

Rapid Transit Rail Facility

State Significant Infrastructure Application: Supplementary Report

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1 Overview

This report has been prepared by Transport for NSW (TfNSW) to supplement the Rapid Transit Rail Facility State Significant Infrastructure Application made on 9 April, 2013.

TfNSW proposes to develop a purpose built train stabling and maintenance facility to support Sydney's new rapid transit rail network. The Rapid Transit Rail Facility would be located on 34 hectares of land between Tallawong Road, Schofields Road and First Ponds Creek in the localities of Rouse Hill and Schofields.

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. New generation, single deck rapid transit trains are a key element of the strategy.

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. It is important to ensure that the delivery of rapid transit infrastructure can occur as outlined in *Sydney's Rail Future*.

The rapid transit services will commence with the North West Rail Link (NWRL) operating between Chatswood and Cudgegong Road, Rouse Hill. *Sydney's Rail Future* envisages that rapid transit trains would be stabled and maintained at a purpose built facility at the western end of the NWRL.

The Rapid Transit Rail Facility is to cater for future expansion of the rapid transit system, including a future harbour crossing and link to the southern suburbs. The facility would be constructed in two phases and would provide stabling for 45 trains and maintenance facilities for 76 trains. The initial design capacity would be 20 trains (stabling and maintenance).

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 is contained in the Major Civil Construction Works Environmental Impact Statement (March 2012) and Stations, Rail Infrastructure and Systems Environmental Impact Statement (October 2012).

The Rapid Transit Rail Facility project comprises State significant infrastructure pursuant to clause 1 of Schedule 3 of *State Environmental Planning Policy (State and Regional Development) 2011*. This report provides the Department of Planning and Infrastructure with additional information on the project to enable environmental assessment (Director General's) requirements to be issued for the preparation of an Environmental Impact Statement.

Preliminary consultation has been held with the Department of Planning and Infrastructure (Housing Infrastructure and Delivery). Issues raised as addressed in Section 6 of this Supplementary Report.

The Rapid Transit Rail Facility SSI Application and this Supplementary Report are based on the reports and background studies listed in Section 2.3.

2 Strategic context

2.1 NSW Government strategies and plans

NSW 2021: A Plan to Make NSW Number One

NSW 2021 is the NSW Government's 10 year plan to grow the NSW economy, return quality services, renovate infrastructure, strengthen local environments and communities, and restore accountability to Government. *NSW 2021* contains goals, targets and actions to guide the direction of development in the state.

The Rapid Transit Rail Facility project is consistent with the goals, actions and targets of the NSW 2021 particularly in terms of renovating infrastructure.

Draft Metropolitan Plan for Sydney 2031

The Draft Metropolitan Strategy for Sydney 2031 is currently being exhibited for public comment. 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 city shapers will help to make sure 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 would be integral to key initiatives of the Long Term Transport Master Plan and would support the Draft Metropolitan Strategy objectives to improve accessibility and connectivity to major employment hubs.

NSW Long Term 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 Long Term Transport Master Plan. *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 North West Rail Link, a second Harbour crossing and new CBD line and extension of the new single deck service to Bankstown and Hurstville. The Rapid Transit Rail Facility would be a key component of the long-term rapid transit network.

2.2 Project justification

Sydney's rail system needs to be modernised. The challenge posed by the complex ageing system means that the current network cannot grow sufficiently to meet forecast demand. The current network does not deliver what customers want – shorter journey times and services that are more regular, more reliable and tailored to different customer needs.

In line with the approach of focussing specifically on the different needs of customers, *Sydney's Rail Future* will deliver a three-tiered system to respond to changing customer needs. Rapid transit, 'turn up and go' trains, comprise Tier 1 services.

A whole-of-network approach has been taken to long term planning for *Sydney's Rail Future*. It has closely anticipated future demand across the network to identify areas requiring significant capacity increases.

Implementation of the strategy will unfold through a long term program of service improvements, capital works and network upgrades. The proposed Rapid Transit Rail Facility would facilitate Stage 4 (second Harbour Crossing) and Stage 5 (Southern sector conversion) of the *Sydney's Rail Future* strategy including:

- Completion of a new tunnel under the Harbour and a new Sydney CBD line, allowing services from the North West Rail Link to extend directly to the Sydney CBD
- The second Harbour Crossing will create the largest increase in capacity to the Sydney rail network for 80 years
- Untangling the CBD enables major capacity increases on the Western Line
- Extension of the new single deck service to Bankstown and Hurstville
- Continue major timetable changes to the existing suburban services to continue major capacity increases to the South West and Western Sydney
- Better express services introduced due to separation from rapid transit.

2.3 Background studies

The Rapid Transit Rail Facility SSI Application and this Supplementary Report has drawn from the following background studies and reports:

- North West Rail Link Stage 1 – Major Civil Construction Works including technical reports and appendices prepared by AECOM, March 2012;
- North West Rail Link Stage 2 – Stations, Rail Infrastructure and Systems including technical reports and appendices prepared by AECOM, October 2012;
- Cudgegong Road Station Draft Structure Plan, March 2013; and
- North West Growth Centre Area 20 Draft Precinct Plan Supporting Technical Studies (December 2010)

3 The site

3.1 Locality

The Rapid Transit Rail Facility would occupy 34 hectares of land between Tallawong Road, Schofields Road and First Ponds Creek in the localities of Rouse Hill and Schofields. The Rapid Transit Rail Facility would be connected to the rapid transit network at the western end of the NWRL. Existing land uses are predominantly rural residential and include intensive animal and agriculture activities (Plates 1 and 2).

The site is within the Riverstone East Precinct of the North West Growth Centre (Figure 1). The Riverstone East Precinct includes the land north of Schofields Road and on the eastern side of First Ponds Creek. Precinct planning for the Riverstone East Precinct is expected to commence in the near future.

Land on the western side of First Ponds Creek is within the North West Growth Centre's Riverstone Precinct. The Riverstone Precinct has been rezoned. The Area 20 and Alex Avenue Precincts are to the east and south. Both of these areas have precinct plans in place. Land uses within the locality are expected to change as urban development proceeds.



Figure 1 - Site context

(Source: Cudgong Road Draft Structure Plan, March 2013)



Plate 1 – Existing rural character of the locality



Plate 2 – Existing rural character, Tallawong Road

3.2 Site details

The land subject to the application is detailed in Table 1 and shown in Figure 2. The site area is approximately 34 hectares.

Table 1 - Land subject to the application.

| Lot | DP | 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 |



Figure 2 - Land subject to the application

4 Statutory assessment framework

4.1 Commonwealth legislation

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (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.

A strategic certification for the North West and South West Growth Centres under the Commonwealth (EPBC) legislation was approved on 28 February 2012. The Rapid Transit Rail Facility project is not expected to require referral under the EPBC.

4.2 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 'State significant infrastructure'. Part 5.1 applies to development that is declared to be State significant infrastructure by a State Environmental Planning Policy (SEPP).

Under Section 115U of the Act, development that may be declared to be State significant infrastructure is development of the following kind that a State Environmental Planning Policy 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.*

As set in Section 4.3, the proposal is predicted to have a potentially significant impact on the environment and is therefore State significant infrastructure. In accordance with Section 115W of the Act, approval from the Minister for Planning is required.

4.3 Environmental planning instruments

State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 provides specific provisions for 25 types of infrastructure works or facilities. Clause 79 allows rail infrastructure facilities can be carried out by or on behalf of a public authority without development consent on any land. Certain restrictions apply to land that is reserved under the *National Parks and Wildlife Act 1974*.

The Rapid Transit Rail Facility is permissible without consent as all components of the proposal can be defined as a rail infrastructure facility under the SEPP.

State Environmental Planning Policy (State and Regional Development) 2011

Part 3 of *State Environmental Planning Policy (State and Regional Development) 2011* (SEPP SRD) identifies development that is State significant infrastructure.

Clause 14 declares development to be State significant infrastructure for the purposes of the EP&A Act if it is permissible without consent under Part 4 of the Act and specified in Schedule 3 of the SEPP. Schedule 3, clause 1 (General public authority activities) includes the following:

- (1) Infrastructure or other development that (but for Part 5.1 of the Act and within the meaning of Part 5 of the Act) 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 of the Act.*

SEPP (Infrastructure) 2007 provides that the Rapid Transit Rail Facility project is permissible without consent and, but for Part 5.1 of the Act, would otherwise be subject to Part 5 of the Act. TfNSW would be the proponent and the determining authority for the proposal.

TfNSW has formed the opinion that, based on the preliminary environmental assessment, the proposal is likely to have a significant impact on the environment, and an EIS would otherwise be required to be obtained.

The proposal therefore comprises State significant infrastructure.

4.4 Relationship to NWRL

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. The major civil construction works (Stage 1) were approved on 25 September 2012. An application for Stage 2 (Stations, Rail Infrastructure and Systems) is awaiting determination.

The NWRL planning approvals envisage a train stabling and maintenance facility at Tallawong Road:

- Stage 1: Major Civil Construction Works (EIS 1) describe basic operations, the proposed area of a train stabling facility at the Tallawong Road site and construction methodology;
- Stage 2: Stations, Rail Infrastructure and Systems (EIS 2) describes the activities associated with operating the stabling and maintenance and includes an indicative site layout.

The Rapid Transit Rail Facility is required to support the future operational requirements of *Sydney's Rail Future*. TfNSW has determined that a separate planning approval is required because of the increased scale and broader purpose of the facility.

The relationship between the proposed Rapid Transit Rail Facility and the NWRL Tallawong Stabling Facility site is shown in Figure 3. The train operations area would connect directly to the NWRL tracks under Tallawong Road, which would be realigned as part of the NWRL project.

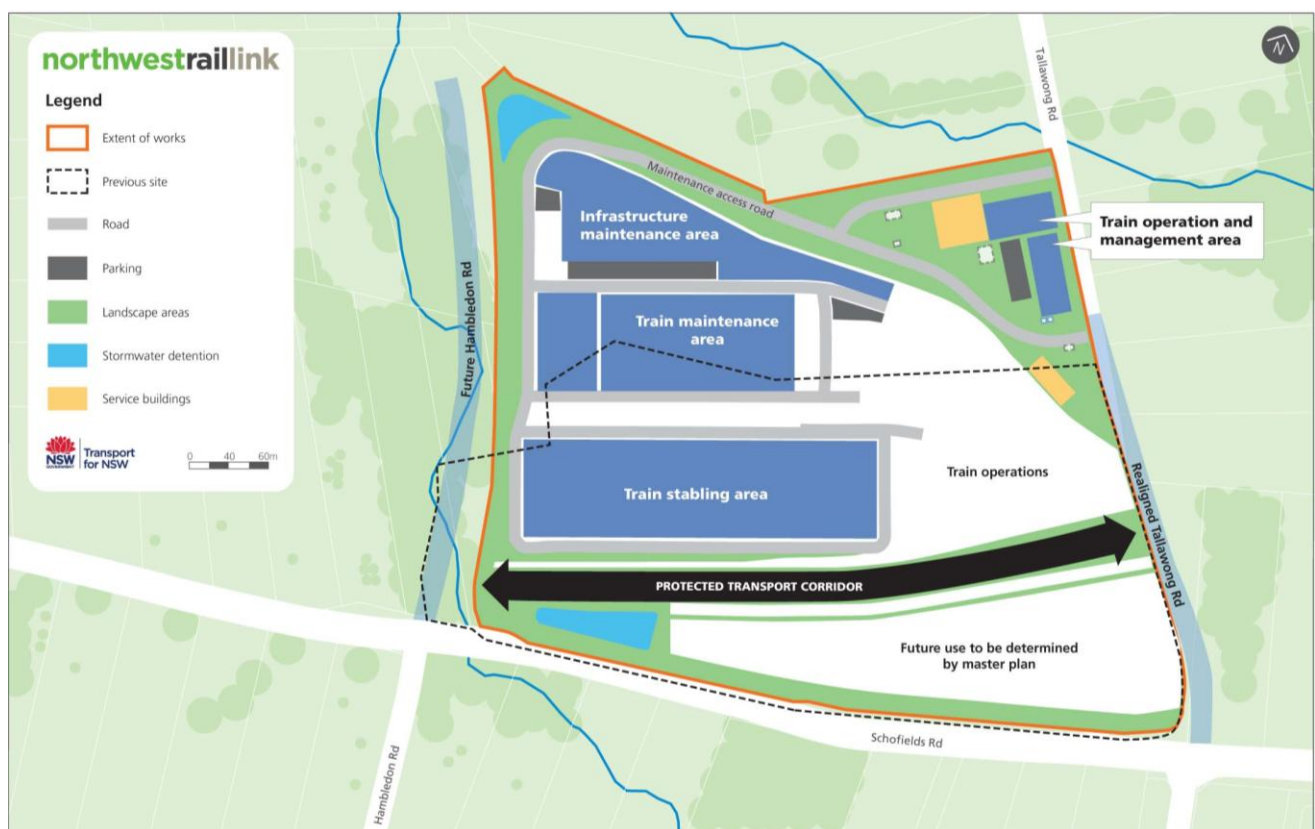


Figure 3 - Relationship to NWRL Tallawong Stabling Facility

5 The project

5.1 Description

The Rapid Transit Rail Facility would comprise a purpose built train stabling and maintenance facility to support Sydney's new rapid transit rail network. The facility would be constructed in two phases with capacity for 20 trains at opening and a final design capacity to stable 45 eight car train sets and maintain 76 eight car train sets.

The facility would be a secure facility operating 24 hours a day, seven days a week. The future development site indicated along the Schofields Road frontage is not part of the application.

The facility would include:

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

An indicative site layout is shown in Figure 4.

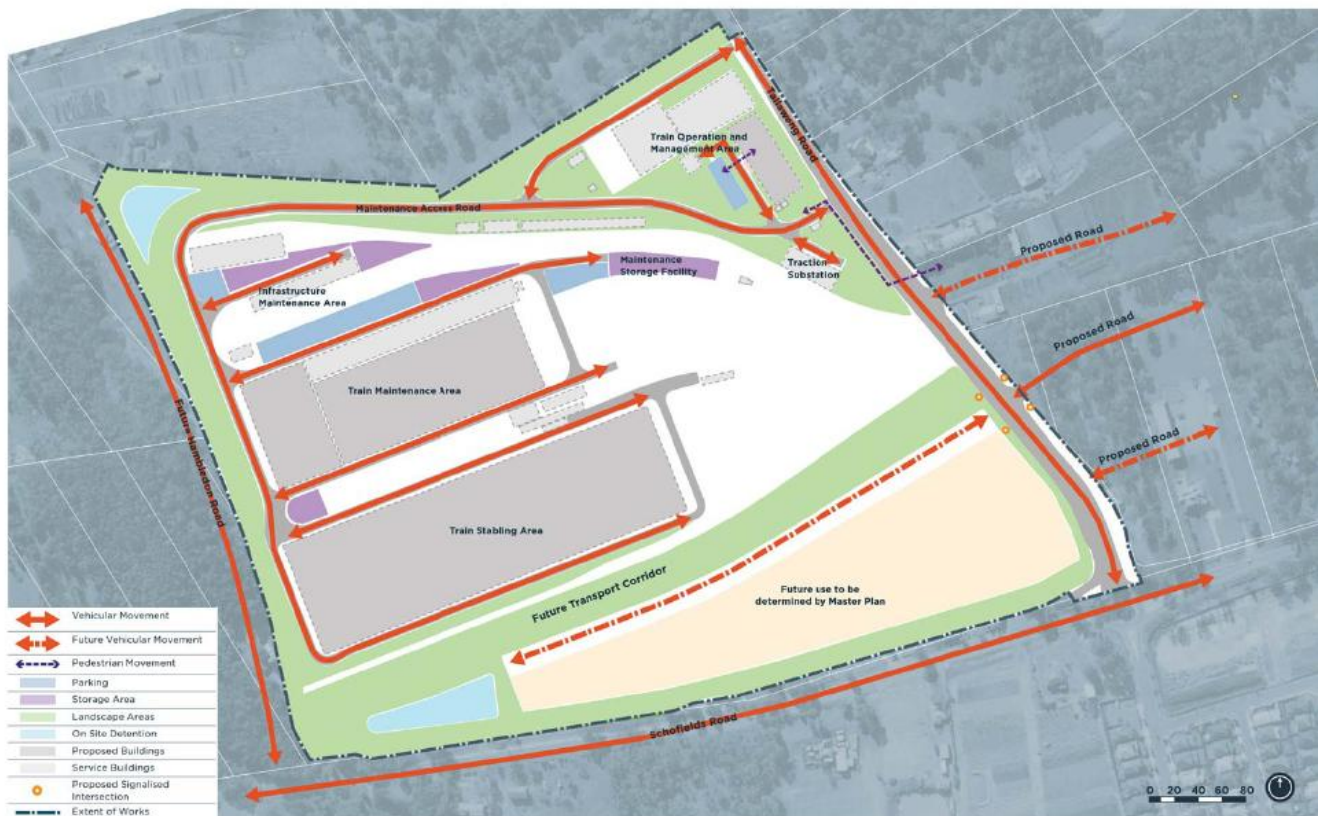


Figure 4 - Rapid Transit Rail Facility indicative layout

5.2 Key elements

Train stabling

The area for train stabling would be located on the southern side of the facility towards Schofields Road. The stabling sidings would be approximately 360m long and accommodate two eight car train sets on each siding. A service road would enable access around the outside of the stabling area.

The stabling sidings would be constructed in two phases with capacity for up to 20 trains at opening. The second phase (end state) would include capacity for stabling up to 45 trains.

Train maintenance

Maintenance of rolling stock would occur within a workshop towards the centre of the site. The maintenance workshop would consist of eight maintenance tracks constructed in two phases. Four tracks would be provided at opening and the remaining four in the second phase (end state) to support an ultimate capacity for maintaining 76 eight car train sets.

The maintenance workshop would be approximately 260m long, 100m wide and 15m high. All maintenance activities would be conducted within the building. The structure would have operable doors at either end to enclose the space in order to minimise noise.

Infrastructure maintenance

An infrastructure workshop would be provided on the northern side of the maintenance workshop. The infrastructure workshop would include facilities for storing and servicing rail track infrastructure equipment.

An infrastructure workshop building measuring approximately 100m in length by 14m wide would provide a marshalling area for infrastructure operations. The approximate height of the workshop building would be 15m.

Administration and training

Operations, maintenance and administration for the rapid transit network would be coordinated and managed from the site. An administration building would incorporate a rapid transit Operations Control Centre where command, control, system monitoring and communications functions would take place. The building would also include office facilities and amenities for rapid transit staff.

The proposed administration building would be located near the main site entrance from Tallawong Road. The two storey building would have an indicative footprint of 80m by 30m, and a maximum height of 8m. The indicative gross floor area of the administration building would be approximately 2,400m².

Vehicle access and parking

Vehicle access to the site would be from Tallawong Road. The main site entry would be on the northern side of the rail facility tracks. A secondary site access would be located at the northern end of the Tallawong Road frontage. All site access points would be security controlled.

An internal access road would facilitate movements within the site including access for maintenance vehicles to the stabling tracks, wheel lathe, bogie drop, train wash and signalling and communications equipment building and administrative buildings. The internal access road would also allow emergency vehicle access and access for garbage and waste collection.

Vehicle parking areas would be provided for staff and visitors. Around 180 parking spaces would be distributed around the site based on estimated staffing within different areas of the facility.

Site security

The facility would be a high security site that would be fully self-contained with back-up power supplies and access control/security systems. The site would also accommodate the needs of emergency services. The site would be expected to support approximately 300 staff.

5.3 Alternatives

Five potential options have been identified for consideration as part of the Rapid Transit Rail Facility environmental assessment:

1. Do Nothing;
2. Extension into Cudgegong Road Station Precinct (Eastern Option);
3. Extension over First Ponds Creek (Western Option);
4. Marsden Park; and
5. Tallawong Road North.

These are described in turn below.

Do Nothing

The Do Nothing option would result in no stabling or maintenance facilities for the rapid transit network being provided in the North West. The implications are:

- The North West Rail Link would rely on existing and imminent approvals for the stabling facility at Tallawong Road; and
- Stabling, maintenance and operation/administrations management for the new rapid transit network would need to occur in another location.

Preliminary assessment/comment

The Do Nothing option does not support the requirements of the strategic transport planning documents and operational requirements of the rapid transit rail network.

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.

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.

Preliminary assessment/comment

- 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);
- Limits future potential of the Cudgegong Road Station precinct including opportunities to integrate the new station precinct with surrounding land uses; and
- Less potential environmental impacts than other options, particularly in relation to the riparian corridor of First Ponds Creek.

Western Option

The Western Option would extend across First Ponds Creek occupying the land between Tallawong Road and Boundary Road.

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.

Preliminary assessment/comment

- Potential conflict with future land uses;
- 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;
- Would potentially conflict with the future northern extension of Hambledon Road; and
- Likely to result in additional adverse impacts on the riparian corridor of First Ponds Creek.

Marsden Park Option

An option has been identified that could locate the Rapid Transit Rail Facility within Marsden Park. This option assumes that the facility would be located at the western end of the future transport corridor. The potential location is within the Marsden Park Industrial Precinct.

The future transport corridor to Marsden Park generally follows Schofields Road and links to South Street, Marsden Park. Any stabling facility would therefore be located on land along the northern edge of the Marsden Park Industrial Precinct. The land in this area is zoned for medium density residential development or business uses.

Preliminary assessment/comment:

- Potential conflict with future land uses;
- Considerable distance to Cudgegong Road Station if constructed in advance of western extension of the rapid transit network would significantly reduce the operational efficiency;
- Considerable additional cost; and
- Environmental impacts between Second Ponds Creek and Marsden Park Industrial Precinct.

Tallawong Road Option

The Tallawong Road option would be contained between Tallawong Road, Schofields and First Ponds Creek utilising approximately 34 hectares of land.

Preliminary assessment/comment:

- Optimal operational (functional) and environmental outcomes compared to other options;
- Allows for future northern extension of Hambledon Road; and
- Generally compatible with adjoining land uses with potential to influence future structure planning for the Riverstone East Precinct.

The Tallawong Road option will be assessed against alternatives in the environmental impacts statement.

6 Consultation

Initial consultation has occurred with the regional office of the Department of Planning and Infrastructure. Issues raised in the preliminary meeting included:

- Consideration of Marsden Park Industrial as an option for the site
- Consideration of impacts to surrounding land uses, particularly operational noise and relationship to future land use potential of nearby land.

Further consultation would be undertaken as part of the environmental assessment process, including consultation with agencies (Roads and Maritime Services, Blacktown City Council, Urban Growth) and local stakeholders (landowners, community groups, schools and local businesses).

It is noted that considerable (and ongoing) discussions have been undertaken with Blacktown City Council in relation to the NWRL and its detailed elements. This includes issues associated with the NWRL's Tallawong Stabling Facility.

7 Potential environmental issues

7.1 Key environmental issues

TfNSW has identified key environmental issues that will require detailed assessment and may require project specific mitigation measures. The preliminary assessment is based on:

- baseline information and technical reports prepared for the North West Rail Link Environmental Impact Statements (Major Civil Construction Works, March 2012, and Stations, Rail Infrastructure and Systems, October 2012);
- Cudgegong Road Draft Structure Plan prepared by Hill PDA and Cox Richardson for Transport for NSW and the Department of Planning and Infrastructure (March 2013).

The key environmental issues are expected to include:

- Land use, property and infrastructure planning;
- Biodiversity and ecology;
- Traffic and transport;
- Noise and vibration;
- Indigenous and non-Indigenous heritage and Aboriginal archaeology;
- Flooding and hydrology;
- Bushfire;
- Visual impacts, landscape and urban design; and
- Social and economic impacts.

Other potential environmental considerations that could arise include:

- Air quality;
- Greenhouse gases;
- Waste management and resource use; and
- Cumulative impacts.

These issues are expected to be of lesser consequence in the context of the project scope, existing environment and the implementation of standard management and safeguard measures.

7.1.1 Land use, property and infrastructure planning

Discussion of issues

The site is at the southern edge of the Riverstone East Precinct of the North West Growth Centre. The Riverstone Precinct is to the west and Alex Avenue Precinct is to the south.

The existing land use zones are illustrated in Figure 5. Although existing land uses are predominantly rural residential and semi-urban, the Riverstone Precinct plan zones the land on the western side of First Ponds Creek drainage and open space with low and medium density residential development beyond. The Alex Avenue Precinct Plan zones land along Schofields Road for drainage purposes and residential use.

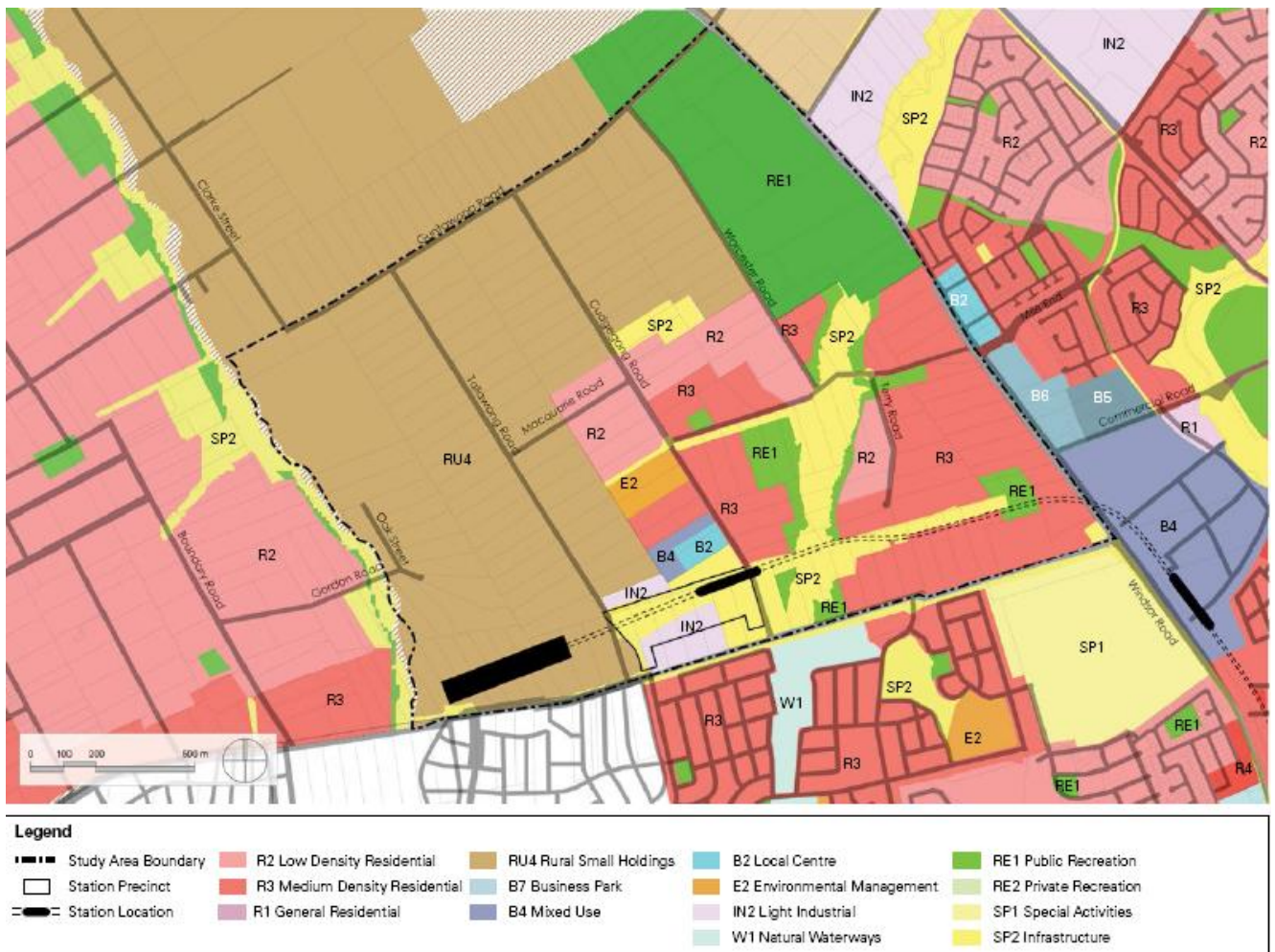


Figure 5 - Existing land use zones (Source: Cudgegong Road Draft Structure Plan, March 2013)

Precinct planning for the Riverstone East Precinct is expected to commence in the near future. Implications of existing and likely future land uses will be relevant considerations for the environmental assessment.

Further assessment is anticipated to determine the potential for the proposed facility to affect existing public utility infrastructure and services.

Further assessment and mitigation

1. Determine implications for existing and future planning, land use and development strategies including planning for the Riverstone East Precinct.
2. Identify any impacts on existing and planned infrastructure and utility services, and any actions to protect or mitigate against impacts.

7.1.2 Biodiversity and ecology

Discussion of issues

Land on either side of First Ponds Creek is within the North West Growth Centre Biodiversity Certified Area. The riparian corridor is excluded from the bio-certified area. Figure 6 presents a summary of the vegetation of the locality.

Biodiversity and ecological considerations for the project include:

- Impacts on endangered or critically endangered ecological communities (flora and fauna)
- Potential impacts on riparian vegetation and aquatic ecology of First Ponds Creek and its tributaries.

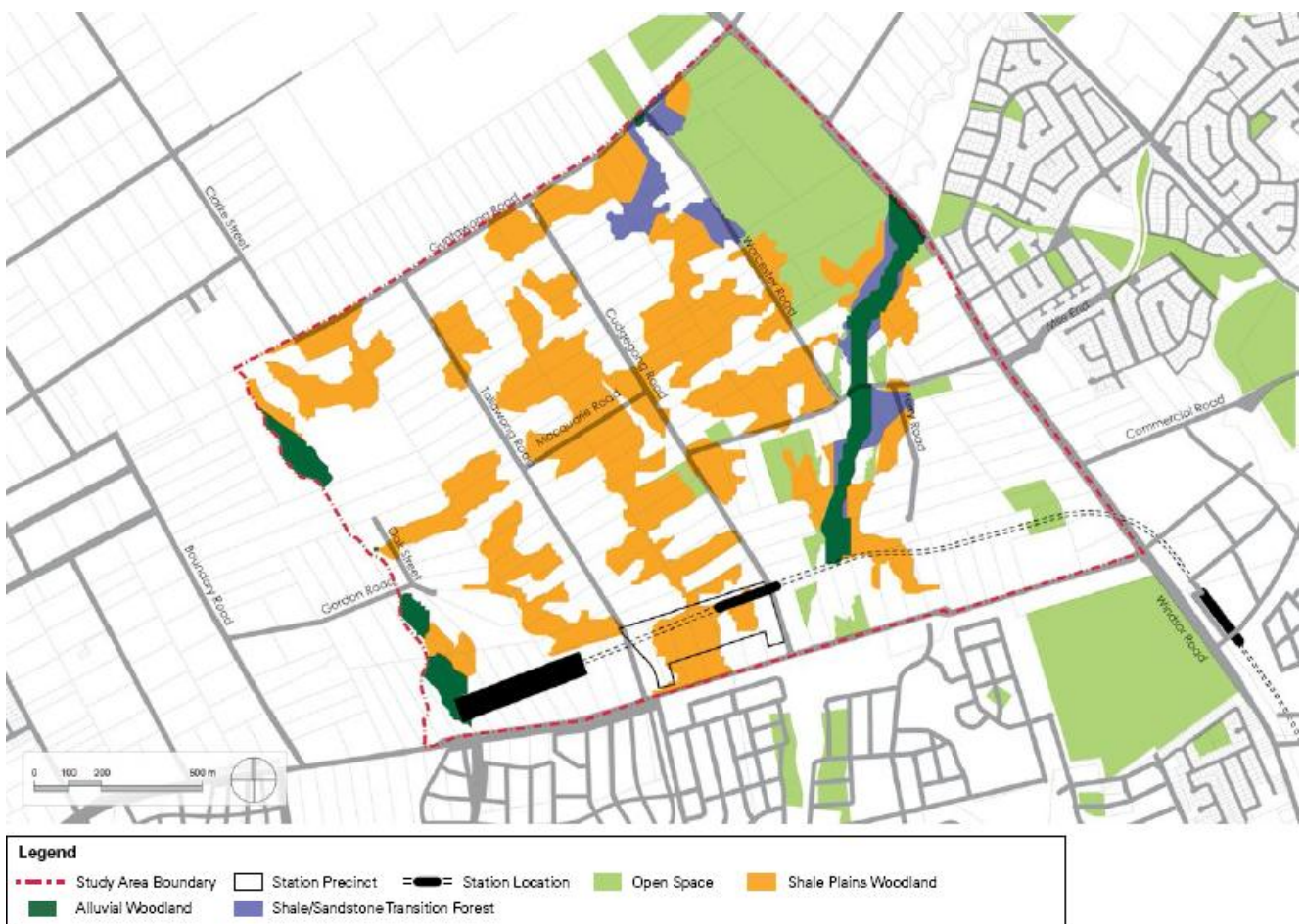


Figure 6 - Biodiversity and ecology (Source: Cudegong Road Draft Structure Plan, March 2013)

Previous studies for NWRL and the precinct planning for Area 20 have identified significant vegetation in the locality. This includes pockets of Cumberland Woodland Plain in poor to moderate condition, River Flat Eucalypt Forest in poor condition and riparian vegetation along the First Ponds Creek corridor. Although no threatened flora or fauna species have been found within the immediate site area, farm dams are present and might provide potential breeding and foraging habitat for threatened amphibians and migratory birds.

Shale Plains Woodland is classified as a Critically Endangered Ecological Community under the *Environment Protection and Biodiversity Conservation (EPBC Act) 1999* and the *NSW Threatened Species Conservation Act 1995*. The riparian vegetation along First Ponds Creek includes Alluvial Woodland which is listed as an Endangered Ecological Community under the *Threatened Species Conservation Act 1995*.

A strategic certification for the North West and South West Growth Centres under the Commonwealth Environmental Protection Biodiversity Conservation Act 1999 was approved on 28 February 2012. Further assessment is required to determine whether the proposed facility will affect vegetation within the certified and/or non-certified areas and the associated statutory requirements.

Further assessment and mitigation

Further assessment is required to determine flora and fauna impacts including impacts on:

1. Threatened species (aquatic and terrestrial)
2. Critical habitats (aquatic and terrestrial)
3. Ecological communities, native vegetation and corridors.

7.1.3 Traffic and transport

Discussion of issues

The key access routes of the locality are shown in Figure 7. Schofields Road is a main arterial road of the locality linking east-west from Schofields to Rouse Hill. Schofields Road forms the southern boundary of the site.

Schofields Road is currently being upgraded by Roads and Maritime Services (RMS) to provide two lanes in each direction between Windsor Road and Hambledon Road. The Schofields Road upgrade is expected to incorporate realignment of Tallawong Road to align with Ridgeline Drive. Longer term plans for the locality may include a northern extension of Hambledon Road. The timing would be determined by future urban development.

RMS has previously indicated that access to the NWRL Tallawong Stabling Facility should not be directly from Schofields Road. The proposed access to the facility is consistent with this recommendation.

The key contributors to traffic generation at the site would be expected to include:

- Movements associated with removal of excess spoil during construction
- Vehicle movements associated with staff working at the site during operation, particularly at changes of shifts.



Figure 7 - Access and movement corridors

(Source: Cudgegong Road Draft Structure Plan)

Further assessment and mitigation

1. Potential impacts on the local and regional road network during construction and operation.
2. Consultation with Roads and Maritime Services in relation to the proposed northern extension of Hambledon Road.

7.1.4 Noise and vibration

Discussion of issues

The Rapid Transit Rail Facility would include a number of potential noise sources. This would include noise associated with train movements and maintenance activities and heavy vehicle movements around the site.

Acoustic enclosures would be constructed around the primary noise generating activities. This includes:

- Maintenance workshop
- Train wash
- Wheel lathe and bogie drop
- Infrastructure workshop

- Track welder.

Preliminary noise assessment work indicates that, notwithstanding the proposed acoustic enclosures, there is potential for operations to generate noise intrusion to adjoining and nearby properties.

Further assessment and mitigation

Further assessment is required to determine:

1. Noise impacts from operations in relation to existing and likely future land uses.
2. Noise impacts during construction.

7.1.5 Indigenous and non-Indigenous and Aboriginal heritage

Discussion of issues

Surveys undertaken as part of the NWRL environmental assessment process found limited ground surface visibility (10 percent) and infrequent areas of soil exposure. Disturbance impacts were associated with residential development, farming, ploughing, cropping, grazing, dam construction, farm tracks and vegetation stripping.

The survey work identified previously unrecorded Aboriginal sites, confirmed the presence of some previously recorded Aboriginal sites and confirmed zones with potential archaeological deposits. The identified sites were found to have from low to moderate potential, with one having moderate to high potential (subject to further investigation).

Further assessment is required to determine the potential for additional Aboriginal sites in the northern section of the Rapid Transit Rail Facility site.

Rouse Hill House and Farm is located approximately 2.5kms to the north of the site (refer Figure 8). The proposed facility would be unlikely to impact on the setting or heritage significance of Rouse Hill House as it would be screened by the existing landscape and vegetation (Plate 3).



Plate 3 – View from Rouse Hill House and Farm towards the site



Figure 8 - Heritage items (Source: Cudgong Road Draft Structure Plan, March 2013)

Further assessment and mitigation

1. Identify areas of direct and indirect impact (including areas of heritage potential), assess the heritage significance of any sites and consider potential measures to offset any unavoidable impact on heritage.
2. Ensure consistency with the strategies/approach developed for the Growth Centres.

7.1.6 Flooding and hydrology

Discussion of issues

The site is within the catchment of First Ponds Creek. Second Ponds Creek is to the east. Both creeks drain into the Hawkesbury River catchment which is to the south. The locality is subject to varying degrees of flooding risk. Figure 9 shows a summary of the existing drainage conditions of the area.

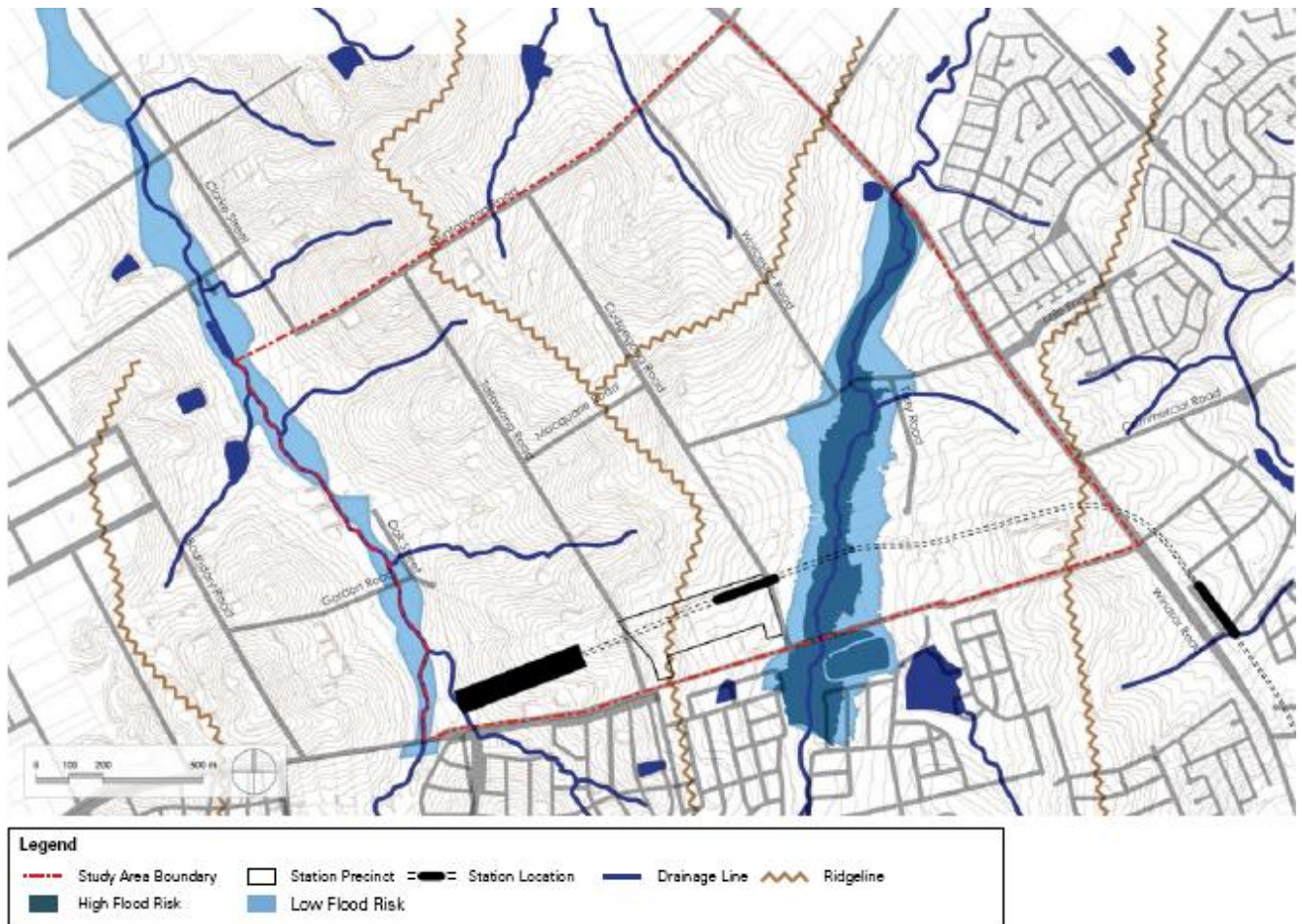


Figure 9 - Drainage patterns of the locality (Source: Cudgegong Road Draft Structure Plan)

Potential impacts and issues for the project include:

- Changes to surface water and stormwater flows
- Impacts on salinity levels of the riparian corridor.

The First Ponds Creek catchment is largely undeveloped, consisting of rural residential properties. Urban development is currently occurring in the catchment area, with development currently proceeding at Alex Avenue to the south.

Surface water and hydrological investigations undertaken for the NWRL environmental assessment found that the tributary of First Ponds Creek on the western edge of the site is partially flood affected (subject to a minor flood risk). The riparian corridor of First Ponds Creek was found to be in poor condition with a degraded aquatic condition.

The NWRL technical assessment confirms that development on the site would need to incorporate water quality measures in accordance with the NSW Sustainable Guidelines for Rail (TfNSW, 2011).

Further assessment and mitigation

1. Flood impact assessment in accordance with the NSW Government Floodplain Development Manual (2005).
2. Identify potential increases in flood levels, duration, hazard impacts, and mitigation options through appropriate flood modelling.
3. Impacts on soil salinity and potential acid sulphate soils.

7.1.7 Bushfire

Discussion of issues

The Cudgegong Road Draft Structure Plan identifies the potential for bushfire threat along the First Ponds Creek corridor because of the highly vegetated setting (Figure 10). More detailed studies are required to confirm the extent of any bushfire prone land and required mitigation measures.



Figure 10 - Bushfire hazards (Source: Cudgegong Road Draft Structure Plan, March 2013)

Further assessment and mitigation

1. Identify and assess the potential for bushfire threat to the site.

7.1.8 Visual impacts, landscape and urban design

Discussion of issues

The Rapid Transit Rail Facility would require a level platform for operational purposes. Detailed design work is expected to determine the optimum level for the facility in relation to the existing landform.

The potential for changes to the natural ground levels, particularly along the western boundary, could impact the visual amenity of the locality, particularly in combination with loss of vegetation. The project would also introduce new elements into the visual landscape.

Potential visual, landscape and urban design issues are likely to include:

- Impacts associated with introducing a new element into the landscape
- Visual impacts from changes to ground levels.

Further assessment and mitigation

1. Identify and evaluate the key visual impacts of the project.
2. Prepare urban design principles to guide detailed design for the facility including opportunities for landscaping to provide visual screening.

7.1.9 Social and economic impacts

Discussion of issues

The proposed facility would introduce a new land use in a locality that is earmarked for future urban development. The project also has the potential to generate positive changes, particularly associated with local job opportunities. Issues arising include:

- Increased employment during construction and operation
- Potential amenity impacts to properties in the vicinity of the site

Further assessment and mitigation

1. Identify social benefits and impacts of the project on the local community and existing sensitive land uses in the vicinity of the site.
2. Identify any business impacts and economic impacts to the locality.

7.2 Other environmental issues

TfNSW considers the following environmental considerations to be lesser consequence in the context of the project scope, the existing environment and the implementation of standard management and safeguard measures:

- Air quality
- Greenhouse gases
- Waste management and resource use
- Cumulative impacts.

Appendix – Risk Assessment

.1 Risk analysis framework

The environmental risk analysis has been undertaken in accordance with the principles of the Australian and New Zealand standard AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines. The risk analysis involved:

- Ranking the risk of each identified potential impact by identifying the consequences of the impact and the likelihood of each impact occurring.
- Considering the probable effectiveness of the proposed mitigation measures to determine the likely residual risk of each impact.

The first step involved the identification of the consequence, should an impact occur. Definitions of the consequence used as a guide are provided in Table 1.

The following step in the risk analysis involved an assessment of the likelihood of the consequence, considering the frequency of activities that are to occur. The definitions of likelihood used as a guide are provided in Table 2.

The risk rating was then determined by combining the consequence and likelihood according to the matrix in Table 3.

Table 1 Risk analysis consequence definitions

| Consequence | Level Definition |
|---------------|---|
| Catastrophic | Long term (greater than three months) and irreversible impacts. Resulting in a major prosecution under relevant environmental legislation. |
| Major | Medium term (between one and three months) and potentially irreversible impacts. Resulting in a fine or equivalent penalty under relevant environmental legislation. |
| Moderate | Moderate and reversible impacts, or medium term (between one and three months). |
| Minor | Minor and reversible impacts, or short term impacts (less than one month). |
| Insignificant | Minor, negligible impacts. |

Table 2 Risk analysis likelihood definitions

| Likelihood | Definition | Probability |
|-------------------|---|--------------------|
| Almost certain | The event is almost certain to occur in the course of normal or abnormal construction or operational circumstances. | >90% |
| Likely | The event is more likely than not to occur in the course of normal construction or operational circumstances. | 51% – 90% |
| Possible | The event may occur in the course of normal construction or operational circumstances. | 26% – 50% |
| Unlikely | The event is unlikely to occur in the course of normal construction or operational circumstances. | 5% – 25% |
| Very unlikely | The event may occur in exceptional construction or operational circumstances only. | < 5% |

Table 3 Risk Matrix

| Consequence | Likelihood | | | | |
|----------------------|----------------------|-----------------|-----------------|---------------|-----------------------|
| | <i>Very unlikely</i> | <i>Unlikely</i> | <i>Possible</i> | <i>Likely</i> | <i>Almost certain</i> |
| <i>Catastrophic</i> | 15 | 19 | 22 | 24 | 25 |
| <i>Major</i> | 10 | 14 | 18 | 21 | 23 |
| <i>Moderate</i> | 6 | 9 | 13 | 17 | 20 |
| <i>Minor</i> | 3 | 5 | 8 | 12 | 16 |
| <i>Insignificant</i> | 1 | 2 | 4 | 7 | 11 |

Based on the risk rating score obtained above, risks were then categorised from low to extreme as shown in Table 4.

Table 4 Risk rating categories

| Risk rating score | Risk category | Comments |
|--------------------------|----------------------|--|
| 23 - 25 | Extreme | Assessment and planning is necessary to avoid these potential impacts to the greatest extent possible |
| 19 – 22 | Very High | Detailed assessment and planning is necessary to develop appropriate measures to mitigate the potential impacts wherever possible |
| 13 – 18 | High | Detailed assessment and planning is necessary to develop appropriate measures to mitigate the potential impacts. |
| 8 – 12 | Moderate | Potential impacts can be mitigated through the application of relatively standard environmental mitigation measures |
| 1 - 7 | | Low Potential impacts either require no specific mitigation measures or are adequately mitigated through other working controls (such as detailed design requirements, normal working practice, quality and safety controls) |

.2 Environmental risk analysis

Using the risk framework above, an environmental risk analysis has been undertaken for the project (Table 5). The analysis is structured towards risk minimisation outcomes. The residual risk rating is arrived at after the application of anticipated mitigation measures that will be further developed at the EIS stage.

Table 5 Environmental risk analysis

| Issue | Potential Adverse Impacts | Consequence | Likelihood | Risk Rating | Proposed Mitigation Measures | Residual Consequence | Residual Likelihood | Residual Risk Rating |
|--|--|-------------|----------------|-----------------|--|----------------------|---------------------|----------------------|
| Land use, property and infrastructure planning | Implications for existing and future planning, land use and development strategies including planning for the Riverstone East Precinct | Major | Likely | 21 Very High | Consultation with DP&I and Council | Minor | Very Unlikely | 3 Low |
| | Impacts on existing and planned infrastructure and utility services | Major | Very Unlikely | 10 Moderate | Consultation with asset owners, including during detailed design | Minor | Very Unlikely | 3 Low |
| Biodiversity and ecology | Impacts on endangered or critically endangered ecological communities (flora and fauna) | Moderate | Almost Certain | 20 Very High | Offsets in accordance with strategic certification | Minor | Almost Certain | 16 High |
| | Potential impacts on riparian vegetation and aquatic ecology of First Ponds Creek and its tributaries | Moderate | Almost Certain | 20 Very High | Site specific mitigation measures | Minor | Possible | 8 Moderate |
| Transport and traffic | Potential impacts on the local and regional road network during construction | Minor | Almost Certain | 16 High | Site specific and standard mitigation measures | Insignificant | Almost Certain | 11 Moderate |
| | Potential impacts on the local and regional road network during operation | Moderate | Very Unlikely | 6 Low | Standard mitigation measures | Minor | Very Unlikely | 3 Low |
| Noise and vibration | Potential noise impacts from operations in relation to existing and likely future land uses | Moderate | Almost Certain | 20 Very High | Site specific mitigation measures and operational controls | Minor | Likely | 12 Moderate |

| Issue | Potential Adverse Impacts | Consequence | Likelihood | Risk Rating | Proposed Mitigation Measures | Residual Consequence | Residual Likelihood | Residual Risk Rating |
|---|---|--------------|----------------|-----------------|---|----------------------|---------------------|----------------------|
| | Potential noise impacts during construction | Moderate | Almost Certain | 20 Very High | Standard mitigation measures | Minor | Almost Certain | 16 High |
| Indigenous and non-Indigenous heritage and Aboriginal archaeology | Direct and indirect impact (including areas of heritage potential) of any sites | Moderate | Almost Certain | 20 Very High | Archaeological investigations (known PADs) and standard mitigation measures | Minor | Almost Certain | 16 High |
| Flooding and hydrology | Potential flood risks associated with First Ponds Creek and its tributaries | Catastrophic | Likely | 24 Extreme | Flood impact assessment in accordance with guidelines | Minor | Possible | 8 Moderate |
| | Changes to surface water and stormwater flows | Major | Possible | 18 High | Standard mitigation measures | Minor | Unlikely | 5 Low |
| | Impacts on salinity levels of the riparian corridor | Minor | Possible | 8 Moderate | Standard mitigation measures | Insignificant | Unlikely | 2 Low |
| Bushfire | Potential for bush fire threat along the First Ponds Creek corridor | Major | Very Unlikely | 10 Moderate | Site specific and standard mitigation measures | Moderate | Very Unlikely | 6 Low |
| Visual impacts, landscape and urban design | Impact on the visual amenity of the locality, particularly in combination with loss of vegetation | Moderate | Almost Certain | 20 Very High | Site specific design and screening/landscaping | Minor | Almost Certain | 16 High |
| | Construction phase would also introduce new elements into the visual landscape | Moderate | Almost Certain | 20 Very High | Standard mitigation measures | Insignificant | Almost Certain | 11 Moderate |
| Social and economic impacts | Increased employment during construction and operation (positive) | Minor | Likely | 12 Moderate | - | Minor | Likely | 12 Moderate |

| Issue | Potential Adverse Impacts | Consequence | Likelihood | Risk Rating | Proposed Mitigation Measures | Residual Consequence | Residual Likelihood | Residual Risk Rating |
|---------------------------------|---|-------------|----------------|-----------------|--|----------------------|---------------------|----------------------|
| | Potential amenity impacts to properties in the vicinity of the site | Moderate | Almost Certain | 20 Very High | Application of mitigation measures for other aspects | Minor | Likely | 12 Moderate |
| Greenhouse Gas & climate change | Emissions of greenhouse gases during construction and operation contributing to climate change | Minor | Possible | 8 Moderate | Risk assessment and sustainability initiatives | Insignificant | Unlikely | 2 Low |
| Air quality | Impacts to surrounding receivers from dust and exhaust emissions during construction | Minor | Likely | 12 Moderate | Standard mitigation measures | Insignificant | Possible | 4 Low |
| | Localised impacts to surrounding receivers from exhaust emissions from plant and traffic associated with the facility | Minor | Likely | 12 Moderate | Site specific and standard mitigation measures | Minor | Unlikely | 5 Low |
| Resource use | Increased demand for potable water for use in the train wash facility | Minor | Almost Certain | 16 High | Sustainability initiatives (water reuse) | Minor | Unlikely | 5 Low |
| | Increased electricity consumption during construction and operation | Moderate | Almost Certain | 20 Very High | Sustainability initiatives (reduce/offset) | Minor | Likely | 12 Moderate |
| | Increased demand on local and regional resources including sand and aggregate during construction | Major | Almost Certain | 23 Extreme | Sustainability initiatives (reduced resource use) | Minor | Likely | 12 Moderate |

| Issue | Potential Adverse Impacts | Consequence | Likelihood | Risk Rating | Proposed Mitigation Measures | Residual Consequence | Residual Likelihood | Residual Risk Rating |
|--------------------|---|-------------|----------------|---------------|--|----------------------|---------------------|----------------------|
| Cumulative impacts | Impacts to local community and the environment compounded by other concurrent construction activities in the vicinity of the project (including the NWRL) | Major | Almost Certain | 23 Extreme | Site specific and standard mitigation measures | Minor | Likely | 12 Moderate |