



Transport  
Construction  
Authority

# South West Rail Link Glenfield to Leppington rail line

Submissions and Preferred  
Project Report





# **South West Rail Link Glenfield to Leppington rail line Environmental Assessment - Submissions and Preferred Project Report**

August, 2010

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**Transport Construction Authority**

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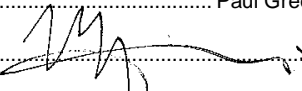
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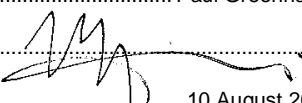
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## Glossary and abbreviations

Term or abbreviation	Definition
AEP	Annual exceedance probability
AMBS	Australian Museum Business Services
at grade	at ground level
CBNTCAC	Cubbitch Barta Native Title Claimants Aboriginal Corporation
CEMP	Construction Environmental Management Plan
Chainage	A measure of rail track distance , measured in kilometres from Sydney (Central Station)
CLM Act	(NSW) <i>Contaminated Land Management Act 1997</i>
CNVP	Construction Noise and Vibration Management Plan
Concept Plan	The concept for the SWRL as defined in the <i>South West Rail Link Concept Plan and Environmental Assessment</i> (TIDC 2006) as amended by the <i>South West Rail Link Concept Plan and Environmental Assessment Submissions Report</i> (TIDC 2007).
Concept Plan Approval	Concept Approval 06_0158 granted by the NSW Minister for Planning on 29 August 2007 for the South West Rail Link Concept Plan
Concept Plan EA	<i>South West Rail Link Concept Plan and Environmental Assessment</i> (Parsons Brinckerhoff 2006a)
CPTED	Crime Prevention Through Environmental Design
DACHA	Darug Aboriginal Cultural Heritage Assessments
dBA	A-weighted decibels i.e, the decibel (abbreviated as dB) scale reduces the range of sound pressure levels to which the human ear responds to a manageable size. Sound measured using a meter with an “A-weighting” filter is expressed in terms of dBA. This electronic filter has a frequency response corresponding approximately to that of human hearing.
DCAC	Darug Custodian Aboriginal Corporation
DECC	(former) Department of Environment and Climate Change (now DECCW)
DECCW	NSW Department of Environment, Climate Change and Water
DEWHA	Commonwealth Department of Environment, Water, Heritage and the Arts
DoP	NSW Department of Planning
‘Down’ rail tracks/services	Tracks/services that travel away from Sydney (Central Station)
DTAC	Darug Tribal Aboriginal Corporation
EA	<i>South West Rail Link, Glenfield to Leppington Rail Line, Environmental Assessment</i> (Parsons Brinckerhoff May 2010)
ECRTN	<i>Environmental Criteria for Road Traffic Noise</i>
EEC	Endangered ecological community
EMF	Electro-magnetic field
EMS	Environmental Management System
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
fill	Spoil material required for construction of the SWRL

Term or abbreviation	Definition
Glenfield to Leppington rail line project	Stage B2 works of the South West Rail Link as defined in the Concept Plan. The Stage B2 works are referred to as 'the project', which is the subject of this Submissions and Preferred Project Report
Glenfield Northern Flyover	A flyover structure which was approved as part of Glenfield Interchange works to the north of Cambridge Avenue which would carry the tracks over the Main South Line and the Southern Sydney Freight Line (SSFL) on the existing rail network
Glenfield Southern Flyover	A flyover structure within the vicinity of Bunbury Curran Creek which would carry the SWRL tracks over the Main South Line and the Southern Sydney Freight Line (SSFL) on the existing rail network
Glenfield Transport Interchange	Stage B1 works (as defined in the Concept Plan) which comprise the reconfiguration of Glenfield Station and the construction of a new car parking facility on Roy Watts Road with an initial capacity of approximately 700 spaces. The Concept Plan Approval determined that these works required further assessment under Part 5 of the EP&A Act. The assessment was undertaken in 2008 and 2009, in the form of a Review of Environmental Factors (Parsons Brinckerhoff 2009), and the activity was determined by TIDC in April 2009. No further planning approvals are required for the Stage B1 works at Glenfield, which have now commenced.
GTI	Glenfield Transport Interchange
ha	hectares
IGANRIP	<i>Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects</i> (DECC 2007a)
INP	<i>Industrial Noise Policy</i> (Environmental Protection Authority 2000)
km/hr	Kilometres per hour
kV	Kilovolt
LA <sub>eq</sub>	The A-weighted equivalent noise level, or the average noise level.
LA <sub>eq(15minute)</sub>	The 'energy average noise level'. This is evaluated over a measurement period of 15 minutes and used to assess noise impacts.
L <sub>Amax</sub>	The highest noise level recorded during a noise event
LGA	Local government area
m <sup>3</sup> /s	cubic metres per second
mAHD	metres above Australian Height Datum used to measure height above sea level
MCoA	Minster's Conditions of Approval
NIAC	Northern Illawarra Aboriginal Collective
NMLs	Noise Management Levels
NSW	New South Wales
NSW T & I	NSW Transport & Infrastructure (now Transport NSW)
Overbridge	A road crossing where the road passes over the railway line
OHW	Overhead wiring
PB	Parsons Brinckerhoff, engaged by Transport Construction Authority to prepare this Submissions and Preferred Project Report
PMF	Probable maximum flood: an estimate of the largest flood that could conceivably occur and is typically used to consider implications arising from the design of major infrastructure and flood evacuation
Project	The project that is the subject of this Submissions and Preferred Project Report is the Glenfield to Leppington rail line section of the SWRL (also defined as Stage B2 in the Concept Plan Approval)

Term or abbreviation	Definition
Project approval	Approval being sought in this EA (approval under Part 3A for of the Glenfield to Leppington section of the SWRL)
REF	Review of Environmental Factors
RTA	Roads and Traffic Authority of NSW
SEPP	State Environmental Planning Policy
SoC	Statement of Commitment
SNIA	SWRL Noise Impact Assessment
SSFL	Southern Sydney Freight Line project, currently being delivered by Australian Rail Track Corporation
Stage A (of SWRL)	These works comprise the commencement of early works at the Glenfield North and Glenfield South junctions and the establishment and use of construction work sites (including the establishment of access tracks) at Glenfield and James Meehan Estate, as described in the Concept Plan (Parsons Brinckerhoff 2006a).
Stage A Project Approval	Project Approval 06_0158 granted by the Minister of Planning on 29 August 2009 for Stage A of the South West Rail Link.
Stage B1 (of SWRL)	These works comprise construction and operation of the Glenfield Transport Interchange and associated ancillary infrastructure, including the reconfiguration of Glenfield Station and the construction of a new car parking facility on Roy Watts Road with an initial capacity of approximately 700 spaces.
Stage B2 (of SWRL)	These works comprise construction and operation of the SWRL corridor and associated ancillary infrastructure, including construction of the rail line between Glenfield and Leppington, two new stations at Edmondson Park and Leppington and a train stabling facility at Rossmore.
SWGC	South West Growth Centre; area identified for land release and growth in the Sydney Metropolitan Strategy; also generally known as the South West Sector.
SWRL	South West Rail Link
TCA	(NSW) Transport Construction Authority (formerly TIDC)
TIDC	(the former) Transport Infrastructure Development Corporation (NSW)(now TCA)
TLALC	Tharawal Local Aboriginal Land Council
Train stabling facility	Train parking facility
TSC Act	<i>Threatened Species Conservation Act 1995</i> (NSW)
Underbridge	A road crossing where the road passes under the railway line
'Up' rail tracks/services	Tracks/services that travel towards Sydney Central
UXO	Unexploded ordinance



# Executive summary

## Overview of the project

The South West Rail Link (SWRL) project comprises works at Glenfield Junction, construction and operation of the Glenfield Transport Interchange and approximately 11 kilometres of rail track (and associated overhead wiring and ancillary infrastructure) between Glenfield and Leppington in Sydney's south-west region (the subject of this Submissions and Preferred Project Report, hereafter referred to as the Glenfield to Leppington rail line or the project). The SWRL also includes the construction and operation of new stations at Edmondson Park and Leppington (including associated bus interchanges, commuter car parks and bicycle facilities), a train stabling (train parking) facility at Rossmore, and a flyover structure within the vicinity of Bunbury Curran Creek (the 'Glenfield Southern Flyover'). This flyover would carry the SWRL tracks over the Main South Line and the Southern Sydney Freight Line (SSFL) on the existing rail network. The proponent of the SWRL project is the Transport Construction Authority (TCA).

## Purpose of this report

This Submissions and Preferred Project Report documents and considers the submissions received on the *South West Rail Link Glenfield to Leppington rail line Environmental Assessment* (EA) (Parsons Brinckerhoff May 2010) and outlines TCA's response to the submissions, as required under Section 75H (6) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This report provides an overview of the EA (refer to Section 1.4), consultation activities undertaken during the preparation and public exhibition of the EA (refer to Chapter 2), a summary of the key non-government and government issues raised (refer to Chapter 3), and details of additional investigations and proposed design changes (refer to Chapters 4 and 5 respectively) that have been made since the EA exhibition. This report also documents a revised Statement of Commitments (refer to Table 7-1), which was amended to address some of the key issues raised in the submissions received as well as the additional investigations.

## Overview of submissions

The key issues raised in this report (refer to Chapter 3) are divided into two main categories: non-government submissions and government agency submissions. The most frequently raised issues in these two categories include:

- the location of the Integral Energy Substation and the impacts to adjoining residents, specifically within Cassidy Street
- construction and operational noise impacts and mitigation options along the project
- project design issues, including options for the Glenfield Southern Flyover, station interchanges and visual amenity
- biodiversity impacts, including ensuring an appropriate biodiversity offset strategy is developed
- hydrology issues including the methodology used for the assessment, proposed impact mitigation measures and the potential impacts associated with salinity.

## Modifications to the project

Since the exhibition of the EA, the following modifications have been made to the project design:

- two additional bridges at Edmondson Park Station, including approach roads to the eastern bridge to facilitate improved access for pedestrians, vehicles and cyclists on either side of the station and rail corridor (refer to section 5.2)
- additional visual impact mitigation within the vicinity of the Forest Lawn Memorial Gardens (refer to Section 5.3)
- modifications to the project footprint, incorporating 13 additional sites for improved maintenance and construction access, three new construction compounds/worksites, maintenance access to culverts, relocation of the Integral Energy substation further away from the existing residences, and additional land for commuter car parking at Leppington Station (refer to Sections 5.5, 5.6 and 5.7).

These modifications have been made in response to feedback received from the project stakeholders (including the community) during the exhibition period as well as from the identification of future opportunities and constraints with the proposed project design and additional investigations presented in Chapter 4 of this report.

The preferred project for the SWRL Glenfield to Leppington rail line is largely as described in Chapter 6 of the EA with the modifications as described in this chapter. The preferred project has been modified in accordance with Section 75H of the EP&A Act to improve constructability and operational effectiveness and to minimise environmental impact.

An assessment of the proposed modifications to the project design is provided in Chapter 6. This demonstrates that the modifications are minor and can be managed with the application of suitable mitigation measures.

## Conclusions

This report has addressed the issues raised through the consultation process conducted during and following, the exhibition of the EA for the SWRL project.

It is proposed that the SWRL project as described in Chapter 6 of the EA, as amended by this report, should be submitted for determination by the NSW Minister for Planning.

The revised Statement of Commitments provided in Table 7-1 will establish the appropriate environmental framework for the project to be undertaken in an sustainable manner.

## Next steps

The NSW Minister for Planning will subsequently determine whether to grant approval (with or without conditions), or refuse the project in accordance with Section 75J of the EP&A Act.

Should the project be approved by the NSW Minister for Planning, TCA will continue to consult with community members, government agencies and other stakeholders during the pre-construction and construction phases of the project.



# 1. Introduction

## 1.1 Background

The proposed South West Rail Link (SWRL) forms part of the NSW Government response to issues of reliability and passenger growth on the Sydney metropolitan rail network and population growth in south-west Sydney.

The SWRL project comprises works at Glenfield Junction, construction and operation of the Glenfield Transport Interchange (GTI) and approximately 11 kilometres of rail track (and associated overhead wiring and ancillary infrastructure) between Glenfield and Leppington in Sydney's south-west region. The SWRL also includes the construction and operation of new stations at Edmondson Park and Leppington (including associated bus interchanges, commuter car parks and bicycle facilities), a train stabling (train parking) facility at Rossmore, and a flyover structure within the vicinity of Bunbury Curran Creek (the 'Glenfield Southern Flyover'). This flyover would carry the SWRL tracks over the Main South Line and the Southern Sydney Freight Line (SSFL) on the existing rail network.

On 29 August 2007, the NSW Minister for Planning granted:

- Concept Plan Approval for the SWRL
- Project Approval for Stage A of the SWRL under Part 3A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Stage A Project Approval authorised works to be carried out at Glenfield Junction, including the construction and operation of the Glenfield Northern Flyover and partial construction of the Glenfield Southern Flyover (subject to conditions). The Concept Plan Approval was subject to a number of control measures and further requirements for environmental impact assessment of the Stage B components, as follows:

- Stage B1 works – comprising the GTI (including the reconfiguration of Glenfield Station and construction of a new car parking facility on Roy Watts Road with an initial capacity of approximately 700 spaces). The approval determined that this required further assessment under Part 5 of the EP&A Act. The assessment was undertaken in 2008 and 2009 in the form of a Review of Environmental Factors (REF) (Parsons Brinckerhoff 2009) and determined by the former Transport Infrastructure Development Corporation (now the Transport Construction Authority, TCA) in April 2009. No further planning approvals are required for the Stage B1 works at Glenfield, which commenced in May 2009.
- Stage B2 works – comprising the remaining SWRL corridor (including construction of the rail corridor, two new stations and a train stabling facility). The approval determined that this stage required further assessment under Part 3A of the EP&A Act.

On 9 March 2010, the Minister for Planning declared Stage B2 of the SWRL to be a critical infrastructure project under Part 3A of the EP&A Act (see Figure 1-1 for the SWRL stages of works).

An Environmental Assessment (EA) was prepared by Parsons Brinckerhoff in May 2010 to assess the environmental impacts of the SWRL Stage B2 works (which are hereafter referred to as the 'Glenfield to Leppington rail line' or 'the project') under Part 3A of the EP&A Act. The EA was publically exhibited for a period of 34 days between 19 May 2010 and 21 June 2010 in accordance with Section 75H(3) of the EP&A Act. During this period, submissions were invited from anyone with an interest in the project, including members of the community and government stakeholders (Chapter 2 of this report contains details of the submissions received). These submissions have been considered and are addressed in this report.

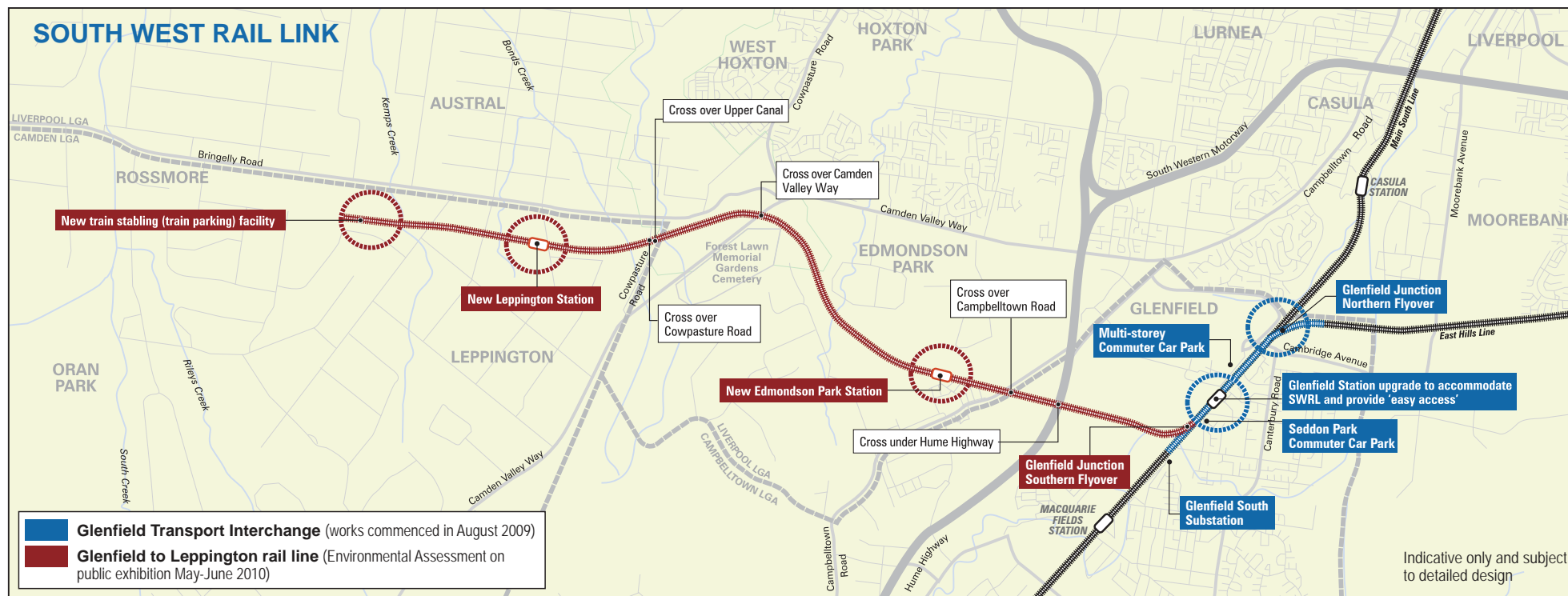


Figure 1-1 Stages of the South West Rail Link

## 1.2 Purpose of this report

This report documents and considers the submissions received on the South West Rail Link, Glenfield to Leppington rail line, EA (Parsons Brinckerhoff May 2010) and outlines TCA's response to the submissions, as required under Section 75H (6) of the EP&A Act. This report also provides an overview of the EA (refer Section 1.4), consultation activities undertaken during the preparation and public exhibition of the EA (refer Chapter 2), a summary of the key non-government and government issues raised (refer Chapter 3), and details of additional investigations and proposed design changes (refer Chapters 4 and 5 respectively) that have been made since the EA exhibition. This report also documents a revised Statement of Commitments (SoC), which has been amended to address some of the key issues raised in the submissions received as well as the results of the additional investigations.

## 1.3 Transport Construction Authority

On 1 July 2010, the former Transport Infrastructure Development Corporation (TIDC) became Transport Construction Authority (TCA). TCA is an operating entity within the new transport agency, Transport NSW. From this point forward in the project, the proponent would be referred to as TCA. Any references to TIDC in previous documentation relating to the project, including the Minister's Conditions of Approval for the Concept Plan and the EA, should be now read as references to TCA.

## 1.4 Overview of the EA

The following section presents a summary of the EA prepared for the SWRL Glenfield to Leppington rail line.

### 1.4.1 Scope of the project

The project incorporates the following key components:

- construction of 11 kilometres of rail line between Glenfield and Rossmore
- new stations at Edmondson Park and Leppington, which would include interchange and car parking facilities and other associated infrastructure
- a train stabling facility at Rossmore, which would provide for stabling (overnight parking) of 20 eight-car sets
- construction of the Glenfield Southern Flyover that would cross over the existing Main South Line and the relocated track of the SSFL
- provision of ancillary facilities, including power supply, substations, sectioning huts, signalling structures, access roads and other infrastructure for the operation and maintenance of the rail services and infrastructure.

More details of the scope of the project are provided in Chapter 6 of the EA.

### 1.4.2 Needs and benefits

The project is required to meet a range of NSW Government strategic, operational and environmental objectives. The project supports the NSW Government's aim to provide an integrated and sustainable transport network to cater for Sydney's forecast population growth, with the project's objectives closely linked with the objectives of the *Sydney Metropolitan Strategy* (Department of Planning 2005).

Specifically, the project is required to service future growth within the South West Growth Centre of Sydney (the SWGC). This growth is guided by both the Sydney Metropolitan Strategy and the *draft South West Subregional Strategy* (Department of Planning 2007). The project would facilitate development of the SWGC by providing increased access to the greater Sydney Greater Metropolitan Region. Overall, the project (as part of the SWRL) would increase the frequency and reliability of public transport for existing customers and provide essential infrastructure for the future increases in population in Sydney's SWGC. The proposed stations at Edmondson Park and Leppington would serve as transport nodes that would be connected to economic gateways within the Greater Metropolitan Region. The proposed train stabling facility at Rossmore is needed to provide additional train stabling capacity for the SWRL and the wider Sydney rail network.

The project would provide improved transport choice and accessibility, and would support sustainable transport orientated land release within the developing SWGC. It creates an opportunity for public transport to be attractive by allowing for the development of an integrated public transport network within the SWGC. The provision of an accessible public transport link for existing and future residents in this area would help to reduce the already high reliance on private cars as the main mode of transport for journeys to and from the area. In promoting integrated transport and land use planning in the SWGC, the project would help achieve appropriate levels of urban consolidation and commercial development around the transport nodes as higher density development is more attractive and, therefore, more viable, around established and reliable transport nodes.

The anticipated key regional benefits of the project would include:

- improved access to public transport for existing and future residents of the SWGC
- improved access to employment and educational and cultural facilities
- reduced road congestion/pressure on regional roads (such as Narellan Road) as growth in the SWGC increases the number of commuters wishing to access the Main South Line between Macarthur and Glenfield
- facilitation of sustainable land release by establishing a mass transit corridor, to serve a planned regional centre; thereby making higher density development more attractive and viable
- removal of the need for residents of new developments in the area to travel to existing CityRail stations, thereby reducing congestion on the Main South Line
- reduced motor vehicle costs (fuel and operating costs) due to less reliance on cars
- reduced negative externalities such as accidents, noise/air pollution, greenhouse gas emissions and energy consumption due to the reduction in car usage
- increased stabling capacity for trains in the outer metropolitan area.

Overall, the project is considered a vital infrastructure project that would support both the immediate SWGC and the wider Sydney Metropolitan Region. More detailed information on the needs, benefits and impacts can be found in Chapter 18 of the EA.

### 1.4.3 Overview of likely impacts

The key environmental issues for construction and operation of the project are associated with:

- land use, property and infrastructure planning
- traffic, transport, parking and access
- noise and vibration
- water quality and hydrology
- flora and fauna
- Aboriginal heritage
- historic heritage
- visual impact, landscaping and urban design.

These impacts are discussed in detail in the EA. A summary of the abovementioned key environmental issues, and corresponding key management commitments, is provided in Table 1-1. These have been updated (where relevant) in chapter 6 of this report to reflect the proposed design changes described in Chapter 5 of this report. The potential benefits of the project are also summarised in Table 1-1. More detailed information on the likely impacts of the project can be found in the EA.

**Table 1-1 Key potential impacts of the Glenfield to Leppington rail line**

Key issue	Identified key potential impacts/benefits	Key management commitments
Land use and property	<p>Temporary noise and vibration, visual amenity, traffic and transport and business impacts during construction.</p> <p>Permanent impacts on rural residential properties in Edmondson Park, Leppington and Rossmore, and properties under government ownership.</p>	<p>Ongoing consultation with the community and agencies responsible for future precinct planning in the SWGC.</p> <p>Acquisition of required land in accordance with the requirements of the <i>Land Acquisition (Just Terms Compensation) Act 1991</i>.</p>
Local and regional traffic	<p>Heavy vehicle traffic and increased traffic on local roads during construction.</p> <p>Growth in traffic volumes in the vicinity of the proposed stations at Leppington and Edmondson Park caused by the progressive release and development of land, including development at the proposed stations.</p> <p>Growth in traffic near both railway station precincts as a result of the increased use of rail as a transport mode.</p>	<p>Development of a Construction Traffic Management Plan, as a sub-plan of the CEMP,, which would maximise access along the rail corridor.</p> <p>Ongoing consultation with the community and agencies responsible for future precinct planning in the SWGC.</p>

Key issue	Identified key potential impacts/benefits	Key management commitments
Noise and vibration	<p>Short-term impacts associated with construction activities and construction traffic, with exceedances in noise criteria goals expected at the nearest receivers.</p> <p>Adverse noise impacts would be experienced. These would be associated with train operations on the new rail line, station operations at Edmondson Park and Leppington and activities at the train stabling facility.</p>	<p>Development of a Construction Noise and Vibration Management Plan as a sub-plan of the CEMP.</p> <p>Application of noise mitigation measures.</p> <p>Continue to work with the Strategic Land Release Office of the Department of Planning (DoP) and Landcom to assist with development of an appropriate land use strategy to separate sensitive users from the rail corridor.</p> <p>Continue to work with RailCorp on the options for horn noise mitigation.</p>
Water quality and hydrology	<p>Water quality may be impacted by the pollution of stormwater run-off with sediments, fuels and other materials that may be inadvertently discharged or eroded from construction sites.</p> <p>Potential for erosion and sedimentation from cuttings and embankments, scouring downstream of waterway crossings and run-off generated pollutants such as oils, greases and gross matter.</p> <p>Potential for significant flood risks in storms larger than the 1% annual exceedance probability (1 in 100 year) event and/or overflows due to a substantial culvert blockage. This is especially relevant to the area around the proposed Edmondson Park Station. The project works would be unlikely to significantly affect flooding within the project area.</p>	<p>Development of a Construction Water and Soil Management Plan as a sub-plan of the CEMP.</p> <p>Application of water quality measures in the design of the drainage system, such as the use of grassed swales in lieu of a concrete or bitumen lining.</p> <p>Development of a Floodplain Risk Management Plan for Edmondson Park Station.</p>
Flora and fauna	<p>Impacts on threatened ecological communities (Cumberland Plain Woodland and River-Flat Eucalypt Forest on Coastal Floodplains) and habitat for threatened species (Cumberland Plain Land Snail, Grey-headed Flying-fox and Microbats) during construction.</p>	<p>Development of a Flora and Fauna Management Plan as a sub-plan of the CEMP.</p> <p>Implementation of biodiversity offset Strategy.</p>
Aboriginal heritage	<p>Direct impacts on eight sites during construction.</p>	<p>Test excavation would be undertaken throughout the impact zone of the project.</p> <p>Aboriginal communities would be offered the opportunity to relocate relevant artefacts.</p> <p>Sites located outside of the construction impact area would be clearly demarcated with high visibility temporary fencing to prevent accidental impacts.</p>



Key issue	Identified key potential impacts/benefits	Key management commitments
Historic heritage	<p>Vibrational impacts from the project may directly affect the Sydney Water Supply Upper Canal and Ingleburn Army Camp. The project may also affect the understanding of the original James Meehan Macquarie Fields grant, the rarity of the street layout within Ingleburn Village, the historical and aesthetic values of the Bunya Pines, and the historic and technical significance of several local roads.</p> <p>Operational impacts would include detrimental impact on the visual amenity of the heritage areas and view corridors, especially around the Glenfield Southern Flyover.</p>	<p>Development of a Historic Heritage Management Plan as a sub-plan of the CEMP.</p> <p>Landscape measures would be implemented to minimise impacts on the visual amenity of the identified heritage items.</p>
Visual	<p>Construction may affect the visual amenity of the landscape for surrounding residents and occupants of vehicles using nearby roads.</p> <p>The rail corridor, stations, stabling facility and new overbridges have the potential to be visually dominant features in the landscape.</p>	<p>Construction sites would be located to minimise visual impact. Additional screening would be provided and stockpiling would not be permitted outside designated areas.</p> <p>Visual impacts would be managed through design development by the implementation of urban design and landscape management measures.</p>

#### 1.4.4 Conclusions of the EA

The project has a strong justification for proceeding, considering the significant regional transport, social and economic benefits it would produce in a key growth area of Sydney. The project forms part of the Metropolitan Transport Plan (NSW Government 2010), which aims to effectively link Sydney's land use planning with its transport network. The adverse consequences of not proceeding with the project would be significant in the long term, in terms of the capacity of the rail network and road network congestion, poor accessibility and potentially unsustainable land release and development.

The project is expected to have significant environmental, social and economic benefits for the south-west region of Sydney and the wider metropolitan area. Notwithstanding this, some adverse impacts are unavoidable due to the nature of the project.

Noise, visual and social impacts are expected to reduce over time as the area develops and land use planning and development integrates with the project. Other direct impacts of the project, such as biodiversity and land use/property impacts, also need to be considered in the context of the wider development planned for the SWGC.

Various measures and commitments are recommended to avoid, remedy and manage the identified impacts associated with construction and operation of the project, which would be incorporated in the construction and operational environmental management plans, as the design for the project is developed further. This is reflected in the Statement of Commitments for the project (refer Chapter 7).

Provided that the measures and commitments specified in the EA are applied during the construction and operational phases of the project, the Glenfield to Leppington rail line could proceed without resulting in significant adverse impacts.



## 1.5 The assessment and approval process

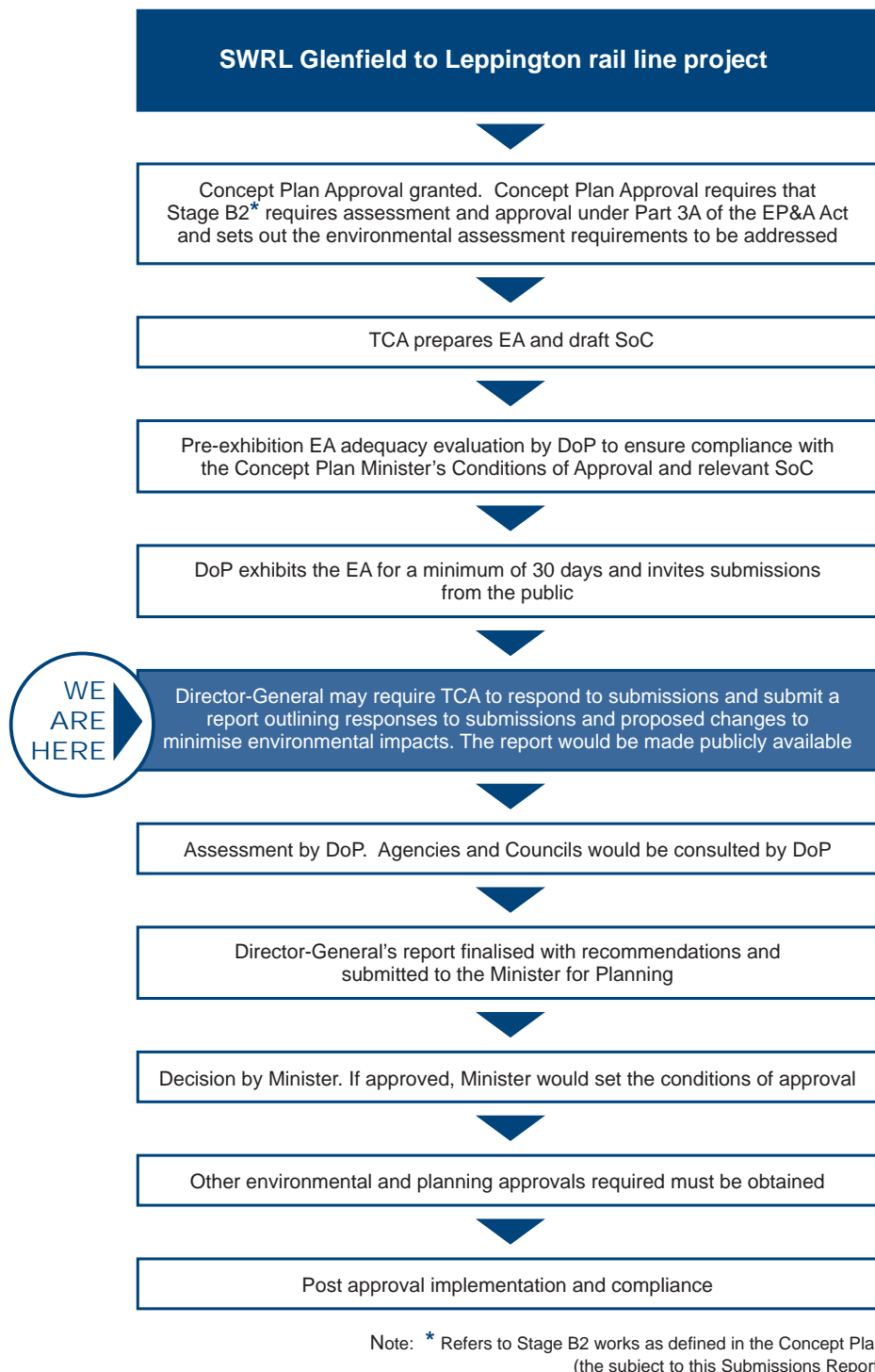
### 1.5.1 Part 3A of the NSW Environmental Planning and Assessment Act 1979

The project has been assessed and will be considered in accordance with the project approval requirements of Part 3A of the EP&A Act. The determination process under Part 3A is illustrated in Figure 1-2. The next steps for the assessment of the project are summarised as follows:

- Following the lodgement of this report with the DoP, the Director-General of the DoP will prepare an Assessment Report for the project (under Section 75I of the EP&A Act).
- The Assessment Report, including a copy of the EA, this report and any advice provided by public authorities, will be submitted by the Director-General to the Minister for Planning for the purpose of the Minister's consideration as to whether to grant project approval under Part 3A of the EP&A Act.
- The Minister for Planning's determination of the project and the Assessment Report will be published on the DoP's website.

### 1.5.2 Subdivision under Part 3A

The project involves the subdivision of private and public land to create the SWRL rail corridor. In some cases whole lots were acquired to avoid creating small unusable lots. In seeking project approval, TCA is also seeking approval for subdivision of all lots acquired to construct the project, where a part of any lot is identified as being surplus to operational requirements following the completion of construction. Detailed subdivision plans would be developed as part of the Land Asset Management Plan in consultation with the DoP to inform the divestment of such surplus land as outlined in SoC No.22.



**Figure 1-2** Planning approval process for the project

## 1.6 Structure of this report

The structure and content of this Submissions and Preferred Project Report is summarised in Table 1-2.

**Table 1-2 Structure and content of the Submissions and Preferred Project Report**

Chapter/Appendix	Description
Chapter 1 – Introduction	Outlines the background and need for the project and the purpose of the report, and summarises the key findings of the EA. This chapter also provides an outline of the determination process for the project.
Chapter 2 – Consultation	Documents the consultation that was undertaken by TCA during the preparation and public exhibition of the EA, and the process used to manage submissions received on the project. This chapter also provides an overview of consultation activities that TCA would undertake if project approval is granted.
Chapter 3 – Consideration of submissions	Provides an overview of the total number of submissions received, the key types of issues raised and frequently raised issues. This chapter also provides TCA's response to frequently raised issues.
Chapter 4 – Updates to the EA	Provides a summary of the additional investigations that have been undertaken since the EA was placed on public exhibition, as well as clarifications to the EA relating to noise and vibration, hydrology, the existing services and utilities, land use zoning and Aboriginal heritage.
Chapter 5 – Proposed design changes and outline of Preferred Project	Provides a description and justification of any proposed design changes to the project since exhibition of the EA.
Chapter 6 – Assessment of proposed design changes	Provides a summary of the assessments undertaken for the proposed design changes.
Chapter 7 – Revised Statement of Commitments	Provides the final Statement of Commitments that TCA commits to during the pre-construction, construction and operational phases of the project to manage the impacts identified in the EA and this report.
Chapter 8 – Conclusions and next steps	Presents the conclusions of the report and documents the form of approval requested in accordance with the provisions of Part 3A of the EP&A Act.
Appendix A – Project Update 5	Provides a copy of the Project Update 5 that was distributed to stakeholders and the community to provide notification of the public exhibition of the EA and forthcoming community information sessions.
Appendix B – Project advertisements	Provides a copy of the advertisements that were published in local newspapers to inform the community about the exhibition of the EA.
Appendix C – Non-government submissions	Provides a summary of the issues raised in non-government submissions and TCA's response to these issues.
Appendix D – Government agency submissions	Provides a summary of the issues raised in government agency submissions and TCA's response to these issues.
Appendix E – Noise Assessment of Horn Testing Options	Provides a summary and assessment of horn testing options.

Chapter/Appendix	Description
Appendix F – Aboriginal Heritage Assessment Addendum	Provides an assessment of the potential impacts on Aboriginal cultural heritage values at a number of additional sites within the project footprint.
Appendix G – SWRL Substations Noise Impact Assessment	Provides a summary and noise assessment of the substations for the project.
Appendix H – Options assessment for the Integral Energy substation	Provides an assessment of the potential options for the location of the Integral Energy substation and identifies the preferred option.

## 2. Consultation

This section documents the consultation undertaken by TCA and its consultants during the preparation and public exhibition of the South West Rail Link Glenfield to Leppington rail line Environmental Assessment (EA) (Parsons Brinckerhoff, May 2010). It is noted all the previous consultation was carried out by TCA under its former name of TIDC. As such, all references to TCA in relation to activities prior to 1 July 2010 relate to the former TIDC.

### 2.1 Pre-exhibition consultation

Substantial consultation was carried out during preparation and exhibition of the SWRL Concept Plan EA (Parsons Brinckerhoff, 2006), as summarised in that document.

The following sections provide an account of consultation carried out following Concept Plan Approval (received in August 2007), to inform stakeholders about the project and identify stakeholder and community issues to be addressed in the EA for project approval of the Glenfield to Leppington rail line project.

Stakeholder consultation for project approval commenced in early 2008. Consultation was undertaken with a variety of stakeholders, including local councils, government agencies, residents, businesses and other community members.

Additional consultation was undertaken in early 2010 to inform stakeholders of design and environmental impact assessment developments since 2008 and to provide a further opportunity for stakeholder feedback during finalisation of the project EA. A variety of different tools and activities were employed to give the community and stakeholders the opportunity to provide input to the project's development. These are discussed below.

#### 2.1.1 Feedback mechanisms

Project feedback mechanisms have been available since the inception of environmental assessment process and promoted on all written communications distributed to the community. These have included a 1800 project infoline, email address, postal address and website. These feedback mechanisms have provided an opportunity for ongoing two-way communication between community and project team members since the project's inception and throughout the environmental assessment process.

#### 2.1.2 Project briefing

A project briefing was held with NSW Government agencies on 8 February 2008 to provide information on the project, the EA, the concept design process and the consultation process. Further details regarding this briefing can be found in Section 3.3.2 of the EA.

### **2.1.3 Project updates**

Between March 2008 and May 2010, five project updates were distributed to residents, stakeholders and community members in relation to the project and the Glenfield Transport Interchange. Copies of the project update were also made available at local businesses, community events, and Campbelltown City Council and Camden Council offices and handed out to commuters at Glenfield Station. Further details regarding the project updates can be found in Section 3.3.2 of the EA.

### **2.1.4 Advertisements**

Advertisements to promote the community information sessions were placed in the following newspapers: Camden Advertiser; Campbelltown Macarthur Advertiser; Macarthur Chronicle, Liverpool Champion, Liverpool Leader and the South Western Rural Advertiser.

### **2.1.5 Community information sessions**

Community information sessions were held at the commencement of the project and prior to the public exhibition of the EA. At the sessions, community members and stakeholders were provided with information about the project and were encouraged to provide feedback and discuss concerns with members of the project team (including noise, sustainability, design, community and environmental specialists). Feedback forms were available for individuals to provide feedback on the project (which was addressed in the EA), and request to be included on the mailing list for future project updates. Further details regarding the community information sessions can be found in Section 3.3.2 of the EA.

### **2.1.6 Stakeholder workshop**

A stakeholder workshop was held in March 2008 for potentially directly affected stakeholders and those who expressed high levels of interest in the project's development. The workshop, like the community information sessions, was attended by technical experts and project members, but had greater emphasis on addressing specific stakeholder issues and concerns.

### **2.1.7 Integrated design workshops**

As a means of integrating environmental and sustainability objectives into the project design, three integrated design workshops were held between March and May 2008 to:

- establish key principles to be employed during the design and development phase
- assess and refine the draft concept design with regard to these principles
- provide a forum for review
- discuss and review the incorporation of community input into the design.

The first two of these workshops were attended by internal stakeholders; the third was also attended by representatives of government and local councils.

### 2.1.8 SWRL Community Information Office

Since December 2009, the SWRL Community Information Office, at 80 Railway Parade, Glenfield, has been open to the community. The office was established to allow the community to view details of the SWRL project, including the Glenfield Transport Interchange component. The office is open every Monday and otherwise made available to residents by appointment.

### 2.1.9 Agency meetings

From 2008, individual meetings were held between TCA (and/or EA consultants Parsons Brinckerhoff) and the following agencies to seek their input in finalising the EA: RailCorp, RTA, NSW Transport & Infrastructure (now Transport NSW), DoP, DECCW and Landcom.

### 2.1.10 Property acquisition negotiations

Land acquisition for the project is being managed by the Office of Strategic Lands at the Land and Property Management Authority ("LPMA") on behalf of the SWRL and in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. To assist the acquisition process, TCA consulted with individual land owners impacted by acquisition between late 2007 and early 2010. These consultations included public meetings, meetings at individual landowner's homes and properties and telephone calls.

## 2.2 Consultation during the public exhibition period

The EA was placed on public exhibition for a period of 34 days between 19 May and 21 June 2010. The exhibition activities and consultation undertaken during the exhibition period are summarised in the following sections.

### 2.2.1 Exhibition venues

Hard copies of the EA were placed on public exhibition at the following locations:

- Campbelltown City Council Customer Centre
- Campbelltown HJ Daley Library
- Liverpool Central Library
- Liverpool City Council Customer Centre
- Camden Council Customer Centre (Camden)
- Camden Council Customer Centre (Narellan)
- Camden Public Library
- NSW DoP (Sydney Office)
- Nature Conservation Council of NSW (Newtown Office)

- TCA (Chatswood Office)
- SWRL Community Information Office (Glenfield).

The display included copies of the EA, an A3 poster with information on the project, contact details and copies of Project update 5 (refer Appendix A). An electronic copy of the EA was also available on the DoP website. A link to the DoP website was provided via the former TIDC website ([www.tidc.nsw.gov.au](http://www.tidc.nsw.gov.au)).

## 2.2.2 1800 project information line, project email and website

The 1800 project information line and email address were available throughout the exhibition period. Table 2-1 outlines the number of complaints and enquiries received between 19 May and 21 June 2010.

**Table 2-1 SWRL enquiries 19 May – 21 June 2010**

Event type	Events
Enquiry/complaint 1800 number	15
Enquiry via <a href="mailto:mail@tidc.nsw.gov.au">mail@tidc.nsw.gov.au</a>	7
Enquiry Phone Call	5
Enquiry Email	6
<b>Total</b>	<b>33</b>

Project information was also available on the former TIDC website, which included:

- information on upcoming community information sessions (refer Section 2.2.5)
- a PDF copy of the SWRL project overview
- a copy of the Project update (refer Section 2.2.4).

## 2.2.3 Advertisements

Advertisements outlining the key details of the project, exhibition of the EA and community information sessions were placed in six local newspapers listed in Table 2-2.

**Table 2-2 SWRL Advertisements**

Publication	Appearance date
Campbelltown Macarthur Advertiser	Wednesday 19 May 2010
	Wednesday 26 May 2010
Camden Advertiser	Wednesday 19 May 2010
	Wednesday 26 May 2010
Liverpool City Champion	Wednesday 19 May 2010
	Wednesday 26 May 2010



Publication	Appearance date
South West Advertiser	Wednesday 19 May 2010
	Wednesday 26 May 2010
Liverpool Leader	Wednesday 19 May 2010
	Wednesday 26 May 2010
Macarthur Chronicle	Tuesday 25 May 2010

These advertisements requested submissions on the EA from anyone with an interest in the project, including stakeholders and members of the community. A copy of the advertisements are provided in Appendix B.

## 2.2.4 Project updates

In total, five project updates have been distributed since the project's inception. The most recent *Number 5, May 2010*, was distributed at the commencement of the EA exhibition period to approximately 5,000 residents and businesses in the project area and to the project mailing list. Copies of the update were handed out to commuters at Glenfield Station and were available at the SWRL Community Information Office and at the community information sessions held during May and June 2010 (refer Section 2.2.5).

The latest update described the project and EA process. Also included was information on the dates and venues for the public exhibition of the EA and upcoming community information sessions (refer Section 2.2.5). It also invited submissions about the project to be sent to the DoP. A copy of Project update 5 is provided in Appendix A.

## 2.2.5 Community information sessions

Three community information sessions were held during the public exhibition period. These sessions were advertised in Project update 5 (refer Section 2.2.4), in local newspapers (refer Section 2.2.3) and on the former TIDC website. Details about the community information sessions are summarised in Table 2-3.

**Table 2-3 Community information session details**

Venue	Date and time	Registered attendees <sup>1</sup>
Leppington Progress Hall, Ingleburn Rd, Leppington	Tuesday 25 May 2010 3pm – 8 pm	111
SWRL Community Information Office	Saturday 29 May 2010 10 am – 2 pm	46
SWRL Community Information Office	Wednesday 2 June 2010 5 pm – 8 pm	56

Note 1: The number of community members who attended the community information sessions was potentially higher than the number quoted as not all community members registered their attendance.

The community information sessions enabled members of the public to meet the project team and provide feedback/ask questions on the project. In addition, community members were able to view the following display materials:

- hard copies of the EA
- aerial maps with the proposed alignment
- an animation showing the 3D view of the project alignment
- posters and fact sheets containing information about the project
- copies of the Project update 5 (refer Section 2.2.4).

CDs containing an electronic copy of the EA, Project Update 5 and submission forms were all available for attendees to take away from the information sessions.

Submission forms were available at each of the community sessions to encourage members of the community to make a formal submission on the project. These forms were either sent directly to the DoP by community members or collected by TCA at the end of each community information session, and a copy sent to the DoP to be registered as a formal submission.

## 2.3 Receipt and management of submissions

Submissions on the project were received by the DoP and copies provided to TCA by the DoP. Submissions that were sent directly to TCA via email or at the community information sessions were forwarded to the DoP to be registered as a formal submission.

Each submission that was received was allocated a unique identification number in chronological order. The submissions were then reviewed to identify the key issues.

Late submissions were accepted by the DoP up until three weeks after the close of the exhibition period. These submissions were managed using the same process described for submissions that were not late.

### 2.3.1 Acknowledgement and management of submissions

Receipt of submissions that were provided to TCA via the community information sessions, direct email or through the project email address were acknowledged (in terms of their receipt), where contact details were provided.

Following determination of the project, a letter will be sent to the persons who provided a submission advising of the completion of the Submissions and Preferred Project Report, their submission number and the Minister for Planning's determination of the project.

## 2.4 Future consultation

Should the project be approved, TCA would continue to consult with community members, government agencies and other stakeholders during the construction phases of the project. TCA's commitment to ongoing stakeholder consultation is reflected in the project SoC No. 14 (refer Chapter 7).

The following section provides an outline of the proposed community consultation activities that would be undertaken during the pre-construction and construction phases of the project.

### 2.4.1 1800 project information line, project email and website

The freecall 1800 project infoline and TCA email address ([mail@tca.nsw.gov.au](mailto:mail@tca.nsw.gov.au)) would be maintained throughout pre-construction and construction phases. These contact details would be included on all project related correspondence.

The project website ([www.tca.nsw.gov.au](http://www.tca.nsw.gov.au)) would be maintained throughout the pre-construction and construction phases. The website would provide an electronic copy of project updates, monthly construction updates, and contact details for TCA, to allow community members to raise their questions or concerns.

The website would also contain a link to this report and project determination documents.

### 2.4.2 Construction response line

A freecall 24 hour 1800 construction response line would be maintained throughout construction. This phone number would be available for residents and the wider community for urgent enquiries about any construction activities in progress.

### 2.4.3 Project updates

Following determination of the project, a project update would be sent to residents and business owners in the area surrounding the project advising them of the completion of this report, and determination of the project. This update will also provide community members with an outline of the next steps in the project schedule and project contact details.

Further project updates would be distributed to the community throughout the construction period.

### 2.4.4 Meetings

Following the completion of this report, meetings will be held with government stakeholders (such as Councils, RailCorp and the RTA), where appropriate, to provide an update on the project and outline the next steps. Ongoing consultation with other stakeholders, including the community, will occur during the next stages of the project (refer Section 8.2).



## 3. Consideration of submissions

This section provides an overview of submissions received and TCA's responses to issues raised. A detailed breakdown of submissions and complete responses are provided in Appendices C and D.

### 3.1 Overview of submissions on the EA

#### 3.1.1 Number of submissions received

The DoP received a total of 70 submissions during the exhibition period. These comprised 61 submissions from community members and nine submissions from government departments, agencies and stakeholders. A further six submissions were received outside of the exhibition period. TCA's response to the key issues raised in these submissions forms the basis of this chapter.

#### 3.1.2 Analysis process

All non-government submissions (including submissions from the community) have been categorised according to the key and specific issues they raised (refer Table 3-1). The specific issues raised in non-government submissions, and TCA's response to these issues, are provided in Appendix C. A summary of the most frequently raised issues in non-government submissions, and TCA's response to these issues, is provided in Section 3.2.

Government agency submissions have been dealt with separately to non-government submissions due to the large number of specific, technical issues that were raised. The specific issues raised in government agency submissions, and TCA's response to these issues, are provided in Appendix D. A summary of frequently raised issues by government agencies, and TCA's response to these issues, is provided in Section 3.3.

#### 3.1.3 Summary of issues raised in submissions

##### Non-government submissions

A breakdown of the key issues raised in non-government submissions is provided in Table 3-1. Since most submissions raised more than one issue, the number of issues identified in Table 3-1 is greater than the total number of submissions received. The key issues identified in Table 3-1 have been categorised into topics that correspond with the information presented in the EA. Submissions that raised multiple issues from the same category (i.e. noise and vibration related issues) were only counted once.

As shown in Table 3-1, 'project design', 'noise and vibration' and 'socio-economic' related issues were the most frequently raised issues in non-government submissions. A further breakdown of these key issues into sub-issues is provided in the following sections.

**Table 3-1 Summary of the key issues raised in the non-government submissions**

Key issue	Number of submissions raising the issue <sup>1</sup>	Percentage of submissions raising the issue <sup>2</sup>
Project design <sup>3</sup>	35	57.4%
Noise and vibration <sup>3</sup>	24	39.3%
Socio-economic <sup>3</sup>	20	32.8%
Visual amenity	14	23.0%
Traffic and transport	13	21.3%
Biodiversity	7	11.5%
Planning process	7	11.5%
Construction	5	8.2%
Electromagnetic fields (EMF)	3	4.9%
Project scope	2	3.3%
Water	1	1.6%

Notes 1: Submissions that raised multiple issues from the same category (e.g. traffic and transport) were only counted once.

2: 61 non-government submissions were received during the exhibition period. The percentage stated is the number of submissions raising each key issue, relative to the 61 submissions received.

3: Refer to Figure 3-2 for a detailed breakdown of this issue into sub-issue categories.

#### *Key Issue 1 – Project design*

Project design related issues were raised in approximately 57% of non-government submissions. Of these issues, relocation of the Integral Energy substation and the Glenfield Southern Flyover were the most frequently raised sub-issues (43% and 21%, respectively).

Discussion on the relocation of the substation and TCA's response is provided in Section 3.2.1. Discussion on issues related to the Glenfield Southern Flyover is provided in Section 3.2.2.

#### *Key Issue 2 – Noise and vibration*

Noise and vibration related issues were raised in approximately 39% of non-government submissions. Of these issues, noise mitigation, noise from the Glenfield Southern Flyover and the adequacy of the noise assessment were the most frequently raised sub-issues (20%, 17% and 17%, respectively). A breakdown of noise related issues into sub-issue categories is provided in Figure 3-1.

Discussion on issues raised regarding the noise assessment, proposed impact mitigation measures and TCA's response is provided in Section 3.2.4. Discussion on noise from the Glenfield Southern Flyover is provided in Section 3.2.2.

#### *Key Issue 3 – Socio-economic*

Socio-economic related issues were raised in approximately 33% of non-government submissions. Of these issues, property value was the most frequently raised sub-issue with 38% raising this concern. A breakdown of socio-economic into sub-issue categories is provided in Figure 3-1.

Discussion on the projects impact on property value is provided in Section 3.2.3.

*Key Issue 4 –Visual amenity*

Visual amenity related issues were raised in approximately 23% of non-government submissions. Of these issues, impacts from the Glenfield Southern Flyover and the substation were the most frequently raised sub-issues (43% and 43%, respectively). A complete breakdown of visual related issues into sub-issue categories is provided in Figure 3-1.

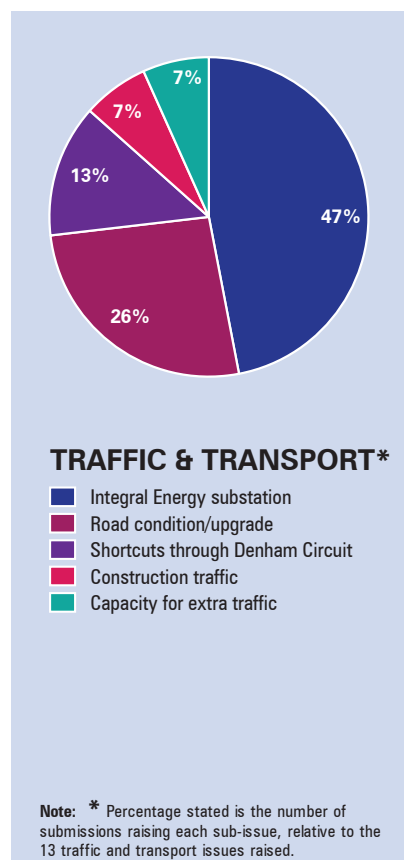
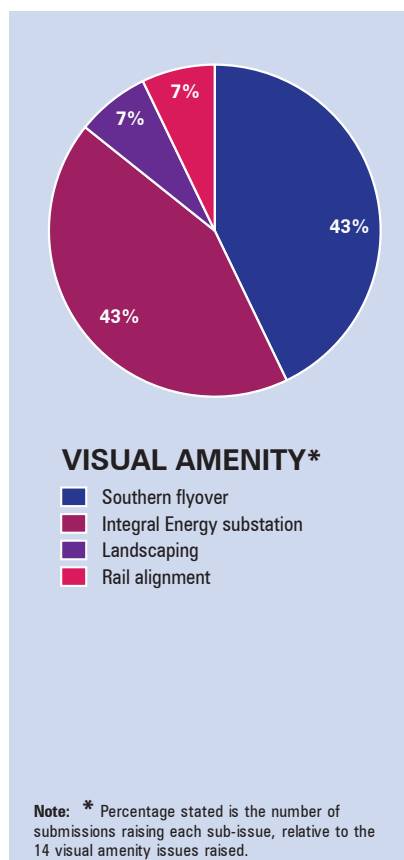
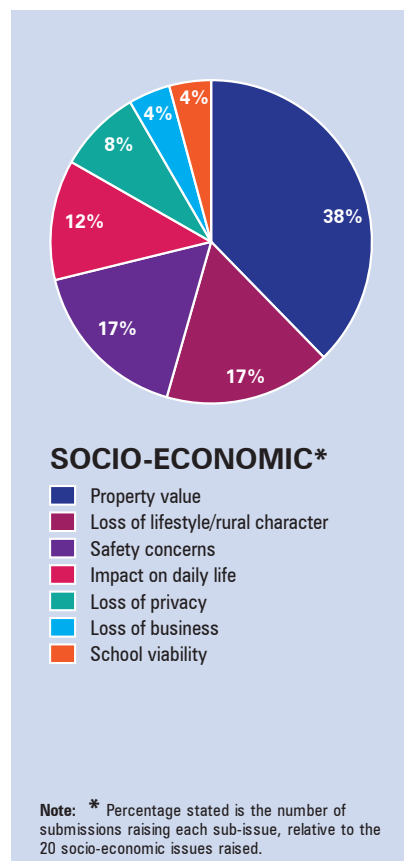
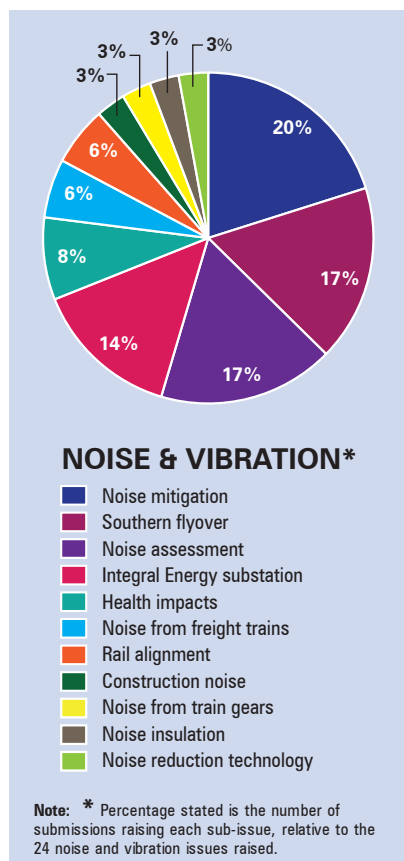
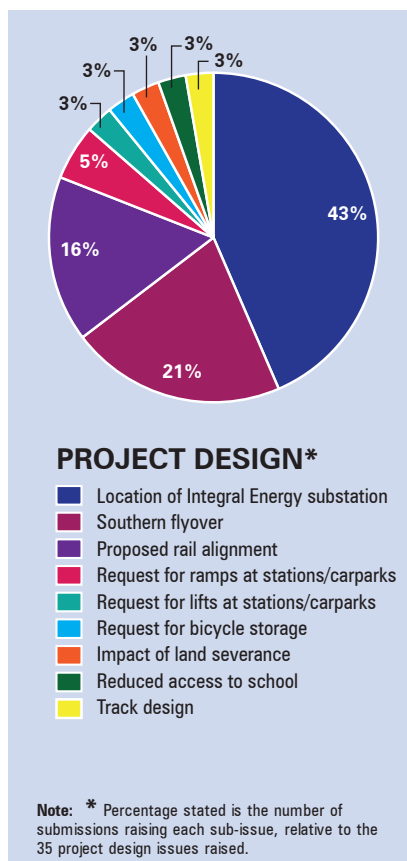
Discussion on frequently raised issues associated with visual amenity impacts from the flyover and TCA's response to these issues is provided in Section 3.2.2.

*Key Issue 5 –Traffic and transport*

Traffic and transport related issues were raised in approximately 21% of non-government submissions. Of these issues, traffic impacts from the substation was the most frequently raised sub-issue, with 47% referencing this concern. A complete breakdown of traffic and transport related issues into sub-issue categories are provided in Figure 3-1.

Discussion on traffic impacts from the substation and TCA's response is provided in Section 3.2.1.

A breakdown of these key issues into sub-issue categories is provided in Figure 3-1.



**Figure 3-1** Analysis of the specific project design, noise and vibration, socio-economic, visual amenity and traffic and transport issues raised in non-government submissions



## Government agency submissions

A summary of the key issues raised by each government agency is provided in Table 3-2. Discussion of issues raised frequently by multiple government agencies and TCA's response to these issues is provided in Section 3.3. A complete list of issues raised in government agency submissions, including TCA's response to these issues, is provided in Appendix D.

**Table 3-2 Summary of issues raised in government agency submissions**

Agency	Key issues raised
Sydney Water	<ul style="list-style-type: none"> <li>▪ supply and use of recycled water</li> <li>▪ application required for servicing compliance certificate</li> <li>▪ further assessment on application for Section 73 certificate.</li> </ul>
Department of Defence	<ul style="list-style-type: none"> <li>▪ rail noise impacts on future land use</li> <li>▪ impact mitigation measures for Aboriginal artefacts.</li> </ul>
Campbelltown City Council	<ul style="list-style-type: none"> <li>▪ road, cycleway and pedestrian linkages</li> <li>▪ detailed assessment of affected heritage items</li> <li>▪ post-construction rehabilitation and landscaping</li> <li>▪ monitoring of vibration during construction</li> <li>▪ archaeological management and recording during construction</li> <li>▪ methodology and consultation for Aboriginal heritage assessment</li> <li>▪ extent of vegetation clearing</li> <li>▪ mitigation and offsetting of biodiversity impacts during construction</li> <li>▪ clarification of flora and fauna assessment</li> <li>▪ bush fire management and establishment of Asset Protection Zone (APZ)</li> <li>▪ methodology/approach used for flood assessment</li> <li>▪ consideration of Glenfield Basin in project design</li> <li>▪ use and access of construction compounds</li> <li>▪ noise mitigation for existing residences</li> <li>▪ long-term maintenance of visual amenity.</li> </ul>
Landcom	<ul style="list-style-type: none"> <li>▪ station design to promote linkages, civic presence and safety</li> <li>▪ station car park to be integrated with development of town centre</li> <li>▪ Edmondson Park bridge design and construction timing</li> <li>▪ pedestrian/cycleway/emergency vehicle entrance into Regional Park</li> <li>▪ regard to be taken for adjoining land use and land configuration at Crossing 6.</li> </ul>

Agency	Key issues raised
DECCW	<ul style="list-style-type: none"> <li>flora and fauna surveys undertaken for project</li> <li>applicability of biodiversity offset strategy</li> <li>noise assessment and mitigation measures at the train stabling facility</li> <li>strategic land release and future land use planning for noise sharing</li> <li>archaeological assessment and protection of artefacts</li> <li>methodology for archaeological test excavations</li> <li>clarification of flood assessment</li> <li>preparation of salinity assessment and management plan</li> <li>promotion of sustainable transport options</li> <li>proposed sustainability measures be included in Statement of Commitments (SoC).</li> </ul>
Industry and Investment	<ul style="list-style-type: none"> <li>consideration of significant coal resources</li> <li>weed management strategies to be incorporated in Flora and Fauna Management Plan.</li> </ul>
Camden Council	<ul style="list-style-type: none"> <li>construction noise and noise mitigation at train stabling facility</li> <li>visual impacts of project and integration with existing landscape</li> <li>provision of station facilities</li> <li>project timeline.</li> </ul>
Liverpool City Council	<ul style="list-style-type: none"> <li>station design and road linkages</li> <li>commuter car park location</li> <li>noise mitigation measures and planning controls</li> <li>substation location</li> <li>design and construction of waterway crossings</li> <li>design, construction and cost of necessary access roads</li> <li>consultation prior to and during construction</li> <li>post construction and restoration of land in vicinity of the SWRL.</li> </ul>
DoP	<ul style="list-style-type: none"> <li>justification, assessment of alternatives and mitigation measures for substation location</li> <li>finalisation of biodiversity offset strategy</li> <li>balance between land use planning solutions and project specific mitigation measures.</li> </ul>
NSW Office of Water	<ul style="list-style-type: none"> <li>future functioning of waterways</li> <li>work within riparian areas</li> <li>rehabilitation methods</li> <li>bridge designs.</li> </ul>

## 3.2 Responses to non-government submissions

This section details the most frequently raised issues in non-government submissions received on the project (as identified in Table 3-1) and TCA's response to these issues. Responses to every specific issue raised in the non-government submissions are provided in Appendix C. Individuals/organisations seeking a specific response to their individual submission are referred to Appendix C.

### 3.2.1 Integral Energy substation

#### *Relocation of substation*

A desire for relocation of the proposed Integral Energy substation at the end of Cassidy Street was the most frequently raised issue in the non-government submissions received. Around 33% (20) of non-government submissions raised this issue at least once, citing concerns related to project design, noise and vibration, visual, traffic and transport, construction, electro magnetic field and water. Of these submissions, over half (56%) suggested that the substation be relocated to the northern side of the rail line.

In response to community feedback, an options assessment was undertaken for relocation of the substation (refer to Appendix E). The options assessment identified the most suitable alternative location based on the consideration of environmental, social, economic and technical issues. Full details of the preferred substation relocation and an assessment of associated impacts are detailed in Section 5.5 and Chapter 6.

#### *Traffic impacts from the substation*

Traffic and transport issues relating to the construction and operation of the substation were raised in 11% (7) of all non-government submissions. The most frequent concern was the impact of additional traffic from the substation on Cassidy Street. A Construction Environmental Management Plan (CEMP) would be prepared to mitigate and manage any environmental impacts from construction, including construction traffic. A construction compound (compound 5) and stockpile area is proposed in close proximity to Cassidy Street; however this site would be accessed from the north via Jardine Drive, and as such there would be minimal construction traffic impact on Cassidy Street. Table 8-9 of the EA identifies that construction vehicles accessing compound 5, to be used for construction of the substation, would have the potential to impact 14 residences at Jardine Drive and Ryman Avenue. During construction of the substation, Cassidy Street would be used for delivery of some equipment; however, this additional traffic would be infrequent and would have only minimal impact on existing residences. Management measures to minimise these impacts will be included in the CEMP.

During operation, maintenance vehicles would need access to the substation site off Cassidy Street. Maintenance vehicle traffic would be infrequent and of very low volume, and the resultant impacts on Cassidy Street would be negligible.

*Visual impacts of the substation*

Visual amenity issues related to the substation were raised in 10% (6) of non-government submissions. The most frequently raised concerns were the perception that the substation signified the introduction of an industrial site into a rural setting and disturbance from the substation lights.

In response to community feedback, the location of the substation has been set back to allow a 40 metre separation distance to the nearest residence. The visual impact assessment of the preferred relocation and visual mitigation solutions can be found in Section 6.8.3.

Light spill from the substation would be minimised through appropriate lighting design, including full cut-off lighting where no light is emitted above the horizontal plane of the light fixture and positioning of lights away from residential areas.

*Noise impacts of the substation*

Noise and vibration issues related to the substation were raised in 8% (5) of non-government submissions. The most frequent concern was noise from power surges and the potential for sleep disturbance.

The main noise emissions associated with substations are continuous low level humming from the transformers and impulsive noise from the infrequent operation of circuit breakers. Additional noise modelling completed by Heggies Pty Ltd for the preferred substation relocation at the end of Cassidy Street (refer to Appendix G) showed that the LAeq(15minute) noise levels (which are representative of the average noise levels that would be experienced over a 15 minute period) resulting from the operation of the substation would comply with the NSW *Industrial Noise Policy* (INP) amenity and intrusiveness criteria at all existing residential receivers. On this basis, mitigation of substation transformer noise is not required to comply with the INP criteria.

The upper noise goal for sleep disturbance is an L<sub>Amax</sub> noise level of 65 dBA (the highest noise level recorded during a noise event). The predicted noise levels from the operation of circuit breakers would exceed this goal at the nearest residences by up to 7 dBA, with a predicted L<sub>Amax</sub> noise level of 72 dBA. The sleep disturbance indicators provided in the *Environmental Criteria for Road Traffic Noise* (ECTRN) allows for one or two noise events per night at this level (72 dBA) to not cause impacts to health and wellbeing.

The circuit breakers at the substation would meet this criterion as they only operate when fault conditions cause over-current trips. Advice from RailCorp and Integral Energy indicate that this would occur infrequently and consideration of noise mitigation measures for circuit breakers is therefore not required.

*Clearing of Cumberland Plain Woodland for development of the substation*

Concerns regarding the clearing of Cumberland Plain Woodland for development of the substation were raised in 8% (6) of non-government submissions.

Since exhibition of the EA and in response to community concerns, a preferred site for the relocation of the proposed substation has been determined. The relocated site is still at the end of Cassidy Street; however, the separation between the substation and the nearest residence has increased to approximately 40 metres.

This design change would result in the clearance of an additional 0.07 ha of Cumberland Plain Woodland, increasing the total clearing for the substation from 0.51ha to 0.58ha of Cumberland Plain Woodland. However this additional area of clearing is not likely to constitute a significant impact on biodiversity. (Section 6.6.1 discusses in full the biodiversity impacts of the preferred substation relocation.) Offsets would be used to address this loss. Table 6-3 compares the previous and newly proposed vegetation impacts.

Other areas considered for the substation location within the site would have greater impacts on native vegetation than the preferred option due to servicing infrastructure

#### *Impact of the substation on property values*

Concerns that the substation would affect property values were raised in 7% of non-government submissions. In response to community concerns, the proposed substation location has been moved to increase the separation between the substation and the nearest residence by approximately 40 metres (refer Appendix H). With the proposed landscaping and visual screening measures (as discussed above), the existing transmission line easement, and in consideration of the predicted noise levels (as discussed above and further in Appendix G), it is not anticipated that the substation would have an impact on property values.

### **3.2.2 Glenfield Southern Flyover**

Concern over the impacts of the Glenfield Southern Flyover was one of the most frequently raised issues in the non-government submissions received. Around 16% (10) of submissions raised this issue at least once (i.e. a combination of 'project design', 'noise and vibration' and 'visual' issues as discussed in Section 3.1.3). All of these submissions suggested rerouting the cross-over to go underground. The most common concerns about the flyover were visual and noise impacts.

#### *Rerouting the flyover underground*

The flyover superstructure presents the most cost-effective and feasible option for the Glenfield to Leppington rail line to cross the existing Main South Line. The proposal to build the SWRL on a flyover structure was confirmed by the Concept Plan Approval in 2007, which also provided project approval for the substructure of the flyover inside the Main South Line corridor. Alternative options, such as routing the line underground, are limited by engineering complexity, land availability and flooding constraints. To mitigate visual impacts from the flyover, a detailed urban and landscape design strategy would be prepared as part of the detailed design.

#### *Noise impacts from the flyover*

A comprehensive noise and vibration impact assessment was carried out for the operational phase of the project. As detailed in Section 9.4.2 of the EA, this assessment identified locations along the project route where impact mitigation measures, such as noise barriers, would be required. These locations would be refined and confirmed during detailed design in consideration of relevant noise guidelines, policies and criteria. The flyover is not predicted to result in exceedances of the noise criteria for any existing neighbouring land uses.

### 3.2.3 Property value

The project's impact on property values was raised in 15% (9) of the non-government submissions received, with the most frequent concern being the devaluation of existing residences at Denham Court. The EA details a suite of measures to minimise the potential environmental, economic and social impacts of the project. It is not expected that the project would have a substantial impact on property values in the region. In addition the significant land use changes in the area and the proximity to a transport corridor would provide a positive benefit to property value.

### 3.2.4 Noise assessment and mitigation

Concerns regarding the noise assessment were raised in 10% (6) of non-government submissions and proposed noise mitigation methods were raised in 11% (7) of non-government submissions. These included concerns that accurate noise levels were not provided in the EA, that the predicted operational noise levels do not comply with relevant guidelines, that the long-term use of the train line was not considered in the noise assessment, that noise mitigation measures had only been considered and not proposed and that noise mitigation along the rail corridor would not be sufficient especially where at grade or on an embankment.

#### *Noise levels provided in the EA*

The noise and vibration technical report, contained in Volume 2a of the EA, provides a detailed assessment of the project's predicted noise levels and impacts. Further noise modelling would be undertaken during detailed design to confirm the predicted noise levels and impacts, and the corresponding requirements for noise mitigation measures. *Compliance with operational rail noise guidelines.*

The DECC (2007a) *Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects* (IGANRIP) is the current guideline applicable to assessing potential noise impacts from rail infrastructure projects. The IGANRIP provides external noise trigger levels that are to be assessed at a point one metre from the most potentially affected facade. The operational noise contours presented in the EA correspond to the IGANRIP trigger levels.

#### *Long-term use of rail line*

The noise assessment considered the use of the rail line both at opening in 2016 and for the long-term scenario in 2026. Freight traffic is not anticipated to use the SWRL. Track maintenance vehicles with diesel engines may occasionally carry out maintenance on the SWRL, but this would be infrequent and any additional noise and vibration impacts are not expected to be significant. Quadruplication is not part of the current SWRL Glenfield to Leppington rail line project. A separate assessment of potential noise and vibration impacts would be undertaken in the event that quadruplication of the line is proposed in the future.



### *Consideration of noise mitigation measures*

Reasonable and feasible noise mitigation measures are proposed at locations where the IGANRIP trigger levels are exceeded during operation at existing residences and confirmed future residential locations. The mitigation measures that have been proposed include source controls, earth mounds and noise barriers at some locations combined with future land use planning.

The proposed measures will be subject to further assessment during detailed design to confirm the requirements for noise mitigation (refer to .SoC No.61).

Noise mitigation in the form of a 6 m high noise barrier has also been proposed at the train stabling facility subject to further assessment during detailed design, to minimise potential exceedances of the DECCW (2000) *NSW Industrial Noise Policy* (INP) criteria.

### *Noise mitigation along rail corridor*

A 3D computer noise model was implemented for the SWRL operational noise assessment. The noise model incorporates 3D ground contour information (topography) for the rail corridor and adjacent land. Therefore, the noise model accounts for both the vertical and horizontal alignments of the proposed tracks.

Where noise mitigation is required, the proposed noise barriers are of a specific height above the top of the rail. The relative heights of the barrier and the noise source are not affected by the elevation of the track on embankment compared to where the track is at grade.

The proposed measures will be subject to further assessment during detailed design to confirm the requirements for noise mitigation.

## **3.3 Responses to government agency submissions**

This section provides a summary of the issues raised frequently by government agencies and TCA's response to these issues. Responses to specific issues raised by each government agency are provided in Appendix D. In general, where an issue has been raised by only one submission, it is dealt with only in Appendix D.

### **3.3.1 Operational noise impacts on future populations**

The Department of Defence, Campbelltown City Council, DECCW, Camden Council and Liverpool City Council raised the issue of operational noise impacts on future residents and land use adjacent to the rail corridor or train stabling facility.

As detailed in Chapter 9 of the EA, the noise and vibration impacts of train operations along the new rail line were assessed in accordance with IGANRIP, and the DECCW *Assessing Vibration: A Technical Guideline*. Noise from fixed facilities (the substations and the stabling facility) has been assessed in accordance with the INP.

Commercial development in a town centre would have a lower sensitivity to rail noise than residential development. It is also important to note that high-density developments and multistorey residential buildings would not benefit from mitigation in the form of noise barriers

as the line of sight from the source to the receiver would not be disrupted. Future residential development along the SWRL would need to be guided by the Department of Planning (2008) *Development near rail corridors and busy roads – interim guideline* gazetted under Clause 87(3) of the *State Environmental Planning Policy (Infrastructure) 2007*. This guideline states that, for development for the purposes of a building for residential use, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following  $LA_{eq}$  levels are not exceeded:

- in any bedroom in the building — 35 dB(A) at any time between 10 pm and 7 am
- anywhere else in the building (other than a garage, kitchen, bathroom or hallway) — 40 dB(A) at any time.

Operational rail noise contours calculated for the baseline scenario in 2016 suggest that the IGANRIP trigger levels would be exceeded at some locations adjacent to the rail corridor boundary. These locations include locations of expected future residential development, including:

- the Ingleburn Gardens Estate
- the proposed Edmondson Park Town Centre
- the proposed development area around Leppington Station.

Therefore, although the IGANRIP only requires consideration of existing receivers, the approach to noise mitigation for the project also considers future residential areas. Given the greenfield nature of the project, and uncertainties on the details of future land use, it is not considered feasible or reasonable to use physical measures alone to mitigate noise impacts on all potential future sensitive receivers. It is noted that some development is already taking place in the Ingleburn Gardens Estate and that the requirement for noise mitigation in this area will be reviewed in the detailed design phase.

Physical noise mitigation measures would be combined with a noise sharing approach involving potential operational and land zoning solutions.

Future development on land adjacent to the train stabling facility would need to be designed carefully. Alternative options for reducing the impacts of horn testing at the train stabling facility have been investigated since the completion of the EA (see Section 4.4) in consultation with RailCorp. The results of this assessment indicate that there are potentially feasible operational solutions to reduce the impact of horn noise at the train stabling facility. TCA has also proposed to work with the DoP on a noise sharing approach to reduce potential impacts around the train stabling facility through appropriate land use planning.

### **3.3.2 Biodiversity offsets**

DECCW and Campbelltown City Council raised issues regarding the proposed biodiversity offsets, including the application of biodiversity certification within the growth centre and how impacts on threatened ecological communities in non-certified areas would be offset.

The conditions of the Concept Plan Approval granted for the South West Rail Link specified the applicable environmental assessment requirements including relating to biodiversity assessment. Relevantly, the Concept Plan Approval required:



- a description of the “ecological impacts of the project including (as relevant): impacts on threatened populations and ecological communities; riparian and stream ecology and existing or planned biodiversity corridors ...”; and
- that the biodiversity impacts associated with the South West Rail Link are offset to ensure a net neutral or beneficial biodiversity outcome consistent with the draft Growth Centres Conservation Plan (GCC, 2007) and the draft Guidelines for Biodiversity Certification of Environmental Planning Instruments (DECC, 2007) and in consultation with the DEECW.

Under Part 3A of the EP&A Act, proponents must demonstrate that a project would improve or maintain biodiversity outcomes. As a result of achieving biodiversity certification of the *State Environmental Planning Policy (Sydney Region Growth Centres) 2006* (Growth Centres SEPP), the improvement or maintenance of biodiversity values would be achieved largely through the provision of offsets.

The impacts of the project on biodiversity within the certified areas covered by the Growth Centres SEPP do not require further assessment to meet the requirements of the Part 3A threatened species assessment guidelines (Department of Environment and Climate Change 2007b), in that they do not affect the overall ability of the growth centres to improve or maintain biodiversity values. Conversely, impacts on biodiversity within non-certified areas may affect the ability of the growth centres to maintain or improve biodiversity values and must be assessed and, in most cases, offset as required by the conditions of the Concept Plan Approval.

Refinement of the project design since the exhibition of the EA has resulted in a slight increase in the area of vegetation to be cleared in non-certified areas from 5 ha to 6.09 ha. Offsets provided for this clearing of non-certified areas must be in accordance with Condition 11 of the Biodiversity Certification Order that has been conferred upon the Growth Centres SEPP. The offsets must, therefore, comprise one or a combination of the following measures:

- protection of an equal or greater area of existing native vegetation elsewhere in the growth centres and/ or
- revegetation and/or restoration of an area of land elsewhere in the growth centres at a ratio of at least 3:1.

The offsets must be located inside the growth centres where possible, but may be located outside the growth centres (but within the Cumberland Plain of Western Sydney) if the DoP is satisfied that there are no practicable offset options within the growth centres.

A biodiversity offset strategy for the project is being developed by TCA in consultation with DoP and DECCW. See Section 4.6 for further detail.

### **3.3.3 Maintaining the visual amenity**

Campbelltown City Council and Camden Council raised issues regarding impacts on visual amenity and highlighted the importance of integrating the project into the existing landscape and maintaining key views.

Landscape strategies have been recommended to mitigate the visual impact of the project (refer Technical Paper 5 of the EA). These strategies have been developed in consideration of the existing landscape framework and the potential impact on future land use proposals.

The project corridor provides the opportunity for more than 30 ha of revegetation and landscape treatments. The design intent is to plant areas of the corridor outside of the central 14 m wide rail shoulder where feasible, allowing for all necessary drainage, maintenance and rail systems access requirements.

The proposed landscape strategies would create a variety of landscape characteristics along the corridor. In some areas, the project infrastructure would be enclosed in dense plantings that would screen the infrastructure from the surrounding landscape. In other areas, the landscape strategies would allow views out of the rail corridor into parkland areas. The approach appreciates the value of glimpsed views of a rail line within the landscape setting. Views would be opened up to the corridor at key locations and within proposed high density town centres.

The planting mix for the landscaping strategies would be informed by the existing vegetation of the Cumberland Plain. It would be impractical, however, given the restricted areas available for planting along the corridor, to attempt to fully recreate the impacted threatened ecological communities. Species would be selected for their proven track record in large scale revegetation projects, their suitability for rail corridors and their low maintenance requirements.

### 3.3.4 Hydrology

Campbelltown City Council, DECCW and Liverpool City Council all raised issues regarding the hydrological assessment undertaken for the project, including the methodology used for the assessment, proposed impacts mitigation measures and the potential impacts associated with salinity.

The hydrologic modeling undertaken for the portion of the rail line through Campbelltown City Council's area (Crossings 2–7) (refer to Figure 5-5) was based on the assessment carried out for the Edmondson Park Flood Study (*Webb, McKeown & Associates Pty Ltd 2007*) which was prepared as part of the Edmondson Park precinct planning. Critical durations were determined as part of that assessment and the same storm duration was used for the Glenfield to Leppington rail line assessment. A full range of storm durations was assessed. Generally, the 90 minute and 2 hour storm durations were found to be the critical storm for various subcatchments contributing to the rail line crossings. Initially, a review of results for a full range of storm durations (concentrating on both the 90 minute and 2 hour storm) was undertaken. The review revealed that the 2 hour storm gave the most representative results and the assessment proceeded on that basis. Two storm durations were modelled at Crossing 1: the 2 hour storm (critical for flooding within the Glenfield urban area) and the 9 hour storm (critical for flooding in the main creek and floodplain).

A stormwater management plan and detention basin strategy was developed as part of the Edmondson Park Flood Study to manage changes in flow behaviour associated with the proposed urbanisation of the catchments within the Edmondson Park urban release area. This detention basin strategy also takes into consideration the change in land use proposed in the catchments surrounding the Glenfield to Leppington rail line. This integrated, holistic

approach to detention basin strategy development is anticipated to be more effective and efficient than providing multiple detention basin systems for separate infrastructure.

For all water crossings within the Edmondson Park area, except Crossing 3, the proposed detention basin strategy provides for detention basins downstream of the rail corridor. The location of these detention basins would be determined during detailed design and the development of the Edmondson Park Precinct land use. As outlined in SoC No.12 any changes to the project footprint would be subject to further environmental assessment. Following the development of the Edmondson Park urban release area, the peak flows at these crossings would be greater than existing flows. Peak flows following development of the wider Edmondson Park urban release area have been considered in the flood assessment of these waterway crossings. This is considered a reasonable trade-off, whereby the Glenfield to Leppington rail line deals with developed flows from the upstream area and any impacts on flow behaviours resulting from the Glenfield to Leppington rail line are addressed in the broader stormwater management strategy for the Edmondson Park urban release area.

As outlined in .SoC No.42 and Section 10.6.6 of the EA, TCA would prepare a Flood Risk Management Plan to address the potential impacts of flooding to rail infrastructure and operations at Edmondson Park Station.

As outlined in SoC No.81 and Section 15.3.5 of the EA, TCA would undertake further assessment of salinity conditions along the proposed SWRL alignment during detailed design. A Salinity Management Plan would be developed, targeting locations where salinity is a potential risk to infrastructure.

### **3.3.5 Station design and linkages**

Campbelltown City Council, Landcom and Liverpool City Council all raised the issue of station design and access provisions, in particular the provision of a cycleway and adequate pedestrian access.

In accordance with SoC No. 69(b) in Chapter 7, the stations would be designed recognising the context of the scale and character of the existing surrounding areas, and to be visually attractive and appealing to visitors, residents and commuters. Landcom has requested that the SWRL includes an option to construct two road bridges with associated pedestrian and cycle lanes at Edmondson Park. Assessment of these bridges has been included in Section 5.1 and would form part of the project for which approval is being sought. The two road bridges would be constructed by Landcom subject to funding arrangements being confirmed.

A cycleway along the rail line does not form part of the project as there is insufficient space within the rail corridor. Cycleways will form part of the precinct planning of land within the SWGC to be undertaken by the DoP.



## 4. Additional investigations and updates to the Environmental Assessment

### 4.1 Introduction

Since the exhibition of the EA in June 2010, several investigations have been undertaken in response to internal or external stakeholder requests to improve the environmental performance of the project or to address any lack of detail in the EA. In some instances the investigations respond to the additional design development that has occurred since the EA exhibition (see Chapter 5).

The purpose of this chapter is to describe the investigations and updates undertaken since exhibition of the EA commenced. Section 4.9 also provides project clarification on elements of the EA. Additional investigations and updates have occurred in the following areas:

- Aboriginal heritage test excavations
- train operating speeds
- horn noise mitigation options
- contaminated lands
- biodiversity offset strategy
- road traffic intersections
- masterplanning of town centres.

Details of these investigations are outlined below.

### 4.2 Aboriginal heritage test excavations

#### 4.2.1 Background and reason for additional investigations

In accordance with the Aboriginal heritage recommendations identified in Section 12.8.1 of the EA, a program of test excavations has been undertaken in some areas of medium and high archaeological sensitivity. This program has been designed to determine the density, type and integrity of archaeological deposits in the area and to obtain a representative sample of the artefacts and would inform the design development of the SWRL.

The test excavations undertaken to date have been carried out to assist the geotechnical investigations for the project. Specifically, the excavations have been carried out to determine where geotechnical testing can be carried out with minimal environmental impact.

#### **4.2.2 Additional investigations undertaken**

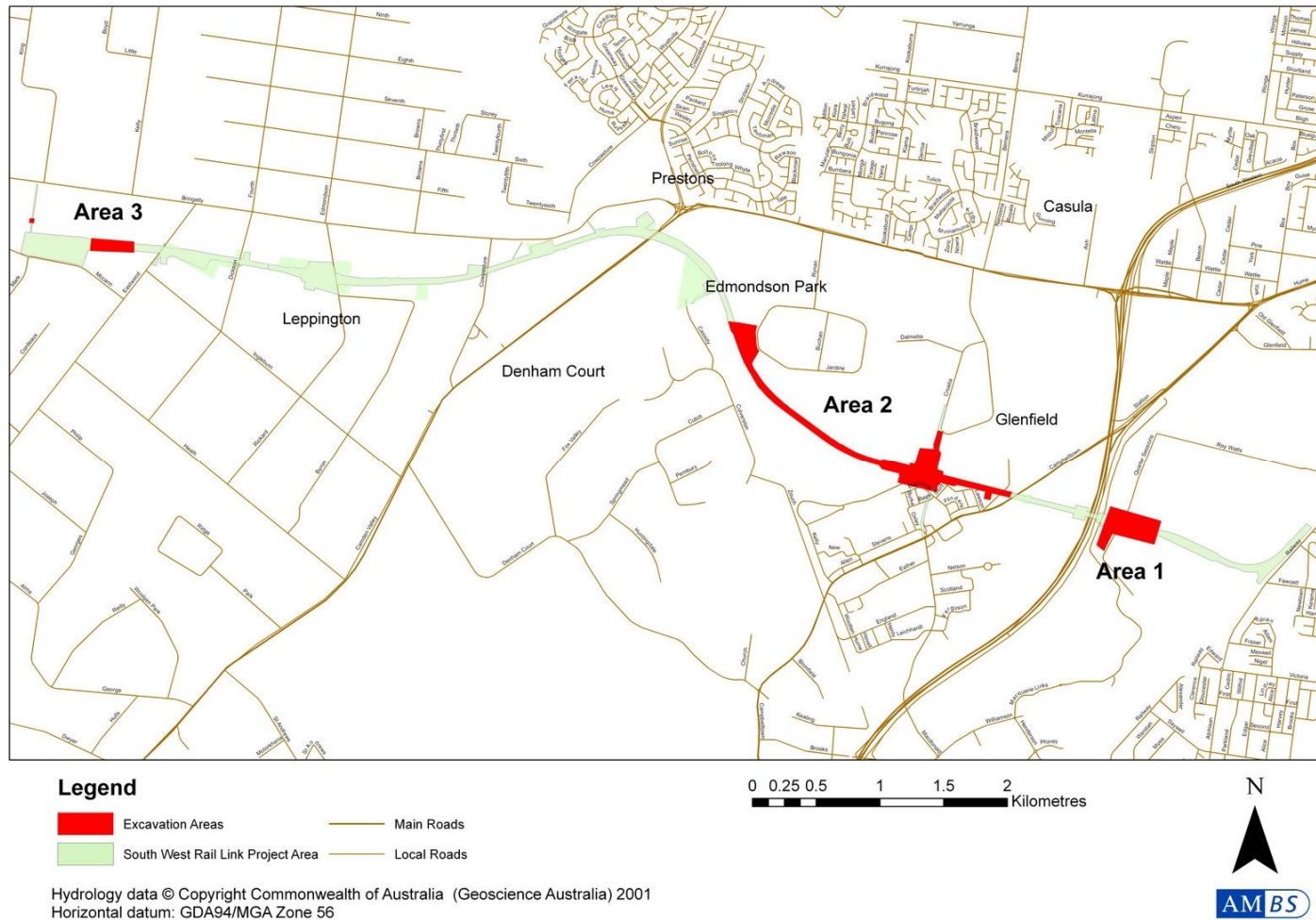
Australian Museum Business Services (AMBS) carried out the Aboriginal heritage test excavations during June and July 2010. Representatives from each of the eight Aboriginal stakeholder organisations that were registered and participated in the Aboriginal heritage assessment for the EA were invited to participate in the test excavations.

The heritage test excavation sites were grouped into three excavation areas (see Figure 4-1) for the purpose of description:

- excavation area 1 - which contains the Glenfield to Leppington rail alignment, site compound and stockpile areas on the slope and ridge between MFH#2 (recorded stone artefact scatter described in Section 12.3 of the EA) and the Hume Highway
- excavation area 2 - which contains the Edmondson Park precinct, including the Ingleburn Defence lands, and lands held and occupied by private landowners
- excavation area 3 - which is located where the rail alignment crosses Kemps Creek, and comprises land held and occupied by private landowners.

Within the above excavation areas, 30 test sites were excavated.

Figure 4-1 shows the Aboriginal heritage test excavation areas.



**Figure 4-1 Aboriginal heritage test excavation areas**



The excavated archaeological material is currently being analysed by AMBS to formulate interpretations about the Aboriginal site use, antiquity and settlement patterns of the area and to determine the scope of any archaeological salvage excavations to be undertaken prior to the construction of the project. The full analysis of the Aboriginal heritage test excavations would be available prior to the commencement of construction. The preliminary results of the heritage test excavations are provided below.

### 4.2.3 Results of additional investigations

The excavations recovered 78 stone artefacts, and a further 6 artefacts were recovered as surface finds. Preliminary analysis of the excavated artefact assemblage suggests that the raw material and tool types present at the site are broadly consistent with flaked stone artefact assemblages recovered from other archaeological sites in the region. Numbers of artefacts recovered by excavation area and archaeological test pit are detailed in Table 4-1. Eighteen test pits contained no archaeological material are not listed in Table 4-1.

**Table 4-1 Aboriginal artefacts recovered by excavation**

Excavation area	Pit name	No. of artefacts
Area 1	BH34v	1
Area 2	TP03	6
	TP29v	1
	BH10	1
	BH36v	1
	BH11	1
	TP06	12
	TP08	1
	TP09	1
	TP35v	6
	TP25	16
Area 3	TP49v	31
	TOTAL	78

The largest numbers of excavated artefacts have been recovered in association with significant water resource zones in the region. TP49v and TP25 are located within 150 metres of Kemps Creek, and contain the largest numbers of artefacts recovered. TP06, BH11, BH36v and BH10 are located within 300 metres of a swamp area within the Edmondson Park lands, while TP29v and TP03 are located within 200 metres of Maxwells Creek. Although few artefacts were recovered along elevated landforms in the study area, this may be a result of increased past impacts and associated erosion affecting site integrity, and may not be reflective of past Aboriginal land use.

Preliminary analysis of the results of the test excavations suggests that there is potential for significant Aboriginal archaeological deposits to be present in the identified areas of high archaeological sensitivity in the SWRL corridor, particularly in association with creeks and swamp areas. Archaeological analysis of the artefact assemblage is currently being undertaken.



#### **4.2.4 Recommendations**

The preliminary analysis of the heritage excavations indicates that additional investigation of the identified areas of high archaeological sensitivity in the SWRL corridor is likely to be required, particularly in areas associated with creeks and swamps. This would be in addition to mitigation measures outlined in Section 12.8.1 of the EA. The details of any further heritage investigations would be developed during detailed design once the full archaeological analysis of the excavations has been completed.

### **4.3 Operational noise**

#### **4.3.1 Background and reasons for additional investigation**

The noise and vibration modelling carried out for the EA was based on an assumed maximum track design speed of 125 kilometres per hour (km/h). This was considered to provide an acceptable but upper limit estimate of maximum operating speed. Since the completion of the EA, the potential maximum train operating speed has been confirmed to be 115 km/h. The actual operational rail noise levels would therefore be marginally lower than those presented in the EA at some locations, in particular those locations where it was assumed (in the noise modelling) that maximum speeds would be reached. Additional investigations were therefore required to determine the predicted noise impacts using the lower maximum operating speed of 115 km/hr.

#### **4.3.2 Additional investigations undertaken**

The additional investigations regarding train operating speeds involved desk-top calculations. No additional monitoring or modelling was required as this was undertaken as part of the previous assessment reported in the EA.

Calculations undertaken by noise consultants *Heggies Pty Ltd* (Heggies) determined that if the maximum operating speed of 115 km/hr was used in the EA, rather than the assumed maximum track design speed of 125 km/hr, there would be a marginal reduction in the calculated  $LA_{max}$  and  $LA_{eq}$  levels at some locations. The maximum reductions in  $LA_{max}$  and  $LA_{eq}$  levels that would occur at any location would be 1.1 dB and 0.9 dB, respectively, as shown in Table 4-2. It is noted that Table 4-2 shows all locations where speeds used in the EA assessment were greater than 115 km/h (i.e. all speeds between 116 km/h and 125 km/h).

**Table 4-2 Locations affected by reduction in the maximum operating speed used in the EA noise model**

Direction and approximate chainage (kilometres)	Description
Up 43.500 – 44.000	In cutting to the east of the Hume Highway, before trains slow to take the Glenfield Southern Flyover curve
Up 46.200 – 47.900 Down 47.000-47.400	Denham Court, between Forest Lawn Memorial Gardens and Edmondson Park Station
Up 48.400 – 49.300 Down 49.900 – 50.300	Between Camden Valley Way and Leppington Station

The  $LA_{max}$  at a particular location is not necessarily due to the fastest train. These factors mean that the reduction in predicted  $LA_{max}$  and  $LA_{eq}$  noise levels that would result from using a lower maximum operating speed in the noise model would generally be even less than 1.1 dB and 0.9 dB, and typically less than 0.5 dB.

The reduction in predicted noise levels is not considered to change to the EA conclusions regarding noise impact mitigation requirements.

### 4.3.3 Recommendations

It is proposed that additional noise modelling be undertaken during detailed design to confirm train operating speeds, the operational noise impacts and associated impact mitigation requirements. This additional noise modelling would be based on the latest information available on train operations, including operating speeds. This is addressed by the new SoC No.60 (see Chapter 7).

## 4.4 Assessment of options for reducing horn noise impacts

### 4.4.1 Background and reasons for additional investigation

The project includes the construction and operation of a train stabling facility at Rossmore. The conditions of the Concept Plan Approval for the project required TCA to consider all reasonable and feasible options for reducing the operational noise impacts of the train stabling facility, including the full enclosure of the facility in a shed and the use of a low volume horn test.

The EA for the project included a noise impact assessment by Heggies (Technical Paper 1). The results of the assessment indicated that train horn noise generated within the proposed train stabling facility (including horn testing within the facility and the sounding of horns as a safety measure to signal impending train movement from the facility) has the potential to cause sleep disturbance at existing and future residential receivers over a wide area. A range of measures to reduce and/or manage the potential horn noise impacts associated with the train stabling facility were therefore investigated, including noise walls, a shed enclosure, and the use of a low volume horn test.

The results of the EA indicated that placing six metre high noise walls around three sides of the train stabling facility would be effective in reducing the impacts of all train stabling facility noise emissions, except those of horn sounding and horn testing. The option of enclosing the train stabling facility in a shed would provide a marked reduction in noise impacts on three sides of the facility but horn noise would still be projected out the open end of the facility on its eastern side. At the time of the EA exhibition, TCA was advised that testing of town horns was considered to be critical to operational rail safety.

Since the start of exhibition of the EA, TCA and RailCorp have continued to investigate potential operational measures for reducing horn noise impacts, and further consideration is now being given to alternatives to the use of train horns at the facility. To progress this investigation, Heggies was commissioned in May 2010 to conduct a detailed investigation of horn testing alternatives at the train stabling facility, as detailed below.

#### 4.4.2 Additional investigations undertaken

The following alternatives to use of horn at the train stabling facility were considered:

- the use of a BBS Tek BBS-102 non-tonal 'quacker' style audible warning to signal impending train movement at the train stabling facility (in place of a standard town horn to signal impending train movements)
- testing of train town horns within a rail cutting en-route between the train stabling facility and Leppington Station (in place of horn testing within the train stabling facility).

The noise impacts of these alternative procedures were evaluated by comparing the predicted noise levels with the relevant *NSW Industrial Noise Policy* (INP) criteria at both the train stabling facility boundary (in the case of the 'quacker' alarm assessment) and residential receiver locations. The full details of the methodology and results of the assessment are presented in Appendix E. The key findings are presented in Table 4-3. In summary, the results of the assessment indicate that the alternative horn use procedure would reduce the noise impacts associated with the proposed train stabling facility as follows:

- the use of a 'quacker' style broadband warning (non-tonal warning) to signal train movements at the facility, while not complying completely with the INP criteria at the boundary of the facility, would result in a major reduction in noise impacts on residential receivers when compared to the scenario of sounding town horns at the facility (as presented in the EA)
- the testing of train town horns within a rail cutting en-route between the train stabling facility and Leppington Station is much less likely to cause sleep disturbance to the surrounding area than the testing of horns at the facility (as presented in the EA).

**Table 4-3 Noise impacts of alternative two-part horn testing and sounding procedure**

Alternative procedures	Noise impacts (in comparison to the standard horn testing and sounding procedures presented in the EA)
Use of non-tonal 'quacker' to signal movement within the train stabling facility	<ul style="list-style-type: none"> <li>▪ The INP intrusiveness and sleep disturbance criteria would be met at most locations along the southern boundary of the facility.</li> <li>▪ The INP intrusiveness LAeq(15minute) criterion of 40 dBA would be exceeded at two existing residential receivers (with a maximum predicted exceedance of 9 dBA) due to the operation of the facility, including the operation of the warning.</li> <li>▪ The sleep disturbance screening criterion of LMax 50 dBA would be exceeded at three existing residential receivers (with a maximum predicted exceedance of 8 dBA) due to the operation of the warning.</li> <li>▪ The upper sleep disturbance criterion of LMax 65 dBA would not be exceeded at any existing residential receivers due to the operation of the warning.</li> </ul>
Testing of train horns at 'town' levels within a cutting en-route between the train stabling facility and Leppington Station	<ul style="list-style-type: none"> <li>▪ Compliance with the INP sleep disturbance screening criterion of LMax 50 dBA is expected at distances beyond 210 metres from the rail corridor at 90 degrees to the track test location for C-set horns and 65 metres for T-, S-, L- and R-set horns.</li> <li>▪ The INP sleep disturbance screening criterion of LMax 50 dBA is predicted to be exceeded at 10 existing properties due to horn noise from C-sets and at two existing properties due to horn noise from T-, S-, L- and R-sets.</li> <li>▪ Compliance with the higher sleep disturbance criterion of LMax 65 dBA is expected at distances beyond 50 metres from the rail corridor at 90 degrees to the track test location for C-set horns and 20 metres for T-, S-, L- and R-set horns.</li> <li>▪ The higher sleep disturbance criterion of LMax 65 dBA is predicted to be exceeded at two existing properties due to horn noise from C-sets. No exceedances of this criterion are expected due to horn noise from T-, S-, L- and R-sets.</li> <li>▪ The IGANRIP LMax noise trigger level of 80 dBA is predicted to be exceeded at distances of up to 30 metres from the rail corridor at 90 degrees to the track for the C-set horns.</li> <li>▪ The predicted LMax noise levels at all existing residential receivers in the vicinity of the testing area, comply with the IGANRIP LMax noise trigger level of 80 dBA.</li> </ul>

#### 4.4.3 Recommendations

As a result of the horn testing options investigation, it was agreed that operational measures would be investigated as the preferred approach for managing the potential horn noise impacts associated with the train stabling facility. Operational measures would be further investigated during detailed design in preference to a shed enclosure (refer to SoC No.62 in Chapter 7).

It is proposed that the need for physical noise mitigation measures be assessed during detailed design in consideration of the results of further investigation of alternative operational options for reducing horn noise impacts (refer SoC No 61). In the event that a suitable operational solution cannot be found to mitigate noise from the train stabling facility, a shed enclosure would be constructed around the facility.

## 4.5 Additional contamination assessment

### 4.5.1 Background and reasons for additional investigation

A preliminary contaminated land and hazardous materials impact assessment was undertaken as part of early project development and reported in the Concept Plan EA (Parsons Brinckerhoff, 2006). No further contamination assessment was undertaken during the preparation of the May 2010 EA for project approval. However, to provide greater certainty on contamination issues, and to inform further design development, a Phase 1 contamination investigation was undertaken by Douglas Partners in March 2010. The results of this investigation, which were not available during the preparation of the May 2010 EA, are outlined below.

### 4.5.2 Additional investigations undertaken

The Phase 1 contamination investigation by *Douglas Partners* involved a desktop study of land use history within and adjacent to the project corridor, with the aim of identifying any potentially contaminating activities that may have previously taken place. The investigation included:

- a search of the record of notices for contamination issued by DECCW under the *Contaminated Land Management Act 1997* (CLM Act)
- a review of historical aerial photographs taken in 1947, 1961, 1970, 1978, 1986, 1998 and 2005 to identify changes in physical features and land uses over time.

Due to property access constraints, *WorkCover* dangerous goods searches were not undertaken. These would be undertaken during detailed design.

### 4.5.3 Results of Phase 1 contamination investigation

The Phase 1 investigation confirmed that there have been no notices or orders issued under the CLM Act for any properties within the study area. The results of the historical photograph review indicated that the main areas of change were associated with:

- construction of arterial roads
- construction and demolition of an estate on the Ingleburn Defence lands
- construction of scattered farm buildings.

A summary of the results of the investigation is presented in Table 4-4.

**Table 4-4 Results of the Phase 1 contamination investigation**

Study area section	Summary of results
Glenfield Station to Campbelltown Road (Campbelltown local government area)	Land use is primarily rural and semi-rural. Planning certificates obtained from Campbelltown Council did not indicate that any land among the lots search is being regulated under the CLM Act.
Campbelltown Road to Cowpasture Road (Liverpool local government area)	Land use along the project corridor between Cowpasture Road and the former Ingleburn Defence land has primarily been rural, with semi-rural or sparsely urbanised land use occurring from the 1960s onwards. A previous study of the former Defence lands identified the presence of arsenic, chromium VI, zinc, chrysotile asbestos and general military waste. Some areas, including the former Defence land south of Jardine Drive, have undergone remediation for military waste stockpiles, trenches and unexploded ordnances (UXOs); however, no validation reports have been identified for the project study area. The former military housing area south of Lawson Road underwent mass demolition between 1998 and 2005 and there may be asbestos contaminated fill associated with this work. Liverpool Council 149(2) searches did not indicate any existing contaminated land in the lots searched.
Cowpasture Road to Rossmore Stabling Facility (Camden Council)	The region south of Bringelly Road has primarily been rural with semi-rural or sparsely urbanised land use occurring from the 1960s onwards. One large shed constructed south of Bringelly Road may have been used as a poultry farm. Poultry farms have an elevated potential for contamination, particularly in relation to asbestos, pesticides, heavy metals and buried carcasses. Planning certificates obtained from Camden Council did not indicate that any land among the lots search is being regulated under the CLM Act.

Rural land in the study area generally has a low risk of contamination, although some contaminants related to the use of herbicides, pesticides and fertilisers may be present. Biohazards related to rural land uses are another potential contaminant of concern, although such contamination would probably be localised if present. Asbestos may occur in rural and semi-rural areas where sheds or houses have been demolished and not completely removed. The frequent subdivisions between Eastwood Road and Cowpasture Road appear to have coincided with the frequent appearance and removal of various structures. A large shed identified in a 1961 aerial photo may be associated with poultry farming, which would pose a contamination risk due to the potential presence of buried chicken livestock and asbestos structures.

#### 4.5.4 Recommendations

As a result of the Phase 1 contamination investigation, the following recommendations have been made for the project:

- ongoing site inspection checks to be incorporated with the planned geotechnical investigations
- a targeted Phase 2 assessment to be completed to provide further information on the presence and extent of any contamination
- a Works and Environmental Management Plan to be prepared and incorporate an 'unexpected find' protocol, setting out procedures to adopt when contaminants of concern are encountered during the investigation and construction of the project, as well as procedures for waste classification.



## 4.6 Biodiversity offset strategy

### 4.6.1 Background and reasons for offset strategy update

The biodiversity offset strategy requirements identified in the EA need to be updated as the extent of vegetation clearing has increased slightly as a result of project design refinement since the start of the EA exhibition (refer to Section 6.4). This design refinement includes minor changes to a number of potential construction and ancillary infrastructure sites along the rail corridor. Furthermore, the DECCW and DoP have requested that additional information on the proposed biodiversity offset strategy be provided prior to project approval.

The results of the biodiversity assessment indicate that the biodiversity offset requirements for the project comprise the provision of offsets for the clearing of 6.09 hectares (ha) of native vegetation in non-certified areas of the SWGC and 0.817 ha outside the SWGC. The 6.09 ha of clearing comprises two threatened ecological communities:

- 4.32 ha of Cumberland Plain Woodland
- 1.77 ha of River-Flat Eucalypt Forest.

The biodiversity offsets provided for the above-listed clearing must be in accordance with Condition 11 of the Biodiversity Certification Order that has been conferred upon the *State Environmental Planning Policy (Sydney Region Growth Centres) 2006*. The offsets must, therefore, comprise one or a combination of the following measures:

- the protection of an equal or greater area of existing native vegetation elsewhere in the growth centres, and/or
- the revegetation and/or restoration of an area of land elsewhere in the growth centres at a ratio of at least 3:1.

The offsets must be located inside the growth centres where possible, but may be located outside the growth centres (but within the Cumberland Plain of Western Sydney) if the DoP is satisfied that there are no practicable offset options within the growth centres.

### 4.6.2 Additional development of the biodiversity offset strategy

A biodiversity offset strategy for the project is being developed by TCA in consultation with the DoP and the DECCW. Preliminary discussions have been undertaken with the DECCW and the DoP on the biodiversity offset options. The identification of suitable properties for use in the biodiversity offsets strategy will be undertaken in consultation with the DoP, DECCW and local councils. Securing the land to be used for the biodiversity offsets strategy may involve direct purchase or other mechanisms such as conservation agreements.

TCA has obtained agreement from the DoP and DECCW to combine the development of the biodiversity offset strategy for the project with the development of biodiversity offset strategies for two other projects, namely the SWRL GTI project and the Macarthur Station Upgrade. Combining the offset strategies for these three projects will have the potential benefit of creating a larger continuous area of protected vegetation and will be more efficient in terms of stakeholder negotiations and long-term site management and monitoring.

The total area requiring offsets for the three projects combined is 11.22 ha of Cumberland Plain Woodland and 2.97 ha of Alluvial Woodland. It is important to note, however, that the combined biodiversity offset strategy to be developed by TCA will clearly delineate between the offsets corresponding to each of the three projects so that:

- the offsets provided for the project can be assessed for compliance with the Biodiversity Certification Order
- the offsets provided for clearing outside the growth centres for the purposes of the Glenfield Transport Interchange and Macarthur Station Upgrade projects are not confused with those provided for the SWRL Glenfield to Leppington rail line, and not incorrectly counted towards the total offset target for the growth centres as defined under the Biodiversity Certification Order.

In August 2010, TCA appointed a consultant to complete the SWRL Glenfield to Leppington Rail Line Biodiversity Offsets Strategy in accordance with draft SoC No. 51 and with the Biodiversity Certification Order under the *State Environmental Planning Policy (Growth Centres) 2006*.

Over the next two months TCA will work to identify suitable sites in the South West Growth Centre for offset or possible revegetation. Once this occurs, a presentation of the preliminary strategy with the nominated sites would be made to the DECCW and the DoP.

The strategy with draft agreements would then be finalised prior to construction and once in-principle agreement has been obtained from the DECCW and the DoP. The final document, which may also include options for “biobanking”, would then be finalised by late 2010 or early 2011.

## 4.7 Masterplanning of the Edmondson Park and Leppington town centres

### 4.7.1 Background

The masterplanning for the Edmondson Park Town Centre is currently being developed by Landcom, while broadscale masterplanning at Leppington has just commenced under guidance from the DoP. Planning and development within the South West Growth Centre is continually evolving. Below is an updated summary to that provided in Section 4.10.1 of the EA of the masterplanning works currently being undertaken at the Edmondson Park and Leppington town centres.

Due to the importance of integration of the proposed new stations with their surrounding town centres, presentation of up-to-date information on the evolution of both the station and town centre plans is included in this report. TCA, the DoP and Landcom would meet regularly to ensure that the SWRL and the centres of Edmondson Park and Leppington are well integrated.



#### **4.7.2 Edmondson Park town centre**

Planning for the future Edmondson Park town centre is being undertaken by Landcom in close association with Liverpool and Campbelltown councils, with input from a number of NSW and Federal Government agencies including TCA. Landcom has recently made an application to the NSW Minister for Planning to undertake Environmental Assessments for a Concept Plan and two project applications for Edmondson Park under Part 3A of the EP&A Act. This application will include a Concept Plan for the overall planning framework for the site and project applications for the detailed design and construction of the initial residential stages of the development (a total of approximately 270 residential lots and 17 rural residential lots) and for the establishment of a new 150 hectare Regional Park.

TCA has been in discussion with Landcom throughout the development of the design of the SWRL, in an effort to ensure the successful integration of the new Edmondson Park train station with the future town centre. TCA proposes to construct a transport interchange including provision for 400 commuter car parking spaces and bus and taxi facilities. As outlined in the EA, provision will be made on both the north and south sides of the station. All interchange facilities will be as close to the existing grades as possible.

Since the exhibition of the EA, Landcom and TCA agreed that TCA would include two bridges over the rail line at Edmondson Park as part of the project for which approval is being sought. The construction of these bridges would not be funded by TCA. Further detail of these bridges can be found in Section 5.1 of this report. As stated in SoC No.33, the final location of proposed commuter car parking at Edmondson Park would be determined during detailed design in consultation with Landcom, RailCorp, Transport NSW and Liverpool City Council.

#### **4.7.3 Additional investigations – Leppington town centre**

Leppington town centre is in the preliminary stages of masterplanning. The DoP is currently developing the town centre masterplan for Leppington. The DoP is also facilitating multi-government agency working groups, including TCA, to bring a whole of government approach to planning the new town centre.

TCA would continue to work with the DoP to provide a successful integration of the new train station with the future town centre

## **4.8 Assessment of road network suitability for construction traffic**

### **4.8.1 Background and reasons for additional assessment**

During the exhibition of the EA, the RTA in direct correspondence with TCA sought assurance that any intersections proposed as construction traffic access routes would be upgraded where necessary to a standard adequate to ensure the safe movement of construction traffic. It was further requested that any roads in a poor standard of maintenance would be upgraded to a standard to allow for safe passage of construction traffic. Furthermore, the RTA sought to confirm that intersections would be upgraded where necessary to accommodate additional traffic at those intersections as a result of the operation of the project.

### **4.8.2 Additional investigations**

The suitability of the road network to accommodate traffic movements associated with the operation of the project was assessed in Chapter 8 of the EA. The assessment focused on the operational capacity of affected intersections. and concluded that upgrades would not be required as a result of additional impacts on intersections from the SWRL. Since the EA exhibition additional assessment has been undertaken to consider the physical layout and condition of the intersections specifically in relation to construction traffic.

Key intersections were assessed to determine whether construction truck turning space requirements, lines of site, intersection markings, road layouts, street lighting and road condition surface were adequate. The assessment also considered the need or otherwise for acceleration or deceleration lanes.

The assessment comprised:

- visual assessment of road conditions and layouts
- swept path analysis to determine layouts and turning space suitabilities.

### **4.8.3 Findings of assessment**

The additional investigations confirmed that the findings of the EA are correct in relation to the suitability of the road network to accommodate traffic associated with the project at day 1 (2016). The additional investigations also confirmed that overall background traffic growth associated with the development of the South West Growth Centre would be the driver of future road upgrades, rather than the SWRL project.

In relation to the suitability of affected intersections to accommodate construction traffic, a number of minor upgrades may be required depending on the final construction traffic plans developed by the construction contractor. As such, the need for upgrades would be further considered during detailed design in consultation with the RTA and local councils, as part of the development of construction traffic management planning referred to in SoC No. 39.

## 4.9 Clarifications to the EA

### 4.9.1 Technical Paper 1 – Noise and Vibration

There is an error on page 24 of Technical Paper 1 - Noise and Vibration (Volume 2a of the EA) in relation to information on train operating speeds. Specifically, the last sentence of paragraph six in Section 5.4.1 states that “it is planned to run services at speeds up to 125 km/hr”. This is not correct; the maximum operating speed would be 115km/hr. There is also likely train speeds to be lower than 115 km/hr along the proposed SWRL line.

### 4.9.2 Technical Paper 3 – Hydrology

Technical Paper 3 of the EA included a number of incorrect figures (Figures 11a, 11b, 12, 13, 14, 31 C1, C2, C3, C4, C5 and C6). WMA Water revised the hydrological modelling of Crossing 3 to provide a better definition of flood behaviour and overland flow paths; however, the figures were not updated in the report, which was included in the EA. The results and recommendations of the WMAwater technical report have not changed since the EA.

All dimensions in Table 13 are subject to a typographical error and are inverted. For instance, where the size of a proposed culvert reads 3.3 m (h) x 1.2 m (w), the correct dimensions are 3.3m(w) x 1.2m(h).

### 4.9.3 Table 15-4 – Existing services and utilities

Table 15-4 in the EA, which outlined the existing services that cross the rail corridor for the length of the project, has been updated since exhibition of the EA (in Table 4-5) to reflect the correct Sydney Water services.

**Table 4-5 Existing services and utilities**

Utility	Service Owner	Chainage	Precinct	Position	Details
Gas					
	Jemena	44.280	Ingleburn Gardens Existing	Buried	110mm
	Jemena	44.650	Cambelltown Rd	Buried	110mm
	Jemena	48.400	Camden Valley Way	TBC	110mm
	Jemena	48.400	Camden Valley Way	TBC	TBC
Eastern Gas Pipeline Central Trunk Main	Jemena	49.450	General Track	Buried	864mm
Secondary Gas Main	Jemena (Alinta)	49.740	Cowpasture Road	Buried	150mm
High Pressure Gas	Jemena	49.460	General Track	Buried	457mm
Ethane Pipeline	APA	48.400	Camden Valley Way	Buried	200mm

Utility	Service Owner	Chainage	Precinct	Position	Details
<i>Power</i>					
	Integral Energy	42.280	Ingleburn Gardens	Overhead	TBC
	Integral Energy	43.800	Quarter Sessions	Overhead	TBC
	Integral Energy	44.100	Ingleburn Gardens	Overhead	11kV (TBC) Overhead Power Lines
	Integral Energy	47.700	General Track Bulk Substation	Overhead	132kV Overhead Power Lines LV + 11kV
	Integral Energy	49.750	Cowpasture Road	Above ground	Overhead power lines LV + 11kV
	Integral Energy	50.920	Rickard Road	Above ground	Overhead power lines 2 x LV (TBC)
	Integral Energy	51.700	Dickson Road	Above ground	Overhead Power Lines LV + 11kV (TBC)
	Integral Energy	52.350	Eastwood Road (250m west)	Above ground	Overhead Power Lines 132kV Overhead Power Lines
	Integral Energy	52.650	Eastwood Road	Above ground	330kV Overhead Power Lines
	Transgrid	52.650	Eastwood Road (250m west)	Above ground	
<i>Telecommunications</i>					
	Telstra	43.800	Quarter Sessions	Buried	TBC
	Telstra	43.830	Quarter Sessions	Buried	TBC
	Telstra	44.045	Hume Highway	Buried	DN50
	Telstra	44.280	Ingleburn Gardens Existing	Buried	Route in shared utility trench
	Telstra	44.650	Cambelltown Rd	Buried	TBC
	Telstra	48.400	Camden Valley Way	Buried & above ground	Optic Fibre 1 way x P50
	Telstra	48.400	Camden Valley Way	Buried & Aerial Joint use poles	TBC
	Telstra	49.550	General Track	TBC	DN100
	Telstra	49.730	Cowpasture Road	Above ground	DN100
	Telstra	50.930	Rickard Road	Above ground	TBC
	Telstra	51.700	Dickson Road	Buried	Optic Fibre 2 x DN100

Utility	Service Owner	Chainage	Precinct	Position	Details
	Telstra	51.710	Dickson Road	Above ground	Optic Fibre 8 x DN100
	Telstra	52.320	Eastwood Road	Above ground	DN40
<i>Water</i>					
Stormwater Main	Sydney Water	44.015	Hume Highway	Buried	750mm RCP
Water	Sydney Water	44.280	Ingleburn Gardens Existing	Buried	100mm DI CL
Water	Sydney Water	44.280	Ingleburn Gardens Existing	Buried	150mm uPVC
Recycled water	Sydney Water	44.640	Campbelltown Rd	TBC	450mm
Recycled water	Sydney Water	44.640	Campbelltown Rd	TBC	450mm
Water	Sydney Water	44.680	Campbelltown Rd	Buried	TBC
Water	Sydney Water	47.200	General Track	Buried	200mm CI CL
Water	Sydney Water	48.400	Camden Valley Way	Buried	100mm CI CL / AC
Water	Sydney Water	49.740	Cowpasture Road	Buried	375mm CI CL
Water	Sydney Water	50.930	Rickard Road	Buried	250mm CI CL
Water	Sydney Water	51.710	Dickson Road	Buried	100mm CI CL
Water	Sydney Water	52.320	Eastwood Road	Buried	150mm CI CL

#### 4.9.4 Clarifications to land use zoning

Tables 2-3 and 2-4 of the EA list zone '1(a) Rural' under the *Campbelltown Local Environment Plan 2002* (Campbelltown LEP 2002) as part of the project. This land has since been identified as being subject to the Campbelltown *Local Environment Plan* LEP No. 112 (Campbelltown LEP 112) which does not zone the subject land but makes provision for permissible land uses. Campbelltown LEP 112 applies to Macquarie Field House and the portion of land adjoining it, upon which part of the project would be located. Further, this area should be listed on Figure 2-2 of the EA as 'Campbelltown LEP No 112 - Macquarie Field House' and not as 'zone 112 under the Campbelltown LEP 2002'.

In Table 4-3 of the EA, the future proposed land use for receiver group C is listed as 'zone 2(c) Higher Density Residential' under the *Edmondson Park Precinct Development Control Plan*. This should refer to 'zone 2(c)' under the Campbelltown LEP 2002.

Table 15.7 of the EA refers to "The Talana" as the title of the Edmondson Park development within the Ingleburn Gardens Estate. This title is incorrect and should be disregarded.

#### **4.9.5 Clarifications to Aboriginal heritage**

Table 4-12 of the EA lists the ten existing Aboriginal heritage sites within 50 metres of the study area. Section 4.7.2 refers the reader to Figure 4-9 for the location of these sites. However this is incorrect as this map does not identify all of the ten sites. The Aboriginal heritage sites identified during AMBS's archaeological surveys are identified in Table 5-1 and Figure 5-1 of Technical Paper 6 in Volume 2B of the EA.

#### **4.9.6 Clarifications to proposed overbridges**

Section 6.2.5 of the EA describes the bridges that form part of the SWRL. Overbridges are described as having two tracks along the rail line underneath the bridges with maintenance access to one side and a safe walkway to the other. It should be noted that the safe walkway is for rail personnel only and is not an access track for the public.

## 5. Proposed design changes

### 5.1 Introduction

Since exhibition of the EA in May/June 2010, the project design has been refined in some areas to either improve constructability and operational effectiveness, or to minimise environmental impact. In a number of instances the design changes were a direct response to community and stakeholder feedback. The following sections outline the proposed design changes and provide a brief background for the reasons behind the changes. The new or amended impacts of the proposed design changes are assessed in Chapter 6 with mitigation measures provided in Section 6.9.

### 5.2 Edmondson Park Station additional road crossings

#### 5.2.1 Background

Since early 2010, TCA has been involved in discussions with Landcom on the planning and design interface issues affecting the development of the proposed Edmondson Park Station and town centre. TCA and Landcom have investigated a range of options for the proposed bridge crossings at the Edmondson Park town centre. This initially focused on providing a bridge crossing adjacent to the station concourse to create a 'plaza' style entry from the adjacent road bridge. However, it was then determined that due to fire and safety concerns and the additional operating elements needed to provide a bridge structure over a station platform would preclude this design. This essentially restricted any road bridge options over the station footprint.

In June 2010, an agreement was reached between TCA and Landcom whereby TCA would assess and seek approval for two bridges as part of the SWRL Glenfield to Leppington rail line project to facilitate improved access for pedestrians, vehicles and cyclists on either side of the station and rail corridor. The construction of these bridges would not be funded by TCA. The bridges would be located at either end of the station footprint, with a five-lane bridge (including a pedestrian and cycleway) provided to the east, and a six-lane bridge provided (including pedestrian and cycleway lanes) to the west. The preferred bridge alignments were determined to comply with RailCorp User Requirements.

#### 5.2.2 Proposed design solution

The proposed bridges would be located to integrate with the Edmondson Park masterplan and allow for ease of access for park-and-ride commuters to the two proposed commuter car parks on either side of the station (400 spaces in total). The proposed bridges would also improve bus access to and from the station and town centre, and reduce potential vehicle and pedestrian safety issues by allowing vehicles to bypass the station heading south or north through the centre.

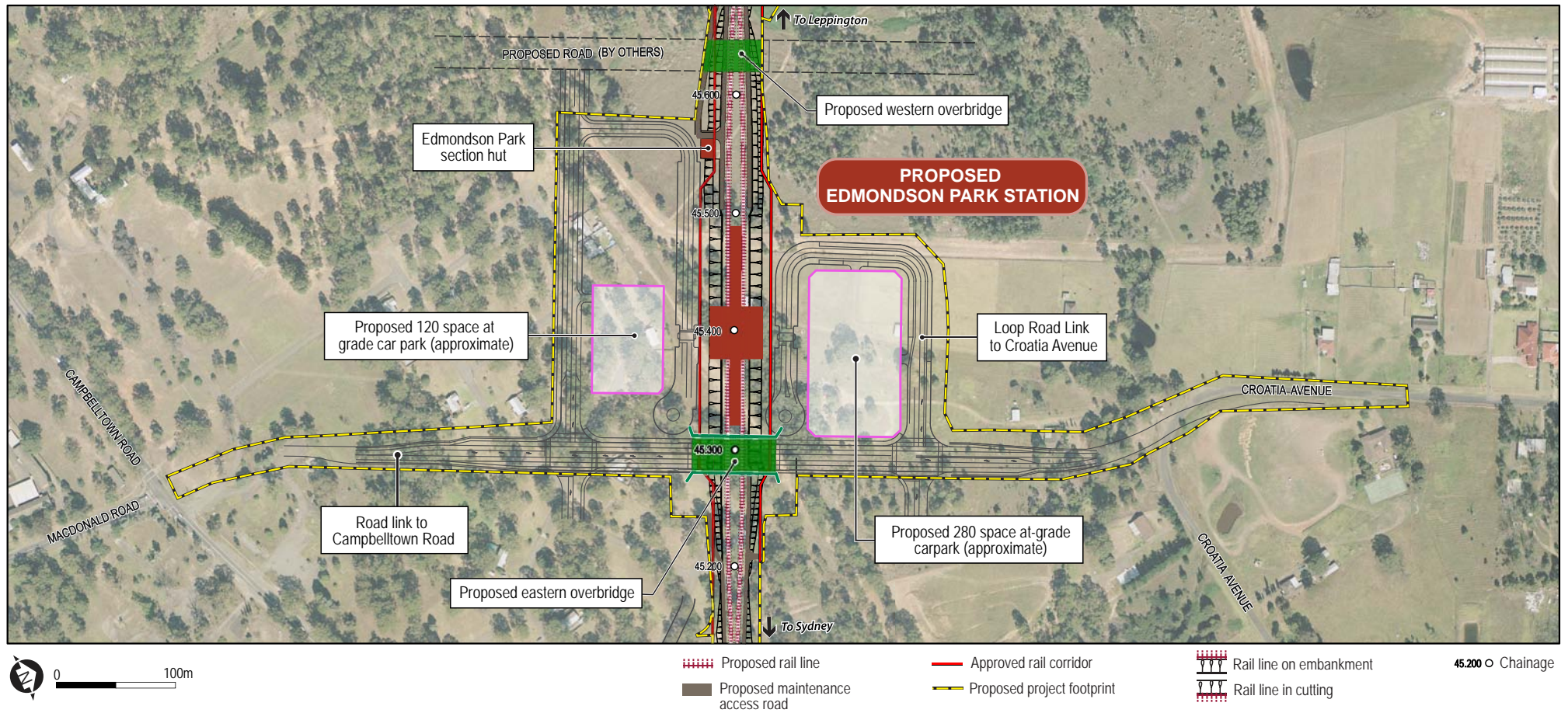
In its submission on the EA, Landcom indicated its support for two bridge crossings of the project to achieve adequate pedestrian and vehicle circulation within the Edmondson Park town centre. Landcom also support provision of a centralised pier for each bridge within the rail corridor, to reduce the bridge structural depths and, therefore, the height of the bridge approaches as they pass over the SWRL rail corridor. This would reduce associated costs for the future bridge construction and also reduce potential visual impacts in this part of the town centre. Landcom also supports appropriate staging, whereby the bridges would be constructed prior to operation of trains on the SWRL in 2016. The two road bridges would be constructed by TCA subject to funding arrangements being confirmed by Landcom.

Approval is now sought for the eastern bridge and approach road works and the western bridge (excluding the approach road works). These works were not included in the transport interchange design submitted as part of the EA. Introducing the bridges would necessitate raising the levels of some roads to match the bridge levels. Figure 5-1 identifies the proposed changes to the Edmondson Park interchange.

Approach road works for the western bridge are not considered part of the project and are, therefore, beyond the scope of the EA. They are part of Landcom's Part 3A application for Edmondson Park. As a result the function of the western bridge in terms of access and circulation has not been assessed in this report, as this would depend on the final layout and function of future connecting roads.

TCA would liaise with the DoP, Landcom and RailCorp to achieve an interchange and future town centre design that integrates with Edmondson Park Station as outline in SoC No.70.





**Figure 5-1** Extent of works at Edmondson Park Station  
*\*Note: Indicative only, subject to detailed design*

## 5.3 Visual impact mitigation at Forest Lawn Memorial Gardens

### 5.3.1 Background

As part of the public exhibition of the Concept Plan EA in 2006, Invocare (owners/operators of the Forest Lawn Memorial Gardens Cemetery) raised concerns about the proposed rail alignment and potential noise and visual impacts on the cemetery. These concerns were taken into account during development of the design and preparation of the EA for project approval in 2010.

On 10 June 2010 (during exhibition of the current EA), TCA met with Invocare to discuss its concerns about the visual impacts of the project, particularly in regard to operations in the north-west corner of the Memorial Gardens. This area is of particular importance and cultural sensitivity, and the cemetery is planning an expansion of the area to the north-west.

The visual impact assessment undertaken as part of the EA stated that the project would have a high visual impact at this location. To mitigate this impact, it was recommended that the detailed urban and landscape design strategy (to be prepared during detailed design) includes 'greening' of the embankment with a combination of plantings to provide a visual buffer and more open (low level) vegetated space. Invocare requested that alternative measures be considered to minimise the high visual impact of the project such as a high embankment or wall.

TCA investigated further options to minimise the visual impacts at this location (refer to Section 6.8.1). A site inspection with Invocare was undertaken on 23 June 2010 to inform this assessment, further understand the concerns, and identify potential solutions.

### 5.3.2 Impact mitigation options

A number of options to minimise the visual impacts at the Forest Lawn Memorial Gardens have been considered, including engineering options (higher embankments and noise walls) and a landscaping option (additional plantings).

The potential options comprise three engineering solutions and one landscaping solution as follows:

- Option 1 — construct an embankment outside the approved corridor prior to the commencement of construction works (which would also provide for screening of the construction works)
- Option 1a — terminate the embankment at either side of waterway crossing No. 9
- Option 2 — construct an embankment from the top of the track formation (i.e. raise the proposed corridor embankment to a height of 6 metres to provide shielding to the overhead wiring)
- Option 3 — increase the height of the proposed noise wall to 6 metres so that train movements are shielded

- Option 4 — provide additional planting of acquired land, commencing immediately so that fully structured planting (groundcover, canopy and understorey) would have time to establish).

### Engineering solutions

The potential engineering solutions for visual impact mitigation at Forest Lawn Memorial Gardens were reviewed as discussed below.

#### *Option 1 — embankment outside the approved corridor*

A potential option was identified was the construction of an embankment to provide shielding from train movements. This option would involve constructing an embankment outside the approved corridor at the earliest possible time to provide screening during construction works.

This embankment would have a height of approximately 15 metres with 1:2 batter slopes. The width of the embankment would be approximately 60 to 65 metres. Along with potential land take within the cemetery, this embankment width would create maintenance issues for waterway crossing No. 9 (unless the culvert height was increased from 0.9 metres to a minimum of 3 metres). A new access road to the debris structure and collection point would also be required. This option would negate the need for the currently proposed noise wall along the rail line.

A disadvantage of this option would be an increase in the project footprint, which could potentially impact on Aboriginal archaeology within the area, and trigger additional property acquisition requirements.

#### *Option 1a — embankment outside the approved corridor, terminating at either side of waterway crossing No. 9*

As another option, an embankment could be constructed to terminate at either side of waterway crossing No. 9. An alternate screening would however be required across the gap (approximately 40 metres). This option would involve construction of a 6-metre high wall along the edge of the proposed maintenance access road (at track formation level).

#### *Option 2 — embankment from top of track*

Another option would be to construct an embankment from the top of the track formation. This option would raise the proposed corridor embankment to a height of 6 metres to provide shielding to the overhead wiring. It would not provide the opportunity to terminate the embankment across waterway crossing No. 9 and, therefore, extension of this culvert and alternative access roads (as described in Option 1) would be required.

When compared to Option 1, this option would limit the width of the embankment by about 15 to 20 metres, minimising land take. Construction of the embankment would however need to be carried out as part of the rail line construction works so shielding during construction would not be available.



*Option 3 – increase the height of the proposed noise wall*

The final engineering option considered involves increasing the height of the proposed noise wall so that train movements are shielded. The noise wall would be 6 metres in height. This option would not affect the current design of waterway crossing No. 9 and only minor changes to the access road arrangements would be required. Treatment to the wall would however be required to minimise the visual impact of the wall itself when viewed from the cemetery lands.

**Landscaping solutions (Option 4 – additional landscaping)**

The EA proposes fully structured landscape planting (groundcover, sub-canopy and canopy plantings) on the rail embankment only. Invocare indicated that this solution would not be satisfactory in minimising the visual impacts of the rail line. During the site visit, an alternative landscaping option was considered, using land adjacent to the rail embankment.

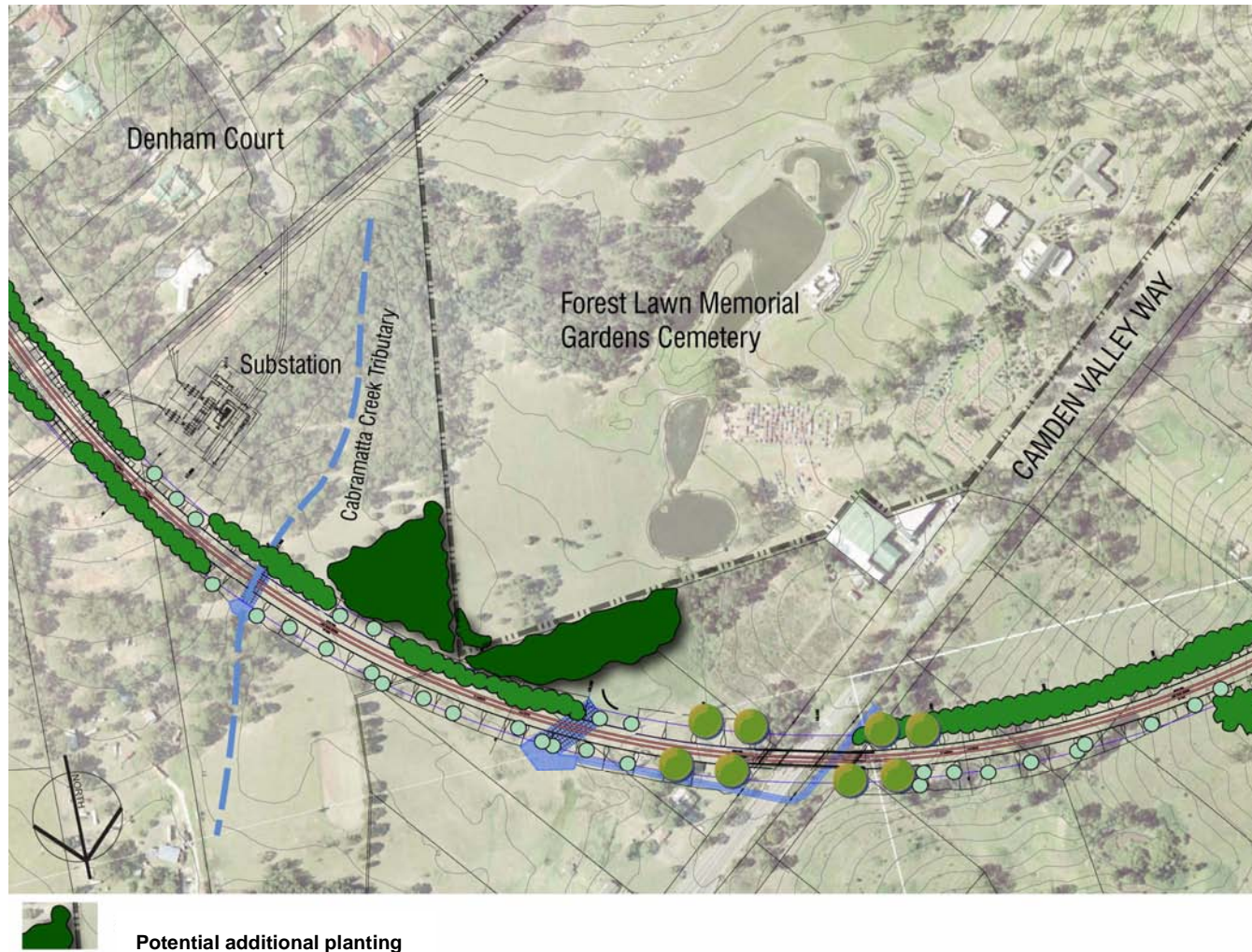
Residual land between the cemetery and the rail line, currently in the DoP ownership, could be utilised for landscape planting (refer to Figure 5-2). Planting within this area could commence immediately so that plantings would have time to establish prior to operation of the SWRL.

**5.3.3 Proposed mitigation solution**

On review, engineering options 1 to 3 were not considered appropriate as an embankment or an increase in height of the proposed noise wall to shield the trains will need to be a substantial structure to be effective, and will provide a visual impact in itself. The engineering options also had impacts to the maintenance of waterway crossing No. 9.

Following the options evaluation, the preferred visual impact mitigation option for Forest Lawn Memorial Gardens is Option 4 (see Section 6.8.1). This includes the currently proposed noise wall within the rail corridor and an increase in landscaping relative to that proposed in the EA (refer to Section 6.8.1 and Figure 5-2). The proposed landscaping within the Memorial Gardens would be the responsibility of Invocare, in accordance with their revegetation requirements. A detailed landscape plan for this area would be provided prior to any construction works, as detailed in SoC No. 66.

This preferred option would provide sufficient visual screening of the project from the existing Memorial Gardens and the proposed expansion of the cemetery. The land adjacent to the cemetery is currently owned by the DoP and, therefore, provides the opportunity to establish the additional planting prior to any works commencing on the rail line.



**Figure 5-2 Preferred Option — potential additional landscape planting**

## 5.4 Hume Highway crossing

The SWRL would cross the Hume Highway just south of the Campbelltown Road on-ramp. The highway at this location experiences high traffic volumes, and so maintaining the function of the highway during construction is essential. Risk mitigation measures are, therefore, required to minimise the likelihood of serious traffic disruption.

To minimise the risk of traffic disruption, it was proposed in the EA that the rail crossing be achieved by tunnelling under the highway. TCA has developed a concept design for such a tunnel, involving directionally drilled canopy tubes.

In addition, detailed discussions between TCA and the RTA have taken place. It has been agreed that TCA, in consultation with the RTA, would develop an emergency response plan to address the crossing of the Hume Highway in emergency situations. This plan would, as a minimum, include provision of an emergency-use-2-way crossover. This issue is addressed by the new SoC No.30 in Chapter 7.

Any physical works resulting from the emergency response plan including the crossover would be subject to further environmental impact assessment in accordance with SoC No.30.

## 5.5 Integral Energy substation

### 5.5.1 Background

To provide the primary bulk power supply for the project, TCA proposed (in the EA) a new Integral Energy substation at the end of Cassidy Street, Denham Court. This new substation is required to be constructed along the rail line to provide power directly from the existing 132 kilovolt (kV) transmission line network.

A number of community submissions received during the EA public exhibition period raised concerns about the proposed location of the Integral Energy substation, particularly its proximity to residences on Cassidy Street. The submissions suggested that an alternative location was required. TCA undertook an options assessment to examine alternative locations for the substation. The details of that assessment are described in Section 6 and Appendix E, and are summarised below.

### 5.5.2 Proposed design solution

The options assessment concluded that the preferred relocation of the substation would be approximately 40 metres west of the indicative location identified in the EA. This would move the proposed substation further away from the closest residential property in Denham Court and thus reduce the potential for noise and visual impacts. A full assessment of the location of the Integral Energy substation is provided in Appendix E and Chapter 6.

The preferred design and relocation of the Integral Energy substation is shown in Figure 5-3. The design and footprint have been modified since the EA was placed on public exhibition. The design assessed in the EA was a rectangular shape, whereas the current design is square and includes the following components:

- a substation area approximately 69 metres long and 77 metres wide
- one transformer with a maximum capacity of about 60 MVA
- space for a second transformer, and appropriate connections, for Integral Energy requirements
- a 132kV and 33kV control and protection room
- space for a future 33kV switchroom
- staff parking and amenities
- a perimeter fence around the substation
- a driveway around the perimeter fence
- a driveway to Cassidy Street.





**Figure 5-3     Integral Energy substation location**



## 5.6 Additional car park area at Leppington Station

### 5.6.1 Background

In early 2010, TCA, in consultation with Transport NSW, determined that 850 parking spaces would be required to accommodate park-and-ride (commuter parking) requirements in the short term. This was to comprise 200 spaces to the south of the rail line and 650 spaces to the north. This figure was presented in the EA, with the car parking location and footprint illustrated on Figure 6-1s of the EA.

Since the EA exhibition design investigations confirmed that to accommodate the 650 spaces required to the north of the rail line additional space or a multi level carpark would be required relative to that indicated in the EA. An additional car parking area is proposed.

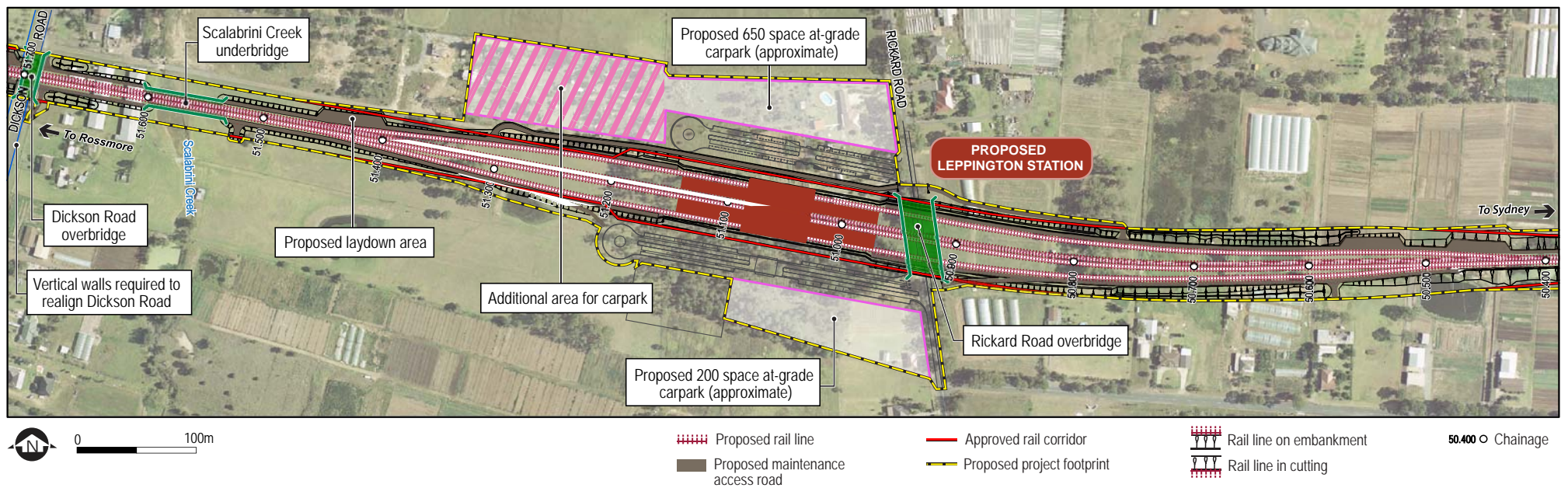
### 5.6.2 Proposed design solution

The land identified for additional car parking is adjacent to the proposed transport interchange on the northern side of the station and is approximately 300 metres at its furthest point from the northern entrance to Leppington Station (see Figure 5-4). A number of options were considered for the location of the additional commuter car parking area, including sites both north and south of the station. The site chosen was selected because:

- the site was part of the acquisition plan for the SWRL and no further property acquisition would be required
- the site could be integrated with the car park site already proposed in the EA.

As stated in the EA the final location for the car parks would be determined in consultation with the master planners for the Leppington Town Centre, DoP and the key NSW transport agencies.

Further assessment of the additional car park site is provided in Chapter 6.



**Figure 5-4** Extent of works at Leppington Station  
*\*Note: Indicative only, subject to detailed design*

## 5.7 Changes to the project footprint

In May 2010, TCA identified an additional 13 sites potentially required for construction and operation of the project (refer to Figure 5-5). These potential additional sites are a result of design development since the exhibition of the EA. The 13 sites include areas for improved construction access, three new construction compounds/worksites, amendments to two previously proposed construction compounds, new stockpile locations, maintenance access to culverts, relocation of the Integral Energy substation, and additional commuter car parking at Leppington (refer to Figure 5-5 and Table 5-1).

Table 5-1 provides justification for the inclusion of the additional sites within the project footprint. TCA is now seeking project approval for the revised project footprint, incorporating the 13 potentially additional sites. An assessment of the additional sites is provided in Chapter 6.

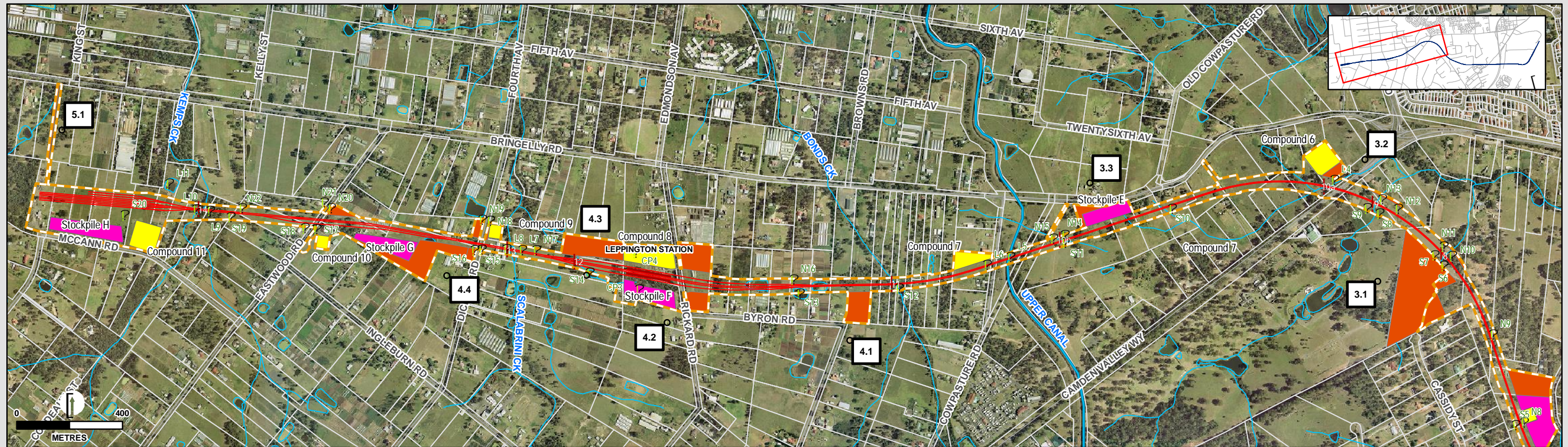
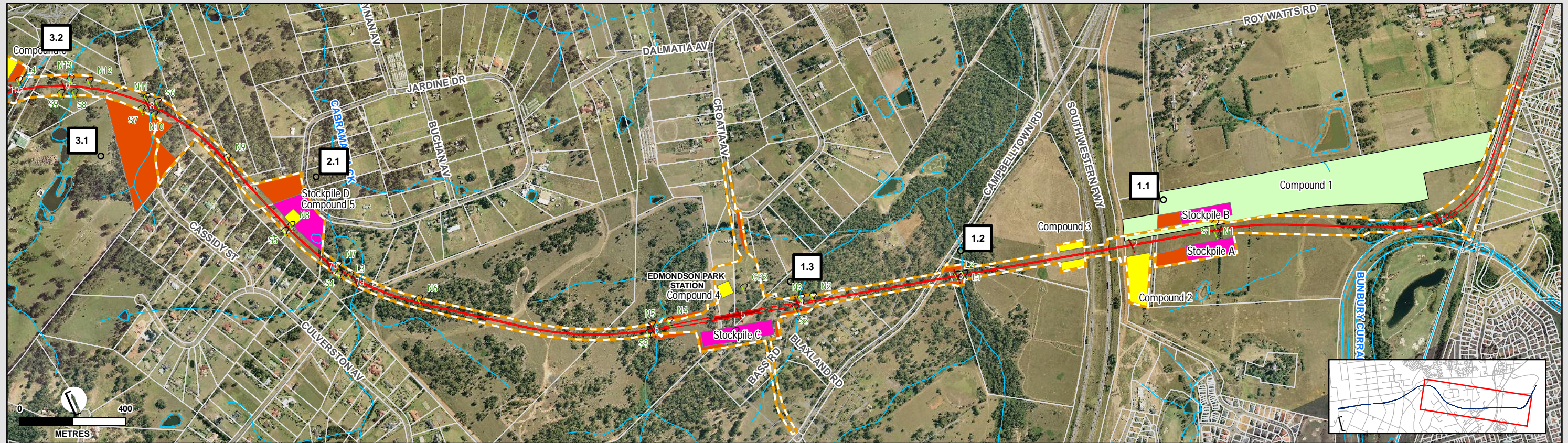
The identification of the sites provides flexibility for the construction contractor. The ultimate use of these sites would be determined by the construction contractor in accordance with SoCs Nos 12 and 21.

**Table 5-1 Additional potential construction and compound sites for environmental assessment**

Site	Modification	Justification
1.1	Extension of the stockpile sites on both sides of the rail corridor westwards to link with Quarter Sessions Road; the northern stockpile site is already approved.	The modification to the stockpile location would provide direct road access from these proposed stockpiles, which would enhance the construction process.
1.2	Widening of the rail corridor to provide access to the proposed culvert near Campbelltown Road.	RailCorp maintenance access to the proposed culvert is required to prevent blockage of the culvert, reduce flooding and maintain safe rail operations.
1.3	Extension of the property boundary to the southern side of Edmondson Park Station.	Required to improve the definition of property boundaries and facilitate permanent works.
	Widening of the project footprint to the east and north of Edmondson Park Station.	Required to facilitate the permanent diversion of Lawson Road and to provide maintenance access to a proposed culvert.
	Widening of the project footprint to the north of Edmondson Park Station.	Required to provide a better alignment of the access road north to Croatia Avenue, to comply with the Edmondson Park masterplan.
2.1	An additional worksite compound near Cabramatta Creek.	Required for the construction of a 70 metre rail bridge over the creek.

Site	Modification	Justification
3.1	Relocation of the Integral Energy substation at the end of Cassidy Street.	Required to reduce the potential impacts on residential properties in Denham Court and reduce visual impacts on Forest Lawn Memorial Gardens.
3.2	Modification (enlargement) of an existing compound site off Camden Valley Way.	Required for use by the contractor to provide improved road access to Camden Valley Way and to support the efficient construction of the Camden Valley Way overbridge.
3.3	Modification (enlargement) of an existing compound site and improved access near Cowpasture and Bringelly Roads.	Required to provide improved access to Bringelly Road and to align better with the existing property boundaries. Other minor changes relate to the widening of the corridor to improve the definition of property boundaries and facilitate permanent works, including permanent operational access tracks.
4.1	Improved access to Byron Road.	Temporary access to the corridor from Byron Road is needed during construction.
4.2	Additional compound site at Rickard Road.	Required for a temporary worksite compound and proposed diversion of Rickard Road during bridge construction.
4.3	Additional land for commuter car parking at Leppington Station.	Required to accommodate the 850 commuter car parking spaces proposed as part of the project. This site provides the most appropriate location for an additional parking area due to its proximity to Leppington Station, its generally level grade and its location next to the car park presented in the EA.
4.4	Modification to the stockpile location and improved access to Dickson Road.	Additional land is needed for the stockpile and for the temporary road diversions to construct the local road overbridge.
4.5	Additional compound site at Eastwood Road.	Required for a worksite and to construct the local road overbridge.
5.1	Improved access to Bringelly Road.	A slight modification to the construction access road from Bringelly Road to the train stabling facility is required to provide improved construction access.





- |                    |   |
|--------------------|---|
| Waterway crossing  | Approved site compounds (approved as part of Glenfield Transport Interchange) |
| Sediment basin     | Potential site compounds for the project                                      |
| Cadastre           | Potential stockpile for the project   |
| Drainage           | Additional compound sites   |
| Proposed track     |   |
| Clearing footprint |   |

Figure 5-5 Additional construction and compound sites



## **5.8 Other design changes**

### **5.8.1 Removal of construction compound No. 3**

As part of the ongoing design development and review for the project, TCA has reassessed the potential construction compounds identified in the EA. This review determined that construction compound No. 3 (as shown on Figure 5-5) is no longer required for the construction of the project and should be removed from the clearing footprint. That is, the likely construction compound requirements would be satisfied by the remaining construction compounds proposed.

Construction compound No. 3 was located within an area subject to the Edmondson Park conservation agreement. Removal of the compound from the clearing footprint would, therefore, mean that impacts on the conservation agreement would also be removed. It is now confirmed that the clearing footprint for the project would not affect any areas protected in the Edmondson Park conservation agreement.

### **5.8.2 Rossmore train stabling facility – 20 eight car sets**

The EA outlined that the Rossmore train stabling facility would cater for 12 eight-car sets on opening with provision within the footprint for expansion to 20 eight-car sets. It has now been identified that there would be demand for stabling of up to 20 eight car sets on opening. This increase in stabling capacity would not increase the footprint of the train stabling facility.

In addition the impacts of the train stabling facility were assessed assuming 20 eight-car sets would be stabled at the facility. As such the design change would not change the results of the EA.

### **5.8.3 Secondary storage and staff amenities building at Rossmore train stabling facility**

In the long term, a small secondary storage and staff amenities building may be required on the northern side of the train stabling facility at Rossmore. This building would be adjacent to the tracks and would enable staff to access amenities without crossing the stabling yard. The building would not increase the proposed footprint of the train stabling facility and is not expected to increase the impacts of the train stabling facility.

## **5.9 Preferred Project**

The preferred project for the SWRL Glenfield to Leppington rail line is largely as described in Chapter 6 of the EA with the modifications as described in this chapter. The preferred project has been modified in accordance with Section 75H of the EP&A Act to improve constructability and operational effectiveness and to minimise environmental impact.

## 6. Assessment of the proposed design changes

### 6.1 Introduction

Since exhibition of the EA, TCA has proposed the following design changes to the project:

- 13 potentially additional sites, comprising a combination of alterations to proposed compound and stockpile sites, minor alterations to the final built form of the project as described in the EA, and relocation of the Integral Energy substation at Cassidy Street, Denham Court
- two new overbridges, including access connections to one of these overbridges at Edmondson Park Station
- a modified landscape and urban design concept at the Forest Lawn Gardens Memorial Cemetery.

These design changes are described fully in Chapter 5.

This chapter provides an environmental impact assessment of any new or modified impacts as a result of the design changes described in Chapter 5. The key environmental issues that were assessed include:

- Land use and property
- Traffic, transport, parking and access
- Noise and vibration
- Hydrology
- Flora and fauna
- Heritage
- Visual and landscaping.

Any new mitigation requirements identified as a result of the further assessment have been taken into consideration in revising the SoC in Chapter 7 and is discussed in Section 6.9 Land use and property

The change in the project footprint compared to that presented in the EA is minimal. The design changes are required for the construction and operation phases of the project and are consistent with the objectives and desired outcomes of the Concept Plan EA (Parsons Brinckerhoff 2006).

The proposed design changes require minor additional land acquisition to that which was described in Figure 6-18 of the EA for project approval, exhibited in May/June 2010. The impacts of the proposed design changes on land use surrounding the project are consistent with what was assessed in Chapter 7 of the EA for project approval, and Chapter 10 of the Concept Plan EA. The additional assessment provided below does not indicate any significant impacts on surrounding land uses as a result of the design changes.

## 6.2 Traffic, transport, parking and access

An updated traffic and transport assessment was undertaken for the potential additional 13 sites and for the works associated with the eastern bridge at Edmondson Park Station. The results of these assessments are described in Section 6.3.1 and 6.3.2 below.

Approach roads at the western bridge at Edmondson Park have not been designed and could therefore not be assessed for traffic and transport impacts. Traffic and transport would not be affected by the proposed landscaping and urban design changes at Forest Lawn Memorial Gardens.

### 6.2.1 Additional 13 sites

This section discusses the potential traffic implications of the 13 additional sites described in Chapter 5. Each site has been assessed individually below; however, the design changes would also collectively better facilitate construction activities and improve access to Edmondson Park Station.

#### Site 1.1 Quarter Sessions Road

A change to the project design is required to provide sufficient space for the already planned Stockpiles A and B, as shown on Figure 5-5. The stockpile site would have direct access to Quarter Sessions Road with construction vehicles entering and exiting via the Campbelltown Road / Quarter Sessions Road intersection.

The proposed increase in the project footprint at this site would not generate additional traffic volume, and would not change the construction access routes to and from the site; as such, it would not change the expected traffic impact at this site.

#### Site 1.2 Campbelltown Road

A change to the project design is required to provide maintenance access tracks on either side of the rail alignment to a proposed culvert located east of Campbelltown Road. These maintenance access tracks would only be used infrequently. Therefore, the additional traffic impact of this site on Campbelltown Road would not be significant.

#### Site 1.3 Croatia Avenue

Various additional areas of land are required at the location of the planned future Edmondson Park Station site. One of the new areas would facilitate the already planned site access to Croatia Avenue. The site access would be on the outside of a sharp bend, with good sight distance in each direction. No additional traffic generation or traffic impacts would be expected as a result of this change to the proposed project footprint.



**Site 2.1 Jardine Drive**

The proposed change at this site would expand the area provided for compound 5 (refer to Figure 5-5). Access to this site would be via the Bringelly Road / Rynan Avenue intersection and then via Rynan Avenue and Jardine Drive. It is not anticipated that the change of construction layout proposed would generate any more vehicle trips, nor any change in access routes, so no additional traffic impacts would be expected.

**Site 3.1 Integral Energy substation**

The project design at the Integral Energy substation has been amended to locate the substation further away from residential properties. The location of the proposed construction and operational accesses would not change from those proposed within the EA. The construction and operational traffic volumes would also be unlikely to change. Therefore, no changes to the traffic impacts predicted in the EA are expected as a result of this design change.

**Site 3.2 Camden Valley Way**

An increase to the project footprint is required to provide more space for the planned activity at Compound 6 (refer to Figure 5-5). Access to this compound is already proposed via a temporary intersection with Camden Valley Way. No additional traffic generation would be expected to result from this change, so no additional traffic impacts would be expected.

**Site 3.3 Bringelly Road (Stockpile E)**

An increase to the project footprint is required to provide space additional for Stockpile E (refer to Figure 5-5). Access to this site has already been proposed via a temporary intersection with Bringelly Road. As the change to the project footprint is required only to provide additional space for Stockpile E, it would not be expected to generate any additional vehicles; therefore, no additional traffic impacts would be expected.

**Site 4.1 Byron Road**

An amendment to the project design is required to enable access to the rail corridor from Byron Road during construction. The temporary site access would be on the outside of a 90 degree bend, with good sight distance in each direction. The trips generated from this site were considered as part of the EA in Technical Paper 4 - Traffic and Transport. This addition to the project footprint would not change the traffic impacts identified in the EA.

**Site 4.2 Rickard Road**

An increase to the project footprint is proposed, comprising two new construction areas on the eastern side of Rickard Road on either side of the rail corridor, to provide additional space for a temporary access intersection for Compound 8 and Stockpile F (refer to Figure 5-5 of the EA in Technical Paper 4 - Traffic and Transport. This addition to the project footprint would not change the traffic impacts identified in the EA.

#### **Site 4.3 Leppington Station car park**

An increase to the project footprint at Leppington Station is required for construction of the proposed commuter car park for Leppington Station. Although this change results in an increase to the car park area, it would not change the number of parking spaces proposed. As such, this increase would not result in additional traffic, so the operational traffic impacts would not be changed. Additionally, the increased footprint at this site would provide additional space for Compound 8 during construction; however, this increase would not generate additional traffic, nor change the temporary access arrangements assessed in the EA. No additional traffic impacts would be expected to result from the increase in the project footprint at this site.

#### **Site 4.4 Dickson Road**

The project design would be amended to provide space for temporary traffic lanes alongside Dickson Road, to be used to divert traffic during construction of the proposed rail overpass bridge at this location. The additional space would allow staged construction of the works, with traffic temporarily diverted onto the temporary lanes during construction.

The area provided for Stockpile G (refer to Figure 5-5), would also be increased. The increase in space for Stockpile G would not increase construction traffic generation, or the temporary access arrangements to this stockpile; therefore the traffic impacts associated with the stockpile would be unchanged from that described in the EA. The space provided for temporary traffic lanes alongside Dickson Road would reduce the need for temporary road / lane closures on this road and so reduce the associated traffic impact of such closures.

#### **Site 4.5 Eastwood Road**

The project footprint would be increased to provide additional space for Compound 10, as shown in Figure 5-5, and additional space for construction of the rail overpass bridge crossing Eastwood Road. This addition to the project footprint would not change the traffic impacts identified in the EA.

#### **Site 5.1 Bringelly Road – train stabling facility**

The project footprint would be enlarged at the proposed construction access track to the train stabling facility from Bringelly Road. The traffic impact of this access track was assessed in the EA and would be unchanged by this proposed widening.

### **6.2.2 New bridges at Edmondson Park Station**

Section 6.3.4 of the EA includes a description of the proposed access to Edmondson Park Station.

On 5 July 2010, the proposed Concept Plan for the Edmondson Park Precinct was declared a Major Project subject to the State Environmental Planning Policy (Major Development) 2005. The Concept Plan will be assessed under Part 3a of the EP&A Act and will include a transport and access study to assess the proposed road layout design as shown in Figure 6-1. As previously proposed in the *Liverpool Development Control Plan* (2008), the Precinct road network proposes to connect the north and south sides of the rail corridor.

Since exhibition of the EA, further discussion has been held between TCA and Landcom over the benefits of providing a north–south road crossing at the commencement of operation of the SWRL. The preliminary locations of the proposed bridges connecting the north and south sides of Edmondson Park are included in Figure 5-1.

Approval is now sought for two bridges to facilitate improved access for pedestrians, vehicles and cyclists on either side of the station and rail corridor. The bridges would be located at either end of the station footprint, with a five-lane bridge (with a pedestrian and cycleway) to be provided to the east and a six-lane bridge (with pedestrian and cycleway lanes) to the west. Approval is sought for the eastern bridge and approach road works, as it is proposed that this bridge would be operational on day one. Approval is also sought for the western bridge; however, the approach road works for the western bridge are not considered part of the project and are, therefore, beyond the scope of the EA and this report. As such, the function of this bridge in terms of access and circulation has not been assessed, as this would depend on the layout and function of future connecting roads. The two road bridges would be constructed by TCA subject to funding arrangements being confirmed by Landcom.

Operation of the new eastern bridge would improve accessibility to the station, by allowing:

- rail park-and-ride passengers to use either the north or south car park should their closest car park be full
- connection of through bus services accessing the station from the north and south sides
- the potential to rationalise the facilities by removing the need to duplicate interchange facilities such as taxi ranks and bus stops on each side of the station.

## Land zoning map - sheet LZN-009

### Zone

- B1 Neighbourhood Centre
- B2 Local Centre
- B3 Commercial Core
- B4 Mixed Use
- B5 Business Development
- B6 Enterprise Corridor
- E1 National Parks and Nature Reserves
- E2 Environmental Conservation
- E3 Environmental Management
- IN1 General Industrial
- IN2 Light Industrial
- IN3 Heavy Industrial
- R1 General Residential
- R2 Low Density Residential
- R3 Medium Density Residential
- R4 High Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU1 Primary Production
- RU2 Rural Landscape
- RU4 Rural Small Holdings
- SP1 Special Activities
- SP2 Infrastructure
- WSP SEPP Western Sydney Parklands
- W1 Natural Waterways

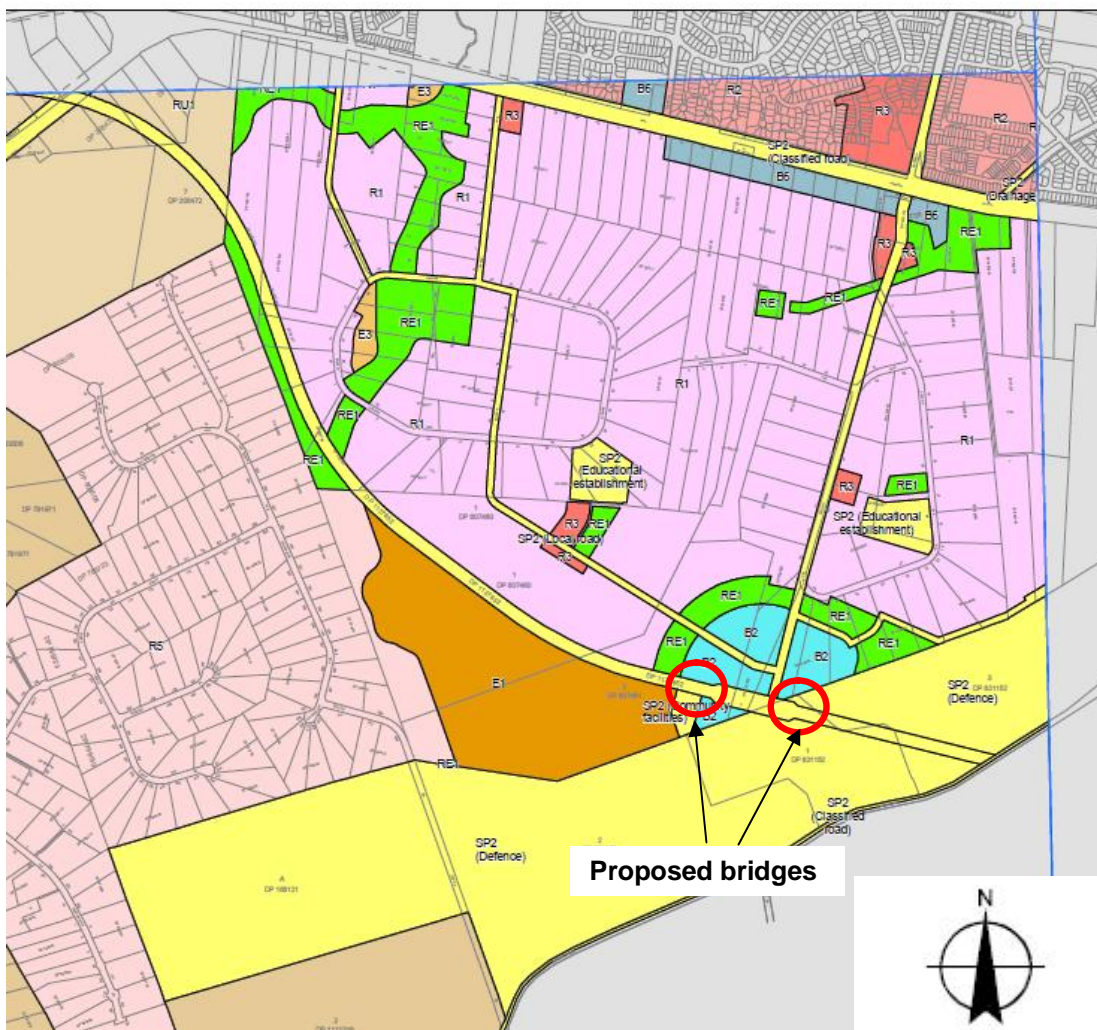


Figure 6 - 1

Edmondson Park road network (Liverpool LEP 2008)



The eastern bridge would not generate additional vehicle trips to the station. Provision of the eastern bridge could however change the traffic distribution on the road network. It is noted that this change has been anticipated within the Growth Centre planning and would occur with or without the project.

The eastern bridge would enable traffic not associated with the project to travel between Campbelltown Road and Camden Valley Way. It may provide a quicker route for vehicles travelling from the residential areas of West Hoxton, Horningsea Park or Prestons to the Ingleburn/Minto/Campbelltown area. Without this connection, vehicles would have to use Denham Court Road, or travel to the intersection of Camden Valley Way and Campbelltown Road.

If constructed prior to the development of the Edmondson Park Town Centre, the eastern bridge may be subject to an increase of through-traffic. However, this additional through-traffic is unlikely to be a significant issue because:

- the through-traffic would be a small proportion of the total traffic that would ultimately use this bridge and the road network once the Edmondson Park Town Centre is developed. As the town centre is developed, an additional bridge would be constructed to provide a western bypass. The adequacy of both project bridge crossings and the surrounding local road network (as proposed in the Edmondson Park masterplan) was assessed and found to have sufficient capacity up to 2021 (*Edmondson Park Town Centre Preliminary Traffic Review*, AECOM, 2009)
- the Croatia Avenue/Camden Valley Way intersection has recently been upgraded to a signalised intersection. This intersection would form the main road into the Edmondson Park Town Centre and would ultimately be used by through-traffic and traffic generated by the growth centre. The EA demonstrated that this intersection could accommodate the expected traffic generated by the development and Edmondson Park Station
- a new road is proposed between Campbelltown Road and the south side of the bridge linking with Croatia Avenue. This road and its intersection with Campbelltown Road would ultimately be designed to accommodate the traffic volumes forecast within the *Edmondson Park Town Centre Preliminary Traffic Review* (AECOM, 2009), which would include traffic generated by the growth centre development and through-traffic.

## 6.3 Noise and vibration

A noise and vibration assessment was undertaken by *Heggies Pty Ltd* for the potential additional 13 sites, including the Integral Energy substation at the end of Cassidy Street. No additional noise and vibration assessment of the Edmondson Park bridges was undertaken as it was considered that the primary impacts associated with the bridges would be construction noise. Construction noise impacts will be further assessed during detailed design, with impact mitigation measures incorporated into a CEMP.

### **6.3.1 Construction noise impacts of additional 13 sites**

Of the 13 site changes proposed (refer to Chapter 5), the majority did not result in the need for additional construction noise and vibration assessment as assessment had already been completed with some sites which form part of existing compounds whilst others are sufficiently set back from sensitive receivers. The exceptions to this were Sites 2.1, 3.1, 3.3, 4.2 and 4.4 which are located close to inhabited areas.

Additional assessment of potential construction noise impacts at these sites has been carried out and the results are summarised in Table 6-1. It is noted that the predicted noise levels in Table 6-1 represent the noise generated from the compounds during construction of the project, except in the case of Site 3.1, where the levels presented are for construction of the substation.

**Table 6-1 Predicted LAeq(15minute) construction noise levels - site specific**

Site reference	Site	Typical receiver location	Approximate distance to activity (metres)	LAeq (15minute) noise management level (normal construction hours) (dBA)	Predicted LAeq(15minute) construction noise level (dBA)
2.1	Worksite compound, near Cabramatta Creek, across rail corridor from 35 and 45 Cassidy Street, Denham Court	195 Jardine Drive	50	46	60
		205 Jardine Drive	50	46	60
		215 Jardine Drive	50	46	60
		270 Jardine Drive	<10	46	74
		35 Cassidy Street	40	41	62
		45 Cassidy Street	40	41	62
3.1 <sup>1</sup>	Integral Energy substation, at northern end of Cassidy Street, Denham Court	75 Cassidy Street	110	41	57
		85 Cassidy Street	50	41	64
3.3	Compound to provide access to Bringelly Road, near 150 Bringelly Road	150 Bringelly Road	40	53	62
4.2	Worksite compound and access at junction of rail corridor and Rickard Road	166 Rickard Road	120	44	52
		176 Rickard Road	40	44	62
		183 Rickard Road	30	44	65
		173 Rickard Road	90	44	55
		215 Rickard Road	100	44	54
		216 Rickard Road	<10	44	74
		258 Byron Road	<10	44	74
		251 Bringelly Road	80	44	56
4.4	Stockpile and access to Dickson Road (temporary road diversions) at junction of rail corridor and Dickson Road	133 Dickson Road	<10	44	74
		162 Dickson Road	80	44	56

Note 1: Refers to construction of the substation as opposed to operation

As discussed in the EA, due to the close proximity of residential receivers to the works, the construction noise management levels (NMLs) are anticipated to be exceeded at many locations along the rail corridor. This is an issue for the project as a whole, and not specifically a consequence of the proposed design changes. This is relatively common on major infrastructure projects, particularly where there is no opportunity to provide a large buffer zone. It is recognised that such exceedances may be of concern to potentially affected residents and particular effort should be directed towards the implementation of all feasible and reasonable construction noise mitigation and management strategies.

While exceedances of the NMLs would be expected, the predicted noise levels are below the limit for residential receivers that are considered 'highly noise affected' (i.e. where the predicted noise level exceeds 75 dBA).

The majority of construction works would be limited to daytime hours to reduce any potential impacts as much as possible. The fact that noise criteria exceedances have been identified highlights the importance of managing the works to minimise both the noise levels and duration of the predicted exceedances. Construction noise and vibration would be managed in accordance with the DECCW's (2009) *Interim Construction Noise Guideline* and TCA's (2007) *Construction Noise Strategy (Rail Projects)*.

### 6.3.2 Operational impacts of Integral Energy substation

Section 6.4.1 covers likely construction impacts of the additional Sites 2.1, 3.1, 3.3, 4.2 and 4.4. A separate detailed assessment was undertaken to assess the operational impacts of the substation (Site 3.1), particularly with regard to residents of Cassidy Street.

As described earlier, the proposed location of the Integral Energy substation is now proposed to be located approximately 40 metres from the nearest residence. During preparation of the EA, detailed information on the substation design was not available to inform the noise assessment. This data is now available and was considered in the additional noise assessment for the substation. It should be noted that the substation as assessed in the EA met the noise criteria at all existing residential receivers, and this additional assessment reconfirmed the results of this initial assessment.

A comprehensive SWRL Substation Noise Impact Assessment (SNIA) was undertaken and included an assessment of the Integral Energy substation (see Appendix G). The SWRL SNIA predicted that the  $LA_{eq(15\text{minute})}$  noise levels generated by the transformer would comply with the night-time *Industrial Noise Policy* (INP) intrusiveness criterion of 38 dBA at the nearest residential receiver (85 Cassidy Street) and would therefore also comply at all residential receivers. Therefore, no mitigation of the substation transformer noise would be required to satisfy INP criteria.

The predicted external maximum  $LA_{max}$  noise level generated by the circuit breaker at 85 Cassidy Street would be approximately 72 dBA, which exceeds the upper sleep disturbance noise goal by 7dBA. The sleep disturbance indicators provided in the ECRTN allows for one or two noise events per night at this level (72 dBA) to not cause impacts to health and wellbeing.

The circuit breakers at the substation would meet this criteria as they only operate when fault conditions cause over-current trips. Advice from RailCorp and Integral Energy indicate that this would occur infrequently and consideration of noise mitigation measures for circuit breakers is therefore not required.



## 6.4 Hydrology

### 6.4.1 Additional 13 sites

The additional 13 sites have the potential to impact flood behaviour, subject to site-specific factors such as works in the vicinity that may divert flow or create localised increases in flood levels. Table 6-2 provides an overview flood assessment and a summary of the hydrologic aspects at each of the 13 sites prepared by *WMA Water*. This assessment is based on a desktop review of the existing hydraulic modelling carried out for the EA.

**Table 6-2 Hydrological assessment of the 13 sites**

Site	Hydrologic aspects
1.1	Site is located within small catchment draining to Crossing 2. While no hydraulic modelling has been undertaken, it is unlikely to be inundated during the 1% annual exceedance probability (AEP) (1 in 100 year) event. Adequate site drainage through the site should be provided as to not impede flow.
1.2	Site is for an access road to the Crossing 3 culvert and associated debris structure. There is potential for flow at Crossing 3 to divert toward Campbelltown Road along the access road. The installation of a mound at the 1% AEP (1 in 100 year) event flood level of 45.7 metres above height datum (mAHD) should prevent this.
1.3	Site is located adjacent to Edmondson Park Station and Crossings 4, 5 and 6. Site not likely to be inundated during the 1% AEP (1 in 100 year) event. Site usage should not impede the diversion or drainage of Crossing 5.
2.1	Site is located north of Crossing 7b and is not likely to be inundated during the 1% AEP event.
3.1	Site is located in catchment draining to Crossing 8. Site usage should not obstruct or fill creek. Adequate drainage through the area should be provided as to not impede flows. Flood levels during the 1% AEP (1 in 100 year) event across the site vary from 50.3 mAHD (north-east corner) to 53.3 mAHD (south-west corner).
3.2	Site is located within small catchment draining to Crossing 10a. Site is likely to be inundated during a 1% AEP (1 in 100 year) event to a flood level of 55.5 mAHD. Site usage should not obstruct or fill drainage path.
3.3	Site is located adjacent to Crossing 10b. Site usage should not impede the diversion or drainage of Crossing 10b. Site is not likely to be inundated during the 1% AEP (1 in 100 year) event.
4.1	Site is located to the west of Crossing 11. Site would likely be inundated during the 1% AEP (1 in 100 year) event. The 1% AEP flood level would be up to 76.3 mAHD.
4.2	Site is located to the west of Crossing 11 and would not be inundated during the 1% AEP.
4.3	Site is located downstream of Crossing 12. Site usage should not impede the diversion and associated drainage of Crossing 12.
4.4	Site is located west of Crossing 13 and is not likely to be inundated during the 1% AEP.
4.5	Site is located east of Crossing 14 and is not likely to be inundated during the 1% AEP.
5.1	Site is located west of Crossing 14 and is not likely to be inundated during the 1% AEP. Crossing of potential tributary to Kemps Creek should be confirmed.

### 6.4.2 Edmondson Park Station road crossings

Two road crossings are proposed to the north and south of Edmondson Park Station, which would cross existing waterways. Initially these roads would be used for construction access and then as permanent roads. The road crossings would be located upstream of Crossing 4

and downstream of Crossing 6. The catchment flow in the event of a flood needs to be accommodated at these crossings. Given the future permanent nature of these access roads, providing for the 1% AEP (1 in 100 year) event would be appropriate. The access road upstream of Crossing 4 would need to accommodate flows of approximately 3.8 cubic metres per second ( $\text{m}^3/\text{s}$ ) during the 1% AEP (1 in 100 year) event, and the design of this structure would be addressed during the detailed design stage. The access road downstream of Crossing 6 would need to accommodate flows of approximately 18.4  $\text{m}^3/\text{s}$  during the 1% AEP (1 in 100 year) event. The interaction of this crossing with Crossing 6, and the consequences of the failure at Crossing 6, mean that a more detailed hydraulic assessment is required during the detailed design phase.

## 6.5 Flora and fauna

Additional flora and fauna assessment was undertaken by PB for the additional 13 sites, which included the relocation of the Integral Energy substation. No additional assessment was undertaken for the proposed landscape and urban design works at Forest Lawn Memorial Gardens. However, it is proposed that plant selection for this landscaping would be undertaken in consultation with councils and DECCW to complement the areas of adjacent Shale Plains Woodland.

The bridge crossings at Edmondson Park Station would not have any additional ecological impacts to that identified in the EA. Additional vegetation clearing associated with the Edmondson Park interchange has been addressed in the additional site assessment below.

### 6.5.1 Project footprint changes

As well as the additional 13 sites, the original clearing footprint would be modified (reduced) though the removal of construction compound 3. The impact of these changes has been considered combined with the overall impacts proposed in the EA (as detailed in the Technical Paper 2 in Volume 2A of the EA).

The footprint changes would add 12.63 ha to the previously reported footprint of 89.6 ha. This would result in clearing of an additional 4.84 ha of native vegetation, as detailed in Table 6-4 and Figure 6-2. This includes the following:

- 4.43 ha of Cumberland Plain Woodland (listed as critically endangered under the *Threatened Species Conservation Act 1995 (TSC Act)*)
- 0.41 ha of River-flat Eucalypt Forest (listed as endangered under the TSC Act).

Within the 4.84 ha of native vegetation to be cleared, 1.09 ha of additional clearing would occur within the non-certified areas of the SWGC.

A total of 0.85 ha of the vegetation described as Cumberland Plain Shale Woodlands and Shale Gravel Transition Forest (listed as critically endangered under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*) would also be removed.

This additional 0.85 ha of clearing would include 0.49 ha outside of the Edmondson Park Conservation Agreement area. The additional clearing is all Category C vegetation (patches with connectivity to other large native vegetation) and is not likely to constitute a significant

impact. Offsets would, however, be needed to address this loss, as discussed in Section 4.5 of this report.

There would be a corresponding loss of habitat as noted in Table 6-4.

The presence of native vegetation was considered as part of the identification of the additional areas, but design and engineering constraints meant that native vegetation clearing could not be avoided in all cases. The individual biodiversity impacts at each site have been summarised in Table 6-3 below.

**Table 6-3 Biodiversity assessment of the 13 sites**

Site	Location	Context and assessment
1.1	Quarter Sessions Road	This is the site for Stockpiles A and B as proposed in the EA. A minor increase in the footprint would allow sufficient space for construction operations. This increase would not result in any additional clearing.
1.2	Campbelltown Road	This site is required to provide maintenance access tracks on either side of the rail alignment to a proposed culvert. The whole site would need to be cleared of native vegetation adding 0.24 ha of clearing in a certified area and 0.07 ha in a non-certified area. All of the 0.31 ha to be cleared would be made of threat-listed communities.
1.3	Croatia Avenue	This site comprises additional land adjacent to the planned Edmondson Park station. This site would require an additional 0.68 ha of threat-listed vegetation communities to be cleared, 0.07 ha of which is listed under the EPBC Act.
2.1	Jardine Drive	This site expands the area proposed for Compound 5. It requires the clearing of 1.18 ha of Cumberland Plain Woodland, 0.29 ha of which is listed under the EPBC Act. All of this clearing would be within a certified area.
3.1	Integral Energy substation	This is the preferred relocation site for the Integral Energy substation. This site would requires the clearing of and additional 0.58 ha of Cumberland Plain Woodland, 0.49 ha of which is listed under the EPBC Act. All of this clearing would be within a non-certified area.
3.2	Camden Valley Way	This site expands the space proposed for planned activities at Compound 6 and requires the clearing of 0.02 ha of Cumberland Plain Woodland in a non-certified area.
3.3	Bringelly Road	This site expands the space proposed for planned activities at Stockpile E. It requires clearing of 0.29 ha of Cumberland Plain Woodland predominantly within in a non-certified area.
4.1	Byron Road	This site is required to enable access to the rail corridor from Byron Road during construction. It requires clearing of 0.04 ha of Cumberland Plain Woodland all within in a certified area.
4.2	Rickard Road	This site comprises two new construction areas to provide additional space for temporary access to Compound 8 and Stockpile F. It requires clearing of 0.03 ha of Cumberland Plain Woodland all within in a certified area.
4.3	Leppington Station car park	This site is required for construction of the proposed commuter car park at Leppington Station. It requires clearing of 1.56 ha of Cumberland Plain Woodland all within in a certified area.
4.4	Dickson Road	This site would provide space for temporary traffic lanes alongside Dickson Road and increase the area of Stockpile G. It requires clearing of 0.04 ha of Cumberland Plain Woodland all within in a certified area.

Site	Location	Context and assessment
4.5	Eastwood Road	This site expands the space proposed for planned activities at Compound 10 and provides additional space for construction of the rail overpass bridge crossing Eastwood Road. It requires clearing of 0.26 ha of Cumberland Plain Woodland all within in a certified area.
5.1	Bringelly Road – train stabling facility	This site would increase the project footprint at the proposed construction access track to the train stabling facility from Bringelly Road. It requires clearing of 0.15 ha of Cumberland Plain Woodland all within in a certified area.

Given the location of the additional areas adjacent to the corridor presented in the EA, the additional areas of clearing would marginally increase the level of impacts discussed in the EA.

No new impact mitigation measures are recommended for the project. The biodiversity offset package provided for the project would take into consideration the additional clearing and would now include 6.09 ha of native vegetation offsets so that the project meets the requirement of the Biodiversity Certification Order to improve or maintain biodiversity values within the growth centres.

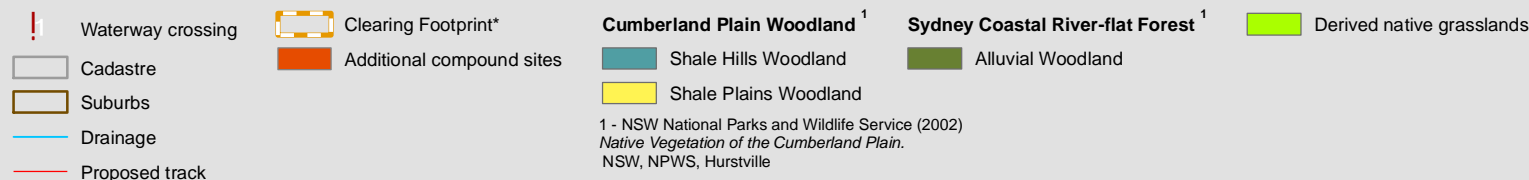
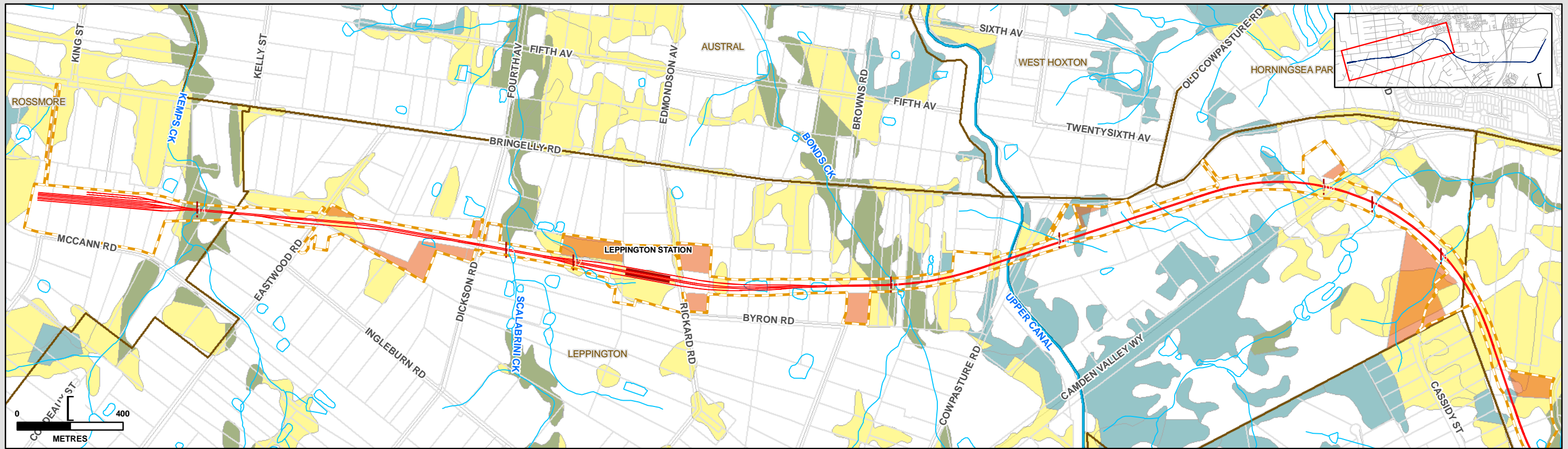
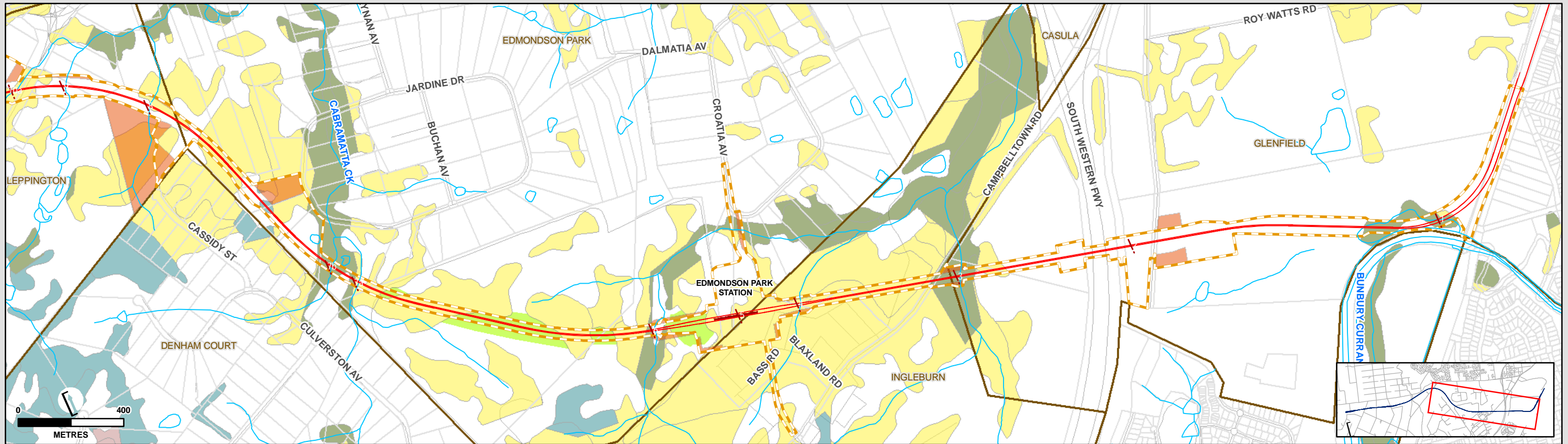
A key reason for the minor increase in vegetation clearing relative to that predicted in the EA is that the Integral Energy substation (Site 3.1) has been relocated further away from residential properties to address concerns about noise and visual impact. Locating the substation even further away from residences would result in greater vegetation clearing due to the need to develop cleared easements between the substation and the established 132kV line.

**Table 6-4 Additional clearing within 13 sites**

Feature	Additional site and changes														TOTAL (ha)	Earlier EA proposal (ha)	Current proposed footprint (ha)
	1.1	1.2	1.3	2.1	3.1	3.2	3.3	4.1	4.2	4.3	4.4	4.5	5.1	C3 <sup>b</sup>			
<b>Size of area (total)</b>	<b>0.64</b>	<b>0.31</b>	<b>0.89</b>	<b>1.28</b>	<b>1.02</b>	<b>0.46</b>	<b>0.63</b>	<b>1.05</b>	<b>1.85</b>	<b>1.78</b>	<b>2.53</b>	<b>0.27</b>	<b>0.21</b>	<b>-0.30</b>	<b>12.63</b>	<b>89.6</b>	<b>102.23</b>
Certified	0.64	0.24	0.88	1.28	0.00	0.00	0.01	1.05	1.85	1.78	2.53	0.27	0.21	-0.30	10.46	69.8	<b>80.26</b>
Non certified	0.00	0.07	0.01	0.00	1.02	0.46	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.17	19.8	<b>21.97</b>
<b>Native vegetation – total clearing</b>	<b>0.00</b>	<b>0.31</b>	<b>0.68</b>	<b>1.18</b>	<b>0.58</b>	<b>0.02</b>	<b>0.29</b>	<b>0.04</b>	<b>0.03</b>	<b>1.56</b>	<b>0.04</b>	<b>0.26</b>	<b>0.15</b>	<b>-0.30</b>	<b>4.84</b>	<b>28.9</b>	<b>33.74</b>
Shale Plains Woodland	0.00	0.00	0.58	1.11	0.58	0.02	0.00	0.04	0.03	1.56	0.04	0.26	0.15	-0.30	4.07	20.5	<b>24.57</b>
Shale Hills Woodland	0.00	0.00	0.00	0.03	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	1.0	<b>1.32</b>
Alluvial Woodland	0.00	0.31	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	4.4	<b>4.81</b>
Derived Grasslands	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	3.0	<b>3.04</b>
<b>Clearing - Threat-listed communities</b>																	
Cumberland Plain Woodland (TSC Act)	0.00	0.00	0.58	1.18	0.58	0.02	0.29	0.04	0.03	1.56	0.04	0.26	0.15	-0.30	4.43	24.5	<b>28.93</b>
River-flat Eucalypt Forest (TSC Act)	0.00	0.31	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	4.4	<b>4.81</b>
Cumberland Plain Shale Woodlands and Shale Gravel Transition Forest (EPBC Act)	0.00	0.00	0.07	0.29	0.49 <sup>a</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.85	5.5	<b>6.35<sup>c</sup></b>
<b>Clearing in non certified areas</b>																	
Cumberland Plain Woodland (TSC Act)	0.00	0.00	0.14	0.00	0.58	0.02	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	3.3	<b>4.32</b>
River-flat Eucalypt Forest (TSC Act)	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	1.7	<b>1.77</b>
Fauna habitat - woodlands	0.00	0.00	0.14	0.00	0.58	0.02	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	3.1	<b>4.12</b>
Fauna habitat – riparian vegetation	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	1.7	<b>1.77</b>
Fauna habitat – derived native grasslands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.2	<b>0.20</b>
Fauna – Cumberland Land Snail habitat	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.9	<b>0.92</b>
Fauna - Grey-headed Flying-fox habitat	0.00	0.07	0.14	0.00	0.58	0.02	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	4.8	<b>5.89</b>
Fauna – microbat habitat	0.00	0.07	0.14	0.00	0.58	0.02	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	4.8	<b>5.89</b>

Notes: a) Located outside the Edmondson Park Conservation Agreement Area. b) Reduced extent of EA footprint. c) Includes 0.89 ha outside the Edmondson Park Conservation Agreement Area





\*Note: Clearing footprint includes likely stockpiles and construction compounds

Figure 6-2 Vegetation communities and project footprint

## 6.6 Heritage

A detailed Aboriginal heritage assessment was undertaken by AMBS for the potential additional 13 sites, as described below (Refer to Appendix F). The proposed design changes at Forest Lawn Memorial Gardens and the Edmondson Park Station do not require any additional assessment to that presented in the EA.

No additional historic heritage assessment was required for any of the proposed design changes.

### 6.6.1 Potential additional 13 sites

A field survey of the potential additional 13 sites was undertaken by AMBS (accompanied by Aboriginal community representatives) to determine whether any Aboriginal archaeological sites or areas of potential Aboriginal archaeological sensitivity were present (see Appendix I). Three new Aboriginal heritage sites were recorded during the survey (in proximity to additional Sites 3.1, 3.3 and 4.3), and the location of artefacts at one previously identified site was extended (in proximity to additional Site 3.1). The new archaeological sites comprised one artefact scatter (in proximity to additional Site 4.3) and two isolated stone artefacts (in proximity to additional Sites 3.1 and 3.3). Based on current scientific evidence, the newly identified Aboriginal stone artefact sites are regarded as being of low scientific significance. Aboriginal communities consulted throughout the project have indicated that, while all Aboriginal heritage sites recorded contain intrinsic cultural significance, there are no further specific cultural significances attached to the identified sites. The following summary contains recommendations for the additional sites subject to heritage impacts which expand on the recommendations listed in Section 13.7 of the EA..

#### Site 1.1

The area where additional Site 1.1 is located is considered to have moderate archaeological potential for *in situ* subsurface archaeological deposits and should therefore be incorporated into the test excavations recommended for Area of Archaeological Sensitivity 2 in the EA.

#### Sites 1.3 and 2.1

Additional Sites 1.3 and 2.1 are located between Maxwells and Cabramatta Creeks, and are considered to have the potential to reveal a continuity of activity in the landscape. These sites should therefore be incorporated into the test excavations recommended for Area of Archaeological Sensitivity 3 in the EA.

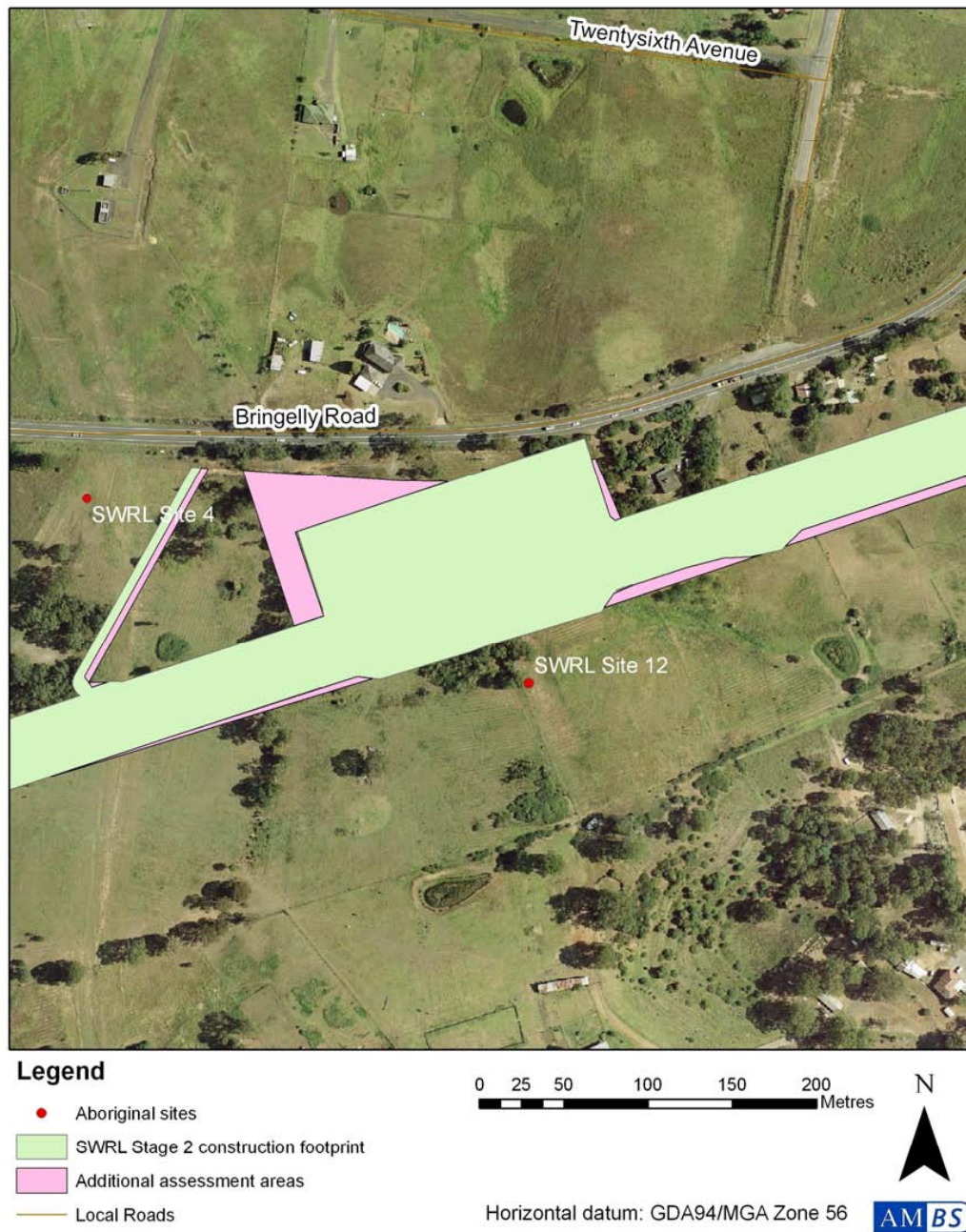
#### Sites 3.1 and 3.3

The two new archaeological sites, SWRL 11 and SWRL 12 in proximity to additional Sites 3.1 and 3.3 (as shown on Figure 6-3 and Figure 6-4) are not located within the impact zone of the proposed project and are unlikely to be impacted by its construction.



The previously identified Aboriginal heritage site, SWRL 10, is located within additional Site 3.1 and has been assessed by AMBS as having low research potential and low archaeological significance. As such, further archaeological investigation of this site, including archaeological excavation, is unlikely to increase the current scientific knowledge of the region.

If construction takes place at Site 3.1 and there is potential to impact on artefacts, it is recommended that the Aboriginal community be offered the opportunity to collect and relocate artefacts outside of the construction area prior to initiation of the works or storage to be determined following removal.



**Figure 6-3** SWRL Aboriginal Sites 10 and 11 near additional Site 3.1 at the end of Cassidy Street

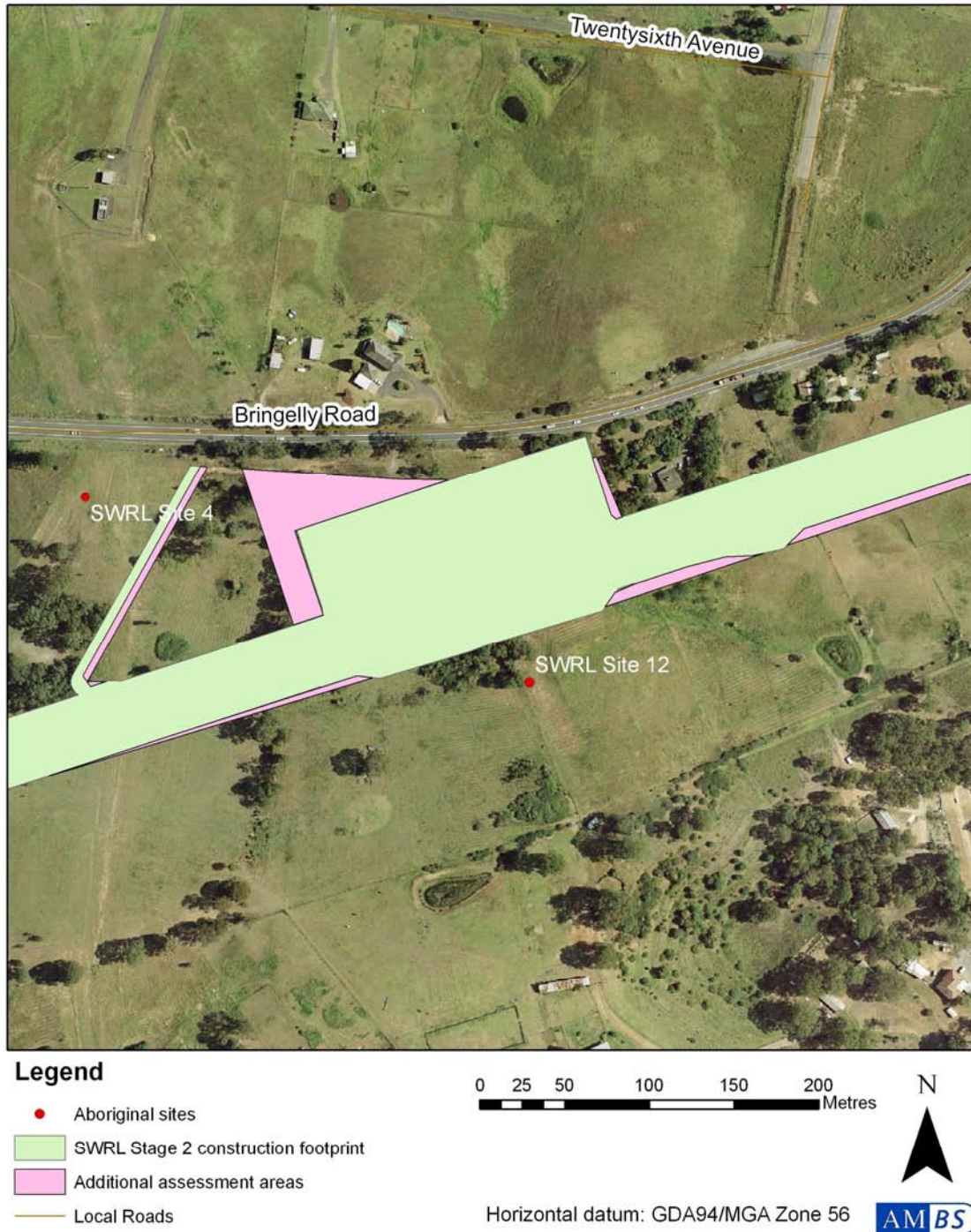


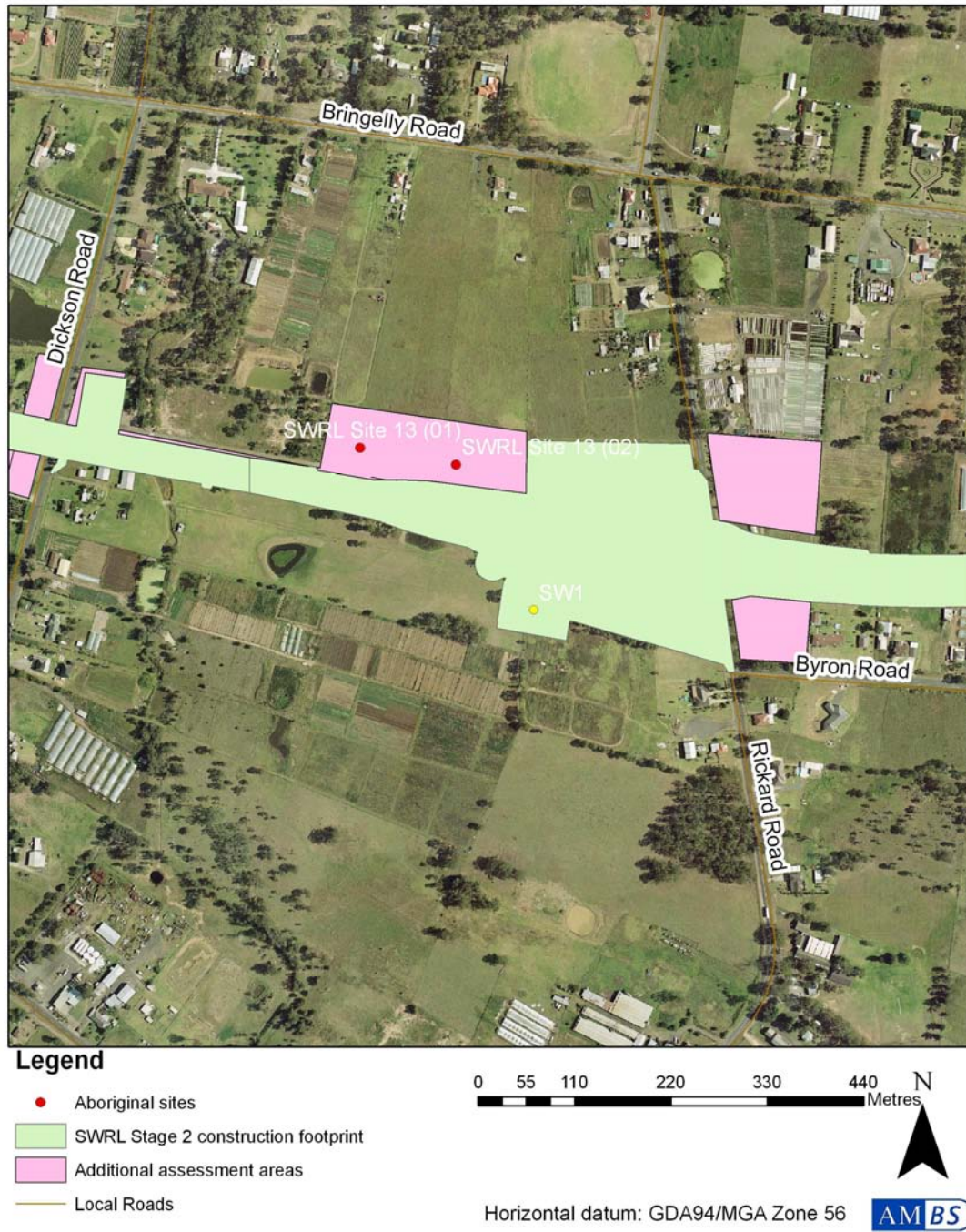
Figure 6-4

SWRL Aboriginal Site 12 near additional Site 3.3 near Bringelly Road



**Site 4.3**

The new archaeological site located at additional Site 4.3, SWRL 13 (as shown in Figure 6-5) would be located within the direct construction impact zone. Construction activities impacting the site would include excavation, levelling and filling, as well as associated infrastructure development, which would destroy the site and any associated sub-surface archaeological deposit. This site has been assessed as having low research potential and low archaeological significance. However its destruction would represent a minor cumulative impact upon the overall heritage significance and archaeology of the region. It is recommended that the Aboriginal community be offered the opportunity to collect and relocate artefacts outside of the construction area prior to initiation of the works.



**Figure 6-5**  
car park

**SWRL Aboriginal site 13 near Site 4.3 at the proposed Leppington Station**

### Site 5.1

The additional Site 5.1 is located within Area of Archaeological Sensitivity 12 which was recommended for test excavation in the EA.

## 6.7 Visual and landscaping

A visual and landscaping assessment was undertaken by Hassell for the Forest Lawn Memorial Gardens in response to stakeholder feedback. Proposed engineering and landscaping solutions to minimise the visual impacts at this site are detailed in Section 5.3 of this report.

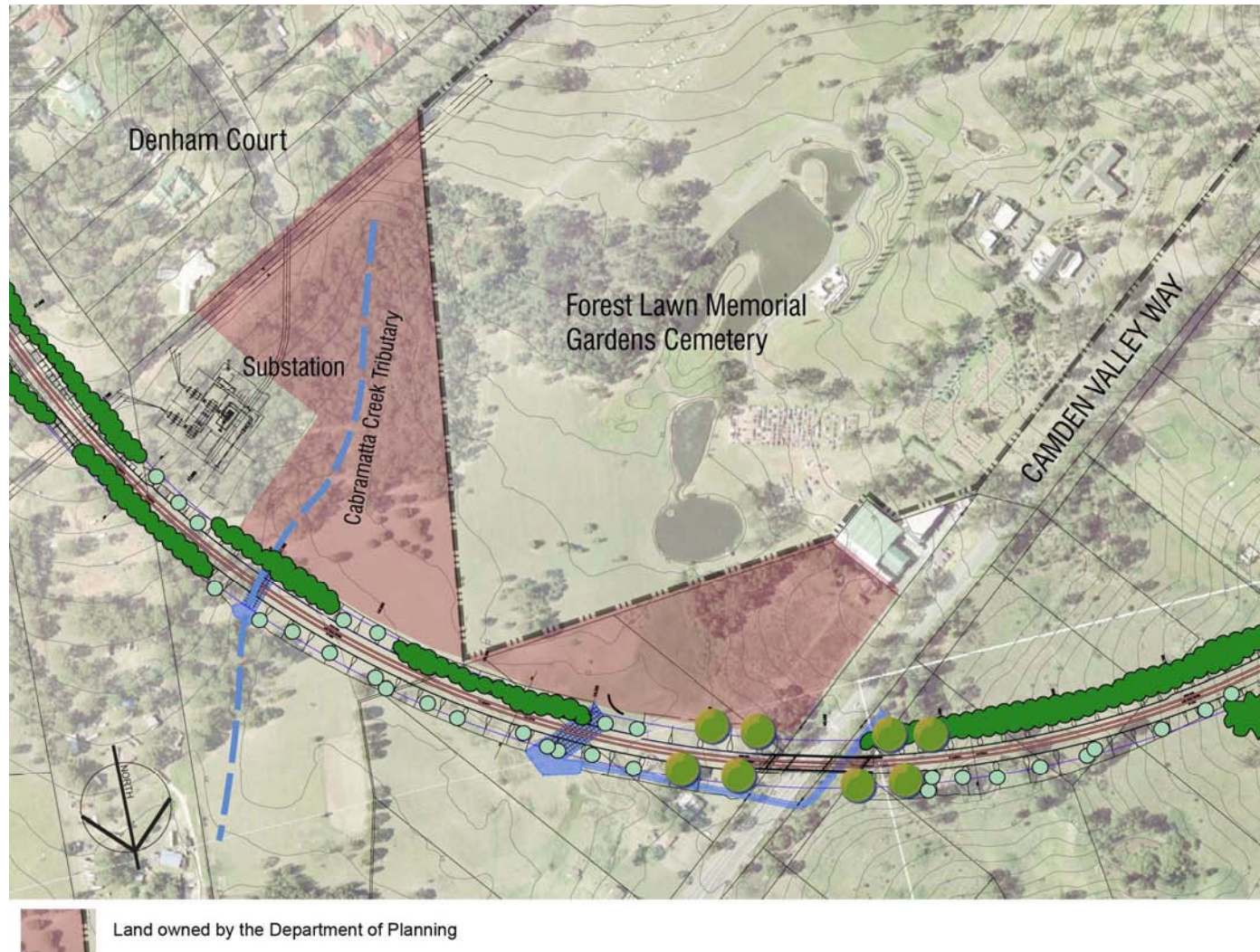
The visual impact assessment of the potential additional 13 sites has been provided in two parts: a collaborative assessment of construction sites that potentially would only have short-term impacts and individual assessments of built sites with potential for permanent impacts. With the landscaping solutions detailed below, none of the 13 sites are expected to have unacceptable visual impacts.

### 6.7.1 Forest Lawn Memorial Gardens

As discussed in Section 5.3, further assessment of the Forest Lawn Memorial Gardens has now been undertaken since exhibition of the EA and a number of engineering and landscaping solutions have been considered in order to reduce visual impacts.

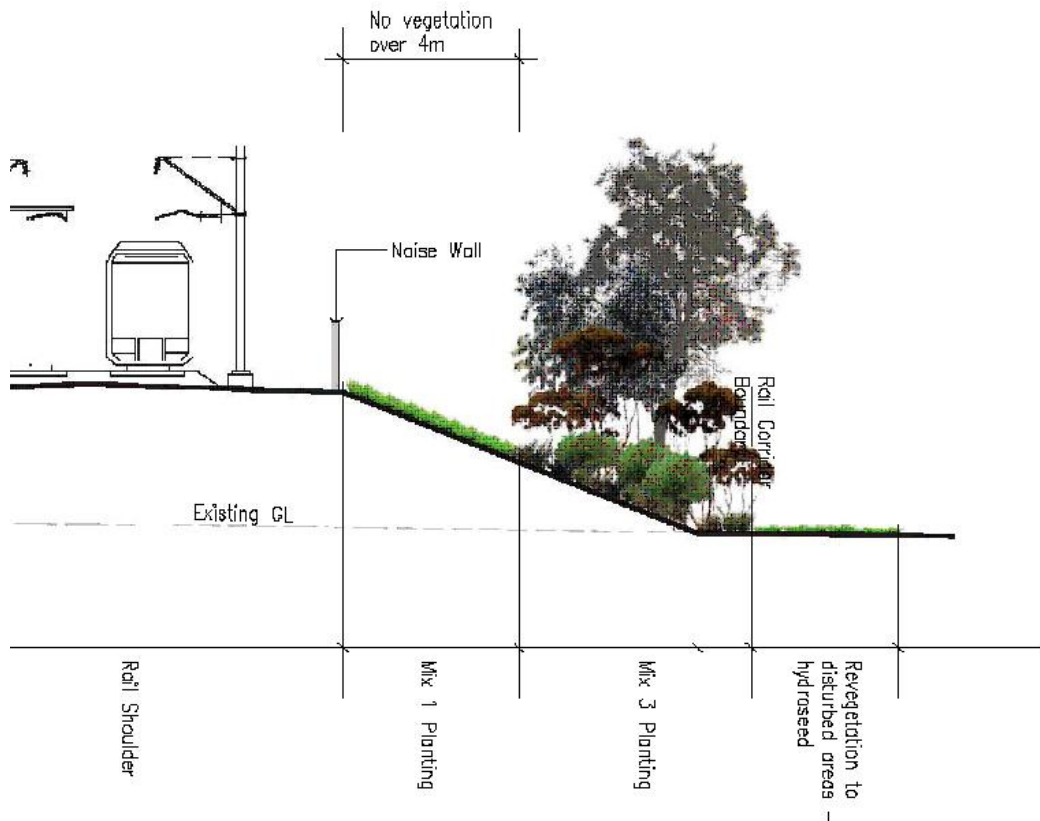
From the cemetery, the future rail line would run from north-east to north-west (as shown in Figure 6-6). The view of the rail line towards the north-east would be hidden by a substantial area of remnant vegetation, and the immediate view towards the north-west contains stands of mature vegetation. The visual impact of the rail line in this vicinity was rated as high in the EA, due to the open context of the site and limited intermediate vegetation.





**Figure 6-6 Location of Forest Lawn Memorial Gardens Cemetery**

The section of rail line in the vicinity of the cemetery would be on an embankment. The proposed landscape treatment includes providing substantial vegetative cover on the embankment. The proposed vegetation would be fully structured, consisting of a combination of native grasses, shrub species, sub-canopy and canopy trees (see Figure 6-7 and Figure 5-2).



**Figure 6-7** Typical embankment, with fully structured planting acting as a visual barrier

The current vegetation cover within the central north-western area of the cemetery contains some well advanced regrowth containing Cumberland Plain species to an approximate height of 20-25 metres (see Photograph 6-1). This stand of vegetation would provide significant visual screening to the rail line. These trees are within the area of planned cemetery expansion and would probably be removed at some point in the future. In accordance with Liverpool City Council requirements, the cemetery must re-plant any cleared trees at a ratio of 2:1. Within the next month the cemetery is required to plant 16 trees.



**Photograph 6-1**

**Advanced regrowth within cemetery; view towards rail line**

## 6.7.2 Additional 13 sites

### Construction Sites 1.1, 2.1, 3.2, 3.3, 4.1, 4.2, 4.4, 4.5, 5.1

Sites 1.1, 2.1, 3.2, 3.3, 4.1, 4.2, 4.4, 4.5 and 5.1 relate to works associated with construction activities and as such have been assessed together, as works would only be temporary. The construction of these additional sites may cause temporary adverse visual amenity impacts for surrounding residents and land uses, rail commuters (with respect to works within the vicinity of Glenfield Junction) and occupants of vehicles using nearby roads.

The impact of the project on individual sensitive receivers would be dependent on the stage of the project, their location and the severity of the impact. Visual amenity impacts during construction of the project would be greatest at locations where residential/sensitive receivers have an unscreened view of the construction sites.

In general, it is anticipated that the majority of sensitive receivers located within close proximity to the additional sites would experience a temporary reduction in visual amenity. Mitigation measures outlined in Section 14.8.1 of the EA would be implemented for these additional sites.

Sites 1.3 and 4.3 require additional land to accommodate built components of the project and therefore could potentially have long-term impacts, they have been assessed separately from the construction sites. Individual assessments of these sites are detailed below.

#### Site 1.3

Additional land is required in order to realign the current proposed access road north of Croatia Avenue, in order to comply with the masterplan for this area. It is not considered that this would have a large additional impact on the visual amenity of nearby receivers, in the context of the overall SWRL works and the expected change in landscape due to the Edmondson Park development.

Additional screen planting may be required along the road to mitigate short distance views (refer to Section 6.10 Site 4.3)

Additional land has been included in order to accommodate additional car parking at Leppington Station. In the context of the current masterplan for Leppington and the building of the SWRL, it is not considered that this would have a major additional impact on the visual amenity of nearby receivers.

Additional screen planting may be required in the car park to mitigate short distance views. A Landscape Plan would be prepared for the Leppington Station commuter car park as detailed in SoC No. 65.

## 6.7.3 Integral Energy substation – Site 3.1

The substation site, Site 3.1, has been addressed separately as it was the subject of a number of submissions from local residents during the exhibition period in relation to its visual impact.



The substation would now be located at the end of Cassidy Street on the north-eastern side of the easement that runs along the boundary of Denham Court (see Figure 5-3). Access would be a continuation of Cassidy Street and would cross the easement approaching the substation from the south-west. The easement already accommodates high voltage powerlines creating a border to Denham Court. Restrictions currently exist for use and planting within the easement area. Existing vegetation within the easement is height restricted and maintained at regular intervals by Integral Energy.

The substation would be located within a dense stand of existing vegetation. Sufficient space is also available within the proposed substation site to plant additional vegetation to provide further screening. Cassidy Street currently terminates at the transmission line easement with an assortment of fencing and gates. The existing views of the site are shown in Photographs 6-2, 6-3 and 6-4 below. The proposed landscaping works provide an opportunity to improve the streetscape. The volume of traffic required to service the substation would be very low.



**Photograph 6-2**

**View north-east along easement from the end of Cassidy Street**



**Photograph 6-3**

**Existing easement: view south-east towards Cassidy Street**



**Photograph 6-4 Existing condition: view looking north-west from property boundary**

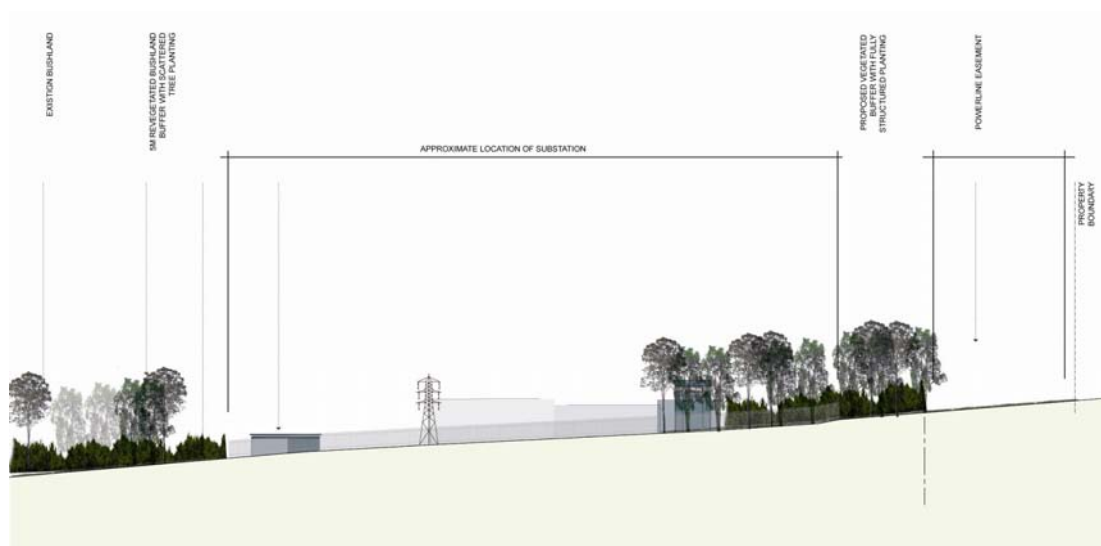
The location of the substation within a dense stand of existing vegetation would provide initial screening and reduce its potential visual impact. This, combined with planting of additional vegetation along the southern boundary of the substation, would create a substantial visual buffer (Refer to Figure 6-8 and 6-9). The location of the access road to the north of the easement would allow a portion of woodland to remain between the easement and the road, which would provide adequate screening between the substation and the closest residence. The access road and low level use by Integral Energy employees would



provide activation and improvement of the streetscape at the termination of Cassidy Street, as shown in Photograph 6-4.



**Figure 6-8 Proposed substation planting**



**Figure 6-9 Section: Proposed substation planting**

## 6.8 Other environmental issues

The following other environmental issues were assessed in the EA:

- air quality and greenhouse gases
- economic and business impacts
- groundwater and subsurface hydrology
- geotechnical, contaminated land and hazardous materials
- public safety
- disposal of waste
- services and utilities
- bushfire risk
- cumulative impacts.

The proposed design changes discussed in Chapter 5 have not altered the potential environmental impacts associated with these issues or the corresponding conclusions presented in the EA. As discussed in Section 4.5, additional investigations have been undertaken for contaminated lands, however, this was not the result of any proposed design change.

## 6.9 Additional mitigation measures

As a result of the assessment of the proposed design changes as contained within Chapter 6 of this report the following mitigation measures are proposed, covering Aboriginal heritage, noise and vibration and visual and landscaping. Specific mitigation measures are also provided for the proposed Integral Energy Substation.

### 6.9.1 Aboriginal heritage

The following additional mitigation measures are proposed:

- Site 1.1 should be incorporated into the test excavation area for Archaeological Sensitivity Area 2 in the EA
- Site 1.3 and 2.1 should be incorporated into the test excavation area for Archaeological Sensitivity Area 3 in the EA
- The Aboriginal community should be offered the opportunity to collect and relocate artefacts outside of the construction area prior to initiation of works within Site 4.3.

### **6.9.2 Noise and vibration**

The following additional mitigation measure is proposed:

- that monitoring of the substation noise be carried out at the three locations (85 Cassidy Street Denham Court, 1701 Camden Valley Way Leppington and 108 McCann Road, Rossmore) once all substations are operational in order to confirm the predicted compliance with the INP criteria.

### **6.9.3 Visual and landscaping**

The following additional mitigation measure is proposed:

- preparation of a landscape plan including additional screen planting at Site 1.3 to mitigation short distance views.

### **6.9.4 Integral Energy Substation**

The following mitigation measures are to specifically address any impacts of the proposed Integral Energy Substation.

Noise monitoring would be carried out once the substation is operational to:

- confirm the predicted compliance of transformer noise with INP criteria
- provide further information on the potential for circuit breaker and transformer noise to cause sleep disturbance.

The following additional visual impact mitigation measures would be implemented as part of the project:

- an additional visual buffer would be established along the southern boundary of the substation via a planting program
- in conjunction with the establishment of the substation access road, landscaping measures would be implemented to improve the amenity of the streetscape at the end of Cassidy Street
- to minimise light spillage on adjacent properties, the detailed design and construction of the substation would be carried out in accordance with Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting. Security lighting would be directed towards the substation and not in the direction of adjacent properties.

The following additional hydrology mitigation measures would be implemented in addition to those proposed in the EA:

- Substation construction and operation would be carried out in a manner that does not result in obstruction or fill of the creek adjacent to the site.
- Site drainage needs to be provided so that flows through the site are not impeded.

A Construction Traffic Management Plan would be prepared to manage the potential traffic impacts associated with Integral Energy substation construction.

In relation to Aboriginal heritage SWRL Site 10 has been assessed as having low research potential and low archaeological significance. However, if construction cannot be avoided in these areas and will directly impact on artefacts, the Aboriginal community should be offered the opportunity to collect and relocate artefacts outside of the construction area prior to initiation of works.



## 7. Revised Statement of Commitments

The EA for project approval (as exhibited in May/June 2010) identified a range of environmental impacts (as summarised in Table 1-1 of this report and detailed in full in Chapters 7 to 14 of the EA). Mitigation measures to minimise these impacts have informed the Statement of Commitments contained in the EA which set out the measures that TCA (the proponent) proposes to implement as part of the construction and operation of the project.

Based on the outcomes of the additional investigations detailed in Chapter 4 and the consideration of the submissions received on the project (refer Chapter 3), the draft Statement of Commitments provided in Chapter 17 of the EA has been amended and finalised (refer Table 7-1). The final Statement of Commitments presented in Table 7-1 describes the measures that TCA (the proponent) will commit to during the pre-construction, construction and operational phases of the project to manage the impacts identified in the EA and the subsequent issues identified during the preparation of this Submissions and Preferred Project Report. The following definitions apply in relation to the Statement of Commitments:

- pre-construction — work relating to the project that includes detailed design, survey, acquisitions, fencing, investigative drilling or excavation, unexploded ordinance surveys, building/road dilapidation surveys, minor clearing (except where threatened species, populations or ecological communities would be affected), Aboriginal heritage investigations and salvage of Aboriginal heritage items, service relocation and protection, establishing ancillary facilities, such as site compounds, or other relevant activities determined to have minimal environmental impact (e.g. minor access roads)
- construction — all work relating to the project other than that defined as pre-construction activity/work (including commissioning trials of equipment)
- operation — the operation of the new rail line and associated infrastructure, but not including commissioning trials of equipment.

The final Statement of Commitments will be considered by the DoP in its assessment of the project. Should approval be granted by the Minister for Planning, approval conditions would take into consideration the final Statement of Commitments proposed for the project.

Following project approval, the finalised SoC will guide subsequent phases of the proposed development. Any consortium or contractor selected to undertake further planning design, construction and/or operation phases of the project would be required to undertake all works in accordance with the final Statement of Commitments and the Minister's Conditions of Approval.



**Table 7-1 Final Statement of Commitments**

Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
<b>Sustainability principles</b>				
<b>Outcome:</b> <i>Project development and delivery based around core sustainability principles</i>				
<i>Demonstration of sustainability best practice to deliver the sustainability principles throughout construction and operation</i>				
Action				
1.	Resource-efficient construction methods, including post-tension concrete construction and prefabrication construction techniques, where practicable, would be used to minimise waste and resource consumption.			✓
2.	Spoil would be reused in embankments and earth mounds for noise mitigation where suitable. Topsoil would be reused on-site or for beneficial use elsewhere as appropriate.			✓
3.	Measures such as free-cooling ventilation systems and skylights would be considered for 'back of house' station office areas to maintain internal thermal comfort while reducing energy demand.			✓
4.	Subject to further cost benefit analysis and resolution of maintenance issues, renewable energy would be generated using photovoltaic cells on station roofs.			✓
5.	Station roof rainwater would be harvested for use at the stations and surrounding landscaping.			✓
6.	Energy management systems would be installed in all buildings to monitor the use of energy consumption.			✓
7.	All cleared vegetation (except weeds) would be recycled as mulch for landscaped areas on-site and elsewhere as appropriate.			✓
8.	Interpretive signage that provides information on the heritage of the area would be used at the stations.			✓
9.	The contract procurement process would recognise: <ul style="list-style-type: none"> <li>a) construction contractors with good sustainability performance</li> <li>b) contractors with apprenticeship schemes, who employ local people and disadvantaged people and/or represent small to medium sized businesses, or who use small to medium sized businesses</li> <li>c) the efficient use of water during construction to help reduce construction water demand</li> <li>d) seeking the efficient use of resources, including further reducing construction volumes and reducing the embodied energy of construction materials, particularly concrete and steel to reduce greenhouse gas emissions</li> <li>e) the extent of use of recycled materials (e.g. fly-ash)</li> <li>f) the use of healthy and safe construction materials and surface treatments and coatings.</li> </ul>			✓

Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
10.	Detailed design and construction of the project would be undertaken in accordance with TCA's <i>Sustainable Design Guidelines 2009</i> , including report updates and monitoring.			✓
11.	Carbon footprinting and life cycle assessment would be undertaken throughout design development and construction of the project in accordance with TCA's <i>Sustainable Design Guidelines and Sustainability Targets 2009</i> .			✓
<b>Design and construction strategies</b>				
<b>Outcome:</b> <i>Minimisation of environmental impacts by integrating assessment of environmental issues with development of design and construction strategies</i>				
<b>Action</b>				
12.	<p>A Construction Strategy would be developed to inform planning for, and confirm localities and footprint of construction sites. Construction methodologies would also be developed at each of the construction sites taking into account:</p> <ul style="list-style-type: none"> <li>a) surrounding sensitive land uses</li> <li>b) existing environmental constraints/sensitivities</li> <li>c) ease of access to the arterial road network.</li> </ul> <p>Any changes to the areas impacted by construction sites following project approval would be subject to further environmental impact assessment to determine any new or modified impacts, including final estimates of vegetation clearing to inform the finalisation of the biodiversity offsets strategy.</p>		<p>✓</p> <p>(Statement of Commitment No.B2)</p>	
<b>Land use, property and infrastructure planning</b>				
<b>Outcome:</b> <i>Integration of transport and land use</i>				
<b>Action</b>				
13.	Liaise with the DoP (Sydney Region West) and Campbelltown City Council about the land use implications of the project for the Glenfield area.	<p>✓</p> <p>(Statement of Commitment No B6)</p>		

Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
<b>Communication processes &amp; stakeholder management</b>				
<i>Outcome: A clear framework for the effective delivery of community and stakeholder involvement</i>				
<b>Action</b>				
14.	<p>A Community and Stakeholder Involvement Plan would be established prior to construction commencing. The plan would then be implemented throughout the delivery of the project. The plan would include, but not be limited to:</p> <ul style="list-style-type: none"> <li>a) identification of community and other stakeholders to be informed/consulted as part of the project</li> <li>b) details of procedures and mechanisms that would be used to regularly inform the community and other stakeholders of the progress of the project and issues of interest to the community</li> <li>c) details of how directly affected property owners would be consulted throughout the project</li> <li>d) processes to receive and manage feedback and complaints</li> <li>e) project phone, email and mail contact details (including a 24 hour contact number for urgent enquiries/complaints)</li> <li>f) details of community based forums that would be held to address key community and environment issues of interest/concern to the community. The community would be encouraged to participate in community based forums to assist in identifying further opportunities to improve project outcomes and/or reduce the impacts associated with the project.</li> </ul>		<p>✓</p> <p>(Statement of Commitment No B3)</p>	
<b>Environmental management systems</b>				
<i>Outcome: Project development and delivery to a high level of environmental compliance and performance</i>				
<b>Action</b>				
15.	The design and construction of the works would be undertaken in accordance with ISO 14001, an Environmental Management System (EMS) consistent with TCA's EMS, or a formally recognised equivalent.			✓
16.	A Pre-Construction and Pre-Operation Compliance Report would be prepared prior to construction and operations respectively, and submitted to the proponent and the Director-General of the DoP. During construction, a Construction Compliance Report would be prepared at 6 monthly intervals and submitted to the proponent and the Director-General of the DoP.			✓
17.	An Environmental Impact Audit Report (Construction) would be prepared and submitted to the Director-General within 3 months of completion of construction. This report would provide a comparison of the impacts predicted in the EA and the actual impacts that arise from the construction of the project, and any lessons learned during the construction phase.			✓

Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
18.	A CEMP would be prepared prior to construction, which would outline the proposed processes and procedures and temporary environmental protection measures to mitigate the impact of construction activities. The CEMP would be consistent with the Statement of Commitments and the Minister's Conditions of Approval (MCoA) and include the conditions of any licences issued by government authorities.			✓
<b>Land use, property and infrastructure planning</b>				
<b>Outcome:</b> <i>Integration of transport and land use</i>				
<b>Action</b>				
19.	Consultation would be undertaken with local councils, DoP, RailCorp and other relevant agencies responsible for locality and precinct planning regarding implementation of appropriate development controls and appropriate zoning within the vicinity of the rail line and the stabling facility.	✓ (Statement of Commitment No B5)		
20.	The proponent, RailCorp and DoP would work together to produce a site masterplan for the Rossmore Train Stabling Facility that addresses the following issues: a) existing and future access (McCann Road / Bringelly Road), including car parking for staff and visitors and bus drop-offs (staff) b) landscaping and tree planting c) materials storage areas d) any proposed future extension of the SWRL e) noise mitigation and appropriate land use planning around the stabling facility.			✓
21.	Land use and property impacts of temporary construction sites and facilities would be further assessed in consultation with DoP, local councils and surrounding land owners and incorporated as part of the CEMP prior to the commencement of construction.		✓ (Statement of Commitment No B7)	
22.	A Land Asset Management Plan to address land surplus to use, post-construction, would be developed jointly with DoP (and local councils where relevant). This plan would investigate opportunities for land amalgamation of parcels severed by the SWRL and identify opportunities for development that are consistent with land use planning, in particular the South West Growth Centre Structure Plan.	✓ (Statement of Commitment No B9)		

Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
23.	Liaison with DoP, local councils, RailCorp and land owners involved in future precinct planning in the South West Growth Centre would be undertaken with an aim of ensuring the design of the project can: <ul style="list-style-type: none"> <li>a) be consistent with and may inform the development of precinct planning, particularly around stations and the stabling facility</li> <li>b) facilitate connectivity across the corridor to mitigate severance impacts, including future opportunities for pedestrian, cycleway and vehicular crossings</li> <li>c) accommodate any planned co-location of utilities within the rail corridor, where feasible</li> <li>d) accommodate future planned utility crossings of the corridor.</li> </ul>		✓ (Statement of Commitment No B10)	
24.	The proponent shall develop and implement a strategy for undertaking relevant building condition surveys prior to the commencement of construction. A copy of building condition surveys undertaken shall be provided to respective property owners.			✓
25.	The proponent shall be responsible for the protection of all council assets significantly affected by the project during project construction (landscaped areas, street furniture, footpaths) and for these to be restored to a pre-existing condition once the project is completed.			✓

#### Traffic, transport, parking and access

**Outcome:** Stations (including interchanges, commuter parking and other facilities) are planned to provide for short - medium term future traffic, transport and access requirements.  
Future assessment to minimise traffic and transport impacts during construction and operation

Action				
26.	Measures to mitigate impacts of the various work sites on pedestrians and cyclists would be incorporated into the Traffic Management and Traffic Control Plans.			✓
27.	Any change to construction traffic access routes as identified in this EA would be subject to further assessment by the proponent, in consultation with the RTA and local councils.			✓
28.	Vehicle access to properties not being wholly resumed for construction of the project would be maintained throughout construction.			✓
29.	A detailed construction methodology for the crossing of the Hume Highway, Campbelltown Road and Camden Valley Way would be developed in consultation with the RTA with the aim of minimising traffic disruptions.	✓ (Statement of Commitment No B18)		



Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
30.	The proponent, in consultation with the RTA, would develop an emergency response plan to address the crossing of the Hume Highway. The plan would, as a minimum, include provision of an emergency-use 2-way crossover, which would be subject to an assessment of all relevant environmental impacts in consultation with DoP.			✓
31.	Ongoing consultation would be carried out with DoP, Transport NSW, local councils, RailCorp, RTA and Landcom (at Edmondson Park) regarding the planned transport provision at the station interchanges (parking, bus, taxi, kiss and ride) and future demand requirements. Specifically during the construction period, any revised precinct planning information or demand forecasting would be evaluated to determine its impact on interchange facilities being provided by the proponent.			✓
32.	Interchanges would be designed to allow for the efficient provision of bus services, avoiding dead-ends wherever possible, and maximising the potential for continuous travel paths.			✓
33.	The final location of the proposed commuter car parking at Leppington and Edmondson Park stations would be determined during detailed design in consultation with DoP (at Leppington), Landcom (at Edmondson Park), RailCorp, Transport NSW and local councils. Any change to the car park locations as presented in the EA and Submissions and Preferred Project Report would be subject to further assessment, and based on the following location criteria: a) Modal priority access provisions as contained in the <i>Guidelines for the Development of Public Transport Interchange Facilities</i> (Ministry of Transport, September 2008) b) Parking must integrate appropriately with the adjacent town centre and transport interchange c) Parking sites are to be selected to minimise impacts in relation to biodiversity, water resources and heritage.			✓
34.	Parking provision at Edmondson Park and Leppington stations would be determined with consideration of bus service provision and land use development patterns in consultation with DoP, Landcom, RailCorp, Transport NSW and Councils.		✓ (Statement of Commitment No B12)	
35.	Edmondson Park and Leppington stations would incorporate bicycle storage facilities at each station. Pedestrian and cycle access across the project corridor would also be provided at each road crossing.		✓ (Statement of Commitment No B13)	

Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
36.	Integration of the project with future pedestrian and cycle networks would be incorporated into the detailed design stage following consultation with DoP, Transport NSW, local councils, RailCorp, RTA and Landcom (at Edmondson Park).			✓
37.	Maintenance access points would be further developed and refined during the detailed design process in consultation with RailCorp, DoP and local councils.		✓ (Statement of Commitment No B15)	
38.	Prior to construction, a spoil management strategy would be prepared detailing final construction spoil quantities, spoil movements and opportunities for beneficial reuse within the project and other local construction projects and town centre developments.			✓
39.	The proponent would prepare a Construction Traffic Management Plan in consultation with local councils and the RTA that achieves the following outcomes: a) Maximise the use of the SWRL corridor for construction traffic b) Safe and accessible movement of construction vehicles to and from the SWRL project site. c) Minimise disruption to traffic flow along roads and at intersections in the vicinity of the project site. d) Maintenance of the existing road pavement condition of roads that cross the SWRL corridor to minimise dilapidation as a result of the increased construction traffic. e) Upgrade of any intersections that are proposed as the main haulage routes in accordance with the <i>South West Rail Link Traffic - Transport Assessment of Design Changes Since Environmental Assessment report</i> (Parsons Brinckerhoff, July 2010).			✓
40.	In the event that temporary closure of Dickson Road, Rickard Road and/or Eastwood Road is required to allow for a more efficient construction method, an access strategy would be prepared in consultation with Camden Council and relevant property owners to minimise impacts on local traffic access.			✓
41.	The proponent will upgrade the intersection of Macdonald Road and Campbelltown Road in consultation with the RTA to provide a new road linking with Edmondson Park Station.			✓

Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
<b>Hydrology and surface water</b>				
<b>Outcome:</b> Further assessment of hydrology and surface water to inform future design development and deliver good environmental outcomes				
<b>Action</b>				
42.	A Floodplain Risk Management Plan would be prepared prior to construction to address the potential impacts of flooding to rail infrastructure and operations at Edmondson Park Station.			✓
43.	Campbelltown City Council would be consulted on the design of Waterway Crossing 1 to achieve compatibility with Council's potential plans to construct a flood detention basin or to be compatible with the existing flood behaviour.			✓
44.	Track drainage, including cross drainage, in the vicinity of the Sydney Water Supply Canal would be designed to the satisfaction of the Sydney Catchment Authority.			✓
45.	Where the rail alignment crosses the floodplain, diversion drains would be provided to manage flood impacts within the SWRL corridor to manage flood impacts on adjacent properties.			✓
46.	The reliability and security of available flood evacuation routes and other flood emergency measures during construction and operation would be evaluated as part of detailed design in consultation with the RTA and local councils.			✓
47.	Flood mitigation for the project would be finalised during detailed design, taking into consideration the assumptions on future rainfall contained within <i>Climate change in Australia: impacts, adaptation and vulnerability</i> (CSIRO, 2007) or any successive Australian Government endorsed climate change data.			✓
<b>Flora and fauna</b>				
<b>Outcome:</b> Assessment and management of biodiversity impacts is consistent with the regional approach to biodiversity management within the South West Growth Centre (i.e. results in maintenance or improvement of biodiversity values).				
<b>Action</b>				
48.	A Flora and Fauna Management Plan would be prepared prior to construction and incorporated into the CEMP. As a minimum, the plan would address: <ul style="list-style-type: none"> <li>a) staff and contractor inductions to address the location of sensitive biodiversity</li> <li>b) vegetation clearing and fauna relocation protocols</li> <li>c) a revegetation program</li> <li>d) weed control and pest management</li> <li>e) a monitoring program.</li> </ul>			✓

Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
49.	Detailed design of waterway crossings and structures would be undertaken with reference to the <i>Guidelines for Design of Fish and Fauna Friendly Waterway Crossings</i> (Fairfull and Witheridge, 2003) and <i>Fish Passage Requirements for Waterway Crossings</i> (Fairfull and Witheridge, 2003) and considering the quality of riparian habitat present, in consultation with Industry and Investment NSW (the former Department of Primary Industries (NSW Fisheries)) and other relevant government agencies.	✓  (Statement of Commitment No B21)		
50.	The proponent would work with the DoP, DECCW and the Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA) to ensure that construction of the project is undertaken in accordance with the provisions of the Conservation Agreement for the Edmondson Park Defence lands.			✓
51.	Prior to detailed design, a biodiversity offsets strategy, incorporating the identification of potential offset sites, would be developed by the proponent in consultation with the DoP and DECCW that responds to impacts on "non certified lands" identified in the SWRL EA and the Submissions and Preferred Project Report (Parsons Brinckerhoff, May 2010). The strategy would be consistent with the Biodiversity Certification of the <i>State Environmental Planning Policy (Sydney Region Growth Centres) 2006</i> and the strategic assessment for the SWGC currently being undertaken by DEWHA and DoP. The strategy may also include options for "biobanking" in accordance with <i>Biodiversity Banking and Offsets Scheme 2009</i> (DECCW).			✓

#### Heritage

**Outcome:** Future design development and assessment minimise impacts on Aboriginal and historic heritage; and proposed management measures are consistent with established protocols and guidelines

Action			
52.	A Heritage Management Plan would be prepared in consultation with Aboriginal Stakeholders and local councils prior to construction and incorporated into the CEMP. The Heritage Management Plan would address: <ul style="list-style-type: none"> <li>a) the impact mitigation and management requirements for Aboriginal and historic heritage</li> <li>b) details of any additional archaeological investigations to be undertaken and any associated licences or approvals required</li> <li>c) procedures to be implemented if previously unidentified Aboriginal or historic objects are discovered during construction</li> <li>d) an education program for construction personnel on their obligations for Aboriginal cultural materials and historic items.</li> </ul>		✓

Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
53.	A Heritage Interpretation Plan would be developed for the project in consultation with the Aboriginal community and local councils, and incorporated into architectural elements or urban design treatments.			✓
54.	An Aboriginal Participation Plan would be developed prior to construction and implemented for the project in accordance with the NSW Government's <i>Aboriginal Participation in Construction Guidelines</i> (applicable to all projects commencing after 1 January 2007).			✓
55.	Further assessment would be undertaken for the Sydney Water Upper Canal (near Cowpasture Road) during detailed design to confirm impact mitigation and management requirements. This assessment would inform the measures incorporated in the Heritage Management Plan and would take into consideration the <i>Conservation Management Plan for the Upper Canal, Pheasant's Nest to Prospect Reservoir</i> (Higginbotham 2002).		✓ (Statement of Commitment No B27)	
56.	Further assessment would be undertaken for Macquarie Field House and the Ingleburn Army Camp during detailed design to confirm impact mitigation and management requirements. This assessment would inform the measures incorporated in the Heritage Management Plan.			✓
57.	A program of test excavation would be undertaken throughout the impact zone of the project in areas of high archaeological sensitivity to determine the density and type of archaeological deposits and to obtain a representative sample of the artefacts expected.			✓

#### Noise and vibration

**Outcome:** Design development and assessment adopt best practice measures to minimise construction and operational noise and vibration impacts

Action				
58.	Construction noise and vibration management would be addressed as part of the Construction Noise and Vibration Management Plan (CNVMP), based on the principles in <i>Construction Noise Strategy (Rail Projects)</i> (TCA, November 2007), as amended, for construction noise management and consistent with relevant NSW construction noise guidelines.			✓
59.	Compliance monitoring of operational noise predictions would be undertaken at representative properties where the LAeq(9hour) 55 dBA level is predicted to be exceeded (with the recommended in-corridor noise mitigation options) as listed in Table 14 of Technical Paper 1 (SWRL EA, Parsons Brinckerhoff May 2010). This would be undertaken three to six months after opening and following the introduction of the SWRL train timetable to determine if actual operational noise levels match the predicted levels. A further assessment of potential mitigation measures outside the corridor (e.g. measures at dwellings) would be undertaken in consultation with affected property owners, and agreed solutions commenced within 12 months of operations.			✓



Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
60.	Final reasonable and feasible operational noise mitigation measures would be implemented to achieve compliance with established project-specific goals that have been determined with reference to the <i>Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects</i> (Department of Environment and Climate Change, 2007). These goals would be determined prior to the commencement of operation, taking into account the role of land use planning solutions (including zoning and building design controls), in consultation with RailCorp, DoP, Landcom, DECCW and local councils. The proponent would undertake consultation with the community on the final proposed measures.			✓
61.	The following would be undertaken for operational noise associated with the train stabling facility: a) determine the extent of any physical noise mitigation measures in consultation with the DECCW and RailCorp b) review the results of investigations outlined in Statement of Commitment No.62 on options for reducing the impacts of horn noise.		✓ (Statement of Commitment No B33)	
62.	The strategy to minimise noise impacts of horn testing at the train stabling facility and the corresponding impact mitigation requirements, would be determined in accordance with the <i>Industrial Noise Policy</i> (DECCW). In the event that the following operational noise mitigation measures for reducing train horn noise including a) non-tonal audible 'quacker' style warning, b) full horn testing in a cutting west of Leppington Station and/or c) alternate measures that comply with the Industrial Noise Policy. are not endorsed by the rail operator due to operational or safety reasons, the proponent would provide an enclosure of the train stabling facility prior to the commencement of operation.			✓
63.	The CNVMP for the project would incorporate measures for protecting heritage items, including the Upper Canal, from the impacts of construction vibration, as required.			✓

#### Visual impacts, landscape and urban design

**Outcome:** Future design development and assessment are informed by best practice landscape and urban design principles and minimise visual impacts

Action				
64.	Where construction compounds and access roads would be visible from surrounding areas, visual screening would be implemented, as appropriate.			✓
65.	A Landscape Plan would be prepared prior to construction for: a) the commuter car parking at Edmondson Park and Leppington and would include the retention of existing			✓

<b>Management/ mitigation measures</b>		<b>Statement of Commitments from Concept Plan</b>	<b>Amended Statement of Commitments from Concept Plan</b>	<b>New Statement of Commitments (since Concept Plan)</b>
	trees where possible.			
	b) the Integral Energy substation			
66.	Prior to construction, the proponent and the operators of the Forest Lawn Memorial Gardens would develop a landscape planting strategy to ensure the visual screening of the SWRL when viewed from cemetery site. This may include a combination of landscape planting with the cemetery site, tree plantings on land between the rail corridor and the cemetery site and also enhanced plantings within the SWRL rail corridor.			
67.	TCA's Design Review Panel would guide the application of urban design principles throughout detailed design.		✓  (Statement of Commitment No B38)	
68.	Public art and heritage interpretation would be incorporated into architectural elements or urban design treatments and would be assessed and implemented with design themes and urban design criteria (e.g. graffiti management).	✓  (Statement of Commitment No B40)		

Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
69.	<p>The following architectural, landscape and urban design principles would be used to guide the detailed design of the stations and transport interchanges, civil works (such as noise walls, substations, embankments and bridge crossings) and the stabling facility concepts:</p> <ul style="list-style-type: none"> <li>a) The role of the stations and transport interchanges would be reinforced within their existing surrounding neighbourhood as principal transport and community facilities within the locality.</li> <li>b) Stations, the stabling facility and substations would be designed recognising the context of the scale, character and image of the existing surrounding areas and to enhance the presentation of the areas to visitors, residents and travellers.</li> <li>c) The design would maintain or improve the links across the project and to surrounding areas and activities. Where a connection between adjacent areas is desirable, pedestrian bridges or underpasses would be considered in the design.</li> <li>d) Easy access facilities would be incorporated into the station designs and integrated with the associated transport interchanges.</li> <li>e) Movement networks should improve existing, or establish new comfortable and inviting pedestrian environments, including equitable access within the railway stations and adjoining areas.</li> <li>f) A design theme would be established for bridges and the Glenfield Southern Flyover to link the overall rail design together. The design would ensure that the structures are simple, integrated with the surrounding area and finished to a high quality. Fencing, parapets and any railing on the bridges would also be integrated with the overall design.</li> <li>g) Public transport and other non-car based travel should be given priority connection to the railway stations and their adjoining areas where possible.</li> </ul> <p>These issues would be addressed in consultation with DoP (in relation to the interface between the rail corridor / stabling facility and surrounding precincts, and between the Leppington Station and future town centre) and with Landcom (in relation to the Edmondson Park station and future town centre).</p>		<p>✓</p> <p>(Statement of Commitment No B37)</p>	
70.	<p>The proponent would liaise with Landcom to achieve an interchange and future town centre design that integrates with the concourse level at Edmondson Park Station. In addition, the proponent would liaise with Landcom to confirm that future road crossings to the east and west of the station can be integrated with the project.</p>			<p>✓</p>

Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
71.	Measures to mitigate visual impacts and deliver high quality design outcomes would be applied through detailed design and would include: a) Where noise walls are proposed, potential visual impacts would be minimised by implementation of urban design measures, to be developed in consultation with adjacent land owners. (Mitigation might include plantings and high quality facings near residential areas and the planned town centres.)		✓ (Statement of Commitment No B39)	
	b) Earth mounding would be considered where space allows and where significant vegetation would not be lost.	✓ (Statement of Commitment No B39(b))		
72.	Light spill would be minimised where feasible to reduce impacts on surrounding existing and future residents in accordance with relevant standards.		✓ (Statement of Commitment No. B39(d))	
<b>Air quality</b>				
<b>Outcome:</b> Construction and operation adopt best practice measures, to minimise construction and operational air quality impacts				
<b>Action</b>				
73.	Air quality management measures would be incorporated into the CEMP prior to construction to address management of dust during construction, emissions from construction plant and vehicles and any other fugitive emissions.			✓
<b>Public safety and security</b>				
<b>Outcome:</b> Crime Prevention Through Environmental Design (CPTED) guidelines are adopted in future design development to address potential impacts on public safety and security				
<b>Action</b>				
74.	All construction compounds and work areas would be fenced off to prevent public access during construction.			✓
75.	NSW Police CPTED and RailCorp guidelines would be applied to all elements of the project to guide the design of appropriate lighting, fencing of the railway corridor, security measures (including surveillance cameras), graffiti management, help points at stations and other issues.		✓ (Statement of Commitment No. B43 and B39)	

Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
<b>Services and utilities</b>				
<i>Outcome: The project addresses potential impacts on utilities and services</i>				
<b>Action</b>				
76.	A Services and Utilities Sub Plan would be developed prior to construction and would: a) identify existing services and utilities around the work sites and provide guidance in the event of an unexpected disruption to utilities and services b) be developed in consultation with relevant utility owners to ensure that any re-locations are undertaken in accordance with relevant requirements and/ or guidelines.			✓
77.	The final layout of power supply infrastructure would be determined following the completion of the Power Supply Strategy currently being prepared by RailCorp.			✓
78.	Appropriate protection and risk management procedures would be established to protect utilities (such as the Sydney Water Supply Canal and Moomba Gas pipelines).	✓ (Statement of Commitment No. B44)		
<b>Groundwater, salinity, erosion and sediment control</b>				
<i>Outcome: Further assessment is completed to inform future design development and minimise potential risks associated with saline soils and groundwater</i>				
<b>Action</b>				
79.	Measures to control soil erosion and run-off would be detailed as part of the CEMP. The plan would be consistent with the principles and practices outlined in <i>Managing Urban Stormwater: Soils and Construction</i> (Landcom 2006).			✓
80.	Detailed geotechnical investigations would assess groundwater levels and groundwater and soil quality to identify risks to the durability and stability of subsurface structures associated with perched groundwater, high groundwater levels, saline groundwater and saline soils. Detailed geotechnical investigations would also address potential contamination sources associated with grenade unexploded ordinance and munitions. The findings of the investigations relating to groundwater are to be provided to the NSW Office of Water for further assessment of the need for any licencing.		✓ (Statement of Commitment No. B45)	
81.	Prior to the commencement of construction a salinity assessment would be undertaken in accordance with the Growth Centres Development Code and the Western Sydney Regional Organisation of Councils (WSROC) <i>Western Sydney Salinity Code of Practice</i> (2002), with any recommendations integrated into a Salinity Management Plan and incorporated into the CEMP.			✓



Management/ mitigation measures		Statement of Commitments from Concept Plan	Amended Statement of Commitments from Concept Plan	New Statement of Commitments (since Concept Plan)
82.	The location, sizing, and design of sediment basins for use during construction would be confirmed during detailed design, in consultation with DoP, Councils, Industry and Investment NSW, and DECCW, prior to the commencement of construction. Any sediment basins required for permanent operation would be confirmed with DoP prior to the commencement of operations.			✓
<b>Contaminated land and hazardous materials</b>				
<i>Outcome: Assessment of potential contamination within the SWRL corridor and, where appropriate, identification of mitigation and management measures</i>				
<b>Action</b>				
83.	A Phase 2 Contamination assessment would be undertaken prior to construction to determine the nature, extent and degree of any contamination or hazardous materials within the area of works. The assessment would be prepared in accordance with relevant DECCW guidelines, and would include a contingency plan to be implemented in the case of the unanticipated discovery of contaminated material during construction.		✓ (Statement of Commitment No. B46)	
84.	Contaminated material identified during any detailed assessment would be managed, classified and disposed of appropriately in accordance with all relevant legislation and guidelines, including the <i>Protection of the Environment Operations Act 1997</i> , the <i>Waste Avoidance and Resource Recovery Act 2001</i> and <i>Waste Classification Guidelines</i> (DECC 2008).			✓
<b>Environmental hazards and risks</b>				
<i>Outcome: To minimise environmental hazards and risk associated with the project</i>				
<b>Action</b>				
85.	Environmental hazards and risk management (including bushfire risk) would be incorporated into the CEMP prior to construction.			✓
<b>Integral Energy Substation</b>				
86.	Further consultation would be undertaken during detailed design with the local community regarding the landscape / visual treatments of the Integral Energy substation.			✓



## 8. Conclusions and next steps

### 8.1 Conclusions and recommendations

This Submissions and Preferred Project Report has documented and considered the submissions received on EA and outlined TCA's response to the submissions, as required under Section 75H (6) of the EP&A Act. This Submissions and Preferred Project Report also provides details of additional investigations and proposed design changes (refer Chapters 4 and 5 respectively) that have been made since the EA exhibition. This Submissions and Preferred Project Report has addressed the outcomes of the consultation process conducted during the public exhibition of the EA for project approval of the SWRL Glenfield to Leppington rail line project (the project).

The report demonstrates compliance with legislative requirements and the requirements of the consultation process in that:

- TCA has considered all issues arising from the submissions and provided a written response to the issues (refer Chapter 3 and Appendices C and D)
- additional investigations have been undertaken in response to internal and external stakeholder requests, generally with a view to improving the environmental performance of the project or to address uncertainties in the EA. In some instances, the investigations respond to the additional design development that has occurred since the EA exhibition (see Chapter 4)
- design changes made to the project following the exhibition have been justified by demonstrating how each modification is either relatively minor and/or provides additional benefits to the project design described in the EA (refer Chapters 5 and 6)
- the final SoC, amended as a result of the submissions received and additional investigations undertaken, demonstrates TCA's commitment to minimising environmental impacts (refer Table 7-1).

In consideration of the above, it is proposed that the project, as described in Chapter 6 of the EA, and amended by this report, should be submitted for determination by the Minister for Planning.

The revised Statement of Commitments provided in Table 7-1 will establish the appropriate environmental framework for the project to be undertaken in a sustainable manner.

### 8.2 Next steps

As a result of the responses TCA has provided to the public submissions and the additional investigations and proposed design changes, it is anticipated that the DoP will be in a position to prepare the Director-General's Assessment Report for the project. The Director-General's Assessment Report will provide advice and recommendations to the Minister for Planning with regard to the determination of the application made for approval of the project under Part 3A of the EP&A Act.

The Minister for Planning will then determine whether to grant or refuse the project approval sought under Section 75J of the EP&A Act.

Should the project be approved by the Minister for Planning, TCA will continue its consultation with community members, government agencies and other stakeholders during the pre-construction and construction phases of the project. TCA's commitment to ongoing stakeholder consultation is reflected in the Statement of Commitments provided in Chapter 7. An overview of the consultation activities that would be undertaken by TCA during the pre-construction and construction phases of the project is provided in Chapter 2.

## 9. References

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Department of Planning 2008, *Development near rail corridors and busy roads – interim guideline*

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NSW Government 2007, *Aboriginal Participation in Construction Guidelines*

NSW Government 2010, *Metropolitan Transport Plan – Connecting the City of Cities*, February 2010

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Transport Construction Authority 2007, *Construction Noise Strategy (Rail Projects)*.

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