northwestraillink

Tallawong Road, Rouse Hill
Rapid Transit Rail Facility

State Significant Infrastructure
Environmental Impact Statement

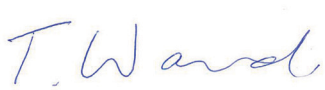
Submitted to Department of Planning and Infrastructure on behalf of Transport for New South Wales

Volume 1 of 1 July 2013

NSW | Transport for NSW

JBA Urban Planning Consultants Pty Ltd operates under a Quality Management System. This report has been prepared and reviewed in accordance with that system. If the report is not signed below, it is a preliminary draft.

This report has been prepared by: Tim Ward



Date 29/07/13

This report has been reviewed by: Gordon Kirkby

Date 29/07/13

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Application Details

Applicant name	Transport for New South Wales
Applicant address	8 – 12 Castlereagh Street, Sydney NSW 2000

Land to be developed

Lot and DP	Street Address
27/30186	47 Tallawong Road, Rouse Hill
28/30186	51 Tallawong Road, Rouse Hill
29/30186	57 Tallawong Road, Rouse Hill
28/39341	5 Oak Street, Schofields
29/39341	2 Oak Street, Schofields
27/39341	68 Gordon Street, Schofields
26/30186	31 Tallawong Road, Rouse Hill
16/39303	51 Schofields Road, Schofields
17/39303	53 Schofields Road, Schofields
18/39303	55 Schofields Road, Schofields
19/39303	57 Schofields Road, Schofields
20/39303	59 Schofields Road, Schofields
21/39303	61 Schofields Road, Schofields
25/27220	63 Schofields Road, Schofields
24/27220	65 Schofields Road, Schofields
23/27220	67 Schofields Road, Schofields

Proposed development	Rapid Transit Rail Facility as described in Section 3.0 of this Environmental Impact Statement

Prepared by

Name	Tim Ward
Qualifications	BSc, Masters of Enviornmental Management
Company	JBA Urban Planning Consultants Pty Ltd
Address	Level 7, 77 Berry Street, North Sydney
In respect of	State Significant Infrastructure Application

Certification

I certify that I have prepared the content of this EIS and to the best of my knowledge:

- it is in accordance with Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*;
- all available information that is relevant to the environmental assessment of the development to which the statement relates; and
- the information contained in the statement is neither false nor misleading.

Signature

Name	Tim Ward
Date	29 July 2013

Executive Summary

Purpose of this Report

This submission to the Department of Planning and Infrastructure (the Department) comprises an Environmental Impact Statement (EIS) for a State significant infrastructure (SSI) application under Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP& A Act). It relates to the development of a Rapid Transit Rail Facility (RTRF) for the stabling and maintenance of rapid transit trains at Tallawong Road, Rouse Hill.

The project is State significant infrastructure by reason of clause 1 of Schedule 3 of *State Environmental Planning Policy (State and Regional Development) 2011*. Transport for New South Wales (TfNSW) as both the proponent and the relevant determining authority has determined that the infrastructure is "likely to significantly affect the environment".

A request for the issue of Director-General's Environmental Assessment Requirements (DGRs) was sought on Tuesday 9 April 2013. Accordingly, the DGRs were issued on 3 June 2013.

Background

The North West Rail Link (NWRL) project, which has been the subject of two State significant infrastructure approvals, will deliver a new rapid transit high frequency single deck train system between Cudgegong Road, Rouse Hill and Chatswood. The NWRL includes eight new stations, approximately 15.5 kilometres of tunnels from Epping to Bella Vista, a four kilometre elevated 'Skytrain' (viaduct) between Bella Vista and Rouse Hill, and conversion of the existing Epping to Chatswood Rail Link.

The State significant infrastructure application for Stage 1 including major civil construction works (EIS1) was approved on 25 September 2012, and the Stage 2 State significant infrastructure application for stations, rail infrastructure and systems works (EIS2) was approved on 8 May 2013. The EIS1 and EIS2 SSI Approvals both include the development of a train stabling and maintenance facility at Tallawong Road, Rouse Hill to support the operations of the NWRL.

Sydney's Rail Future – Modernising Sydney's Trains was released by the NSW Government on 20 June 2012 and is integral to the NSW Long Term Transport Master Plan. Under the plan NWRL rapid transit trains will continue on to the Sydney CDB via a second Sydney Harbour rail crossing, and sectors of the existing suburban rail network will subsequently be converted to rapid transit rail, requiring the development of additional associated infrastructure and service facilities.

Overview of the Project

The NSW Long Term Transport Master Plan envisages a future rail network for Sydney which includes single-deck rapid transit trains (such as those on the NWRL) operating across multiple sections of the existing and future network. This SSI Application seeks approval for an expanded train stabling and maintenance facility at Tallawong Road, Rouse Hill which is capable of servicing an expanded network of single-deck trains.

In brief, this SSI Application seeks approval for the following:

- Site preparation works including bulk earthworks, demolition and tree removal.

- Construction and operation of a RTRF including train stabling, train maintenance, infrastructure maintenance, and operations in support of the rapid transit network, including:
  - Up to approximately 23 rail sidings with stabling capacity for 45 trains.
  - train wash facility.
  - wheel lathe.
  - workshop facilities.
  - approximately four tracks for infrastructure maintenance trains.
  - train delivery track.
  - a section of track to test trains for service.
  - maintenance and infrastructure storage areas.
  - administration, staff training and staff amenities buildings.
- An Operations Control Centre (within the administration building) to monitor and control operations for the rapid transit network.
- Vehicular access, internal roads and staff car parking.
- Substations.
- Communications tower.
- On-site stormwater detention and treatment ponds.

This SSI Application does not include the works associated with the diversion of and modifications to Tallawong Road as those works will proceed under the Schofields Road Upgrade (Stage 1), SSI-5100 and SSI-5414 approvals. Similarly, this SSI Application does not include any future development of the vacant land within the south-eastern corner of the site or the future transport corridor, both of which would be subject to separate approvals processes once the proposed developments have been defined.

The RTRF would operate 24 hours per day, seven days per week and, at capacity, will provide stabling for 45 trains and maintenance services for a fleet of 76 trains. Detail of the proposed infrastructure and its operation is provided in **Section 7.0** of this EIS.

The Site

The subject site is 35.48 hectares in area and is bounded generally by Tallawong Road, Schofields Road, First Ponds Creek and Oak Street. Approximately two-thirds of the site is currently owned by TfNSW, which is in the process of acquiring the remaining parcels of land. The subject site is currently used for a mix of rural-residential, low-intensity agriculture and market garden land uses, with some stands of vegetation located within the northern portions of the site and in the vicinity of First Ponds Creek. A detailed description of the site is provided in **Section 5.0**.

Planning Context

Development for the purpose of rail infrastructure facilities by or on behalf of a public authority (i.e. TfNSW) is permissible without development consent on any land under clause 79 of *State Environmental Planning Policy (Infrastructure) 2007*. TfNSW, as proponent and determining authority for the activity, has determined that the Rapid Transit Rail Facility proposal is likely to significantly affect the environment, thus requiring an EIS. This triggers clause 1 of Schedule 3 of *State Environmental Planning Policy (State and Regional Development) 2011* and the project is declared to be State significant infrastructure.

Section 3.0 of this EIS considers all applicable legislation in detail. The proposal is consistent with the requirements of all relevant State Environmental Planning Policies (SEPPs).

Consultation

In preparing this EIS, consultation has been undertaken with the general public, NSW Government Agencies and local interest groups. Issues raised through this consultation included:

- consideration of relocating the facility.
- consideration of impacts to surrounding existing and proposed land uses.
- implications for performance of the new Schofields Road and Tallawong Road intersection.
- likely noise, dust and traffic impacts from the proposed facility.
- size of the workforce.
- the planning processes and further opportunities for comment and feedback.

Agencies and local community groups have also been consulted to inform the specialist assessments. Contributors to the assessments have included:

- Roads and Maritime Services.
- Sydney Water.
- Endeavour Energy.
- Deerubbin Local Aboriginal Land Council (DLALC).
- Darug Aboriginal Cultural Heritage Assessments (DACHA).
- Darug Custodian Aboriginal Corporation (DCAC).
- Darug Tribal Aboriginal Corporation (DTAC).

The EIS has taken into consideration and addressed the issues identified through the consultation process within relevant sections of the assessment.

Environmental Impacts and Mitigation Measures

This EIS provides an assessment of the environmental impacts of the project in accordance with the DGRs and sets out the undertakings made by TfNSW to manage and minimise potential impacts arising from the development.

Key issues which have been considered in the design and environmental assessment of this project include:

- ecological impact
- noise and vibration
- traffic and transport
- soil and water
- Indigenous and European heritage
- visual impact
- flooding and stormwater quality
- local business and economic impacts

Detailed assessment of the potential impacts of the project is included in **Sections 9** to **21** of this EIS. Where required and available, mitigation measures have been

included to appropriately manage the potential impacts of the proposal and these are summarised in **Section 23.** An environmental risk analysis has been undertaken to provide an assessment of the potential impacts, consider the effects of reasonable and appropriate mitigation measures and present the nature and extent of likely residual impacts. This analysis did not identify any additional key issues for the EIS. The analysis is presented in **Section 22**.

Project Justification and Conclusion

The proposal provides for a Rapid Transit Rail Facility for train stabling, train maintenance, and rail infrastructure maintenance that is capable of supporting the needs of Sydney's rapid transit rail network into the future. The proposed RTRF meets the operational and technical specifications required by Transport for New South Wales and would be compatible with approved development and potential future extension of the NWRL

The RTRF would be progressively developed to expand in line with Sydney's rapid transit network, with operations commencing in conjunction with the NWRL and growing as the rapid transit network expands. The development of the RTRF would be consistent with the strategic framework for transport and metropolitan planning.

This EIS addresses the DGRs issued for the RTRF SSI Application (SSI 13_5931) and demonstrates consistency with the principles of ecologically sustainable development (**Section 24.5**). The assessment of the proposed RTRF is that the potential impacts of the development are acceptable and can be appropriately managed or mitigated.

1.0 Introduction

This EIS is submitted to the Department of Planning and Infrastructure pursuant to Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in support of a State significant infrastructure (SSI) Application for the development of a Rapid Transit Rail Facility (RTRF) at Tallawong Road, in the localities of Schofields and Rouse Hill.

For the purposes of the EP&A Act, infrastructure development for which the public authority is both the proponent of the activity and the determining authority is declared as State significant infrastructure (SSI) in Schedule 3 of *State Environmental Planning Policy (State and Regional Development) 2011*, where the determining authority is of the opinion that the development is likely to significantly affect the environment. Transport for NSW (TfNSW) has formed the opinion that the RTRF is likely to significantly affect the environment, and as such the RTRF proposal is declared to be SSI and is required to be assessed and determined under Part 5.1 of the EP&A Act. A SSI application was made for the RTRF by TfNSW to the NSW Department of Planning and Infrastructure (DP&I) on 9 April 2013.

This EIS has been prepared in accordance with the requirements of Part 5.1 of the EP&A Act, Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), and the Requirements of the Director General of the DP&I for the preparation of the EIS, which were issued on 3 June 2013 are included at **Appendix A**. This EIS should be read in conjunction with the supporting information and plans appended to and accompanying this report.

The report has been prepared by JBA, for the proponent, TfNSW and is based on the engineering drawings prepared by AECOM (**Appendix B**) and supporting technical documents provided by the expert consultant team.

1.1 Overview of Proposed Development

TfNSW proposes to develop a purpose built train stabling and maintenance facility to support Sydney's new rapid transit rail network. The RTRF would be located on 36 hectares of land between Tallawong Road, Schofields Road and First Ponds Creek in the localities of Schofields and Rouse Hill.

The RTRF would be constructed in phases with capacity for 20 trains at opening and a final design capacity to stable 45 eight car train sets and maintain a fleet of 76 eight car train sets. The facility would be a secure facility operating 24 hours a day, seven days a week.

This SSI Application specifically seeks approval for the construction and operation of the following works:

- Train stabling facilities.
- Train maintenance facilities including those required for cleaning, inspection, preventative maintenance, corrective maintenance, component repair and major overhauls of rolling stock.
- Train wash and wheel lathe.
- A section of track to test trains for service.
- Facilities for maintenance and repair of rail systems, equipment and infrastructure.
- Warehousing for spare parts, tools and equipment.
- Administration, staff facilities and training facilities, including an Operations Control Centre, for the rapid transit network.

- Ancillary buildings and structures as required for security services, power supply systems, refuse disposal, hazardous material storage, stormwater management and pollution control.
- Bulk power sub-station and transformer facilities with secure access.
- Internal access and maintenance roads.
- Safeguarding for a future transport corridor to Marsden Park.

The proposed indicative site layout at full development of the RTRF is illustrated at **Figure 1** and provided in greater detail at **Appendix B**.

1.2 The Proponent

The proponent for the RTRF is Transport for New South Wales (TfNSW), which is the lead agency for transport in NSW, with primary responsibility for:

- Customer experience.
- Transport coordination.
- Transport policy and planning.
- Transport services.
- Transport infrastructure.

TfNSW takes the lead on all policy and planning functions of the former Transport NSW, RailCorp, Transport Construction Authority, Roads and Maritime Services (RMS), Sydney Ferries and the Public Transport Ticketing Corporation.

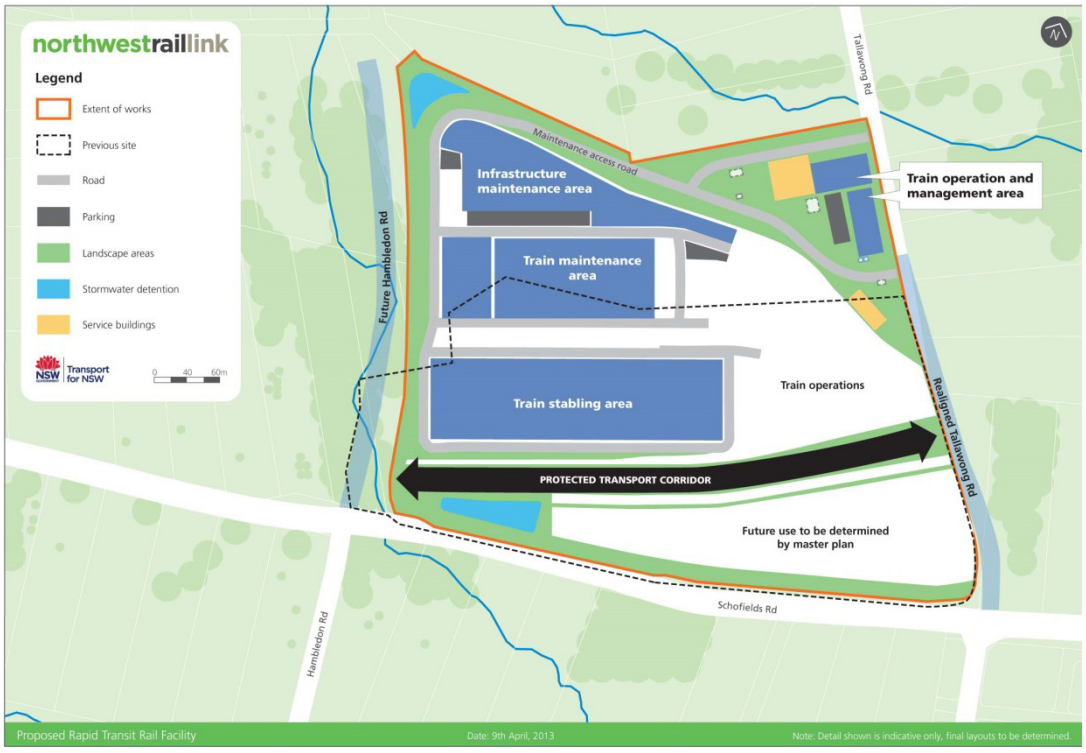


Figure 1 – Proposed indicative site layout plan (end state)

1.3 Background to the Development

1.3.1 Sydney's Rail Future: Modernising Sydney's Trains

Sydney's Rail Future: Modernising Sydney's Trains, released in June 2012, sets the long term strategy to increase the capacity of Sydney's rail network through investment in new services and upgrading of existing infrastructure. The rapid transit network will comprise single-deck rolling stock operating along the length of the North West Rail Link (NWRL), the proposed second Sydney Harbour crossing and on portions of the Bankstown and Hurstville/Illawarra lines (**Figure 2**). The rapid transit network will be integrated with the existing Sydney Trains and NSW Trainlink networks to allow passengers to interchange across services throughout the rail network.

The operational and land requirements for the rapid transit network are being progressed in accordance with the NSW Long Term Transport Master Plan, released in December 2012. *Sydney's Rail Future* forms an integral component of this master plan.

The rapid transit services will commence operations between Chatswood and Cudgegong Road, Rouse Hill – on what is known as the North West Rail Link (NWRL). *Sydney's Rail Future* envisages that rapid transit trains will be largely stabled and maintained at a purpose built facility at the western end of the NWRL (i.e. the Tallawong Road RTRF).

The RTRF is to cater for future expansion of the rapid transit system, including a proposed future second Sydney Harbour crossing and rapid transit rail link to Sydney's southern suburbs. The facility will be constructed progressively in accordance with demand from the rapid transit network and would ultimately provide stabling for 45 trains and maintenance facilities for a fleet of 76 trains. The balance of the fleet would be stabled at another location south of the Harbour to be determined as part of the future conversion of selected lines to rapid transit.

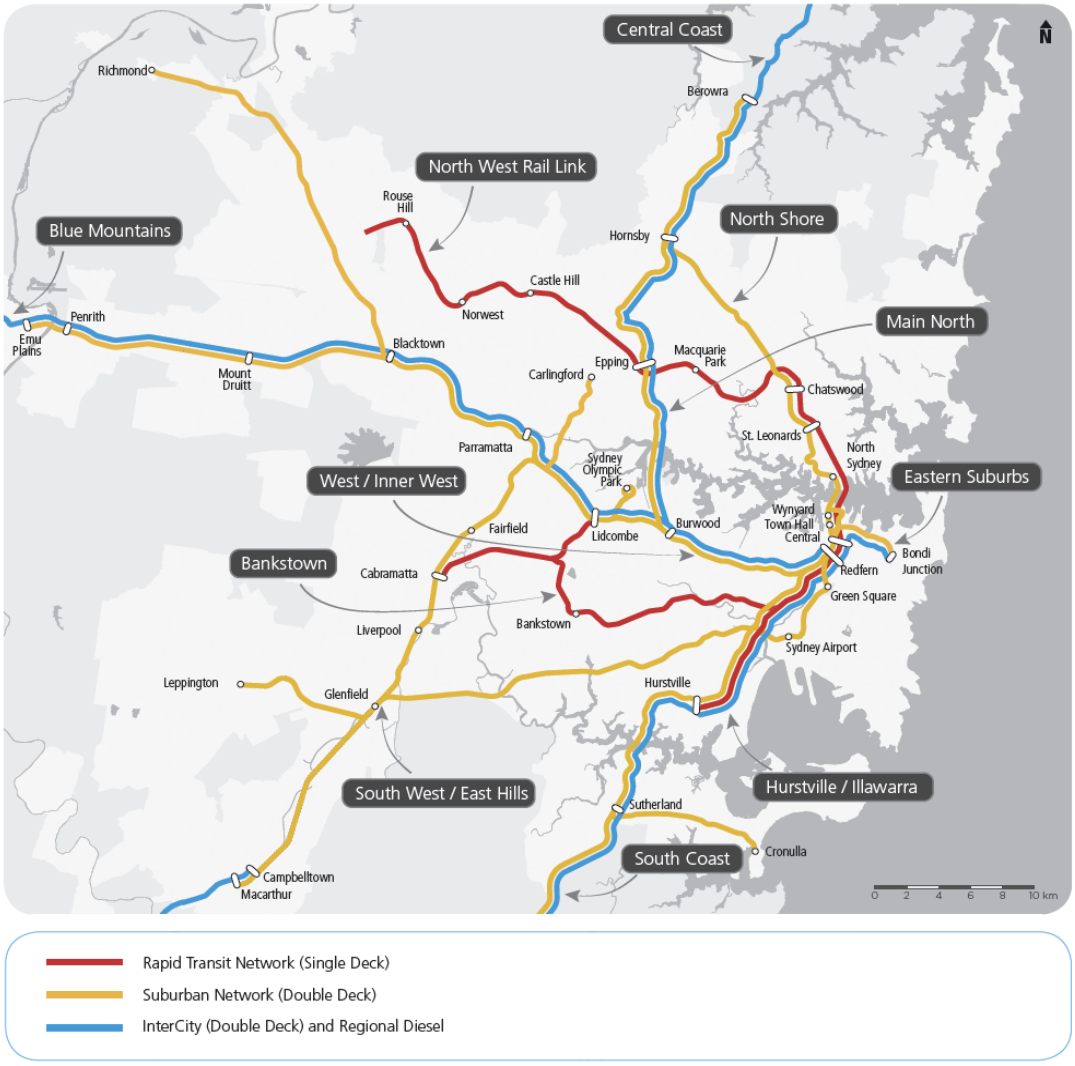


Figure 2 – Three-tiered rail network under *Sydney's Rail Future*

1.3.2 The North West Rail Link

The North West Rail Link (NWRL) project has been identified by the NSW Government as a key priority railway transport infrastructure project. The NWRL comprises an electrified railway with services operating between Chatswood and Tallawong Road, Rouse Hill, and will include the construction of a new two-track alignment from Epping to Rouse Hill, 23 km in length with eight new stations and associated services.

Concept approval for the NWRL project was granted by the then Minister for Planning on 6 May 2008. The Concept Plan Approval is taken to be a Staged Infrastructure Approval under Part 5.1 of the EP&A Act. Planning approval for the NWRL has, however, been sought independently of the Concept Approval in two stages as State Significant Infrastructure under Part 5.1 of the EP&A Act. The first stage (EIS1) comprises major civil construction works, including tunnelling, and was approved by the Minister for Planning and Infrastructure on 25 September 2012. The second stage (EIS2) relates to the rail stations, rail infrastructure, systems, trains and operations, and was approved by the Minister for Planning and Infrastructure on 8 May 2013.

EIS 1 included approval for the major civil construction works including:

- Two 15.5 km rail tunnels between Epping and Bella Vista, linking directly into the Epping to Chatswood Rail Line (ECRL) tunnels.
- Stabling area at Tallawong Road, Rouse Hill.
- Excavation works for underground railway station construction.
- Above ground construction, including the 4.2 km skytrain viaduct structure between Bella Vista and Rouse Hill.

EIS2 includes approval for the operation of the railway as well as the construction of those elements of NWRL not approved under EIS1:

- Any additional land take for station precinct works (such as road works, pedestrian/cycle facilities, landscaping).
- Train maintenance facility and activities at Tallawong Road, Rouse Hill.
- Operation of trains.
- Operation and construction of:
  - Stations.
  - Station precincts.
  - Services facilities.
  - Stabling facility at Tallawong Road.
  - Rail infrastructure and systems.

The approved route and stations for the NWRL are illustrated in **Figure 3**.

Among the benefits of the NWRL, the new rail link will provide:

- Rail access for approximately 400,000 residents in north west Sydney to Epping, Macquarie Park, Chatswood, St Leonards, North Sydney, the Sydney Central Business District (CBD) and beyond.
- New rail services to existing suburbs in the Hills District as well as future areas of planned development for the north west.
- Improved travel time reliability compared with bus and private car.
- Travel time savings from many areas of the north west region to the CBD and Macquarie Park, and within the region, including to the Rouse Hill Town Centre.
- An increase in services to Macquarie University and Macquarie Park.
- Reduced bus congestion in the Sydney CBD.

The EIS1 and EIS2 approvals include a stabling facility located beyond Cudgegong Road Station on a smaller site located within the Tallawong Road RTRF site.

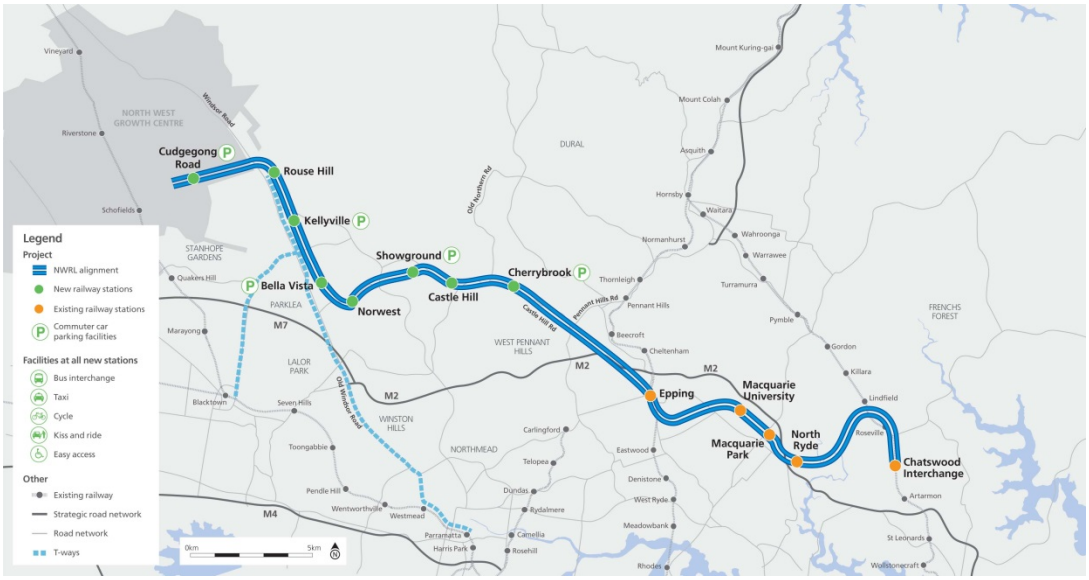


Figure 3 – North West Rail Link

1.4 Relationship between NWRL and RTRF

The NWRL project planned for a train stabling facility on land west of Tallawong Road, Rouse Hill. The environmental assessment for the NWRL Tallawong Stabling Facility was contained in the Major Civil Construction Works Environmental Impact Statement (EIS 1 – March 2012) and Stations, Rail Infrastructure and Systems Environmental Impact Statement (EIS 2 – October 2012). This stabling and maintenance facility was designed to satisfy the stabling and maintenance requirements of the NWRL operations only, and involves a smaller project footprint which sits within that of the subject site for the currently proposed RTRF.

As discussed above, *Sydney's Rail Future: Modernising Sydney's Trains* plans for Sydney's current and future rail network to operate as a three-tier system, with a new rapid transit network operating across the Sydney metropolitan area. This new tier of the rail system will require dedicated infrastructure independent of the current suburban rail system, including facilities for train stabling and maintenance, as well as maintenance of rail infrastructure.

Whilst the RTRF will provide stabling and maintenance capabilities for the NWRL, the facility will also accommodate rolling-stock operating on other portions of Sydney's future rapid transit rail network. The RTRF would ultimately operate as a metropolitan-scale facility, in addition to its operation in the short term as a dedicated facility for the NWRL.

Whilst the RTRF will not become fully operational until the delivery of other components of the rapid transit network, it is essential that the RTRF be planned for and approved in its entirety to allow for consideration of the project in strategic planning for the local area and for efficient management and delivery of Sydney's broader rail network. This approach will allow for the coordinated progression of operations within the facility to meet the needs of Sydney's future rail network, rather than relying on piecemeal additions and extensions to the facility over time.

1.5 Project Team

An expert project team has been engaged by TfNSW to undertake the design and environmental assessment of the RTRF proposal.

Proponent	Transport for New South Wales (TfNSW)
Environmental Planning	JBA
Project Management	WSP
Traffic and Transport	GTA Consultants
European Heritage	Artefact
Indigenous Heritage	Artefact
Land Use, Local Business and Community Analysis	JBA
Visual and View Analysis	JBA
Stormwater and Flooding	SLR Consulting
Ecology	SLR Consulting
Noise and Vibration	SLR Consulting
Air Quality	Todoroski Air Sciences
Services and Utilities	Diversi Consulting

2.0 Strategic Context and Project Objectives

This section of the EIS identifies the strategic framework for the Rapid Transit Rail Facility (RTRF) in terms of government transport and land use policy, and identifies how these policies inform the project objectives.

2.1 Introduction

The NSW State Plan, *NSW 2021: A Plan to Make NSW Number One*, is the primary policy document guiding government action on urban and transport policy in NSW. The NSW State Plan charged TfNSW with the preparation and delivery of a comprehensive transport plan for Sydney. This plan was delivered in December 2012 through the finalisation of the *NSW Long Term Transport Master Plan* and *Sydney's Rail Future: Modernising Sydney's Trains*. These policies identify Sydney's strategic transport objectives and needs, and specifically commit to the construction of the North West Rail Link (NWRL) as a medium-term action and the construction of the second Sydney Harbour crossing as a long-term action.

The construction of the second Sydney Harbour crossing will allow extension of the NWRL into the Sydney CBD and connection through to a wider rapid transit network with the long-term conversion of the Bankstown and Hurstville lines of the existing network. This long-term outcome will see single-deck, frequent, high capacity services operating across Sydney and integrating with the existing suburban and intercity rail networks.

The strategic context established in the long-term transport planning documents above informs the project objectives. That is, the objective of the RTRF is to provide support for the entire rapid transit network, as set out in the *NSW Long Term Transport Master Plan* and *Sydney's Rail Future: Modernising Sydney's Trains.*

2.1.1 NSW 2021

NSW 2021 outlines the NSW State Government's five principal strategies for the State over the next decade. The five strategies are to:

- **Rebuild the economy** – restore economic growth and establish NSW as the 'first place in Australia to do business'.
- **Return quality services** – provide the best transport, health, education, policing, justice and family services, with a focus on the customer.
- **Renovate infrastructure** – build the infrastructure that makes a difference to both our economy and people's lives.
- **Strengthen our local environment and communities** – improve people's lives by protecting natural environments and building a strong sense of community.
- **Restore accountability to Government** – talk honestly with the community, return planning powers to the community and give people a say on decisions that affect them.

There are a number of goals specifically aimed at improving access and transport across the State. Common aims and themes across these goals are maximising the efficiency and effectiveness of public transport, and for active transport systems – including increasing utilisation, enhancing customer experience, integration across modes and desired origin/destination points and improving the frequency and reliability of services. Overall these combine as a general intent to raise the accessibility, attractiveness, and hence utilisation, of the public transport system.

The RTRF would support these strategies and goals by:

- Facilitating the expansion of Sydney's rail network into the North West Growth Centre under the NWRL project.

- Providing additional stabling and maintenance capacity to support future extensions across Sydney Harbour and through the CBD.
- amplifying capacity of existing network components for faster and more frequent trains.

Goal 8 of NSW 2021 aims to increase patronage on public transport resulting in reduced traffic congestion, improved travel times and significant environmental benefits. In order to increase patronage, public transport needs to deliver an attractive, convenient and efficient choice for commuters. To achieve this, the RTRF would play a key role in improving the efficiency of the network through rolling-stock maintenance and would improve the customer experience by providing trains which are clean and reliable.

As part of Goal 8, TfNSW are expanding and amplifying public transport networks to support population growth in metropolitan centres, allowing communities to access jobs and services closer to home. The NWRL, in the medium-term, and the development of a rapid transit network connected to the NWRL by a proposed future second Sydney Harbour crossing, forms a key part of this objective.

2.1.2 NSW Long Term Transport Master Plan

The *NSW Long Term Transport Master Plan* was released in December 2012. The Plan defines the direction for transport planning for the next 20 years, and sets the framework for transport and policy decisions to enable the NSW Government to deliver an integrated, modern transport system that puts the customer first. Solutions and actions are identified to respond to key challenges and to integrate, modernise, grow and manage the transport system in the short, medium and long term.

Sydney's Rail Future is an integral element of the *NSW Long Term Transport Master Plan*.

2.1.3 Sydney's Rail Future: Modernising Sydney's Trains

As outlined in **Section 1.3.1**, *Sydney's Rail Future* is the strategic blueprint for Sydney's rail network and is enabled by the *NSW Long Term Transport Master Plan* and the *State Infrastructure Strategy*. This plan involves:

- Single deck, rapid transit trains on the NWRL project.
- Upgrade of the Epping-Chatswood Rail Link to a high capacity rapid transit system.
- Procurement of rolling stock for the new rapid transit single deck train system initially operating between the North West and Chatswood, with a cross-platform interchange to suburban services for those customers travelling to the CBD.
- A new second Sydney Harbour crossing and a new Sydney CBD line, allowing services from the NWRL to extend directly to the Sydney CBD.
- Conversion and integration of select southern sector lines into the rapid transit network.

Sydney's Rail Future is a long term plan to increase the capacity of Sydney's rail network through investment in new services and upgrading existing infrastructure. Stages 3, 4 and 5 of *Sydney's Rail Future* include completion of the NWRL, a second Sydney Harbour crossing and new CBD line and extension of the new single deck service to the Bankstown and Hurstville lines. The RTRF is a key component of the long-term rapid transit network set out in *Sydney's Rail Future*, and will provide for efficient delivery of the operational control, maintenance, and stabling services for the NWRL and in support of the broader rapid transit network. *Sydney's Rail Future* requires the provision of significant new infrastructure throughout the network, including the provision of a stabling and maintenance facility which is capable of servicing the new single-deck rolling stock and providing support for the rapid transit network, including the NWRL in the medium term.

2.1.4 State Infrastructure Strategy

The NSW Government released the *State Infrastructure Strategy* in December 2012 following input from Infrastructure NSW. The *State Infrastructure Strategy* identifies key infrastructure projects identified in the *NSW Long Term Transport Master Plan*. This includes the completion of the NWRL, construction of the second Sydney Harbour crossing and the conversion of southern sector rail lines to rapid transit as key stages in the delivery of transport infrastructure.

The *State Infrastructure Strategy* places timeframes around the delivery of key infrastructure projects. The NWRL is to be constructed by late 2019 while the construction of the second Sydney Harbour crossing and new Sydney CBD rail capacity will follow.

Under the *Infrastructure NSW Act 2011*, Infrastructure NSW will prepare a Five-Year State Infrastructure Plan alongside the 2013-14 NSW State Budget.

2.1.5 Metropolitan Planning Context

The Draft Metropolitan Strategy for Sydney 2031 establishes the vision for the Sydney metropolitan region over the period to 2031. The draft Strategy was prepared in conjunction with the NSW Long Term Transport Master Plan and the State Infrastructure Strategy. The draft Strategy prioritises housing and jobs growth across Sydney, and recognises the importance of key locations or 'city shapers' that will play an important role in shaping future growth across greater Sydney. The draft Strategy will replace the Metropolitan Plan for Sydney 2036 which also included the NWRL as a key transport infrastructure component.

Transport and Infrastructure

The city shapers will help to ensure the right transport and infrastructure are close to places where people live and work. These include the Global Economic Corridor, which will be extended towards Norwest and Parramatta CBD, and the North West Rail Link corridor.

The draft Strategy recognises that good transport infrastructure, high levels of accessibility and cross regional connectivity are critical for Sydney to sustain its global status. The draft Strategy promotes coordination with the Long Term Transport Master Plan and State Infrastructure Strategy and supports the infrastructure and service improvements that will deliver connectivity and accessibility across the city.

The Rapid Transit Rail Facility is integral to key initiatives of the Long Term Transport Master Plan and will support the Draft Metropolitan Strategy objectives to improve accessibility and connectivity to major employment hubs.

North-West Growth Centre

Building on the strategic planning for the region over the past decade, under the Draft Metropolitan Strategy for Sydney land release and development in the North West Growth Centre will provide for 54,000 new dwellings over the two decades to 2031. At a subregional level this will see a dramatic transformation of the subject site's surrounds as the area urbanises to accommodate Sydney's growth. This change will have direct implications for the context and land use framework in which the RTRF exists.

North West Rail Link Corridor Strategy

The North West Rail Link Corridor Strategy, jointly prepared by DP&I and TfNSW (March 2013), is a guide for future development around the eight new stations of the NWRL. It provides a vision for how the areas surrounding the train stations could be developed to integrate new homes and jobs. The corridor strategy includes a draft structure plan for each of the eight new train station precincts.

The draft structure plans look at the current constraints, controls, opportunities and predicted growth, and present a vision for each area for the next 20-25 years. The corridor

strategy has been prepared to coordinate development across three local government areas – The Hills, Blacktown and Hornsby.

The new rail link will make the corridor an even more attractive area to live and work. An objective of the corridor strategy is to maintain and improve current lifestyles, while allowing for well-planned future growth. The corridor strategy will guide development to maintain, enhance and establish sustainable, well-connected communities, close to jobs, transport and facilities.

Draft Cudgegong Road Structure Plan

The Draft Cudgegong Road Structure Plan was exhibited by the NSW Department of Planning and Infrastructure between 16 March 2013 and 30 April 2013 as part of the overall North West Rail Corridor Strategy. This framework applies to the subject site and land generally bound by First Ponds Creek, Schofields Road, Windsor Road and Guntawong Road.

The RTRF is located on land for which employment uses are proposed under the draft structure plan. Lands to the north of this site are proposed to be predominately low density residential. Land to the east in the vicinity of Cudgegong Road Station will be a range of mixed use commercial and medium density residential development.

2.2 Project Objectives

The objectives of the RTRF are as follows:

- Provide a facility for train stabling, train maintenance, and rail infrastructure maintenance, that is capable of supporting the needs of Sydney's rapid transit rail network into the future.
- Meet the operational and technical specifications required by Transport for New South Wales.
- Be compatibile with approved development and potential extension of the NWRL.
- Permit the progressive development of the RTRF to expand in line with Sydney's rapid transit network, with operations commencing in conjunction with the NWRL and growing as the rapid transit network expands.
- Appropriately manage and mitigate any environmental impacts of the proposal as far as is reasonably practicable.

2.3 Strategic Project Justification

Sydney's transport systems needs to modernise and adapt in response to the city's changing urban form and customer needs. *NSW 2021* places emphasis on increasing public transport patronage in existing and new urban areas to improve travel times and improve customer experience.

Ageing infrastructure together with patronage growth on Sydney's rail network has demanded long-term planning for the network which is embodied in the *Long Term Transport Master Plan* and in *Sydney's Rail Future*. Under these policy documents, which will be implemented through the State Infrastructure Strategy, a third-tier of heavy rail will be developed with frequent, faster single-deck trains operating initially on the NWRL. In the medium-long term, this rapid transit network will be extended into the Sydney CBD via the proposed second Sydney Harbour crossing and through to selected southern lines.

The strategic vision for Sydney's future public transport networks cannot be progressed without the development of appropriate infrastructure to support this vision. The development of a new train stabling, train maintenance and infrastructure maintenance facility is essential for the proposed rapid transit network as there is no existing facility capable of servicing the planned single-deck rolling stock. In light of the above, it is clear

that the development of the RTRF is consistent with the strategic framework for transport and metropolitan planning.

Whilst the RTRF will provide stabling and maintenance capabilities for the NWRL, the facility will also accommodate rolling-stock operating on other portions of Sydney's future rapid transit rail network. The RTRF would ultimately operate as a metropolitan-scale facility, in addition to its operation in the short term as a dedicated facility for the NWRL. The RTRF would therefore provide maintenance, servicing and stabling role which is broader and more extensive than that provided by the Tallawong Road maintenance and stabling facility approved under the NWRL apprvoals for SSI-5100 and SSI-5414.

Whilst the RTRF will not become fully operational until the delivery of other components of the rapid transit network, it is essential that the RTRF be planned for and approved in its entirety to allow for consideration of the project in strategic planning for the local area and for efficient management and delivery of Sydney's rail network. This approach will allow for the coordinated progression of operations within the facility to meet the needs of Sydney's future rail network, rather than relying on piecemeal additions and extensions to the facility over time.

3.0 Statutory Planning and Assessment Framework

This section of the EIS describes the Commonwealth, State and Local Government legislation, regulations and environmental planning instruments which apply to the proposed development and form the framework for the environmental assessment of the RTRF.

3.1 Commonwealth Legislation and Approvals

3.1.1 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) requires assessment and approval of certain actions that have, or will have, or are likely to have a significant impact on a matter of National Environmental Significance, including listed threatened species and ecological communities. The EPBC Act prescribes the Commonwealth's role in environmental assessment for controlled actions which trigger an approval from the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities.

The Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) have previously advised that the NWRL is a controlled action due to potential impacts on listed threatened species and communities requiring assessment and approval under the EPBC Act before it can proceed. Approval under the EPBC Act was granted on 11 April 2013 subject to six conditions to mitigate and offset the potential impacts of the NWRL.

A strategic certification for the North West and South West Growth Centres under the Commonwealth (EPBC Act) legislation was approved by the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities on 28 February 2012.

The RTRF is on land certified under the Growth Centres Biodiversity Certification. Clearing of vegetation on this land is therefore enabled under the strategic certification. The RTRF project does not require further referral under the EPBC.

3.2 State Legislation

3.2.1 Environmental Planning and Assessment Act 1979

Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) establishes an assessment and approval regime for projects which are 'State significant infrastructure' (SSI). Part 5.1 applies to development that is declared to be SSI by either the order of the Minister (which amends a SEPP (Section 115U(4))), or is declared under a SEPP (Section 115U(2)).

Under Section 115U(2) of the EP&A Act, development that may be declared to be SSI is development of the following kind that a SEPP permits to be carried out without development consent under Part 4:

> *(a) Infrastructure;*
> *(b) Other development that (but for this Part and within the meaning of Part 5) would be an activity for which the proponent is also the determining authority and would, in the opinion of the proponent, require an environmental impact statement to be obtained under Part 5.*

Under Section 115U(4) of the EP&A Act, specified development on specified land is declared to be SSI if it is so specified by a SEPP or by an order of the Minister that amends a SEPP for that purpose.

As discussed at **Section 3.3.1** below, the RTRF proposal is declared to be SSI in accordance with *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP) and by reason of Section 115U(2), and therefore Part 5.1 of the EP&A Act applies.

3.2.2 Threatened Species Conservation Act 1995

The *Threatened Species Conservation Act 1995* (TSC Act) lists endangered species, populations and ecological communities and provides for their protection.

In December 2007, the NSW Minister for Climate Change, Environment and Water (Environment) conferred, under Section 126H of the TSC Act, biodiversity certification on *State Environmental Planning Policy (Sydney Region Growth Centres) 2006* (Growth Centres SEPP). The RTRF is located on land to which the Growth Centres SEPP applies, and so is subject of the biodiversity certification.

Under Section 126I of the TSC Act development for the purposes of State significant infrastructure on biodiversity certified land does not require an assessment of the impact of the infrastructure on biodiversity values as part of the approval under Part 5.1 of the EP&A Act.

Section 13 considers the RTRF in relation to the biodiversity certification of the Growth Centres SEPP.

3.2.3 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) provides for the regulation of activities that cause pollution (including air, water and noise pollution) and the prosecution of people or corporations who cause pollution.

Chapter 3 of the POEO Act provides for the licencing of certain activities by the Environment Protection Authority (EPA), including:

- Scheduled activities, being activities listed in Schedule 1 of the POEO Act.
- Scheduled development works, being works designed to enable scheduled activities to be carried out.

Clause 33 of Schedule 1 of the POEO Act relates to Railway Systems Activities and specifies that the following activities are scheduled activities for which an Environment Protection Licence (EPL) is required:

> *(a) the installation, on site repair, onsite maintenance or on site upgrading of track, including the construction or significant alteration of any ancillary works, or*
> *(b) the operation of rolling stock on track.*
>
> ***Track means** railway track that forms part of, or consists of, a network of more than 30 kilometres of track, other than railway track that is used solely by railway vehicles that are themselves used solely for heritage purposes.*

If an EPL would be required for the construction and operation of the RTRF, then in accordance with Section 115ZH of the EP&A Act the EPL must be consistent with the terms of the SSI Approval granted under Section 115ZB of the EP&A Act.

3.3 Statutory Planning Instruments

Section 115ZF(2) of the EP&A Act specifies that environmental planning instruments do not apply to SSI, except insofar as they apply to the declaration of infrastructure as SSI (or as critical State significant infrastructure) and to the declaration of development that does not require consent. The following State Environmental Planning Policies (SEPPs) are therefore relevant to the proposal and are discussed further below:

- SEPP (Infrastructure) 2007; and
- SEPP (State and Regional Development) 2011.

3.3.1 State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (the ISEPP) applies to all land within NSW and includes specific provisions relating to the development consent requirements for certain infrastructure works, including for railways and associated facilities.

Clause 79 of the ISEPP provides that development for the purpose of 'rail infrastructure facilities' is permissible without consent on any land (with certain restrictions applying to land reserved under the *National Parks and Wildlife Act 1974* – which are not relevant in this case). Railway infrastructure facilities are defined under the ISEPP as follows:

> *(a) railway tracks, associated track structures, cuttings, drainage systems, fences, tunnels, ventilation shafts, emergency accessways, bridges, embankments, level crossings and roads, pedestrian and cycleway facilities, and*
>
> *(b) signalling, train control, communication and security systems, and*
>
> *(c) power supply (including overhead power supply) systems, and*
>
> *(d) railway stations, station platforms and areas in a station complex that commuters use to get access to the platforms, and*
>
> *(e) public amenities for commuters, and*
>
> *(f) associated public transport facilities for railway stations, and*
>
> *(g) maintenance, repair and stabling facilities for rolling stock, and*
>
> *(h) refuelling depots, garages, maintenance facilities and storage facilities that are for the purposes of a railway, and*
>
> *(i) railway workers' facilities, and*
>
> *(j) rail freight terminals, sidings and freight intermodal facilities,*
>
> *but do not include buildings or works that are for residential, retail or business purposes and unrelated to railway purposes.*

Under clause 79 of the ISEPP, construction works and environmental management works in connection with a rail infrastructure facility are also permissible without consent.

The RTRF is a 'railway infrastructure facility' and is permissible without consent under clause 79 of the ISEPP.

3.3.2 State Environmental Planning Policy (State and Regional Development) 2011

Clause 1 of Schedule 3 of *State Environmental Planning Policy (State and Regional Development) 2011* (the State and Regional Development SEPP) identifies infrastructure development "for which the proponent is also the determining authority and would, in the opinion of the proponent, require an environmental impact statement to be obtained under

Part 5 of the Act" as being State significant infrastructure requiring assessment and determination under Part 5.1 of the EP&A Act.

TfNSW is the proponent of the RTRF and is also the determining authority for transport infrastructure works. TfNSW has formed the opinion that the RTRF proposal is likely to significantly affect the environment. Therefore, in accordance with section 112 of the EP&A Act, the project requires the preparation of an EIS. As a result, the project is declared to be SSI pursuant to section 115U(2) of the EP&A Act and clause 1 of Schedule 3 of the State and Regional Development SEPP.

3.4 Director General's Requirements

In accordance with section 115Y of the EP&A Act, the Director-General of the Department of Planning and Infrastructure issued the requirements for the preparation of the EIS on 3 June 2013. A copy of the Director General's Requirements (DGRs) is included at **Appendix A**.

Table 1 provides a detailed summary of the individual matters listed in the DGRs and identifies where each of these requirements has been addressed in this report and the accompanying technical studies.

Table 1 – Director General's Requirements

Requirement	Location in Environmental Assessment
General Requirements	
The Environmental Impact Statement (EIS) must address the *Environmental Planning and Assessment Act 1979* and meet the minimum form and content requirements in Part 3 of Schedule 2 the Environmental Planning and Assessment Regulation 2000.	Environmental Impact Statement
1. The information required by clause 6 of Schedule 2 of the Regulation;	Page xi
(a) the name, address and professional qualifications of the person by whom the statement is prepared,	
(b) the name and address of the responsible person,	
(c) the address of the land: (i) in respect of which the development application is to be made, or (ii) on which the activity or infrastructure to which the statement relates is to be carried out,	
(d) a description of the development, activity or infrastructure to which the statement relates,	
(e) an assessment by the person by whom the statement is prepared of the environmental impact of the development, activity or infrastructure to which the statement relates, dealing with the matters referred to in this Schedule,	

Requirement	Location in Environmental Assessment	
(f) a declaration by the person by whom the statement is prepared to the effect that: (i) the statement has been prepared in accordance with this Schedule, and (ii) the statement contains all available information that is relevant to the environmental assessment of the development, activity or infrastructure to which the statement relates, and (iii) that the information contained in the statement is neither false nor misleading.	Page xi	
2. the content listed in clause 7 of Schedule 2 of the Regulation		
- a summary of the environmental impact statement	Section 1.1	
- A statement of the objectives of the project, including a description of the strategic need and justification of the project and objectives of the relevant commonwealth, state and regional strategic planning and transport policies, including NSW 2021, metropolitan plan for Sydney 2036, the Draft metropolitan Plan for Sydney and the NSW Long Term Transport Master Plan	Section 2.2	
- A description of the projects relationship and/ or interaction with other development in the vicinity including the North West Rail (SSI-5100 & SSI5414)	Section 1.4	
- An analysis of feasible alternatives to carrying out if the project and project justification, including an analysis of alternatives/options considered, having regard to the project objectives (including an assessment of environmental costs and benefits of the project relative to alternatives and the consequences of not carrying out the project), and whether or not the project is in public interest	Section 4.0	
- An analysis of the project, including an assessment with particular focus on the requirement s of the listed key issues, in accordance with relevant clause 7(1)(d) of Schedule 2 of the Regulation (where relevant)	Sections 3.5, 5.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 21.0, 22.0 and 23.0	
- An identification of how relevant planning, land use and development matters (including relevant strategic and statutory matters) have been considered in the impact assessment (direct, indirect and cumulative impacts) and/or developing management/mitigation measures	Sections 2.0, 3.0, 4.0, 5.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 21.0, 22.0 and 23.0	
- A compilation of measures proposed to mitigate and/or manage any adverse effects of the project on the environment	Section 23.0	
- Justification for the preferred project taking into consideration the objects of the Environment Planning Assessment Act 1979	Sections 3.2.1 and 24.0	
- Detail how the principles of the ecologically sustainable development will be incorporated in the design, construction and ongoing operation phases of the project	Section 24.5	
Key Issues	**Section of EIS**	**Technical Study**
1) Noise and Vibration, including but not limited to		Appendix F
An assessment of the noise and vibration impacts from construction activates	Section 11.7	Appendix F

Requirement	Location in Environmental Assessment	
The nature and sensitivity of, and impact to, potentially affected receivers and structures	Section 11.3.1	Appendix F
A strategy for managing construction noise and vibration and out if hours activities with particular focus placed on those activities identified as having the greatest potential for adverse noise or vibration impacts, and a broader, more generic approach developed for lower-risk activities	Section 11.8.1	Appendix F
An assessment of noise and vibration impacts from operating the facility	Section 11.7	Appendix F
A description of measures to mitigate and manage operational noise and vibration impacts	Section 11.8.2	Appendix F
Taking into account the Interim Construction Noise Guidelines (DECC 2009), the NSW Industrial Noise Policy (NSW Government, 2000) and Assessing Vibration: a Technical Guideline (DEC, 2006)	Section 11.4	Appendix F
2) Access, Traffic and Transport, including but not limited to		Appendix E
Access to, from and within the site during the construction and operation of the project	Sections 7.1, 7.2 and 10.5	Appendix E
Interaction and integration with existing and planned transport infrastructure with existing and planned transport infrastructure including the North West Rail Link	Sections 7.1, 10.5, 10.6 and 21.0	Appendix E
A traffic impact assessment in the local and regional road network, including a traffic analysis on existing intersections and consideration of existing road constraints	Sections 10.4 and 10.5	Appendix E
Taking into account the Guide to Traffic Generating Developments (RTA,2002)	Sections 10.3, 10.4 and 10.5	Appendix E
3) **Land Use, Property and Infrastructure**, including but not limited to		NA
Impacts on affected properties and land uses, including the impacts related to access, land use, business activities, future development potential and property acquisition	Section 17.0	NA
interaction with existing and proposed services and utilities, including provision of any relocation or protection measures	Section 7.2.9	NA
Taking into account relevant local, regional and State planning policies including the State Environmental Planning Policy (Sydney Region Growth Centres) 2006 and related precinct and structure planning	Sections 3.0, 17.0 and 24.2	NA
4) Visual Impact, Landscaping and Urban Design, including but not limited to		NA
A description of the layout and design of the project including plans and sections to show the height, bulk and scale of the proposed buildings	Section 7.0 and 16.4	Photmontages in Appendix C
Identification and evaluation of the visual impacts of the project on surrounding areas , including privacy and amenity impacts to surrounding receivers	Section 16.5	NA
A description of measures proposed to mitigate and manage these impacts	Section 16.5 and 16.6	NA
5) Ecology, including but not limited to	Section 13.0	Appendix H
An assessment of the potential impacts of the project on terrestrial riparian and aquatic areas including critical habitats, threatened	Sections 13.4, 13.6 and 13.7	Appendix H

Requirement	Location in Environmental Assessment	
species, population or ecological communities and groundwater dependent ecosystems		
Consideration of the relevant biodiversity measures of the Biodiversity Certification conferred on the Environmental Planning Policy (Sydney Region Growth Centres 2006)	Sections 13.3.2 and 13.5	
a description of the measures that would be implemented to avoid, mitigate, manage and offset the ecological impacts of the project, noting that any clearing of existing native vegetation proposed within the noncertified areas of the Growth Centre should be offset in accordance with the relevant biodiversity measures of the Biodiversity Certification	Section 13.9	
taking into account the guidelines for Threatened Species , Assessment (DPI, 2008) and the NSt4/ Safe Groundwater Dependent Ecosystems Policy (D1WC,2002).	Section 13.3.1	
6) Heritage, including but not limited to	Sections 14.0 and 15.0	Appendices I and J
impacts to Aboriginal heritage (including cultural and archaeological significance), in particular impacts to Aboriginal heritage sites identified within or near the project. Where impacts are identified, the assessment shall:	Section 15.6	Appendix J
- outline the proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the measures), demonstrate effective consultation with Aboriginal communities in determining and assessing impacts and developing and selecting options and mitigation measures (including the final proposed measures);	Section 15.3	
- demonstration that an appropriate archaeological assessment methodology, including research design, (where relevant) has been undertaken, including results; and	Section 15.3	
- take into account the Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (Department of Environment and Conservation, 2005) and be undertaken by a suitably qualified heritage consultant	Sections 15.1 and 15.3	
impacts to historic heritage (including archaeology, heritage items conservation areas and natural areas). Where impacts to State or locally significant historic heritage items are identified, the assessment shall:		Appendix I
- outline the proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the mitigation measures);	Section 14.6	
- include a statement of heritage impact for heritage items (including significance assessment);	Section 14.5.1	
- demonstrate that an appropriate archaeological assessment methodology, including research design, (where relevant) has been undertaken, including results; and	Section 14.3	
- take into account the guidelines in the NSW Heritage Manual(1996) and be undertaken by a suitably qualified heritage consultant.	Section 14.3	
7) Water, including but not limited to Modelling and assessment of the potential impacts of the project on: - The quantity and quality of existing surface and ground water resources	Section 12.4 (Groundwater is addressed at Sections 9.4.4 and 9.5.1)	Appendix G

Requirement	Location in Environmental Assessment	
- Affected licensed water users and basic landholder rights - Water courses and riparian areas and their associated catchments - Flooding up and including the probable maximum flood	Sections 9.4.4 and 9.5.1 Sections 12.4 and 12.5 Sections 12.4 and 12.5	Appendix G
A description of the water management system for the project (including all infrastructure and storages)	Section 12.6.2	Appendix G
a description of measures to minimise water discharges and to mitigate and manage surface and ground water impacts	Section12.6	Appendix G
8) Soil and Contamination, including but not limited to	Section 9.0	N/A
Geological and soil characteristics (physical and chemical) including potential constraints such as the presence of acid sulphate soil and soil salinity	Section 9.4	N/A
Land contamination and identification of the need for management or remediation of contaminated land, having regard to ecological and human health risks posed by contamination in the contact of past, existing and future land uses. Where remediation of contaminated land is required presentation of a remediation strategy taking into account relevant OEH (EPA) guidelines and in accordance with the Contaminated Land Management Act 1997;	Section 9.4	N/A
Quantification of bulk earthworks and spoil balance and disposal of the excess spoil and waste	Sections 7.1.2 and 20.0	N/A
A strategy for managing earthworks with particular focus on those works that have the greatest potential to disturb soils that are contaminated, have high erosion and run off hazard	Section 9.6	N/A
9) Air Quality, including but not limited to	Sections 18.0 and 19.0	Appendix K
modelling and assessment of air pollutants, including an assessment of atmospheric pollutants of concern for local air quality including fugitive and point sources	Section 19.5	Appendix K
potential odour from exhaust emissions	Section 19.5	Appendix K
greenhouse gas emissions	Section 18.0	
taking into account the Approved Methods for the Modelling and Assessment of Air pollutants in NSW (DEC, 2005) and the Australian Greenhouse Office Factors and Methods Workbook (AGO, 2006).	Section 19.3	Appendix K
10) Hazards, Risks and Wastes, including but not limited to	Section 20.0	N/A
consideration of the hazards and risks associated with the use, storage and transportation of dangerous goods consistent with the Department's Applying SEPP 33 (DUAP, 1994), and if relevant, a Preliminary Hazard Analysis in accordance with the Department's Hazardous industry Advisory Paper No. 6 Guidelines for Hazard Analysis;	Section 20.3	N/A
An assessment of bushfire hazards, including the identification of access and egress from the site and evacuation routes;	Section 20.4	N/A
the identification and management of chemicals and waste material.	Sections 20.3 and 20.5	N/A
Environmental Risk Analysis		
Notwithstanding the above key assessment requirements, the EIS must include an environmental risk analysis to identify potential environmental impacts associated with the project (construction and operation), proposed mitigation measures and potentially	Section 22.0	N/A

Requirement	Location in Environmental Assessment	
significant residual environmental impacts after the application of proposed mitigation measures. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed impact assessment of this additional key environmental impact must be included in the EIS.		
Consultation		
During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners. In particular you must consult with:	Section 6.0	NA
Local State or Commonwealth government authorities, including: - Department of Planning and infrastructure (Land Release); - Environment Protection Agency; - Department of Primary industries (including NSW Office of Water, Agriculture NSW and Fisheries NSW); - Office of Environment and Heritage; - NSW Heritage Office; - NSW Rural Fire Service - Blacktown Council	Section 6.2	NA
Service and infrastructure providers such as: - Roads and Maritime Services	Section 6.2	NA
Specialist interest groups, including local aboriginal land councils	Sections 6.4 and 15.4	NA
The public, including community groups and adjoining and affected landowners	Section 6.3	NA

3.5 Other Approvals Required

In addition to the SSI approval the following additional approvals may be required in order to permit the proposed infrastructure to occur:

- Environment protection licence(s) under Chapter 3 of the *Protection of the Environment Operations Act 1997* (POEO Act).
- a consent under section 138 of the *Roads Act 1993* would be sought separately in conjunction with the approval for the NWRL project.

Any additional approvals will be sought at the appropriate time. However, the terms of the above approvals must be consistent with any SSI Approval for the project under Section 115ZH(1)€ and (f) of the EP&A Act.

Environmental planning approvals that do not apply to or in respect of State significant infrastructure but which have been considered during the preparation of this EIS include (refer to section 115ZG of the EP&A Act):

- An Approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977*.
- An Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1974*.
- A bush fire safety authority under section 100B of the *Rural Fires Act 1997*.
- A water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000*.

4.0 Analysis of Alternatives

Part 3 of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* requires an EIS to include a number of matters, including "an analysis of any feasible alternatives to the carrying out of the development, activity or infrastructure, having regard to its objectives, including the consequences of not carrying out the development, activity or infrastructure".

The analysis of options for the RTRF comprises:

1) An identification and assessment of each option, presenting its layout and structural features as well as a preliminary assessment of its beneficial and adverse impacts. A graphical representation of the layout of each option is also provided.

2) A comparative assessment of each structural option (excluding the "do nothing" and the Marsden Park Industrial Precinct options).

4.1 Identification of Options and Preliminary Assessment

Having regards to strategic justification for the project and the project objectives which are outlined in Section 2 of this EIS, four alternate options to the Tallawong Road RTRF were identified and considered by TfNSW and the expert project team in determining the most appropriate development option and location for the RTRF, being:

- Do nothing option (rely on existing NWRL train support facility in the short term, with expansion or an alternate facility considered at a future time).
- Marsden Park Industrial Precinct (Marsden Park).
- Western extension of the approved NWRL train support facility across First Ponds Creek.
- Eastern extension of the approved NWRL train support facility to the east of Tallawong Road toward the Cudgegong Road Station.

4.1.1 Do Nothing

The 'do nothing' option would result in no additional stabling or maintenance facilities for the rapid transit network being provided other than that approved under the NWRL. The implications are:

- The urbanisation of the surrounding areas could constrain the ability to expand the services provided at this facility in the future. This would prevent the opportunity to accommodate an expanded RTRF in the strategic land use planning for the locality; or
- A substantial facility or facilities for stabling, maintenance and operation/administrations management for the new rapid transit network would need to be provided in another location, preventing economies of scale, increasing capital cost and adding operational complexity.

Preliminary assessment/comment:

The 'do nothing' option does not support the objectives and operational requirements of the rapid transit rail network as set out in the *Long Term Transport Master Plan*. It is essential that the RTRF be planned for and approved on a 'whole of project' basis. That is, encompassing the extent of works and infrastructure required for the full operations (end state) of the site. Planning for the ultimate facility now would also support ongoing local and regional strategic land use planning.

Seeking approval for the full extent of works would allow for the progressive development of operations within the facility to meet the needs of Sydney's future rail network, rather

than relying on piecemeal additions. The latter would create uncertainty around land use planning in Sydney's North West Growth Centre in order to accommodate a duplicated facility elsewhere, and could potentially constrain future extensions to the approved facility.

On consideration of the above preliminary assessment and the strategic objectives of the project, this option was not considered for further comparative assessment.

4.1.2 Marsden Park Option

An option has been identified to locate the RTRF within the Marsden Park Industrial Precinct. This option assumes that the facility would be located at the western end of the future transport corridor as discussed below (see **Figure 4**). The potential location is within the Marsden Park Industrial Precinct as shown in **Figure 5**.

As identified in the *Long Term Transport Master Plan*, the future transport corridor to Marsden Park generally follows Schofields Road and links to South Street, Marsden Park, with a long term connection to Mt Druitt. Any stabling facility would therefore be located on land along the northern edge of the Marsden Park Industrial Precinct. However, no decision has yet been made as to the mode of transport which might use this corridor.

The Marsden Park Industrial Precinct is located on the western side of the North West Growth Centre. Currently predominantly rural-residential in character, the provision of servicing infrastructure and rezoning of the area will transform the centre over the next 25 to 30 years to provide a range of residential densities, employment areas and open spaces. The land in this portion of the Industrial Precinct is zoned for medium density residential development and business uses as shown in **Figure 5**.

Figure 4 – Marsden Park Corridor Extension Option

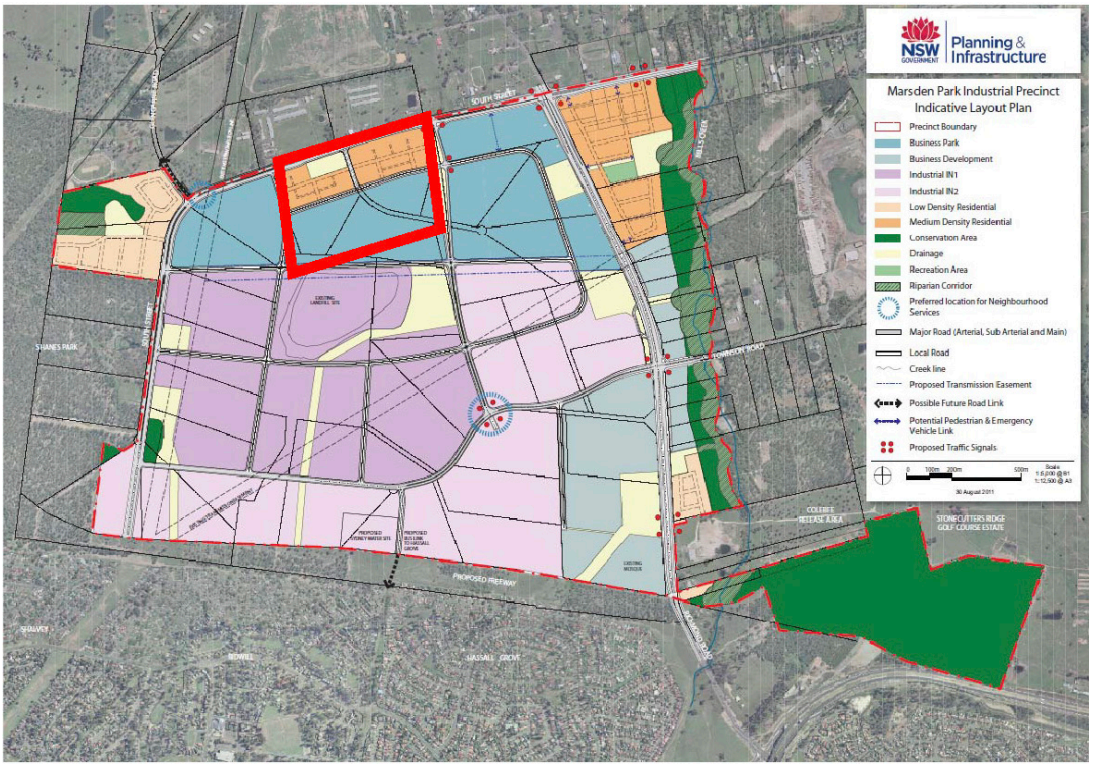


Figure 5 – Indicative location of RTRF within Marden Park Industrial Precinct (within the bold red boundary)

The characteristics of the environment currently existing and expected within the Marsden Park Industrial Precinct would pose potential impacts and constraints on any RTRF, having a flow-on effect influencing design, functionality and cost of the RTRF.

Current land uses include industrial and extractive industries (quarries, a former poultry processing plant, bulky goods warehouses, waste management activities), medium density residential development, sports fields, a church and commercial development. Future land uses would include a major business park and industrial precinct, a local centre, major industrial uses (on the southern side of Marsden Park Industrial Precinct) and low / medium density residential development (concentrated on the northern and eastern sides of Marsden Park Industrial Precinct).

Many developments have been approved or are currently under assessment within close proximity to the preferred location of the Marsden Park Industrial Precinct RTRF. The developments include:

- An approved Woolworths retail development at the future Schofields town centre.
- A proposed Coles retail development and McDonalds restaurant at Schofields (under assessment).
- Residential developments on South Street.

Customer benefits

Improving the customer's journey experience is a top priority for TfNSW. Locating a RTRF within the Marsden Park Industrial Precinct must take into account future population growth, residential and employment catchments and demand for public transport associated with new rail stations at Schofields and Marsden Park.

Possible new rail stations at Schofields and Marsden Park would provide access to rapid transit services for two new catchments. A station at Schofields would also improve transport choice by providing interchange with the Sydney Trains rail network.

Patronage modelling indicates that the number of passengers using future rapid transit rail services in the western areas of the North West Growth Centre would be relatively small in 2036 compared to the remainder of the NWRL line.

Economic benefits

It is expected that any extension of the NWRL, as part of the *Long Term Transport Master Plan,* would have significant benefits in the longer term, including catalysing the development of new urban areas, travel time savings and further economic, population and sustainability benefits. However, a full economic appraisal would need to be undertaken to confirm the optimal timing to proceed with any possible extension.

An analysis of forecast patronage for an extension of the NWRL to Marsden Park suggests that extra patronage would be largely contained within the NWRL at this time. Any extension at the present time is therefore likely to have relatively low economic benefits attributable to relieving on-road congestion or bus congestion, as these benefits would largely relate to the network closer to the CBD.

Capital cost

Providing track to a RTRF at Marsden Park Industrial Precinct in time to allow NWRL operations to commence in 2019 would have significant capital costs. Construction of stations and associated precinct works at Schofields and Marsden Park would also increase capital costs. Costs would also be incurred for property acquisition.

Preliminary assessment/comment:

The Marsden Park Industrial Precinct option cannot be supported at the present time taking into account the benefits and likely additional costs. The additional capital cost of the track work required for a facility to be built at Marsden Park Industrial Precinct would be high and the RTRF would be located within areas identified for medium density residential buildings and a business park.

The economic benefits of the passenger extension are extremely unlikely to be at a level that would support a RTRF location at Marsden Park Industrial Precinct. On consideration of the above preliminary assessment and the strategic objectives of the project, this option was not considered for further comparative assessment.

4.1.3 Eastern Option

The Eastern Option would utilise land between Tallawong Road, Schofields Road and First Ponds Creek extending into the area between the North West Rail Link's Cudgegong Road Station and Schofields Road as shown in **Figure 6**.

The stabling activities would occur in the area between Tallawong Road and First Ponds Creek. The land within the Cudgegong Road Station precinct would be used for infrastructure and maintenance activities.

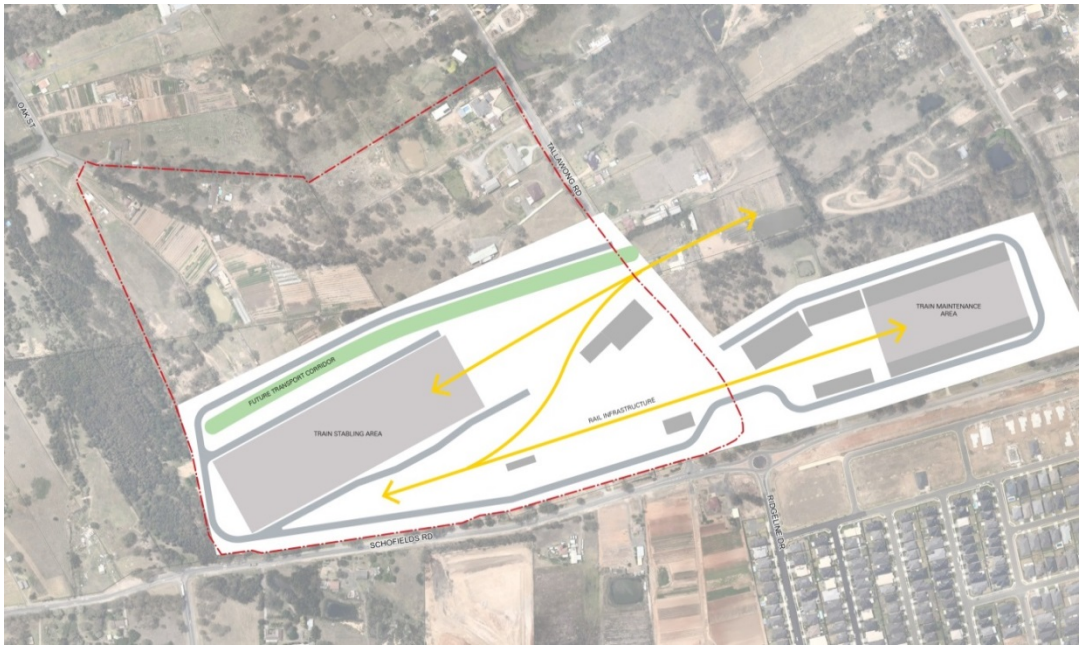


Figure 6 – Eastern Option

Note: the Tallawong Road RTRF Preferred Option site is shown by the red boundary.

Preliminary assessment/comment

This option provides limited design flexibility and poor rail operational performance because of the complex train movements within the facility and the lack of separation between NWRL operations (that is, stabling and maintenance activities would affect train movements at Cudgegong Road Station).

This option limits future potential of the Cudgegong Road Station precinct including opportunities to integrate the new station precinct with surrounding land uses.

An additional road bridge would be required on Tallawong Road where the tracks to the maintenance area would cross beneath the road reserve. This would increase the capital cost of the option and potentially lead to additional vehicle movements during construction and operation.

There are less potential ecological environmental impacts than other options, particularly in relation to the riparian corridor of First Ponds Creek. However it brings some of the operations (train maintenance) closer to existing residential areas in The Ponds development, potentially increasing amenity impacts, particularly noise and visual impacts from the proposed 24 hour operation.

4.1.4 Western Option

The Western Option would extend across First Ponds Creek occupying the land between Tallawong Road and Boundary Road as shown in **Figure 7**.

The infrastructure and maintenance operations would be located in the area between Tallawong Road and First Ponds Creek. The stabling area would be located on the western side of the site between First Ponds Creek and Boundary Road.

The western portion of this option would be within the Growth Centre's Riverstone Precinct. The affected land is zoned for medium density residential development.

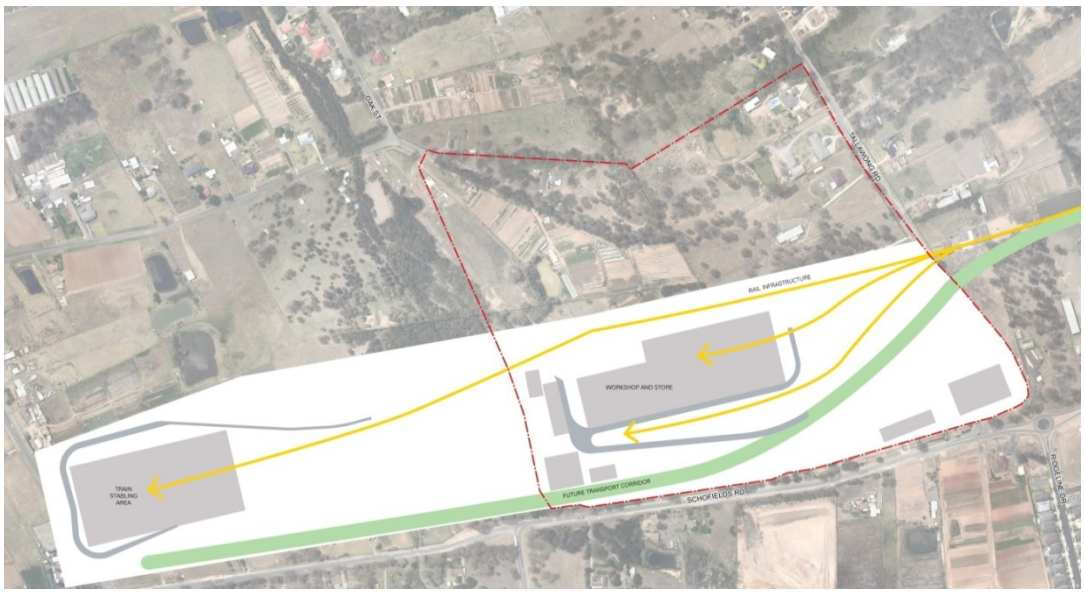


Figure 7 – Western Option

Note: the Tallawong Road RTRF Preferred Option site is shown by the red boundary.

Preliminary assessment/comment

The Western Option has significant conflict with future land uses as currently contained within the Riverstone Precinct Indicative Layout Plan. The option also raises concerns about potential restrictions to future pedestrian and bicycle connections within the locality and limitations on the operation of local access roads because of the effect of the footprint as a physical barrier in the future urban structure. The footprint would also potentially conflict with the future northern extension of Hambledon Road.

This option would serve expected operational requirements but the dispersed site configuration would reduce efficiency because of the length of track required.

Significant bridge structures would be required over First Ponds Creek which would require construction works within the riparian corridor, removal of riparian vegetation, and the establishment of footings or piers within the corridor and within the floodplain which could have adverse implications for bank stability and channel morphology as well as for flood zones.

These potential impacts may also have consequential impacts on flora and fauna habitat upstream and downstream. Any proposed bridge structure would be elevated in order to cross First Ponds Creek and to match the modified elevation of the maintenance facility. This would result in an increase in visual amenity impact to existing and future residents. Additionally, the bridge structure would have to be constructed in a manner that does not unnecessarily constrain or conflict with either the future extension of Hambledon Road or the provision of water and sewerage services north into the Riverstone Precinct.

4.1.5 Tallawong Road Option

The Tallawong Road option would be contained between Tallawong Road, Schofields and First Ponds Creek utilising approximately 34 hectares of land as shown in **Figure 1**.

This option provides capital and operating cost efficiencies, and there is increased certainty around land use planning for the precinct/growth centre in terms of residential and public infrastructure development.

Preliminary assessment/comment:

This option provides optimal operational (functional) and environmental outcomes compared to other options. It allows for the future northern extension of Hambledon Road as per the Draft Cudgegong Road Structure Plan, and is generally compatible with adjoining land uses with potential to influence future structure planning for the Riverstone East Precinct.

4.1.6 Summary of Preliminary Assessment

Based on the prelimianry assessment of each option described above, the following two options were not slected to be taken forward for compratative assessment:

- The 'Do Nothing' Option because it would not support the objectives and operational requirements of the rapid transit rail network and would create uncertainty around land use planning in Sydney's North West Growth Centre.
- The Marsden Park Industrial Precinct Option because of the likely additional costs and the lack of economic benefits at this time.

The following three options were selected to be taken forward for comparative assessment:

- Eastern Option
- Western Option
- Tallawong Road Option

4.2 Comparative Assessment of Selected Options

A multi-criteria analysis was used for the purpose of a comparative assessment of options on the basis of social, environmental, economic and engineering criteria.

The assessment criteria for the multi-criteria analysis were selected as being representative factors that would influence the selection of an option or options. The head criteria comprise a collection of social, environmental, technical and commercial criteria as identified in **Table 2**.

Table 2 – Assessment criteria and component issues

Assessment Criteria	Components
Technical	- Work required to implement - Rail Operations & Design - Utilities
Community	- Visual Impact - Noise - Transport, Traffic & Access - Consultation
Environmental	- Air Quality - Heritage - Ecology - Hydrology
Land Use	- Integration with existing and future land uses - Compatibility with surrounding land uses - Potential impact local businesses - Potential impact on community facilities
Cost	- Cost

A qualitative assessment of the criteria was undertaken using a simple rating method of low, medium and high ratings against the assessment criteria.

Low	Minimal and/or short term impacts that can be managed and/or mitigated.
Medium	Some moderate impacts expected, but can be managed and/or mitigated.
High	Very detrimental and/or long term impacts expected, requiring significant management and/or mitigation.

The results of the multi criteria analysis are provided in **Table 3** and are discussed in **Section 4.3**. No normalisation or weighting has been applied to the results.

Table 3 – RTRF Multi Criteria Analysis

	Criteria	Eastern Option	Western Option	Tallawong Road
C.1 Technical				
C.1.1	**Work required to implement**			
C.1.2	**Operations and Design**			
C.1.3	**Utilities**			
C1.3.1	Water Mains			
C.1.3.2	Sewer			
C.1.3.3	Electrical			
C.1.3.4	Communications			
C.1.3.5	Gas			
C.2 Community				
C.2.1	**Visual Assessment - Primary Impacts**			
C.2.1.1	Views from Major Routes			
C.2.1.2	Views from Residential Areas			
C.2.1.3	Views at Night			
C.2.2	**Visual Assessment - Phasing Impacts**			
C.2.2.1	Impact During Construction			
C.2.2.2	Impact During Operation			
C2.3	**Visual Assessment -Future Impacts**			
C2.3.1	District Views			
C2.3.2	Localised Views - future			
C.2.4	**Visual Assessment - Structures & Implication of Site Works**			
C.2.4.1	Site Engineering & Infrastructure			
C.2.4.2	Earthworks			
C.2.4.3	Built Form Impact			
C.2.5	**Noise**			
C.2.6	**Transport, Traffic & Access**			
C.2.6.1	Traffic Impacts on exisiting road network			
C.2.6.2	Internal traffic circulation and parking			
C.2.6.3	Pedestrian and bicycle access and circulation			
C.2.6.4	Public transport access and integration			
C.2.6.5	Construction traffic impacts			
C.2.6.6	Land Use integration with NWGC precinct ILPs			
C.2.7	**Consultation**			

Criteria		Eastern Option	Western Option	Tallawong Road
C.3 Environmental				
C.3.1	**Air Quality**			
C.3.1.1	Local			
C.3.1.2	Regional			
C.3.2	**Heritage**			
C.3.2.1	Aboriginal			
C.3.2.2	Non Aboriginal			
C.3.3	**Hydrology**			
C.3.3.1	Flooding			
C.3.3.2	Water Quality Outcomes			
C.3.3.3	Urban Design Outcomes			
C3.3.4	Infrastructure Establishment and Maintenance			
C.3.5	**Ecology**			
C.3.5.1	Endangered Ecological Communities			
C.3.5.2	Riparian vegetation			
C.3.5.3	Threatened species			
C.4 Landuse and Community Facilities				
C.4.1	Exisiting Landuse Framework			
C.4.2	Future Landuse Framework			
C.4.3	Operational Impacts on exisiting surrounding land uses			
C.4.4	Operational Impacts on future surrounding land uses			
C.4.5	Construction impacts on surrounding land uses			
C.4.6	**Local Businesses**			
C.4.6.1	Operational impact on businesses onsite			
C.4.6.2	Operational impact on surrounding businesses			
C.4.7	Impact on community facilities			
C.5 Cost				
C.5.1	Construction			
Result				

4.3 Assessment of Alternatives

4.3.1 Technical

Work Required to Implement

The capital works involved to establish and/or implement each of the options has been broadly considered. Although the Tallawong Road option requires significant earthworks to create a level platform for the facility, minimal additional works are required for this option in comparison to the other two options. The Eastern and Western Options occupy more disperse sites therefore increasing the extent of construction works.

Although proximate to Cudgegong Road Station, the Eastern Option requires an additional road-over-rail bridge. The Western Option requires significant bridge structures over First Ponds Creek and has potential conflict with the future extension of Hambledon Road and provision of services infrastructure.

Rail Operations and Design

The Eastern Option has operational inefficiencies due to additional train shunting increasing the number 'non-productive' train movements. In comparison, the Western Option performs well from an operational perspective, and the Tallawong Road option provides a satisfactory operational solution.

Utilities

All options require two critical water mains in Tallawong Road to be relocated, a communications cable network to be created and gas provided.

The Eastern Option requires sewer to drain to two separate catchments and electrical distribution over a much larger area. The Western Option also requires power over a larger area and to be extended over First Ponds Creek.

These options would each require a significant extension of utilities networks to cross First Ponds Creek and an extended Hambledon Road and follow the transit corridor. The Tallawong Road option allows the most efficient connection to the future sewer carrier main that will run parallel to Hambleton Road and, as it is more consolidated, allows for a more efficient distribution of electrical power around the site and avoids road and creek crossings.

4.3.2 Community

This section relates to impacts on the general community in the vicinity of the site – such as traffic, noise and visual impacts. Specific land use issues are addressed in **Section 4.3.4** below.

Visual Impact

The Eastern and Western Options present a less consolidated, more dispersed site presence which results in a higher visual amenity impact than the more compact consolidated structural option of the Tallawong Road Option.

Transport, Traffic and Access

The Eastern and Western Options would require a greater extent or spread of additional traffic generated by the facility, requiring greater vehicle manoeuvres during construction and operation. The more consolidated layout of the Tallawong Road option would result in fewer and/or shorter internal vehicle movements, which would also generate fewer emissions.

Noise

The potential noise generated by the facilities operations would be relatively consistent at each of the three options, with the exception of the noise generated by additional train shunting at the Eastern Option. There would also be a greater extent or spread of noise generated by the facility at the Eastern and Western Options due to their dispersed nature, therefore affecting a greater number of potential receivers. In the case of the Eastern Option this would potentially adversely affect existing and future residences in The Ponds. The Western Option would potentially affect future residences in the Riverstone Precinct.

Consultation

The same level of consultation is required to be undertaken for the Eastern, Western and Tallawong Road options and it would leverage off the consultation already undertaken as part of the NWRL.

4.3.3 Environmental

Air Quality

The dispersed nature of the Eastern and Western Options and location adjacent to Schofields Road could increase potential risk of local air quality impacts to arise to sensitive receivers at The Ponds. Regional impacts are likely to reduce as a result of the availability of a public transport for all options.

The Tallawong Road option has the greatest separation distance in comparison to the other options (Eastern and Western) and receivers at The Ponds.

Heritage

There are two previously recorded Aboriginal Sites within the area that would be impacted by the Eastern, Western and Tallawong Road options. Accordingly the three options are comparable in relation to this criterion.

There are no non-Indigenous historic or heritage listed items within the study area or within the immediate vicinity.

Ecology

Other than First and Second Ponds creeks, the land for the Eastern, Western and Tallawong Road options is 'Biodiversity Certified', and the loss of all or most of the vegetation has already been anticipated pursuant to the SEPP.

The ecological implications of the three options are reasonably comparable. However, the Western Option requires the crossing of First Ponds Creek increasing the potential ecological impacts, likely including clearing of some riparian vegetation, which would require mitigation.

Hydrology

The Tallawong Road and Eastern Options have minimal impact on the First Ponds Creek floodplain. However, the structures required for crossing of First Ponds Creek which is required for the Western Option has the potential to impact on flood impacts within the waterway and floodplain.

Stormwater quality impacts for all options for the RTRF would require mitigation through the provision of stormwater detention. The Eastern and Western Options have significantly larger development footprints larger footprints compared to the Tallawong Road option and will require the implementation of additional, and more dispersed, stormwater capture and treatment infrastructure.

The additional infrastructure requirements for the Eastern and Western Options compared to the Tallawong Road option will increase the cost of infrastructure establishment and maintenance. In particular, the bridged crossing of First Ponds Creek required for the Western Option will require additional water management infrastructure to minimise impacts on creek and floodplain hydrology.

Due to the absence of any substantial vegetation within the Eastern and Western site options and the proximity to future urban development, the opportunity to integrate stormwater infrastructure into site interfaces and urban design responses is constrained. The Tallawong Road option provides better opportunity to integrate stormwater basins with existing overland flow paths.

While all options can incorporate design measures to contain surface water flows and hydrology impacts, the Western Option requires a large open span bridge to mitigate flood impacts at the First Ponds Creek Crossing, and access on the eastern side of First Ponds Creek is difficult.

The Tallawong Road option already has basins located and sized, and has the potential to consolidate basins and improve regional urban outcomes.

4.3.4 Land use

Integration with Existing and Future Land Uses

The Eastern Option reduces future opportunities to integrate the Cudgegong Road Station precinct with adjoining land uses, and minimises future development opportunities for residual lands at the station precinct. The publicly exhibited *Draft Cudgegong Road Structure Plan* proposes a mixed use land use providing opportunities to integrate the approved station with surrounding land to the south. The Eastern Option reduces opportunities to provide improved integration or additional pedestrian linkages through to residential land south of Schofields Road.

Land within the Western Option site is currently zoned for medium density residential development, with land located immediately to the north zoned for low density residential uses. Direct interface between the Western Option and low and medium residential development is likely to result in significant land use conflicts as a result of potential environmental impacts. Opportunities to minimise potential land use conflicts, through the integration of more appropriate land uses, is limited as the Riverstone precinct has already been zoned.

The Tallawong Road option is generally compatible with existing and adjoining land uses (compared to the 'do nothing' option).

Compatibility with surrounding land uses

Compatibility of the RTRF with surrounding land uses is influenced by the impacts (construction and operational) of the facility and the sensitivity of the surrounding uses to these impacts. Residential and mixed use land uses are generally more sensitive to the potential impacts of the RTRF whilst other land uses such as employment uses are less susceptible to these impacts.

The Western Option is considered to be the least compatible with the existing and future surrounding land uses. Land within the Eastern and Western Option sites is currently used predominately for rural residential and agricultural uses, which are likely to be sensitive to the construction and operational impacts of the RTRF. Land within the Western Option site is zoned for low and medium density residential. Each of these uses is highly sensitive to the potential impacts of the RTRF. Future surrounding land uses for the Eastern Option have not been finalised under the *Draft Cudgegong Road Structure Plan*, however the RTRF is not considered to be compatible with the mixed use and residential uses anticipated and appropriate for the nature of this precinct.

Construction and operational impacts are less where there is a smaller perimeter adjoining sensitive uses and a smaller overall footprint. The Eastern and Western Options have the greatest potential to impact the existing and future land use frameworks due to their disperse site presence, compared to the Tallawong Road option which is more consolidated and consistent with existing and planned land use.

Potential Impacts on local businesses

The impacts on existing businesses are comparable for each option as the future land use framework will facilitate significant redevelopment of the land causing many local businesses (predominantly agricultural in nature) to relocate.

Potential impact on community facilities

The Eastern Option has the potential to limit the potential to provide and/or integrate community facilities close to the future Cudgegong Road Station precinct. The Lankarama Sri Lankan Buddhist Temple is located a short distance to the north of the Tallawong Road Option and may be impacted during construction and operations.

4.3.5 Cost

Relative costs to implement the Eastern and Western Options over existing capital costs of the 'do nothing' option have been considered. Capital costs largely relate to land acquisition and significant civil works that may be required.

The Tallawong Road RTRF and the Western Option would require additional land acquisition compared to the 'do nothing' option.

The Eastern Option would have no additional land acquisition costs but would include the cost of a second road bridge on Tallawong Road. The Western Option requires a large open span bridge over First Ponds Creek, not required by the other options.

4.4 Justification of Selected Option

The results of the multi criteria analysis are provided in **Section 4.3**, with a summary of the results of each of the head criteria presented in **Table 4**. The multi criteria analysis is a relative assessment of options. The "Do Nothing" and Marsden Park Industrial Precinct options have been removed from this analysis as they are not considered viable.

Table 4 – Rapid Transit Rail Facility Options Multi-Criteria Analysis Summary

	Eastern Option	Western Option	Tallawong Road
C.1 Technical			
C.2 Community			
C.3 Environmental			
C.4 Land Use and Community Facilities			
C.5 Cost			
OVERALL RESULT			

The Western Option performs adequately on most aspects, but poorly with regards to potential community impacts and land use integration. Of particular concern are the poor transport integration outcomes that would occur, such as restrictions on pedestrian and bicycle connections and limitations on the operation of local access roads. This option is also inconsistent with the Cudgegong Road Draft Structure Plan and Growth Centres Indicative Layout Plan.

The Eastern Option performed adequately across all criteria, and well in terms of indicative capital costs (largely due to no requirement for additional property acquisition). The predominant negative aspects of this option are associated with implications for train movements and a non-consolidated footprint that restricts some intended land uses in the Cudgegong Road Station vicinity.

However, the best performing option was Tallawong Road, which performed well in terms of land use issues and cost. Importantly, this option performs adequately or well in a majority of the sub criteria.

5.0 Site Analysis

This section of the EIS describes the Tallawong Road site, producing details of the site's location and context, physical characteristics, land ownership and context within the surrounding locality.

5.1 Site Location and Context

The site is located at Tallawong Road, within the Blacktown Local Government Area, approximately 35 kilometres north-west of the Sydney CBD. The site is located approximately 2.5 kilometres to the west of the Rouse Hill Town Centre and the same distance to the east of Schofields Railway Station.

The locality is in a state of transition as historically rural residential and agricultural lands make way for urban development planned under the North West Growth Centre precinct releases. This transition is evident to the south of Schofields Road, where substantial urbanisation is currently underway in The Ponds development area and Alex Avenue precinct. Whilst land to the north, east and west of the subject site is predominately characterised by a mix of rural residential and agricultural uses, the rezoning of the Area 20 precinct to the east and the Riverstone precinct to the west for urban uses has occurred.

The site's metropolitan context is shown at **Figure 8** and its locational context is shown at **Figure 9**.

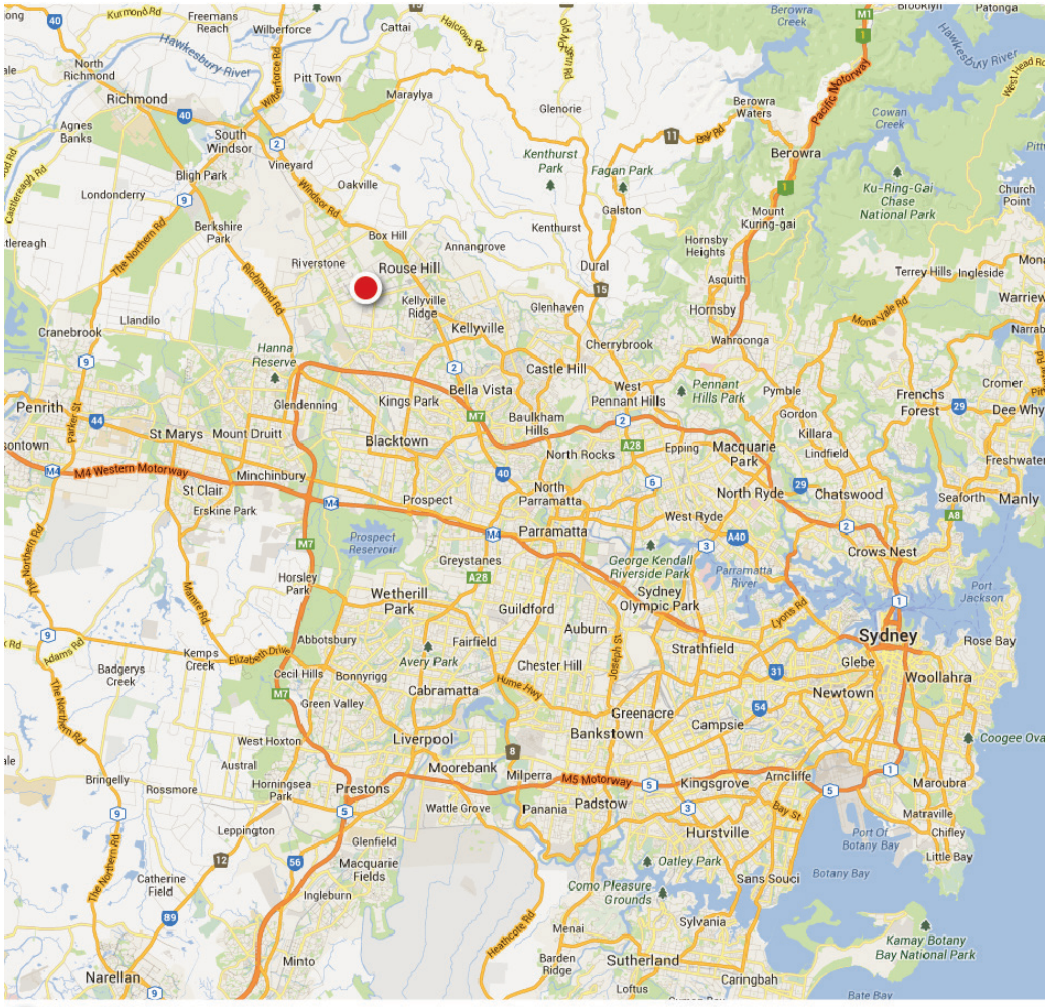
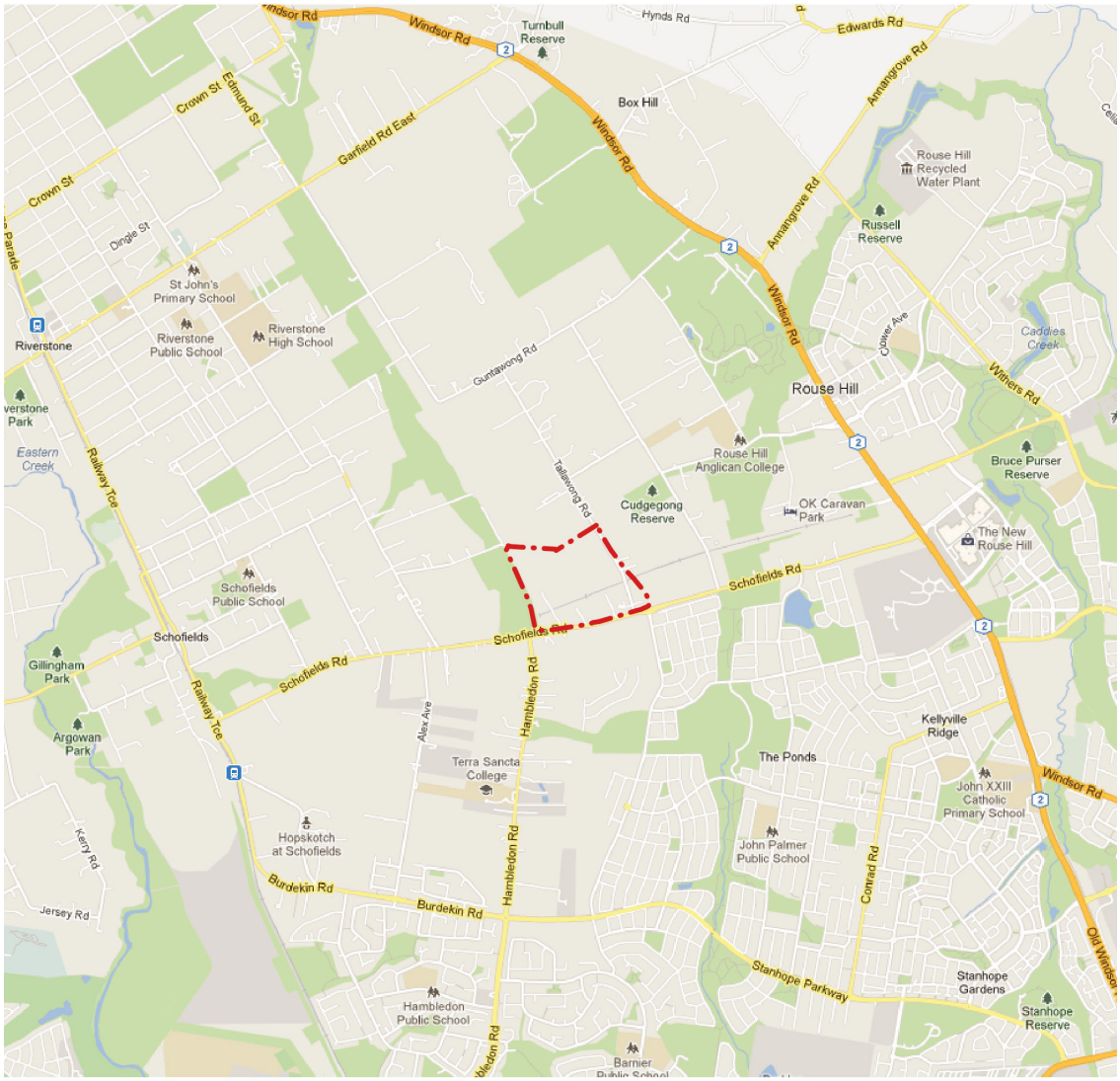


Figure 8 – Metropolitan context plan



Site Boundary

Figure 9 – Local context (map)

5.2 Site Description

The site's area is 35.48 hectares. It is generally quadrangular in shape with approximate dimensions of 550-620 metres (east-west) by 520-680 metres (north south). A Site Survey identifying the landform, existing structures and key site features is included at **Appendix B**.

An aerial photo of the site is shown at **Figure 10**.

Figure 10 – Local context (aerial photo)

Topography and Vegetation

The subject site slopes generally from a high point at the eastern Tallawong Road boundary (RL 64 AHD to RL 49 AHD) to a low point at the western site boundary adjacent to First Ponds Creek (RL 40 AHD to RL 42 AHD).

A small spur runs from west to east within the site from the mid-point of Tallawong Road before falling towards First Ponds Creek. As a result, overland stormwater flows to the north, south and west are in several sub-catchments prior to draining to First Ponds Creek.

Vegetation within the site is predominately comprised of native and introduced grasses and trees. The vegetation on site includes River Flat Eucalyptus Forest, which is listed under the *Threatened Species Conservation Act 1995* as an Endangered Ecological Community (EEC). The River Flat Eucalyptus Forest is in poor and moderate condition at the site, as it has been subject of clearing for agricultural and residential purposes.

Existing Development and Land Use

Tallawong Road currently passes through the southeast corner of the site. As part of the Schofields Road Upgrade (Stage 1) and NWRL approvals Tallawong Road will be relocated to the east to create a new 4-way signalised intersection with Schofields Road and Ridgeline Drive. The realigned Tallawong Road forms the eastern boundary of the site.

There are a total of 19 existing dwelling houses located within the site, with a significant variance in dwelling age, size and architectural style. Ancillary structures include swimming pools and carports. Vehicular access is provided to properties via a mixture of paved and unpaved driveways to Schofields Road, Tallawong Road and Oak Street.

Several dwelling houses are associated with intensive agricultural uses including market gardens and livestock. In addition to the dwelling houses, there are numerous structures including work and storage sheds, carports and greenhouses.

There are a total of nine farm dams located within the site which are predominately used to support agricultural operations.

Existing buildings and farm dams are shown on the Site Survey Plan provided in **Appendix B**.

Photographs of the site are provided at **Figures 12** to **16** (Photographs A-E). A key of photograph locations is provided at **Figure 11**. (Note: Photographs F-J relate to the area surrounding the site and are provided as **Figures 20** to **24** below.)

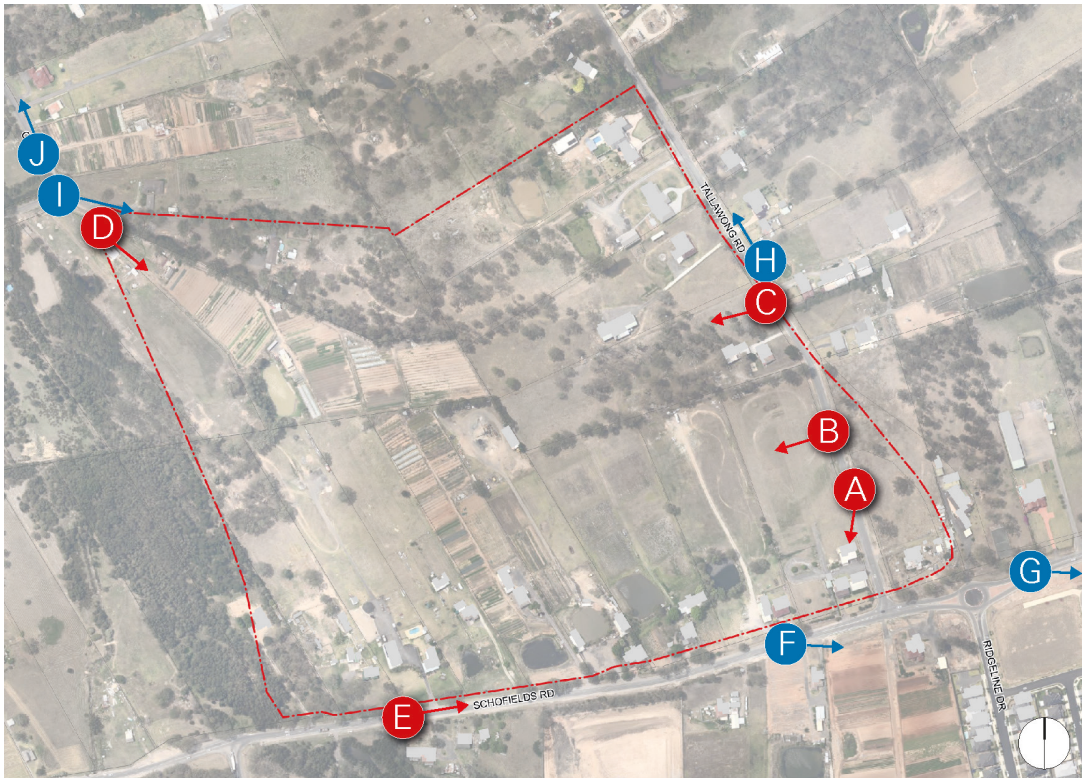


Figure 11 – Site photograph key

Figure 12 – (Photograph A) Dwellings and structures located at the corner of Tallawong Rd and Schofields Rd

Figure 13 – (Photograph B) View across site to south from Tallawong Road

Figure 14 – (Photograph C) View to site to south from Tallawong Road

Figure 15 – (Photograph D) View to site from Oak Street

Figure 16 – (Photograph E) Development along the southern side of the site addressing Schofields Rd

Relationship of the Site to NWRL Sites

The NWRL SSI Approvals SSI-5100 (for Major Civil Construction Works) and SSI-5414 (for Stations, Rail Infrastructure and Systems) provide for a stabling and maintenance facility on 10 lots, nine of which front Schofields Road and one which fronts Tallawong Road, of a total size of approximately 22 hectares.

The site for the proposed RTRF includes the site approved under SSI-5414 (for Stations, Rail Infrastructure and Systems) for the NWRL stabling and maintenance facility, as well as the following:

- Three lots fronting Tallawong Road to the north of the SSI-5414 site.
- Two lots fronting Oak Street and part of one lot fronting Gordon Street.

SSI-5100 and SSI-5414 include for Construction Site 17 to be used for the construction of the approved NWRL Tallawong Road maintenance and stabling facility. Additional works associated with the diversion of Tallawong Road, the bridge over the railway line for Tallawong Road, and the construction of the railway line between Cudgegong Road Station and the maintenance facility are also included.

Figure 17 below illustrates the relationship between the RTRF site and the indicative finished layout of the Cudgegong Road Station precinct for which approval has been granted under SSI-5414.