Automatic Train Protection (ATP) Project
North Shore, Northern & Western Line and Cumberland Line – Area 6A
(Parramatta to Emu Plains and Richmond)

Determination Report

December 2017
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1 Introduction

1.1 Background

Transport for NSW (TfNSW) is the NSW Government's lead public transport agency that ensures planning and policy is fully integrated across all modes of transport in NSW. It manages a multi-billion dollar budget allocation for rail, bus, ferry and taxi services and related infrastructure in NSW.

Transport for NSW is responsible for improving the customer experience of transport services, transport policy and regulation, planning and program administration, procuring transport services, and infrastructure and freight.

The North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains & Richmond) – Area 6A is part of the Automatic Train Protection (ATP) Project (previously known as the Advanced train control Migration System (AMS) Project), which will play a key role in delivering faster and more reliable services as part of the NSW Government’s Sydney’s Rail Future (June 2012). The project will deliver significant safety benefits to customers and rail staff, and responds to one of the key recommendations from the Waterfall Special Commission of Inquiry (Waterfall Inquiry).

Transport for NSW is the proponent for the North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains & Richmond) – Area 6A ATP Project (referred to as ‘the Proposed Activity’ for the purposes of this document).

1.2 Review of environmental factors

A Review of Environmental Factors (REF) was prepared in December 2017 by Aurecon on behalf of TfNSW in accordance with sections 111 and 112 of the Environmental Planning and Assessment 1979 (EP&A Act), and clause 228 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation), to ensure that TfNSW takes into account to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the Proposed Activity. The REF is included as an Appendix.

1.3 Determination Report

Prior to proceeding with the Proposed Activity, the Secretary of TfNSW must make a determination in accordance with the provisions of Part 5 of the EP&A Act.

The objectives of this Determination Report are to:

- assess the environmental impacts with respect to the Proposed Activity which are detailed in the REF (and any proposed modifications, as detailed and assessed in this Determination Report)
- identify mitigation measures to minimise potential environmental impacts
- determine whether potential environmental impacts are likely to be significant
- address whether the provisions of the Commonwealth Environment Protection & Biodiversity Conservation Act 1999 (the EPBC Act) applies to the Proposed Activity.

This report has been prepared having regard to, among other things, the objectives of TfNSW under the Transport Administration Act 1988:

- to plan for a transport system that meets the needs and expectations of the public,
- to promote economic development and investment,
to provide integration at the decision-making level across all public transport modes,

- to promote greater efficiency in the delivery of transport infrastructure projects,
- to promote the safe and reliable delivery of public transport and freight services.

### 1.4 Description of the Proposed Activity in the REF

An overview of the Proposed Activity, which is the subject of the ATP North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains & Richmond) – Area 6A REF, is provided in the Executive Summary with full details set out in Section 3 of the REF. In summary, the Proposed Activity would involve the installation of trackside signalling equipment in Area 6A and as outlined in the REF comprises:

- new track assets (i.e. controlled balises)
- new signalling cabling
- extension to existing signal cabinets and (if required) the installation of new cabinets to house ATP equipment.

The need for, and benefits of the Proposed Activity are outlined in Section 2 of the REF.

### 2 Consultation

The communications approach for the proposal has been designed to serve as an educational tool for interested stakeholders and communities located in close proximity to works being undertaken in the rail corridor.

The works being undertaken as part of the proposal are based on safety and rail system requirements. For this reason, there is limited opportunity for any community feedback into project deliverables. As such, the REF for the ATP North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains & Richmond) – Area 6A has not been placed on public display.

### 3 Consideration of the environmental impacts

#### 3.1 Environmental Planning and Assessment Act 1979 (EP&A Act)

The REF addresses the requirements of section 111 of the EP&A Act. In considering the Proposed Activity, all matters affecting or likely to affect the environment are addressed in the REF, the Determination Report, and associated documentation.

In accordance with the checklist of matters pursuant to clause 228(3) of the EP&A Regulation, an assessment is provided in Section 6 and Appendix 1 of the REF.

In respect of the Proposed Activity an assessment has been carried out regarding potential impacts on critical habitat, threatened species, populations or ecological communities or their habitats, under section 112 of the EP&A Act.

The likely significance of the environmental impacts of the Proposed Activity have been assessed in accordance with the then NSW Department of Planning’s 1995 best practice guideline *Is an EIS Required?* It is concluded that the Proposed Activity is not likely to significantly affect the environment (including critical habitat) or threatened species, populations of ecological communities, or their habitats.
Accordingly, an environmental impact statement under Part 5.1 of the EP&A Act is not required.

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

As part of the consideration of the Proposed Activity, all matters of national environmental significance (NES) and any impacts on Commonwealth land for the purposes of the EPBC Act have been assessed. In relation to NES matters, this evaluation has been undertaken in accordance with Commonwealth Administrative Guidelines on determining whether an action has, will have, or is likely to have a significant impact. A summary of the evaluation is provided in Section 4.5 and Appendix 2 of the REF.

It is considered that the Proposed Activity described in the REF is not likely to have a significant impact on any Commonwealth land and is not likely to have a significant impact on any matters of NES.

Heritage Act 1977

The Proposed Activity would be undertaken within the curtilage of the St Marys Railway Station Group, Riverstone Railway Station group and residence, and the Penrith Railway Station Group and Residence which are listed on the State Heritage Register (SHR). The potential heritage impacts of the Proposed Activity are assessed in Section 6.6.2 of the REF. The works would not affect the heritage significance of these items. A Heritage exemption under Section 57(2) of the Heritage Act 1977 would be obtained for all works within the curtilage of items listed on the SHR.

4 Conditions of Approval

If approved, the Proposed Activity would proceed subject to the Conditions of Approval included in Appendix 2

5 Conclusion

Having regard to the assessment in the REF it can be concluded that the Proposed Activity is not likely to significantly affect the environment (including critical habitat) or threatened species, populations of ecological communities, or their habitats. Consequently, an environmental impact statement is not required to be prepared under Part 5.1 of the EP&A Act.

It is also considered that the Proposed Activity does not trigger any approvals under Part 3 of the EPBC Act.

The environmental impact assessment (REF and Determination Report) is recommended to be approved subject to the proposed mitigation and environmental management measures included in the Conditions of Approval.
Appendix 1: Review of Environmental Factors
Automatic Train Protection (ATP) Project
North Shore, Northern & Western Line and Cumberland Line – Area 6A (Parramatta to Emu Plains and Richmond)
Review of Environmental Factors
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<tr>
<td>ASS</td>
<td>Acid Sulfate Soils</td>
</tr>
<tr>
<td>AHIMS</td>
<td>Aboriginal Heritage Information Management System</td>
</tr>
<tr>
<td>AMS</td>
<td>Advanced train control Migration System</td>
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<td>ATP</td>
<td>Automatic Train Protection</td>
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<tr>
<td>BC Act</td>
<td><em>Biodiversity Conservation Act 2016 (NSW)</em></td>
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<tr>
<td>BMP</td>
<td>Best Management Practice</td>
</tr>
<tr>
<td>BATEA</td>
<td>Best Available Technology Economically Achievable</td>
</tr>
<tr>
<td>CEMP</td>
<td>Construction Environmental Management Plan</td>
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<tr>
<td>DoEE</td>
<td>Department of Environment and Energy</td>
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<tr>
<td>DP&amp;E</td>
<td>NSW Department of Planning and Environment</td>
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<tr>
<td>ECM</td>
<td>Environmental Control Maps</td>
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<td>EEC</td>
<td>Endangered Ecological Community</td>
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<td>EIS</td>
<td>Environmental Impact Statement</td>
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<td>EMS</td>
<td>Environmental Management System</td>
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<tr>
<td>EPA</td>
<td>Environment Protection Authority</td>
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<tr>
<td>EP&amp;A Act</td>
<td><em>Environmental Planning and Assessment Act 1979 (NSW)</em></td>
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<tr>
<td>EP&amp;A Regulation</td>
<td><em>Environmental Planning and Assessment Regulation 2000 (NSW)</em></td>
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<tr>
<td>EPBC Act</td>
<td>*Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</td>
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<tr>
<td>EPL</td>
<td>Environment Protection Licence</td>
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<tr>
<td>ESD</td>
<td>Ecologically sustainable development (refer to Definitions)</td>
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<td>ETCS</td>
<td>European Train Control System</td>
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<td>GST</td>
<td>Galvanised steel troughing</td>
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<td>ICNG</td>
<td>Interim Construction Noise Guideline</td>
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<td>Heritage Act</td>
<td><em>Heritage Act 1977 (NSW)</em></td>
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<tr>
<td>Infrastructure SEPP</td>
<td><em>State Environmental Planning Policy (Infrastructure) 2007</em></td>
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<tr>
<td>I&amp;S</td>
<td>Infrastructure and Services (Division of Transport for NSW)</td>
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<tr>
<td>LEP</td>
<td>Local environmental plan</td>
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<tr>
<td>LEU</td>
<td>Lineside electrical unit</td>
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<tr>
<td>LGA</td>
<td>Local government area</td>
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<tr>
<td>LOC</td>
<td>Rail location case or cabinet to house signalling infrastructure</td>
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<tr>
<td>NES</td>
<td>(Matters of) National Environmental Significance</td>
</tr>
<tr>
<td>NPW Act</td>
<td><em>National Parks and Wildlife Act 1974 (NSW)</em></td>
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<tr>
<td>NSW</td>
<td>New South Wales</td>
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<td>PASS</td>
<td>Potential Acid Sulfate Soils</td>
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<th>Term</th>
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<tr>
<td>POEO Act</td>
<td><em>Protection of the Environment Operations Act 1997 (NSW)</em></td>
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<td>OEH</td>
<td>Office of the Environment and Heritage</td>
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<td>REF</td>
<td>Review of Environmental Factors</td>
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<td>Roads Act</td>
<td><em>Roads Act 1993 (NSW)</em></td>
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<td>RMS</td>
<td>Roads and Maritime Service</td>
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<tr>
<td>SEPP</td>
<td>State environmental planning policy</td>
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<tr>
<td>SHR</td>
<td>State Heritage Register</td>
</tr>
<tr>
<td>TEC</td>
<td>Threatened Ecological Community</td>
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<tr>
<td>TfNSW</td>
<td>Transport for NSW</td>
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<tr>
<td>ULX</td>
<td>Underline crossing</td>
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<tr>
<td>WARR Act</td>
<td><em>Waste Avoidance and Resource Recovery Act 2001</em></td>
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## Definitions

<table>
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<th>Term</th>
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| **Automatic Train Protection (ATP)** | ATP is a generic name, used globally to describe a range of train safety technologies, designed to ensure additional passenger and train crew safety through:  
1. Ceiling speed supervision to prevent a train from travelling over a predetermined speed limit  
2. Brake-to-target supervision to supervise the safe deceleration of a train (e.g. approaching a signal at stop, railway crossing or a worksite). |
| **Balise** | An electronic beacon or transponder placed between the rails of a railway as part of an automatic train protection (ATP) system. |
| **Concept design** | The concept design is the preliminary design presented in this REF, which would be refined by the Contractor (should the Proposal proceed) to a design suitable for construction (subject to TfNSW acceptance). |
| **Detailed design** | Detailed design broadly refers to the process that the Contractor undertakes (should the Proposal proceed) to refine the concept design to a design suitable for construction (subject to TfNSW acceptance). |
| **Ecologically sustainable development** | Development that uses, conserves and enhances the resources of the community so that ecological processes on which life depends are maintained, and the total quality of life, now and in the future, can be increased (refer to Section 4.1). |
| **Out of hours works** | Defined as works *outside* standard construction hours (i.e. outside of 7:00am to 6:00pm Monday to Friday, 8:00am to 1:00pm Saturday and no work on Sundays/public holidays). |
| **the Proposal** | The construction and operation of the Automatic Train Protection (ATP) Project within Area 6A, located on the North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains and Richmond). |
| **Rail Possession** | Possession is the term used by railway building/maintenance contractors to indicate they have taken possession of the track (usually a block of track) for a specified period, so that no trains operate for a specified time. This is necessary to ensure the safety of workers and rail users. |
| **Underline crossing** | An underline crossing (under track crossing) where the cable route crosses under the track from one side of the line to the other. |
Executive summary

Transport for NSW (TfNSW) is the government agency responsible for the delivery of major transport infrastructure projects in NSW, including the Automatic Train Protection (ATP) Project (previously known as the Advanced train control Migration System (AMS) Project).

The ATP Project plays a key role in delivering faster and more reliable services under the NSW Government’s Sydney’s Rail Future (June 2012). The ATP Project will deliver significant safety benefits to customers and rail staff and responds to one of the key recommendations from the Waterfall Special Commission of Inquiry (Waterfall Inquiry).

The ATP Project has a phased integration and implementation process and will be progressively deployed in stages across nine discrete areas, with separate environmental impact assessments being prepared for each area. The works which are subject to this environmental impact assessment pertain to the deployment of the ATP Project within Area 6A, located on the North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains & Richmond) (the Proposal).

This Review of Environmental Factors (REF) has been prepared to assess the environmental impacts associated with the construction and operation of the Proposal under the provisions of Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

Description of the Proposal

The Proposal involves the installation and operation of trackside signalling equipment at 60 locations from Parramatta to Emu Plains and Richmond (Area 6A) on the North Shore, Northern & Western Line and Cumberland Line. Figure 1-1 provides an overview map of the Proposal.

Area 6A traverses a 32 kilometre section of the rail corridor located in the Parramatta, Blacktown, Penrith, Hawkesbury and Cumberland local government areas. Depending on the topography, ATP sites would generally be located up to 15 metres from existing rail tracks.

The proposed ATP trackside signalling equipment would communicate with a train mounted system to improve network capacity and passenger safety by providing information to the driver such as speed limits and signal location and applying brakes automatically if the driver does not respond appropriately. The installation of the train mounted system will be carried out at a train maintenance facility and does not form part of this environmental assessment.

Construction of the Proposal is expected to commence in early 2018 and continue for about 18 months.

Statutory considerations

The EP&A Act provides for the environmental impact assessment of development in NSW. Part 5 of the EP&A Act generally specifies the environmental impact assessment requirements for activities undertaken by public authorities, such as TfNSW, which do not require development consent under the EP&A Act.

The State Environmental Planning Policy (Infrastructure) 2007 (the Infrastructure SEPP) is the primary environmental planning instrument relevant to the proposed development. Clause 79 of the Infrastructure SEPP allows for the development of ‘rail infrastructure
facilities’ by or on behalf of a public authority without consent on any land. Clause 78 defines ‘rail infrastructure facilities’ as including ‘signalling, train control, communication and security systems’.

As TfNSW is a public authority and the proposed activity falls within the definition of rail infrastructure facilities under Infrastructure SEPP, the Proposal is permissible without consent. Consequently the environmental impacts of the Proposal have been assessed by TfNSW under Part 5 of the EP&A Act.

This REF has been prepared to assess the construction and operational environmental impacts of the Proposal. The REF has been prepared in accordance with clause 228 of the Environmental Planning and Assessment Regulation 2000 (the EP&A Regulation).

In accordance with section 111 of the EP&A Act, TfNSW, as the proponent and determining authority, must examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity.

**Stakeholder communication**

The communications approach for the Proposal has been designed to serve as an educational tool for interested stakeholders and communities located in close proximity to works being undertaken in the rail corridor.

The works being undertaken as part of the Proposal are based on safety and rail system requirements. For this reason, there is minimal opportunity for any community feedback into project deliverables. An educational approach to the communication activities has been adopted to allow interested stakeholders to find out more about the ATP Project and any likely resulting impacts.

The communication approach being implemented for the ATP Project has also been developed having regard for the requirements of the planning process.

Refer to Chapter 5 for more information about the communications approach for the Proposal.

**Environmental impact assessment**

This REF identifies the potential environmental benefits and impacts of the Proposal and outlines the mitigation measures to reduce the identified impacts. This REF identifies that, subject to the implementation of mitigation measures, potential environmental impacts can be controlled and reduced to acceptable levels which would not significantly affect the environment.

The main environmental issues relate to construction impacts such as erosion and sedimentation risks, work within the curtilage of heritage items, ground contamination and potential impacts to threatened species and/or communities as well as short-term traffic, air quality and noise issues for nearby receivers. Such impacts would be managed through the implementation of a Proposal wide Construction Environmental Management Plan (CEMP) and location and/or activity specific Environmental Control Maps (ECM).

No operational impacts are anticipated as a result of the Proposal.
Conclusion

This REF has been prepared having regard to sections 111 and 112 of the EP&A Act, and clause 228 of the EP&A Regulation, to ensure that TfNSW takes into account to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the Proposal.

Should the Proposal proceed, the likely impacts would be appropriately managed in accordance with the mitigation measures outlined in this REF. TfNSW has determined that an environmental impact statement (EIS) is not required for the Proposal, nor is the approval of the Minister for Planning.
1. Introduction

TfNSW was established in 2011 as the lead agency for integrated delivery of public transport services across all modes of transport in NSW. TfNSW is the proponent for the North Shore, Northern & Western Line and Cumberland Line (Area 6A) - Automatic Train Protection (ATP) Project (the Proposal), to be delivered by Infrastructure and Services (I&S).

1.1. Overview of the Proposal

The Proposal involves the installation of trackside signalling equipment at 60 locations between Parramatta, Emu Plains and Richmond on the North Shore, Northern & Western Line and Cumberland Line (Area 6A) (refer Figure 1-1). Detailed ATP site location plans for Area 6A are provided in Appendix 3.

The Proposal comprises new track assets installed on rail sleepers; new signalling cabling installed above and below ground; and the extension of a number of existing signalling cabinets and the installation of new signalling cabinets. This 32 kilometre stretch of the rail corridor from Parramatta to Emu Plains and Richmond is located in the Parramatta, Blacktown, Penrith, Hawkesbury and Cumberland local government areas. A detailed description of the Proposal is provided in Chapter 3.

Depending on the topography, ATP sites would generally be located up to 15 metres from existing rail tracks. The proposed trackside signalling equipment would communicate with a train mounted system which will improve network capacity and passenger safety by providing information to the driver such as speed limits and signal location and applying brakes automatically if the driver does not respond appropriately. The installation of the train mounted system will be carried out at a train maintenance facility and does not form part of this environmental assessment.

The Proposal would deliver significant safety benefits to customers and rail staff and responds to one of the key recommendations from the Waterfall Special Commission of Inquiry (Waterfall Inquiry).

Construction of the Proposal is expected to commence in early 2018 and continue for about 18 months.

1.2. Purpose of this Review of Environmental Factors

The purpose of this Review of Environmental Factors (REF) is to describe the Proposal, to assess the likely impacts of the Proposal having regard to the provisions of section 111 of the EP&A Act, and to identify mitigation measures to reduce the likely impacts of the Proposal.

This REF has been prepared by Aurecon on behalf of TfNSW in accordance with clause 228 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation). For the purposes of these works, TfNSW is the proponent and the determining authority under Part 5 of the EP&A Act. Having regard to the provisions of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), this REF considers the potential for the Proposal to significantly impact a matter of national environmental significance (NES) or Commonwealth land, and the need to make a referral to the Commonwealth Department of the Environment and Energy for any necessary approvals under the EPBC Act.
Automatic Train Protection (ATP) Project

FIGURE 1-1: ATP Area 6A sites

Legend
- ATP site
- Inter-site cable location
- Major station
- Rail line
- LGA boundary

Source: Aurecon, LPI, OEH

Projection: GDA 1994 MGA Zone 56

FIGURE 1-1: ATP Area 6A sites
2. **Need for the Proposal**

Chapter 2 discusses the need and objectives of the Proposal, having regard to the objectives of the overall ATP Project. This chapter also provides a discussion of the options that have been considered during development of the Proposal and why the preferred option has been chosen.

2.1. **Strategic justification**

The requirement to implement automatic protection technology was one of the key recommendations from the Waterfall Inquiry.

The ATP Project would implement the European Train Control System (ETCS) (Limited Supervision) which is internationally recognised and reliable automatic train protection technology that has been tailored to meet the needs of the Sydney rail network. The ETCS enhances passenger and train crew safety through ceiling speed supervision to prevent a train from travelling over a predetermined speed limit and by brake-to-target supervision which supervises the safe deceleration of a train (e.g. approaching a signal, railway crossing or a worksite).

The ATP system monitors train speed against a set rail speed limit (ceiling speed) and alerts the driver if the train is over-speeding. The system applies the brakes automatically if the driver does not respond appropriately.

The ATP Project would be progressively deployed in stages across nine discrete areas until around 2019, with separate environmental impact assessments being prepared for each area. As noted in Section 1.1 this REF addresses ATP works in Area 6A.

ATP will benefit the North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains and Richmond) by providing safer and more reliable train services along the line and associated community and customer benefits.

2.2. **Alternative options considered**

A comprehensive review of automatic train protection technology options has been undertaken which assessed technology options against key criteria including technical capability, economic viability and level of risk mitigation.

The review recommended an ETCS Level 1 (Full Supervision) system be adopted as the preferred automatic train protection technology. However, ongoing technology improvements lead to the development of an ETCS Level 1 Limited Supervision (LS) system which provided TfNSW with the opportunity to improve the safety of the rail network in line with recommendations of the Waterfall Inquiry at a lower cost and over a reduced timeframe.

ETCS Level 1 LS is technically less complex with a reduced number of interfaces with the existing signalling system and less trackside equipment to install and maintain than the ETCS Level 1 (Full Supervision) system. In addition, ETCS Level 1 LS would provide a greater flexibility for future functionality enhancements under Sydney’s Rail Future (June 2012) (refer Section 4.2) with less associated equipment redundancy.

ETCS automatic train protection technology was recommended as the preferred technology because it:
• Is a high integrity safety system that controls risks associated with drivers over-speeding or exceeding the limit of their movement authority
• Is available ‘off the shelf’ from multiple suppliers designing to common specifications
• Is a mature technology with a large and rapidly growing user base
• Is flexible in its application and can be overlaid, with minimal impact, to existing signalling systems and rolling stock
• Will provide a major risk mitigation of the rail network’s direct risks
• Has a defined upgrade path to allow future functionality enhancements
• Has the potential to enable future signalling changes which will deliver significant capacity benefits.

The NSW government response to the recommendations of the Waterfall Special Commission of Inquiry outlines its commitment to installing automatic train protection technology across the electrified rail network. As such, a ‘do nothing’ option was not considered a feasible alternative.
3. Description of the Proposal

Chapter 3 describes the Proposal and summarises key design parameters, construction method, and associated infrastructure and activities.

3.1. The Proposal

The Proposal involves the installation of trackside ATP signalling equipment on the North North Shore, Northern & Western Line and Cumberland Line (Area 6A) from Parramatta to Emu Plains and Richmond. The Proposal would take place at 60 locations along the rail line.

The works at each ATP site comprise:

- The works comprise:
- New track assets (i.e. balises)
- New signalling cabling
- Extension to existing signal cabinets and (if required) the installation of new cabinets to house ATP equipment.

Figure 3-1 provides a schematic of the typical proposed works at each ATP site and Table 3-1 and Table 3-2 provide further information on the scope of ATP works being undertaken in Area 6A.

It is noted Area 6B which incorporates Parramatta, Fairfield and Berala to Lidcome will be addressed in a separate environmental assessment and approval and does not form part of this REF.

The typical construction footprint at each ATP site would include new track assets, cabling and ATP equipment. Where new signalling cabling is required between adjacent ATP sites, the construction footprint would cover the length of the proposed cable route. The site-specific footprint for each ATP site that has been assessed in this Review of Environmental Factors (REF) is shown in Appendix 3.

The new signalling cabling would connect to the existing 240 volt electricity network at each ATP site. All cabling would be located wholly within the rail corridor and underline crossings (ULX) or under road crossings (URX) would be constructed to provide a crossing beneath the rail track where necessary.

New track assets

Balises are categorised as fixed or control balises depending on their proximity to a signal and their required function (i.e. protect train from a specific identified hazard (e.g. railway crossing)). A balise would be mounted to the rail sleepers in the area between load bearing rails (referred to as the four foot) on the approach to a trackside signal. Depending on the type of sleeper (i.e. concrete or timber), the balise may be mounted using a combination of cable clips, vortex brackets or mechanical anchors. A series of balises, spaced at intervals are required at each ATP site.

It is noted the installation of fixed balises which are generally placed at speed signs and other hazards has been addressed in a separate environmental assessment and approval process and does not form part of this REF. Fixed balises which always send the same
passive data (i.e. speed limit and wrong running direction) are installed within the four foot and do not have any associated cabling activities.

Table 3-1 provides further information on the installation of controlled balises within Area 6A along with the proposed balise group name.

**New signalling cabling**

Cables would connect the balises to an ETCS junction box which would be positioned adjacent to the track. These cables would be installed in elevated galvanised steel troughing (GST) or inside buried conduits. Other options for cable installation include pit and pipe, galvanised pipe or surface pipes.

Buried conduits may be installed by directional bores within or near the cess (the area immediately adjacent to the ballast shoulder) and underling crossings (ULXs) constructed to provide a crossing beneath the rail track where necessary. The ULX and underbore depths can vary depending on site conditions. As a minimum, it is anticipated ULXs would be 1.8 metres from the top of the rail.

A combination of ULXs and above ground troughing may be used at each ATP site depending on the ground conditions and site access constraints. If existing troughing and pipes have sufficient spare capacity, the new signalling cabling would be installed in these facilities. If existing troughing and pipes do not have sufficient spare capacity a new cable route would be required.

Table 3-2 provides further information on the proposed new signalling cable routes required in Area 6A.

It is possible that supersucking, a form of non-destructive digging using pressurised water and a vacuum source, would be required at some ATP sites.

Cables from the ETCS junction box would terminate at a lineside electrical unit (LEU), which is housed in either a signal cabinet (i.e. LOC), annex, bungalow, hut or relay room.

**Signal cabinets**

Where space within the existing LOC, bungalow, hut or relay room is constrained, a new signal cabinet would be installed to house ATP equipment (i.e. LEU). Existing signalling cabinets would be extended by about six square metres.

The new signal cabinet would generally be installed on a newly constructed concrete plinth adjacent to the slab for the existing signal cabinet. Alternatively, the new signal cabinet would be bolted to the existing cabinet.

ATP equipment housing would be fitted out with a LEU. Table 3-1 provides further information on the proposed location of ATP equipment housing within Area 6A.

Where possible, the concrete plinths and cabinets would be pre-fabricated off site and delivered to the ATP sites in time for works to commence.
Table 3-1 Proposed ATP works in Area 6A

<table>
<thead>
<tr>
<th>Cabinet (i.e. LOC) / Bungalow / Hut / Relay Room (i.e. proposed location of ATP Equipment Housing) (referred to as the ATP Area 6A Site Name hereafter in this REF)</th>
<th>LOC / Bungalow / Hut / Relay Room Chainage (km)¹</th>
<th>Signal / Function name (i.e. proposed location of controlled balises)</th>
<th>Balise Group Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>GE457 LOC</td>
<td>24.190km</td>
<td>GE45 GE455 GE465 GE463</td>
<td>WMD24330_DSW PTA23860_DMW WMDGE463_DSW WMDGE465_DSW</td>
</tr>
<tr>
<td>Westmead Relay Room (Westmead RR)</td>
<td>25.093km</td>
<td>GE470</td>
<td>WMDGE470_USW</td>
</tr>
<tr>
<td>GE476</td>
<td>25.400km</td>
<td>GE476 GE474</td>
<td>WMDGE474_USW WMDGE476_UMW</td>
</tr>
<tr>
<td>16.1</td>
<td>25.780km</td>
<td>GE478 GE480</td>
<td>WMDGE478_USW WMDGE480_UMW</td>
</tr>
<tr>
<td>Wentworthville Relay Room (Wentworthville RR)</td>
<td>26.738km</td>
<td>S16.4 M16.4</td>
<td>WVL26548_USW WVLML164_UMW</td>
</tr>
<tr>
<td>BN1</td>
<td>31.575km</td>
<td>BN3S BN1M TSM HRTO 301BG²</td>
<td>SVH31138_DMW SVH31500_DSW SVHN1_DMW</td>
</tr>
<tr>
<td>BN5</td>
<td>32.287km</td>
<td>BN5M BN7S</td>
<td>SVH32140_DMW SVHN7_DSW</td>
</tr>
<tr>
<td>BN19</td>
<td>32.665km</td>
<td>App HRTO 302B² App HRTO 308B² BN19S</td>
<td>SVH32665_USW SVH32665_UMW SVHN19_DSW</td>
</tr>
<tr>
<td>BN17</td>
<td>32.778km</td>
<td>BN17M App HRTO 305A/306B²</td>
<td>SVHBN17_DMWN SVH30063_DMW</td>
</tr>
<tr>
<td>BN20</td>
<td>33.039km</td>
<td>BN20S BN22M</td>
<td>SVHBN20_USW SVHBN22_UMW</td>
</tr>
<tr>
<td>BN21</td>
<td>33.404km</td>
<td>BN23S TSM HRTO 302B² TSM HRTO308B²</td>
<td>BTBN23_DSW SVH33402_USW BTN33652_UMW</td>
</tr>
<tr>
<td>BN31</td>
<td>33.850km</td>
<td>BN29S BN28R</td>
<td>BTBN28R_UBR BTBN29_DSW</td>
</tr>
<tr>
<td>BN48</td>
<td>34.360km</td>
<td>TSM HRTO 313A/314A²</td>
<td>BTN34109_DBR</td>
</tr>
<tr>
<td>BN51</td>
<td>34.640km</td>
<td>TSM HRTO 312A/316A/318A² TSM HRTO 321A²</td>
<td>BTN34500_UMW BTN34518_DBR</td>
</tr>
<tr>
<td>BN58</td>
<td>34.750km</td>
<td>BN62M BN68UR</td>
<td>BTNBN62_UMW</td>
</tr>
<tr>
<td>BN71</td>
<td>35.100km</td>
<td>BN75UM</td>
<td>BTNBN75_UMW</td>
</tr>
<tr>
<td>BN82</td>
<td>35.460km</td>
<td>BN84M</td>
<td>BTNBN84_UMW</td>
</tr>
<tr>
<td>BN94</td>
<td>35.952km</td>
<td>BN94S</td>
<td>BTNBN94_USW</td>
</tr>
</tbody>
</table>

¹ Chainage in km from North Shore terminus.
<table>
<thead>
<tr>
<th>LOC / Bungalow / Hut / Relay Room Chainage (km)^1</th>
<th>Signal / Function name (i.e. proposed location of controlled balises)</th>
<th>Balise Group Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blacktown Control Centre (Blacktown CC) 35.160km</td>
<td>BN124UR</td>
<td>BTNBN124_UBR</td>
</tr>
<tr>
<td>BN141 36.126km</td>
<td>TSM HRTO 335A^2</td>
<td>BTN35983_UBR</td>
</tr>
<tr>
<td></td>
<td>MyG36236_UBR</td>
<td>MYGBN148_UBR</td>
</tr>
<tr>
<td>BN102 36.630km</td>
<td>BN102S</td>
<td>BTNBN102_USW</td>
</tr>
<tr>
<td></td>
<td>BN104M</td>
<td>BTNBN104_UMW</td>
</tr>
<tr>
<td>23.2 37.256km</td>
<td>S23.2 M23.2</td>
<td>DOOS232_USW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DOOM232_UMW</td>
</tr>
<tr>
<td>28.6 45.875km</td>
<td>SM445S</td>
<td>STM445_DSWM</td>
</tr>
<tr>
<td>452 46.969km</td>
<td>SM449S App HRTO 805B^2</td>
<td>STM449_DSWM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STM47070_USW</td>
</tr>
<tr>
<td>460A 47.300km</td>
<td>SM462S</td>
<td>STM462_USW</td>
</tr>
<tr>
<td>St Marys Relay Room (St Marys RR) 47.700km</td>
<td>SM480M App HRTO 810B/811B^2</td>
<td>STM480_USWM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STM48052_USWM</td>
</tr>
<tr>
<td>482 48.764km</td>
<td>SM482M</td>
<td>WRG48800_USWM</td>
</tr>
<tr>
<td>32.6 LOC 52.639km</td>
<td>32.5</td>
<td>KWD325_DMW</td>
</tr>
<tr>
<td>33.0 LOC 53.219km</td>
<td>33.1</td>
<td>KWD331_DMW</td>
</tr>
<tr>
<td>33.6 LOC 53.950km</td>
<td>33.5</td>
<td>PEN335_DMW</td>
</tr>
<tr>
<td>33.9 LOC 54.673km</td>
<td>33.9 R33.9</td>
<td>PEN339_DWM PENR339_DRL</td>
</tr>
<tr>
<td>34.4 LOC 55.450km</td>
<td>App HRTO 48B^2</td>
<td>PEN55726_USWM</td>
</tr>
<tr>
<td>34.5 55.800km</td>
<td>App HRTO 42B/48B^2</td>
<td>PEN55972_USWM</td>
</tr>
<tr>
<td>34.9 56.270km</td>
<td>34.9 35.0</td>
<td>EPL349_DWM EPL350_USWM</td>
</tr>
<tr>
<td>34.9B 56.687km</td>
<td>App HRTO 54A^2</td>
<td>EPL56778_USWM</td>
</tr>
<tr>
<td>Emu Plains Relay Room (Emu Plains RR) 57.183km</td>
<td>35.6D 35.6</td>
<td>EPL356D_USWM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPL356_USWM</td>
</tr>
<tr>
<td>36.6 58.900km</td>
<td>36.5</td>
<td>EPL365_DMW</td>
</tr>
<tr>
<td>BN151 37.070km</td>
<td>BN153UR</td>
<td>MYG37190_DBR</td>
</tr>
<tr>
<td>BN166 37.563km</td>
<td>BN154UR BN166DR</td>
<td>MYGBN166_DBR MYGBN154_UBR</td>
</tr>
<tr>
<td>BN173 38.513km</td>
<td>BN176DR</td>
<td>QKHB176_DBR</td>
</tr>
</tbody>
</table>
### Cabinet (i.e. LOC) / Bungalow / Hut / Relay Room

(i.e. proposed location of ATP Equipment Housing) 
(referred to as the ATP Area 6A Site Name hereafter in this REF)

<table>
<thead>
<tr>
<th>LOC / Bungalow / Hut / Relay Room Chainage (km)</th>
<th>Signal / Function name (i.e. proposed location of controlled balises)</th>
<th>Balise Group Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS1 41.615km</td>
<td>SS3UR TSM HRTO 51A²</td>
<td>SCOSS3_UBR SCO41468_DBR</td>
</tr>
<tr>
<td>SS14 43.320km</td>
<td>SS14</td>
<td>SCOSS14_BR</td>
</tr>
<tr>
<td>RE1 and SS16 DIST 44.791km</td>
<td>SS16 DIST RE1</td>
<td>RIVSS16DI_BR RIVRE1_BR</td>
</tr>
<tr>
<td>Riverstone Relay Room (Riverstone RR) 45.977km</td>
<td>RE3</td>
<td>N/A</td>
</tr>
<tr>
<td>RE10 46.555km</td>
<td>RE10</td>
<td>RIVRE10_BR</td>
</tr>
<tr>
<td>ME1 51.592km</td>
<td>TSM HRTO 51A²</td>
<td>MUL51131_BR</td>
</tr>
<tr>
<td>ME12 53.573km</td>
<td>ME12</td>
<td>WINME12_BR</td>
</tr>
<tr>
<td>MRCT ATP 56.140km</td>
<td>TSM HRTO 51A²</td>
<td>WIN55640_BR</td>
</tr>
<tr>
<td>DN DIST 58.601km</td>
<td>TSM HRTO 53B²</td>
<td>ERC58610_BR</td>
</tr>
</tbody>
</table>

1. Chainage refers to the distance in kilometres from Sydney’s Central Railway Station
2. Controlled balises at these ATP sites interface with the existing signalling system to perform a specific ATP function on approach to an identified hazard (i.e. high risk turnout, level crossing, buffer stop location etc). They are located in proximity of a LOC, Bungalow, Hut and/or Relay Room and not always adjacent to a signal. These controlled balises are located within the site footprints defined in the site location plans (refer Appendix 3).

### Table 3-2 New signalling cabling routes in Area 6A

<table>
<thead>
<tr>
<th>New signalling cable routes (Connecting ATP sites referenced in Table 3 1)</th>
<th>Chainage (kilometres (km))</th>
<th>Distance (metres (m))</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN17 to BN20</td>
<td>32.778km to 33.039km¹</td>
<td>261m</td>
</tr>
<tr>
<td>BN20 to BN21</td>
<td>33.039km to 33.404km¹</td>
<td>365m</td>
</tr>
<tr>
<td>BN21 to BN31</td>
<td>33.404km to 33.850km¹</td>
<td>446m</td>
</tr>
<tr>
<td>BN51 to BN71</td>
<td>34.640km to 35.100km¹</td>
<td>460m</td>
</tr>
<tr>
<td>BN51 to Blacktown CC</td>
<td>34.640km to 35.160km¹</td>
<td>520m</td>
</tr>
<tr>
<td>BN58 to Blacktown CC</td>
<td>34.783km to 35.160km¹</td>
<td>377m</td>
</tr>
<tr>
<td>Blacktown CC to BN141</td>
<td>35.160km to 36.126km¹</td>
<td>966m</td>
</tr>
<tr>
<td>BN141 to BN151</td>
<td>36.126km to 37.070km¹</td>
<td>944m</td>
</tr>
<tr>
<td>BN94 to BN102</td>
<td>35.952km to 36.630km¹</td>
<td>678m</td>
</tr>
<tr>
<td>BN102 to 23.2</td>
<td>36.630km to 37.256km¹</td>
<td>626m</td>
</tr>
<tr>
<td>Mulgrave RR to ME1</td>
<td>52.586km to 51.592km¹</td>
<td>994m</td>
</tr>
</tbody>
</table>

¹ The proposed cable routes use existing cable routes in sections and the new cable route may not cover the entire distance described.
Figure 3-1 Schematic of proposed works
3.2. Construction methodology

3.2.1. Work methodology

The work methodology would involve the following stages:

- Identify and mark-up areas for stockpiling materials and segregating waste
- Establish site access, including fenced off exclusion zones
- Install erosion and sediment controls
- Trenching and pit and pipe work (if required)
- Install new signal equipment
- Test all equipment prior to commissioning
- Clear the work sites of any remaining construction plant or materials.

It is anticipated ATP works would require a yard and compound area(s) for administrative purposes (project office) and for the storage and management of construction materials, plant and equipment. The establishment and use of a yard and compound area(s) would be subject to further assessment and approval by TfNSW.

3.2.2. Plant and equipment

The following plant and equipment is likely to be used for the works:

- Supersucker
- Excavator (7 tonne) for excavation as well as rock breaking where required
- Hand and power tools
- Bobcat
- Compactor
- Generator
- Boring equipment
- Front end loader (5 tonne).

3.2.3. Timing

Construction of the Proposal is expected to commence in early 2018 and continue for about 18 months.

Main civil and structural construction works at each ATP site in Area 6A would be complete within around three weeks. Installation of the signalling equipment would follow the civil and structural works and take about one week to complete.

The construction team would generally complete civil works and signalling equipment installation at each ATP site prior to progressing to the next location.
Works would generally be scheduled to take place during standard working hours:

- 7.00am to 6.00pm Monday to Friday
- 8.00am to 1.00pm Saturday
- No work on Sunday or public holidays.

However, due to access constraints and the requirement for a safe working site, some works may be undertaken outside standard working hours and during scheduled track possessions.

As noted in Section 6.5, if works are required outside the standard working hours, further approval would be obtained by TfNSW and the affected community would be advised in accordance with the TfNSW Construction Noise Strategy (7TP-ST-157) and the communication protocol for the proposal.

### 3.2.4. Site access and storage of materials

Access to the work sites would be via existing rail corridor access gates and access tracks. Access gates are locked at all times except for site deliveries and access / egress by site staff. Distance from the access gates to the work sites is varied throughout the Proposal.

The construction process would require an average of 10 to 20 vehicle movements and a team of 5 to 15 people on site per day.

Temporary site storage areas would be established in cleared areas within the ATP site footprint.

Vehicles associated with Proposal works will be parked within the rail corridor and not in public commuter parking space.

Amenities such as portable toilets may be provided at some work sites where there is adequate space and suitable access.

### 3.3. Operations, management and maintenance

The operation of the new signalling system would commence following the installation and commissioning of the train mounted system.

Sydney Trains or its appointed contractor would maintain the system. Maintenance would be undertaken in accordance with Sydney Trains standards.
4. Statutory considerations

Chapter 4 provides a summary of the statutory considerations relating to the Proposal including a consideration of NSW Government policies/strategies, NSW legislation (particularly the EP&A Act), environmental planning instruments, and Commonwealth legislation.

4.1. Ecologically sustainable development

TfNSW is committed to ensuring that its projects are implemented in a manner that is consistent with the principles of ecologically sustainable development (ESD).

The principles of ESD are generally defined under the provisions of clause 7(4) of Schedule 2 to the Environmental Planning and Assessment Regulation 2000 as:

- The precautionary principle: if there are threats of serious or irreversible damage, a lack of full scientific uncertainty should not be used as a reason for postponing measures to prevent environmental degradation
- Intergenerational equity: the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations
- Conservation of biological diversity and ecological integrity: the diversity of genes, species, populations and their communities, as well as the ecosystems and habitats they belong to, should be maintained or improved to ensure their survival
- Improved valuation, pricing and incentive mechanisms: environmental factors should be included in the valuation of assets and services.

The principles of ESD have been adopted by TfNSW throughout the development and assessment of the ATP Project. The principles for ESD would be facilitated through the application of a range of environmental management tools such as the implementation of the construction environmental management plan (CEMP) and adherence to the TfNSW environmental management system. Table 4-1 identifies how the Proposal complies with the principles of ESD.

Table 4-1 ESD principles and how they relate to the Proposal

<table>
<thead>
<tr>
<th>Principle</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precautionary principle</td>
<td>There are no threats of serious or irreversible damage posed by the Proposal. The ATP sites are generally within a previously disturbed area in the rail corridor. Environmental risks have been carefully considered through the preparation of this REF and would be managed through the implementation of the CEMP. The CEMP is unlikely to be stalled by a lack of scientific certainty.</td>
</tr>
</tbody>
</table>
**Principle** | **Compliance**
---|---
Intergenerational equity | The Proposal will help ensure that future generations have a safer, more comfortable and more reliable rail transport options.
Biodiversity conservation and ecological integrity | Due to the highly modified nature of ATP sites within the rail corridor, no biodiversity of ecological significance is not anticipated to be encountered. However, construction of the Proposal would be undertaken in accordance with a CEMP which would ensure the biodiversity conservation and ecological integrity of the receiving environmental is retained.
Improved valuation and pricing of environmental resources | The REF has examined all of the environmental impacts associated with the Proposal and has recommended mitigation measures for the identified environmental risks that may result. The management of these risks has been factored into the overall budget allocation for the project, hence demonstrating that environmental resources have received appropriate valuation in the context of the Proposal.

### 4.2. NSW Government policies and strategies

In addition to statutory requirements, a number of NSW Government policies and strategies are relevant to the Proposal. Table 4-2 summarises the NSW Government policies and strategies applicable to the Proposal.

**Table 4-2 Relevant NSW Government policies/strategies**

<table>
<thead>
<tr>
<th>Policy/Strategy</th>
<th>Commitment</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State Priorities – NSW: Making It Happen (NSW Government, 2015)</strong></td>
<td>In September 2015, the NSW Government announced a series of State Priorities as part of <em>NSW: Making It Happen</em> (NSW Government, 2015). The State Priorities are intended to guide the ongoing actions of the NSW Government across the State, and guide resource allocation and investment in conjunction with the NSW Budget. <em>NSW: Making it Happen</em> focuses on 12 key ‘priorities’ to achievement the NSW Government’s commitments. These priorities range across a number of issues including infrastructure, the environment, education, health, wellbeing and safety in addition to Government services. One of the 12 priorities identified as part of <em>NSW: Making It Happen</em> relates to investment in building infrastructure. The ongoing development and investment in transport infrastructure is identified as part of the wider building infrastructure priority.</td>
<td>The Proposal would support the objective of improving the reliability of the public transport network.</td>
</tr>
</tbody>
</table>
| **NSW Long Term Transport Master Plan** | In December 2012, the NSW Government released the NSW Long Term Transport Master Plan. The Plan brings together land use planning with transport planning, and integrated planning for freight and passenger movements across all modes of transport. The Plan responds to the transport challenges of NSW through four types of actions:  
  - Integrate transport services  
  - Modernise our system  
  - Growing our networks to meet future demand  
  - Maintain important road and public transport assets. | The Proposal would be consistent with the NSW Long Term Transport Master Plan as it would modernise and support the growth of the network. |
Sydney’s Rail Future, released in June 2012, is a plan developed to transform and modernise Sydney’s rail network so that it can grow with our future population (NSW Government 2012). The plan is an integral part of the NSW Long Term Transport Master Plan.

Sydney’s Rail Future

In 2013, the NSW Government released the draft Metropolitan Strategy for Sydney to 2031 for consultation. The draft Strategy identifies nine key ‘city shapers’ that will play an important role in shaping the future growth of Sydney. The draft Strategy has been aligned with the NSW Long Term Transport Master Plan.

Draft Metropolitan Strategy for Sydney to 2031

The Proposal would support the plan for Sydney’s Rail Future. The plan specifically identifies the ATP Project as an important technological advancement to support faster, more reliable train services.

Comment

The Proposal would be consistent with the draft Metropolitan Strategy by ensuring the ongoing safe and efficient operation of the rail network, supporting the growth of Sydney.

4.3. NSW legislation and regulations

4.3.1. Environmental Planning and Assessment Act 1979

The EP&A Act establishes the system of environmental planning and assessment in NSW. This Proposal is subject to the environmental impact assessment and planning approval requirements of Part 5 of the EP&A Act. Part 5 of the EP&A Act specifies the environmental impact assessment requirements for activities undertaken by public authorities, such as TfNSW, which do not require development consent under Part 4 of the Act.

In accordance with section 111 of the EP&A Act, TfNSW, as the proponent and determining authority, must examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the Proposal. Having regard to these provisions, TfNSW has determined that no significant environmental impact is likely, and as a consequence an environmental impact statement is not required, nor is the approval of the Minister for Planning.

Clause 228 of the EP&A Regulation defines the factors which must be considered when determining if an activity assessed under Part 5 of the EP&A Act has a significant impact on the environment. Chapter 6 of this REF provides an environmental impact assessment of the Proposal in accordance with clause 228. Appendix 1 specifically responds to the factors for consideration under clause 228.

4.3.2. Other NSW legislation and regulations

Table 4-3 provides a list of other relevant legislation applicable to the Proposal.

Table 4-3 Other relevant legislation applicable to the Proposal

<table>
<thead>
<tr>
<th>Applicable legislation</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heritage Act 1977</strong></td>
<td>Section 57(1) of the <em>Heritage Act 1977</em> (Heritage Act) lists the types of activities/works that require approval from the Office of Environment and Heritage (OEH) Heritage Division when working on/in an item/place listed on the State Heritage Register (SHR). An application for an exemption can also be made under some circumstances. Approval from the Heritage Division is also required under Section 139 of the <em>Heritage Act 1977</em> prior to the disturbance or excavation of land if a project will, or is likely to result in, a relic being discovered,</td>
</tr>
</tbody>
</table>
### Applicable legislation

#### National Parks and Wildlife Act 1974

Exposed, moved, damaged or destroyed.

The Proposal involves works within or near items listed on the State Heritage Register, Sydney Train's section 170 Heritage and Conservation Register, the Parramatta Local Environmental Plan (LEP), the Blacktown LEP, Penrith LEP and Hawkesbury LEP and the Holroyd LEP. Given the disturbed nature of the rail corridor and limited excavation required, it is unlikely that the proposed works would affect any known or unknown archaeological items of heritage significance.

Where works are located within the curtilage of items listed on the SHR and no adverse impact on the heritage significance of these items is expected as a result of the proposed works, an application would be submitted to Sydney Trains to obtain an exemption under s57(2) of the Heritage Act. Where works may adversely affect the heritage significance of item listed on the SHR, an application would be submitted to the OEH Heritage Division.

More information on heritage impacts are provided in Section 6.6.

The excavating, moving or exhibiting of Aboriginal objects requires a permit under Section 87 of the National Parks and Wildlife Act 1974 (NPW Act). The harming or desecrating of Aboriginal objects or places is an offence under Section 86 of the NPW Act. Under Section 90, an Aboriginal heritage impact permit may be issued in relation to a specified Aboriginal object, Aboriginal place, land, activity or person or specified types or classes of Aboriginal objects, Aboriginal places, land, activities or people.

There are no Aboriginal objects or places known to occur in the immediate vicinity of the Proposal and no known items or places would be affected by the proposed work. A search of the Aboriginal Heritage Information Management System (AHIMS) confirmed that there are six Aboriginal sites within 100 metres of ATP Area 6A sites GE463, BN173, MRCT ATP and GE457 LOC. Impacts to these sites are not expected. Given the disturbed nature of the rail corridor, impacts on Aboriginal heritage are not expected.

Safeguards have been proposed to address circumstances if an unexpected find occurs.

All native birds, reptiles, amphibians and mammals, except the dingo, are protected in NSW under the NPW Act. The harming of protected fauna is prohibited under the NPW Act, but an exemption applies in relation to things that are essential to the carrying out of an activity to which Part 5 of the EP&A Act applies and where the determining authority has complied with the provisions of that part.

More information on Aboriginal heritage is included in Section 6.6.

#### Biodiversity Conservation Act 2016

The Biodiversity Conservation Act 2016 (BC Act) is directed at conserving threatened species, populations and ecological communities of animals and plants.

A number of threatened species, populations and endangered ecological communities occur in the vicinity of the Proposal (i.e. Cumberland Plain land snail (Meridolum comeovirens), Juniper-leaved grevillea (Grevillea juniperina subsp. juniperina) and Grey Headed Flying Fox (Pteropus poliocephalus) Green and golden bell frog (Litoria aurea) and Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (refer Section 6.4.1)). However, it is anticipated that due to the nature of works and the location of the construction footprint primarily within disturbed rail corridor, no removal of the native vegetation would be required.

The potential impact on vegetation and biodiversity would be minimised through a hierarchy of controls outlined in Section 6.4.3. Should vegetation other than grass and weeds need to be trimmed or removed to support the construction of the Proposal, further consideration of the BC Act would be undertaken and approval from TfNSW obtained.

Section 6.4 provides further information about the biodiversity constraints associated with the proposal.
Applicable legislation | Considerations
--- | ---
Protection of the Environment Operations Act 1997 | The *Protection of the Environment Operations Act 1997* (POEO Act) provides a licensing framework for certain activities as defined in Schedule 1 of the POEO Act. The Proposal is not considered to fall within the definition of Section 33 ‘Railway systems activities’ of Schedule 1. As such, the Proposal does not require an environment protection licence (EPL) under the POEO Act.

Roads Act 1993 | Under Section 138 of the *Roads Act 1993*, a person must not “erect a structure or carry out a work in, on or over a public road, or dig up or disturb the surface of a public road...” other than with the consent of the appropriate roads authority. However, clause 5(1) in Schedule 2 of the Act states that public authorities do not require consent for works on unclassified roads.

The Proposal does not require any work to be undertaken in, on or over a classified road. Therefore, approval from Roads and Maritime Services (RMS) would not be required.

Crown Lands Act 1987 | The proposed work would not be undertaken on crown land and the provisions of this Act are not applicable to the Proposal.

4.4. Environmental planning instruments

4.4.1. State Environmental Planning Policy (Infrastructure) 2007

The Infrastructure SEPP is the key environmental planning instrument which determines the permissibility of the Proposal.

Clause 79 of the Infrastructure SEPP allows for the development of rail infrastructure facilities by or on behalf of a public authority without consent on any land. Clause 78 defines ‘rail infrastructure facilities’ as including ‘signalling, train control, communication and security systems’.

Consequently, development consent is not required, however the environmental impacts of the Proposal have been assessed under the provisions of Part 5 of the EP&A Act.

Part 2 of the Infrastructure SEPP contains provisions for public authorities to consult with local councils prior to the commencement of certain types of development. Chapter 5 of this REF discusses the consultation undertaken in relation to the Proposal.

4.4.2. Other environmental planning instruments

Table 4-4 provides a list of other relevant environmental planning instruments applicable to the Proposal.

<table>
<thead>
<tr>
<th>Applicable instrument</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Environmental Planning Policy No. 14 – Coastal Wetlands (SEPP 14)</td>
<td>The Proposal is not located within an area covered by the SEPP and therefore no further consideration of SEPP 14 is necessary.</td>
</tr>
<tr>
<td>Applicable Instrument</td>
<td>Considerations</td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>State Environmental Planning Policy No. 19 – Bushland in Urban Areas (SEPP 19)</td>
<td>SEPP 19 protects and preserves bushland within certain urban areas, as part of the natural heritage or for recreational, educational and scientific purposes. Blacktown, Penrith and Hawkesbury LGAs are listed in SEPP 19 as areas where bushland needs to be preserved. The Proposal would not require clearing of native vegetation or disturbance to bushland on or adjacent to land reserved or zoned for public open space. Parramatta LGA is not listed in Schedule 1 as an area where bushland needs to be preserved. Further consideration of SEPP 19 is therefore not considered to be required.</td>
</tr>
<tr>
<td>State Environmental Planning Policy No. 26 – Littoral Rainforests (SEPP 26)</td>
<td>The Proposal does not cover any areas mapped as Littoral Rainforests under this SEPP and therefore no further consideration of SEPP 26 is required.</td>
</tr>
<tr>
<td>State Environmental Planning Policy No. 44 – Koala Habitat Protection (SEPP 44)</td>
<td>Hawkesbury LGA is listed in Schedule 1 as an area possessing habitat or feed trees for koalas. Minor trimming of native vegetation may be required for the Proposal, which may affect Koala habitat. This is considered further in Section 6.4.2. Parramatta, Blacktown, Penrith Hawkesbury LGAs are not listed in Schedule 1 as an area possessing habitat or feed trees for koalas and therefore no further consideration of SEPP 26 is required for works in these LGAs.</td>
</tr>
<tr>
<td>State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55)</td>
<td>SEPP 55 provides for a consistent state-wide planning approach to the remediation of contaminated land. The policy states that land must not be developed if it is unsuitable for a proposed use because it is contaminated. If the land is unsuitable, remediation must take place before the land is developed. If contaminated land is encountered during the construction works a suitable remediation plan would be developed, if required.</td>
</tr>
<tr>
<td>State Environmental Planning Policy No. 71 – Coastal Protection (SEPP 71)</td>
<td>The Proposal is not within the coastal protection zone designated in SEPP 71. Approval under this SEPP is not required as the SEPP relates to the development of local environmental plans and assessment of Part 4 development applications. The Proposal complies with the aims and matters for consideration of the SEPP. No further consideration of this SEPP is required.</td>
</tr>
<tr>
<td>The Proposal is in the Parramatta, Blacktown, Penrith and Hawkesbury catchments which are not part of a drinking water catchment. This SEPP does not apply to the Proposal.</td>
<td>The Proposal is in the Parramatta LGA and is subject to the Parramatta Local Environmental Plan 2011 (Parramatta LEP). The Proposal would be undertaken on land zoned SP2 Infrastructure. Rail infrastructure is permissible with consent under this LEP. As the Infrastructure SEPP overrides the development consent requirements of any LEP, the Proposal can proceed without development consent. ATP Area 6 site GE457 LOC is located within areas mapped as flood prone land under this LEP. Section 6.2 provides further information on the potential flood risks associated with the Proposal.</td>
</tr>
<tr>
<td>The Proposal is in the Blacktown LGA and is subject to the Blacktown Local Environmental Plan 2015 (Blacktown LEP). The Proposal would be undertaken on land zoned SP2 Infrastructure.</td>
<td>The Proposal is in the Blacktown LGA and is subject to the Blacktown Local Environmental Plan 2015 (Blacktown LEP). The Proposal would be undertaken on land zoned SP2 Infrastructure. Rail infrastructure is permissible with consent under this LEP. As the Infrastructure SEPP overrides the development consent requirements of any LEP, the Proposal can proceed without development consent. ATP Area 6 site GE457 LOC is located within areas mapped as flood prone land under this LEP. Section 6.2 provides further information on the potential flood risks associated with the Proposal.</td>
</tr>
</tbody>
</table>
### Applicable Instrument

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Penrith Local Environmental Plan 2010</strong></td>
<td>Rail infrastructure is permissible with consent under this LEP. As the Infrastructure SEPP overrides the development consent requirements of any LEP, the Proposal can proceed without development consent. ATP Area 6A sites SS1, SS14, SS16 DIST, Riverstone RR and RE10 are within/or adjacent to areas mapped as flood prone under this LEP. Section 6.2 provides further information on the potential flood risks associated with the Proposal.</td>
</tr>
<tr>
<td><strong>Hawkesbury Local Environmental Plan 2012</strong></td>
<td>The Proposal is in the Hawkesbury LGA and is subject to the Hawkesbury Local Environmental Plan 2012 (Hawkesbury LEP). The Proposal would be undertaken on land zoned SP2 Infrastructure. Rail infrastructure is permissible with consent under this LEP. As the Infrastructure SEPP overrides the development consent requirements of any LEP, the Proposal can proceed without development consent. ATP Area 6A site ME1 and Mulgrave RR to ME1 is within close proximity to flood prone land mapped under this LEP. Section 6.2 provides further information on the potential flood risks associated with the Proposal.</td>
</tr>
<tr>
<td><strong>Holroyd Local Environmental Plan 2013</strong></td>
<td>The Proposal is in the Cumberland LGA and is subject to the Holroyd Local Environmental Plan 2013 (Holroyd LEP). The Proposal would be undertaken on land zoned SP2 Infrastructure. Rail infrastructure is permissible with consent under this LEP. As the Infrastructure SEPP overrides the development consent requirements of any LEP, the Proposal can proceed without development consent.</td>
</tr>
</tbody>
</table>

### 4.5. Commonwealth legislation

#### 4.5.1. Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth EPBC Act requires the assessment of whether the Proposal is likely to significantly impact on matters of NES or Commonwealth land. These matters are considered in full in Appendix 2.

The Proposal is not considered to have a significant adverse impacts on matters of NES or on Commonwealth land. Therefore, a referral to the Commonwealth Department of the Environment and Energy is not considered to be required.
5. Stakeholder communication

Chapter 5 discusses the information that will be provided to the community on the Proposal both during the planning approval process and during construction.

5.1. Communication approach

The communications approach for the Proposal has been designed to serve as an educational tool for interested stakeholders and communities located in close proximity to works being undertaken in the rail corridor.

The works being undertaken as part of the Proposal are based on safety and rail system requirements. For this reason, there is minimal opportunity for any community feedback into projects deliverables. An educational approach to the communication activities has been adopted to allow interested stakeholders to find out more about the ATP Project and any likely resulting impacts.

The communication approach being implemented for the ATP Project has also been developed having regard for the requirements of the planning process.

The following principles for the Proposal would be adopted:

- generally raising awareness of the Proposal through notifications, site signage, door knocks, advertisements in local newspapers and directing interested stakeholders to the Transport for NSW website
- ensuring that up to date information about the Proposal is available on the Transport for NSW website
- making information available about the appropriate planning processes being followed compliant with legislative requirements
- recording any enquiries and interactions from the community regarding the Proposal
- Ensuring a transparent approach.

5.2. Consultation requirements

Table 5-1 provides details of consultation requirements under the Infrastructure SEPP.
Table 5-1 Infrastructure SEPP consultation requirements

<table>
<thead>
<tr>
<th>Consultation with Councils</th>
<th>development with impacts on council related infrastructure and services</th>
<th>Relevance to the Proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where railway station works:</td>
<td>substantial impact on storm water management services</td>
<td>The proposed works are considered to be minor and should not have an impact on council related infrastructure or services.</td>
</tr>
<tr>
<td></td>
<td>place a local road system under strain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>involve connection to or impact on a council owned sewerage system</td>
<td></td>
</tr>
<tr>
<td></td>
<td>involve connection to and substantial use of council owned water supply</td>
<td></td>
</tr>
<tr>
<td></td>
<td>significantly disrupt pedestrian or vehicle movement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>involve significant excavation to a road surface or footpath for which Council has responsibility.</td>
<td></td>
</tr>
</tbody>
</table>

Consultation with Councils | development with impacts on local heritage | Relevance to the Proposal

Where railway station works:
- substantially impact on local heritage item (if not also a State heritage item)
- substantially impact on a heritage conservation area.

Consultation with Councils | development with impacts on flood liable land | Relevance to the Proposal

Where railway station works:
- impact on land that is susceptible to flooding – reference would be made to ‘Floodplain Development Manual: the management of flood liable land’.

Consultation with public authorities other than Councils | Relevance to the Proposal

Where development is identified as ‘specified development’ (i.e. adjacent to land reserved under the NPW Act or within the foreshore area identified in the Sydney Harbour Foreshore Authority Act), the relevant agency should be consulted.

The Proposal is not located within or adjacent to any national parks. The proposed works are therefore, not expected to impact any national park areas.

5.3. Communication activities

Table 5-2 identifies the communication activities are intended to be undertaken during the planning, construction and commissioning phase of the Proposal.

Table 5-2 Communication activities

<table>
<thead>
<tr>
<th>Project phase</th>
<th>Communication tool or activity</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>Establish an 1800 number for any enquiries related to the Proposal and log these interactions in a register (Consultation Manager).</td>
<td>Prior to REF determination</td>
</tr>
<tr>
<td></td>
<td>Install signage at each of the access gates identifying that works being undertaken as part of the Proposal and timeframe for delivery.</td>
<td>Prior to construction commencement</td>
</tr>
<tr>
<td>Construction</td>
<td>Maintain the 1800 number for any enquiries related to the Proposal and log these interactions in a register (Consultation Manager).</td>
<td>Throughout construction phase</td>
</tr>
<tr>
<td></td>
<td>Use a variety of communication tools such as letter box notifications, door knocks and website updates to keep stakeholders informed of construction activities.</td>
<td>Throughout construction phase</td>
</tr>
<tr>
<td>Commissioning</td>
<td>Update information on the website to reflect completion of the Proposal including overall benefits of work undertaken.</td>
<td>At completion</td>
</tr>
</tbody>
</table>
6. Environmental impact assessment

Chapter 6 of the REF provides a detailed description of the likely environmental impacts associated with the construction and operation of the Proposal. For each likely impact, the existing environment is characterised and then an assessment is undertaken as to how the Proposal would impact on the existing environment. The site-specific footprint for each ATP site assessed in this REF is provided in Appendix 3.

To determine the likely impact of the overall Proposal, a preliminary environmental risk assessment has been undertaken for each proposed ATP site in Area 6A. The preliminary environmental risk assessment has been undertaken for the following environmental issues:

- Water quality / hydrology
- Acid sulfate soils
- Biodiversity
- Noise
- Heritage
- Contamination
- Land use
- Traffic and access.

A number of other environmental issues, such as air quality and waste, would generally pose the same potential risk at each ATP site in Area 6A. As such, these issues have not been included in the risk assessment. The potential risk and likely impact of these issues are discussed in the relevant section and appropriate standard mitigation measures have been identified to be implemented at all ATP sites in Area 6A.

The risk assessment process has identified whether works at the proposed ATP sites in Area 6A would present a low, medium or high risk of impact for the relevant environmental issue. The risk has been determined based on proximity to a sensitive waterbody, heritage item and/or residential property as well as the occurrence of actual or potential acid sulfate soils, threatened species and/or communities and contamination. A copy of the risk assessment criteria which was used to guide the risk classification at each ATP site in Area 6A is provided in Appendix 4.

Where a high risk has been identified at an ATP Site in Area 6A, a site-specific assessment has been provided in the relevant section. Where required, appropriate site-specific mitigation measures have been identified to be implemented at these ATP sites.

The results of the preliminary environmental risk assessment are provided in Table 6-1.

This environmental impact assessment has been undertaken in accordance with clause 228 of the EP&A Regulation. A checklist of clause 228 factors and how they have been specifically addressed in this REF is included at Appendix 1.
Table 6-1 Preliminary environmental risk assessment

<table>
<thead>
<tr>
<th>ATP Area 6A Site Name</th>
<th>Area / Suburb</th>
<th>Water quality / hydrology</th>
<th>ASS</th>
<th>Non Indigenous Heritage</th>
<th>Indigenous Heritage</th>
<th>Biodiversity</th>
<th>Potential Contamination</th>
<th>Noise</th>
<th>Land use</th>
<th>Traffic and access</th>
</tr>
</thead>
<tbody>
<tr>
<td>GE457 LOC</td>
<td>Westmead</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
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<td>Low</td>
<td>Medium</td>
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</tr>
<tr>
<td>ATP Area 6A Site Name</td>
<td>Area / Suburb</td>
<td>Water quality / hydrology</td>
<td>ASS</td>
<td>Non Indigenous Heritage</td>
<td>Indigenous Heritage</td>
<td>Biodiversity</td>
<td>Potential Contamination</td>
<td>Noise</td>
<td>Land use</td>
<td>Traffic and access</td>
</tr>
<tr>
<td>-----------------------</td>
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<td>Blacktown CC</td>
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</tr>
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<td>28.6</td>
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<td>Medium</td>
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<td>Area / Suburb</td>
<td>Water quality / hydrology</td>
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<td>Non Indigenous Heritage</td>
<td>Indigenous Heritage</td>
<td>Biodiversity</td>
<td>Potential Contamination</td>
<td>Noise</td>
<td>Land use</td>
<td>Traffic and access</td>
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<td>Medium</td>
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<td>Medium</td>
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<td>Medium</td>
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<tr>
<td>BN51 to Blacktown CC</td>
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<td>Medium</td>
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<tr>
<td>ATP Area 6A Site Name</td>
<td>Area / Suburb</td>
<td>Water quality / hydrology</td>
<td>ASS</td>
<td>Non Indigenous Heritage</td>
<td>Indigenous Heritage</td>
<td>Biodiversity</td>
<td>Potential Contamination</td>
<td>Noise</td>
<td>Land use</td>
<td>Traffic and access</td>
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<td>Low</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
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<td>BN141 to BN151</td>
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<td>High</td>
<td>Medium</td>
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<td>BN102 to 23.2</td>
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<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Mulgrave RR to ME1</td>
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<td>High</td>
<td>Medium</td>
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</table>
6.1. Landforms, geology and soils

6.1.1. Existing environment

The North Shore, Northern & Western Line and Cumberland Line (Area 6A) from Parramatta to Emu Plains and Richmond is generally flat, and has one major crossing at the Nepean River. The elevation ranges from less than 13 metres at Parramatta to around 22 metres at Emu Plains and 15 metres at Richmond.

The geology throughout the Area 6A comprises Ashfield Shale and Bringelly Shale (of the Wianamatta Group) east of Eastern Creek, Londonderry Clay and Clarendon Formation around Richmond and Cranebrook Formation in the vicinity of the Nepean River. The soil landscape groups located within the Area 6A comprise Blacktown, South Creek, Luddenham, Richmond, Berkshire Park and Freemans Reach.

Potential Acid Sulfate Soils (PASS) are soils rich in iron sulfides (pyrite). If these soils are brought into contact with oxygen, oxidisation occurs and they become Acid Sulfate Soils (ASS) which are highly acidic. There is a risk of encountering potential acid sulfate soils along the margins of estuarine floodplains and coastal lowlands.

A review of the ASS Risk mapping for each ATP site was undertaken to assess the:
- Probability of occurrence of acid sulfate soil
- Depth to acid sulfate soil
- Environmental risk associated with disturbing the soil
- The landform element on which the soil occurs.

The review indicated ATP sites in Area 6A are classified as low risk (i.e. no risk of ASS occurring within four metres of the natural soil surface) with respect to potential ASS. No ATP sites in Area 6A are within areas mapped as having a high risk of ASS.

6.1.2. Potential impacts

Some soil disturbance would be required at each ATP site during the construction of the Proposal. Where available, existing conduits or galvanised steel troughing (GST) would be used for the cabling works. Where space within existing cabling conduits or GST is not available, cabling would be installed using underground cables installed in 0.3 metre wide trench at a depth of 0.6 metres. Land disturbance may also be required at ATP sites to install new signalling cabinets where space is not available within existing cabinets. In general, up to 20 square metres of land would be disturbed at each ATP site during construction of the Proposal plus any disturbance associated with new signalling cabling routes (refer Table 3-2).

Excavated soil and rock for any cable trenching would be temporarily stockpiled on site and backfilled upon completion, provided it is not contaminated or weed infested.

Where trenching is difficult to undertake in rocky terrain, rock breaking may be required.

Trenching activities may result in erosion if appropriate mitigation measures are not in place. Soil erosion has the potential to destabilise landforms and deposit sediments in drainage
systems and waterways. Sediment deposition and fine particles in suspension within waterways have direct impact on water quality and aquatic life.

As noted in Section 6.1, all ATP sites in Area 6A were found to pose a low risk of ASS (refer Table 6-1). As excavation works are not proposed to extend to depths greater than four metres below the natural soil surface potential impacts associated with ASS are not anticipated.

Given the site characteristics and the scope and size of the proposed work at each ATP site, it is anticipated that erosion and sediment risks are minimal and can be effectively managed through the implementation of standard measures as outlined in the *Managing Urban Stormwater: Soils and Construction Guidelines* (the Blue Book) (Landcom 2004).

No operational impacts are expected.

### 6.1.3. Mitigation measures

Site specific erosion and sediment control measures will be identified as part of CEMP/ECM. The proposed erosion and sediment control measures will be implemented in accordance with *Managing Urban Stormwater Soils and Construction* (Landcom 2004) (the Blue Book) and would include, but not be limited to, those outlined below:

- Appropriate stockpiling of materials would take place away from drainage lines, waterways and drains
- Any soil that may be contaminated or weed infested would be stockpiled separately before being removed from the site
- Stockpiles and disturbed areas shall be appropriately stabilised to minimise erosion
- Disturbed areas would be reinstated as soon as possible

### 6.2. Water quality and hydrology

#### 6.2.1. Existing environment

The Proposal is located in the Georges and Hawkesbury catchments and crossed the Nepean River in between Penrith and Emu Plains Train Stations.

The existing drainage system within the rail corridor consists of an informal arrangement of pit and pipe and outfall points to stormwater. Overland flows from adjoining properties generally pass beneath the ballasted areas via culverts and buried pipes.

Existing track drainage and runoff generally discharges into bushland and nearby creeks, and into existing culverts in urban areas.

Existing shelters above signal cabinets and bungalows are located at a number of ATP sites. Rainwater runoff from these shelters discharges to the ground and does not present a risk to local water quality.

A review of flood mapping sourced from the respective LGA’s indicates ATP Area 6A sites GE457 LOC, SS1, SS14, SS16 DIST and RE1, Riverstone RR, RE10, ME1 and Mulgrave RR to ME1 are located in areas prone to flooding.
The ATP sites in Area 6A which are located within 25 metres of a waterway are listed in Table 6-2. Under the preliminary environmental risk assessment (refer Table 6-1) these ATP sites have been classified as high risk from a water quality and hydrology perspective due to their proximity (i.e. within 25 metres) to a waterway.

### Table 6-2 ATP sites in Area 6A within 25 metres of a waterway

<table>
<thead>
<tr>
<th>ATP Area 6A Site Name</th>
<th>Area/Suburb</th>
<th>Waterway</th>
<th>Distance of ATP Area 6A site footprint from waterway (meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN17</td>
<td>Seven Hill</td>
<td>Blacktown Creek</td>
<td>Within site footprint</td>
</tr>
<tr>
<td>BN19</td>
<td>Seven Hills</td>
<td>Blacktown Creek</td>
<td>Within 25m of site footprint</td>
</tr>
<tr>
<td>BN20</td>
<td>Seven Hills</td>
<td>Blacktown Creek</td>
<td>Within site footprint</td>
</tr>
<tr>
<td>BN20 to BN21</td>
<td>Seven Hills</td>
<td>Blacktown Creek</td>
<td>Within site footprint</td>
</tr>
<tr>
<td>BN31</td>
<td>Blacktown</td>
<td>Unnamed</td>
<td>Within 25m of site footprint</td>
</tr>
<tr>
<td>BN21 to BN31</td>
<td>Blacktown</td>
<td>Unnamed</td>
<td>Within 25m of site footprint</td>
</tr>
<tr>
<td>BN141</td>
<td>Blacktown</td>
<td>Breakfast Creek</td>
<td>Within site footprint</td>
</tr>
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<td>Blacktown CC to BN141</td>
<td>Blacktown</td>
<td>Breakfast Creek</td>
<td>Within site footprint</td>
</tr>
<tr>
<td>BN141 to BN151</td>
<td>Blacktown</td>
<td>Breakfast Creek</td>
<td>Within site footprint</td>
</tr>
<tr>
<td>BN151</td>
<td>Blacktown</td>
<td>Breakfast Creek</td>
<td>Within site footprint</td>
</tr>
<tr>
<td>482</td>
<td>Blacktown</td>
<td>Claremont Creek</td>
<td>Within site footprint</td>
</tr>
<tr>
<td>MRCT ATP</td>
<td>Clarendon</td>
<td>Rickabys Creek</td>
<td>Within site footprint</td>
</tr>
</tbody>
</table>

### 6.2.2. Potential impacts

Without appropriate safeguards, contaminants such as fuels and hydraulic oils from plant and equipment may reach nearby drains and discharge into local waterways. These contaminants may have the potential to harm aquatic life and affect the quality of water downstream. However, the risk of such an occurrence is generally low provided the mitigation measures noted in Section 6.2.3 are implemented throughout construction.

During excavation works there is the potential for sediment-laden water to be discharged into local water bodies and/or the nearby stormwater system during a rainfall event. Rain or groundwater may enter trench excavations. If inappropriately managed, sediment-laden water could be discharged into local water bodies and/or the nearby stormwater system.

ATP Area 6A sites GE457 LOC, SS1, SS14, Riverstone RR, SS16 DIST and RE1, RE10, ME1 and Mulgrave RR to ME1 are within areas mapped as flood prone under the relevant LEP, hence there is potential for flooding during heavy rain. The proposed work at each ATP site is relatively minor and would not have any potential impacts on flood patterns.

No significant operational impacts on waterways are expected. The works are not anticipated to affect the landform or the flow of water in the area.

### 6.2.3. Mitigation measures

During construction water quality impacts would be minimised through a range of control measures in addition to the erosion and sedimentation controls included in Section 6.1. The water quality measures would include, but not be limited to those outlined below:

- Erosion and sediment controls at each worksite would be detailed on the ECM and comply with Managing Urban Stormwater: Soils and Construction (Landcom 2004) (the Blue Book)
• Erosion and sediment controls would be regularly inspected and maintained, particularly following heavy rainfall
• The effectiveness of erosion and sediment controls would be monitored daily and adjusted if required
• Plant and equipment would be maintained in accordance with the manufacturer’s specifications and checked regularly for oil leaks
• Refuelling of plant and equipment would occur in impervious bunded areas located a minimum of 40 metres from drainage lines or waterways
• Concrete slurries and wash-out would be collected for reuse or for off-site disposal
• Appropriately sized spill response kits must be kept on at the ATP sites and staff trained in their use
• Earthworks would be suspended during periods of heavy or prolonged rainfall. Plant and equipment would be removed from the ATP site where there is a high risk of inundation
• Dry street sweepers or hand-held brooms would be used to clean local roads in the event of tracked sediment
• Works are to be undertaken in accordance with the TfNSW Chemical Storage and Spill Response Guidelines (9TP-SD-066)
• Water discharge from the ATP site must be carried out as per TfNSW Water Discharge Guidelines (7TP-SD-024).

6.3. Air quality

6.3.1. Existing environment

The local air quality along the rail corridor from Parramatta to Emu Plains and Richmond (Area 6A) is typical of an urban/rural environment. The urban area is largely influenced by transport, industrial, commercial and domestic sources. The rural areas consist of large areas of cleared land and some vegetated areas likely to have relatively good air quality.

6.3.2. Potential impacts

There is a risk of impact on local air quality during the following activities, particularly during warm and dry weather:

• stockpiling of virgin and spoil materials
• excavation of trenches
• backfilling of trenches
• transporting of wastes
• plant movement on access
• emissions from plant and machinery.

No dust or emissions are anticipated during the operation of the ATP.
6.3.3. Mitigation measures

Air quality impacts throughout construction would be minimised through a range of control measures which would include, but not be limited to, those outlined below:

- Plant and equipment would be maintained in accordance with manufacturers’ specifications
- Regular inspection of plant and equipment would be undertaken to ascertain that fitted emission controls are operating efficiently
- Plant or machinery would not be left idling
- All work areas and stockpiles would be monitored by construction personnel for dust generation during working hours
- Stockpiles would be maintained and contained appropriately, which could include covering or regular watering to minimise dust
- Trucks transporting spoil and other waste materials from the ATP site would be covered appropriately
- Disturbed areas would be rehabilitated as soon as practicable.

6.4. Biodiversity

6.4.1. Existing environment

The North Shore, Northern & Western Line and Cumberland Line (Area 6A) from Parramatta to Emu Plains and Richmond experienced significant disturbance during construction of the rail line. The Proposal is situated in a landscape defined by built infrastructure, with minimal areas of adjacent bushland.

A desktop review of Endangered Ecological Communities (EECs) and a search of the Office of Environment and Heritage (OEH) NSW BioNet Atlas of NSW Wildlife and the EPBC Protected Matters Search Tool (refer Attachment 2) identified the potential occurrence of the following matters of national environmental significance (NES) within a one km radius of the rail corridor:

- 5 Threatened Ecological Communities (TECs)
- 22 threatened fauna species
- 21 threatened flora species
- range of marine, terrestrial and wetland migratory species.

The BioNet Atlas of NSW Wildlife returned 8,938 records of threatened flora and fauna species (listed under the BC Act) occurring within the within five kilometres of the rail corridor including:

- 9 endangered fauna species
- 1 critically endangered fauna species
- 48 vulnerable fauna species
- 14 endangered flora species
- 1 critically endangered flora species
- 14 vulnerable flora species
- 3 endangered flora species populations.

Table 6-3 lists threatened flora and fauna species which have been previously recorded in within 150 metres of the Proposal. Disturbance of native vegetation at the ATP Sites has the potential to impact on these species. Three threatened species have been recorded within the site footprints.

Table 6-3 Threatened species located within 150 metres of an ATP site

<table>
<thead>
<tr>
<th>ATP Area 6A site name</th>
<th>Threatened species</th>
<th>Conservation status</th>
<th>Proximity to site</th>
<th>Within rail corridor</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN31 BN21 to BN31</td>
<td>Grey Headed Flying Fox (<em>Pteropus poliocephalus</em>)</td>
<td>EPBC Act (Vulnerable) BC Act (Vulnerable)</td>
<td>Species recorded within 8m of site footprint</td>
<td>Yes</td>
</tr>
<tr>
<td>28.6</td>
<td>Green and Golden Bell Frog (<em>Litoria aurea</em>)</td>
<td>EPBC Act (Vulnerable) BC Act (Endangered)</td>
<td>Species recorded within the site footprint</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Nodding Geebung <em>(Persoonia nutans)</em></td>
<td>EPBC Act (Endangered) BC Act (Endangered)</td>
<td>Species recorded within 5m of site footprint</td>
<td>No</td>
</tr>
<tr>
<td>452</td>
<td><em>Dillwynia tenuifolia</em></td>
<td>BC Act (Vulnerable)</td>
<td>Species recorded within 150m of site footprint</td>
<td>No</td>
</tr>
<tr>
<td>St Marys RR</td>
<td><em>Pultenaea parviflora</em></td>
<td>EPBC Act (Vulnerable) TSC Act (Endangered)</td>
<td>Species recorded within 150m of site footprint</td>
<td>No</td>
</tr>
<tr>
<td>BN166</td>
<td>Spiked rice-flower <em>(Pimelea spicata)</em></td>
<td>EPBC Act (Endangered) TSC Act (Endangered)</td>
<td>Species recorded within 150m of site footprint</td>
<td>No</td>
</tr>
<tr>
<td>BN173</td>
<td>Cumberland Plain land snail <em>(Meridolum corneovirens)</em></td>
<td>BC Act (Endangered)</td>
<td>Species recorded within 150m of site footprint</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Dusky woodswallow <em>(Artamus cyanopterus cyanopterus)</em></td>
<td>TSC Act (Vulnerable)</td>
<td>Species recorded within 150m of site footprint</td>
<td>No</td>
</tr>
<tr>
<td>SS1</td>
<td>Eastern free-tail bat <em>(Mormopterus norfolkensis)</em></td>
<td>TSC Act (Vulnerable)</td>
<td>Species recorded within 150m of site footprint</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Cumberland Plain land snail <em>(Meridolum corneovirens)</em></td>
<td>TSC Act (Endangered)</td>
<td>Species recorded within 150m of site footprint</td>
<td>No</td>
</tr>
<tr>
<td>SS14</td>
<td>Cumberland Plain land snail <em>(Meridolum corneovirens)</em></td>
<td>TSC Act (Endangered)</td>
<td>Species recorded within 150m of site footprint</td>
<td>No</td>
</tr>
<tr>
<td>ME1</td>
<td>Juniper-leaved grevillea <em>(Grevillea juniperina subsp. juniperina)</em></td>
<td>TSC Act (Vulnerable)</td>
<td>Species recorded within the site footprint.</td>
<td>Yes</td>
</tr>
<tr>
<td>Mulgrave RR to ME1</td>
<td>Downy wattle <em>(Acacia pubescens)</em></td>
<td>EPBC Act (Vulnerable) BC Act (Vulnerable)</td>
<td>Species recorded within 150m of site footprint</td>
<td>No</td>
</tr>
<tr>
<td>MRCT ATP</td>
<td>Grey Headed Flying Fox <em>(Pteropus poliocephalus)</em></td>
<td>EPBC Act (Vulnerable) BC Act (Vulnerable)</td>
<td>Species recorded within the site footprint.</td>
<td>Yes</td>
</tr>
</tbody>
</table>
There is potential for threatened flora and fauna species to occur within the rail corridor other than those records currently within the BioNet Atlas of NSW Wildlife Database and EPBC Protected Matters Search Tool. However, this potential is considered to be very low, due to the disturbed nature of the rail corridor and the lack of habitat for both flora and fauna species.

Table 6-4 provides the vegetation communities listed under the BC Act and EPBC Act which been mapped within the footprint of ATP sites in Area 6A.

<table>
<thead>
<tr>
<th>ATP Area 6A Site Name</th>
<th>Vegetation Community</th>
<th>BC Act Status / Name</th>
<th>EPBC Act Status / Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN17 to BN20</td>
<td>River Flat Eucalypt Forest</td>
<td>Endangered as River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</td>
<td>Nil</td>
</tr>
<tr>
<td>28.6</td>
<td>Cumberland Plain Woodland</td>
<td>Critically endangered as Cumberland Plain Woodland in the Sydney Basin Bioregion</td>
<td>Critically Endangered as Cumberland Plain Shale Woodlands and Shale -Gravel Transition Forest</td>
</tr>
<tr>
<td>BN141</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BN166</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RE1 &amp; SS16 DIST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BN151</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DN DIST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mulgrave RR to ME1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cooks River Castlereagh Ironbark Forest</td>
<td>Endangered as Cooks River/Castlereagh Ironbark Forest in the Sydney Basin Bioregion</td>
<td>Critically Endangered as Cooks River/Castlereagh Ironbark Forest in the Sydney Basin Bioregion</td>
</tr>
<tr>
<td></td>
<td>Cumberland Plain Woodland</td>
<td>Critically endangered as Cumberland Plain Woodland in the Sydney Basin Bioregion</td>
<td>Critically Endangered as Cumberland Plain Shale Woodlands and Shale -Gravel Transition Forest</td>
</tr>
</tbody>
</table>

The preliminary environmental risk assessment notes ATP sites are high risk from a biodiversity (refer Table 6-1) perspective where threatened species and/or EECs are located within the site footprint (refer Appendix 3 ATP Area 6A site location plans).

Table 6-5 lists the ATP sites in Area 6A where vegetation communities listed under the BC Act and/or EPBC Act have been mapped within 150 metres of the Proposal, but outside any ATP site footprint (refer Appendix 3).
Table 6-5 Endangered ecological communities mapped in proximity to the Proposal

<table>
<thead>
<tr>
<th>ATP Area 6A Site Name</th>
<th>Vegetation Community</th>
<th>BC Act Status / Name</th>
<th>EPBC Act Status / Name</th>
<th>Within the rail corridor</th>
</tr>
</thead>
<tbody>
<tr>
<td>GE457 LOC BN20 BN20 to BN21 BN21 BN21 to BN31</td>
<td>River Flat Eucalypt Forest</td>
<td>Endangered as River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</td>
<td>Nil</td>
<td>No</td>
</tr>
<tr>
<td>23.2 BN82 BN94 BN141 BN173 St Marys RR 482 32.6 LOC 33.0 LOC 34.9 34.9B</td>
<td>Cumberland Plain Woodland</td>
<td>Critically endangered as Cumberland Plain Woodland in the Sydney Basin Bioregion Critical EEC</td>
<td>Critically Endangered as Cumberland Plain Shale Woodlands and Shale - Gravel Transition Forest</td>
<td>No</td>
</tr>
<tr>
<td>BN102 BN102 to 23.2</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

Site surveys complete for the concept design phase identified the following noxious weeds in Area 6A.

Table 6-6 Noxious Weeds in Area 6A

<table>
<thead>
<tr>
<th>Weed Name</th>
<th>Status</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lantana (Lantana camara)</td>
<td>Yes</td>
<td>Recorded in low to moderate abundance at Area 6A site Wentworthville RR.</td>
</tr>
<tr>
<td>Blackberry (Rubus fruticosus)</td>
<td>Yes</td>
<td>Recorded in low to moderate abundance at Area 6A site BN20, BN17 to BN20 and BN20 to BN21.</td>
</tr>
<tr>
<td>Common pear (Opuntia stricta)</td>
<td>Yes</td>
<td>Recorded in low to moderate abundance at Area 6A site BN94 and BN94 to BN102.</td>
</tr>
</tbody>
</table>
6.4.2. Potential impacts

All construction works would be carried out within the rail corridor, and predominantly in areas subject to regular slashing/clearing for ongoing track maintenance and access. The majority of the new assets would either be installed within or close to the ballasted rail track area or around the existing signals or signal cabinet/huts. Where possible, the new infrastructure would utilise existing conduits for power and signal connections. In circumstances where there is no additional capacity in existing conduits; preference would be given to installing galvanised steel troughing and if this is not possible, underground conduits to connect new assets would be excavated.

In circumstances where new underground conduits or crossings are required, the construction impact would be minimised through a hierarchy of controls outlined in the Section Mitigation measures, particularly in the vicinity of any threatened species or endangered ecological community.

It is anticipated due to the nature of works and location of construction footprint, no removal of native vegetation would be required. Minor clearing and/or trimming of overgrown grasses and weeds would be required at a number of ATP sites Area 6A. Should vegetation other than grass and weeds need to be trimmed or removed, further approval would be obtained from TfNSW.

Vegetation removal and trimming may be required to ensure plant, vehicles and/or equipment can safety access the ATP sites. Any trimming activities are expected to be minor and given the extent of the surrounding bushland, trimming is not expected to significantly impact fauna habitat.

As noted in Table 6-3, there has been a recorded sighting of the threatened Green and Golden Bell Frog (GGBF) at ATP Area 6A site 28.6 located in St Marys. This sighting is from around 20 years ago. ATP Area 6A site 28.6 is located in a low-lying swampy area near Ropes Creek which could be potential habitat for this species. GGBFs located in the St Marys, Mt Druitt and Riverstone area form one of eight key populations identified in the Draft Recovery Plan for the Green and Golden Bell Frog (Department of Environment and Conservation 2005). Construction works could result in impacts to the GGBF community through spills and leaks fuels and chemicals (e.g. pesticides and herbicides), the discharge of sediment laden water during excavation works and from clearing and/or trimming of overgrown weeds and grasses.

The threatened Grey-headed Flying-Fox (GHFF) has also been sighted within the site footprint of ME1 and Mulgrave RR to ME1. This sighting is from around 20 years ago. Vegetation in the rail corridor is highly disturbed and unlikely to provide core habitat for this species. This species is known to be highly mobile and there are around six GHFF camps within seven kilometres of this ATP site, the closest in Parramatta Park around 150 metres from the rail corridor. It is likely the individual sighted was traversing the rail corridor in between nearby GHFF camps. Site survey reports complete for the concept design phase have also confirmed the site footprints are largely devoid of suitable habitat for this species.

Several other threatened fauna species have been recorded within 150 metres of ATP sites in Area 6A (refer Table 6-4). These include the Cumberland Plain Land Snail, Eastern free-tail bat and the Dusky woodswallow. The Eastern free-tail bat and Dusky woodswallow typically inhabit woodlands and swamp forests, and are unlikely to use the rail corridor regularly due to its limited habitat and high level of disturbance. Consequently, potential impacts to these species are not anticipated.
The Cumberland plain land snail has been recorded around 150 metres away from ATP Area 6A site BN173, SS1 and S14. This species typically inhabits the Cumberland Plain Woodland EEC which is located around 50 meters north of the site footprint and lives in bark, leaf litter grassed areas of which there would be little habitat within the site footprint.

Other native fauna is unlikely to be impacted by proposed works in Area 6A, although there is a low risk animals could potentially fall into an open trench and become trapped or injured.

One threatened flora species has been recorded within the site footprint of ATP Area 6B site ME1 and Mulgrave RR to ME1. The Juniper-leaved grevillea was recorded around 10 years ago on the edge of the rail corridor. Site surveys undertaken for the concept design phase noted vegetation at these ATP sites was very sparse (refer Figure 6-1) hence it is unlikely removal of native vegetation would be required, consequently impacts to this species is not anticipated provided in Section 6.4.3 are implemented.

There is a low risk of damage to other stands of existing vegetation (i.e. Juniper-leaved grevillea) due to stockpiling of materials or vehicle movements. Appropriate control measures, such as fencing, would be installed to ensure the risk of damage to existing vegetation is minimised.

Six other threatened flora species have been recorded within 150 metres of ATP sites in Area 6A. These include the Nodding Geebung, *Dillwynia tenuifoli*, *Pultenaea parviflora*, Juniper-leaved grevillea, Spiked rice-flower ad Downy wattle. These species are all located outside the rail corridor. There will be no potential disturbance to vegetation outside the site footprint boundary consequently impacts to these species are not anticipated.

Results from the desktop review (refer Section 6.4.1) indicate a number of ATP sites in Area 6A are located in areas of mapped EEC (refer Table 6-4). Any minor clearing of weeds and grasses required at these sites and the stockpiling of materials or vehicle movements has the
potential to impact these communities if mitigation measures provided in Section 6.4.3 are not implemented.

EECs are also located adjacent to the site footprint and rail corridor boundary (refer Table 6-5) at a number of other ATP sites in Area 6A. Potential direct and/or indirect impacts to these communities are not anticipated provided the mitigation measures in Section 6.4.3 are implemented.

Lantana, Blackberry and the common pear has been identified in low to moderate abundance at six sites in Area 6A (refer Table 6-6) and it is likely, if not controlled correctly, the proposed works could cause the spread of these weeds and other weeds identified in Area 6A. Any weed removal would be assessed to ensure any identified noxious weeds are removed appropriately. It is also noted weed control must be conducted without the use of herbicides in areas where the threatened GGBF is identified.

### 6.4.3. Mitigation measures

Impacts on flora and fauna throughout construction would be minimised through a range of control measures which would include, but not be limited to, those outlined below:

- If threatened and/or protected flora or fauna species are identified at an ATP site, work in the vicinity of the subject flora or fauna would stop immediately. A spotter/catcher or ecologist would be engaged to survey the area, in conjunction with TfNSW’s Representative, and advise on species management.
- Construction staff would be made aware of the ecological constraints and the requirements for no impact to any native vegetation at the following ATP sites in Area 6A. This information would be included in the location and/or the activity specific ECMs and would be marked as "no go zones" with associated signage established at the site(s):
  - **ATP Area 6A site BN31, NB21 to BN31**: Grey Headed Flying Fox recorded within 8 metres of the site footprint.
  - **ATP Area 6A site 28.6**: Nodding Geebung recorded within 5 metres of the site footprint.
  - **ATP Area 6A site 452 and St Marys RR**: *Dillwynia tenuifolia*, *Pultenaea parviflora* and Juniper-leaved grevillea recorded within 150 metres of the site footprint.
  - **ATP Area 6A site BN166**: Spiked rice-flower recorded within 150 metres of the site footprint.
  - **ATP Area 6A site BN173**: Cumberland Plain land snail recorded within 150 metres of the site footprint.
  - **ATP Area 6A site SS1**: Dusky woodswallow, Eastern free-tail bat, Cumberland Plain land snail recorded within 150 metres of the site footprint.
  - **ATP Area 6A site SS14**: Cumberland Plain land snail recorded within 150 metres of the site footprint.
  - **ATP Area 6A site ME1 and Mulgrave RR to ME1**: Downy wattle recorded within 150 metres of the site footprint.
  - **ATP Area 6A site ME1 and Mulgrave RR to ME1**: Juniper-leaved grevillea has been recorded within the site footprint.
  - **ATP Area 6A site MRCT ATP**: Grey Headed Flying Fox has been recorded within the site footprint.
• **ATP Area 6A sites BN17, BN17 to BN20, 28.6, BN141, BN166, SS1, SS14, RE1, SS16 DIST, BN151, DN DIST, ME1 and Mulgrave RR to ME1**: Prior to the commencement of construction a targeted ecological assessment is to be undertaken by a suitably qualified ecologist to determine the presence of EECs at these ATP sites. Where possible, the final alignment of any underground cabling within the site footprint would be designed to avoid potential impacts on these EECs. The location of EECs would be included in the location and/or the activity specific ECMs and would be marked as “no go zones” with associated signage established at the site(s).

• **ATP Area 6A site 28.6**: Prior to the commencement of construction works a suitably qualified ecologist would complete a targeted GGBF survey to determine potential impacts from ATP works in this area. If GGBFs and/or potential habitat for GGBFs is identified a site specific GGBF management plan would be developed prior to construction commencing, for review and approval by TfNSW. This site specific GGBF management plan would include the following controls:
  - All personnel and contractors to undergo environmental induction training before commencing work onsite. The content of this induction would include GGBF profile and identification, frog hygiene protocols and procedures to be followed if GGBFs are found or injured during the works
  - Establishment of signage to identify the site as a sensitive site
  - The requirement for a suitably experienced ecologist to be onsite during construction works. If GGBFs are detected the ecologist shall remove all GGBFs from the construction footprint and relocate them to a suitable nearby location outside the construction footprint
  - Measures to reduce the risk of introducing the frog Chytrid fungus to the site in accordance with the *Hygiene Protocol for the Control of Disease in Frogs* (DECC 2008). These measures include ensuring machinery and equipment is clean on entry to the site and washing footwear previously worn in aquatic or damp wet areas using a 5% bleach solution before being worn on site
  - Specific controls if works are scheduled to occur in the frog breeding season (i.e. between September and March). These controls include fencing the perimeter of the construction footprint with frog proof fencing would be developed in consultation with a suitably experienced ecologist

• **ATP Area 6A sites ME1 and Mulgrave RR to ME1**: Where disturbance to vegetation is required targeted flora surveys would be undertaken to determine the presence of the Juniper-leaved grevillea in the site footprint. Any cabling routes would be designed to avoid impacts to any identified plants. Where impacts are unavoidable, further assessment would be undertaken to consider the likely impacts, for the approval of TfNSW

• Following confirmation of the detailed design where disturbance to native vegetation is required, and prior to the commencement of construction works, an experienced and qualified ecologist would undertake a survey to establish the presence of any threatened flora and fauna species and/or communities. Where a threatened species and/or communities are identified, further assessment would be undertaken to consider the likely impacts, for the approval of the TfNSW

• The ATP Sites would be inspected for any trapped or injured fauna at the start of each day
Trenches/excavations would be covered at the end of each day and inspected before they are backfilled to ensure that no fauna species are harmed.

Construction areas should be kept to a minimum and be clearly demarcated to prevent accidental damage to native vegetation.

Stockpiles, plant, equipment and materials storage are to be located on existing cleared lands away from the drip zone of trees or other native vegetation.

Weeds shall be treated and disposed of appropriately and not mixed with other vegetation to be mulched for reuse.

Piles of cleared vegetation should be mulched as soon as practicable after clearing and mulch reused where possible.

Vehicle turning circles and parking areas shall be clearly marked and should occur in areas free of native vegetation.

Soil and vegetation that could contain weed material should be removed from machinery prior to any movements off site.

Where space within existing conduits is not available, new GST would be preferred over underground conduits to connect new assets.

Where trenching or excavation is required for installing new underground conduits or crossings, the route or location would be modified or altered to avoid any damage to trees or tree roots, where possible.

Any trees requiring removal, trimming or pruning must be assessed and approved for removal using the TfNSW Application for Removal or Trimming of Vegetation (9TP-FT-078).

All cleared vegetation (if any) shall be offset in accordance with TfNSW’s Vegetation Offset Guide (9TP-SD-087).

Management in accordance with TfNSW’s guidelines, as applicable:

- Fauna Management Guideline (3TP-SD-113)
- Vegetation Management Guidelines (9TP-SD-111)
- Weed Management and Disposal Guideline (3TP-SD-110).

6.5. Noise and vibration

6.5.1. Existing environment

The works at each ATP site would take place within the rail corridor which is surrounded by rural, residential, commercial and industrial land uses. The noise environment in the surrounding areas is generally dominated by rail noise, road noise and industrial/commercial sources.

Table 6-7 identifies sensitive receivers within proximity to the Proposal. The preliminary environmental risk assessment (refer to Table 6-1) has classified ATP sites which are located within 50 metres of sensitive receivers as high risk from a noise perspective.
Table 6-7 Summary of nearest sensitive receiver to each ATP site location

<table>
<thead>
<tr>
<th>ATP Area 6A site name</th>
<th>Suburb</th>
<th>Nearest sensitive receiver (m)</th>
<th>Other Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westmead RR</td>
<td>Westmead</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GE476</td>
<td>Westmead</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.1</td>
<td>Westmead</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wentworthville RR</td>
<td>Wentworthville</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BN1</td>
<td>Seven Hills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BN17</td>
<td>Seven Hills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BN20</td>
<td>Seven Hills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BN17 to BN20</td>
<td>Seven Hills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BN20 to BN21</td>
<td>Seven Hills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BN21</td>
<td>Blacktown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BN21 to BN31</td>
<td>Blacktown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BN31</td>
<td>Blacktown</td>
<td></td>
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</tr>
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<td>BN48</td>
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<tr>
<td>BN82</td>
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<tr>
<td>BN94</td>
<td>Blacktown</td>
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</tr>
<tr>
<td>BN94 to BN102</td>
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<td></td>
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</tr>
<tr>
<td>Blacktown Control Centre</td>
<td>Blacktown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BN58 to Blacktown CC</td>
<td>Blacktown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blacktown CC to BN141</td>
<td>Blacktown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BN151</td>
<td>Blacktown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BN141 to BN151</td>
<td>Blacktown</td>
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<td>BN102</td>
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<td>BN102 to 23.2</td>
<td>Blacktown</td>
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<td>28.6</td>
<td>St Marys</td>
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<tr>
<td>32.6 LOC</td>
<td>Kingswood</td>
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<td></td>
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<td>33.6 LOC</td>
<td>Penrith</td>
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<td>Schofields</td>
<td></td>
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</tr>
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<td>RE10</td>
<td>Riverstone</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>482</td>
<td>St Marys</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Penrith</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33.9 LOC</td>
<td>Penrith</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34.4 LOC</td>
<td>Penrith</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Westmead, Wentworthville, Seven Hills, Blacktown and Penrith are major city centres with existing rail and traffic noise.
- St Marys, Kingswood, Marayong, Schofields, Riverstone and Emu Plains are urban areas with existing rail and traffic noise.
- Existing boundary fences provide some screening for some properties.
6.5.2. Potential impacts

The *Interim Construction Noise Guideline* (ICNG) (DECC 2009) defines noise management levels (measured in decibels) for residential receivers and other types of receivers including commercial and industrial premises, places of worship and schools.

The ICNG states:

- Where the predicted or measured $\overline{L}_{Aeq, 15\text{ min}}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level.
- The proponent should also inform all potentially affected residents of the nature of works to be carried out, the expected noise levels and duration and contact details.
- For works above the highly affected noise criteria, respite periods may be required, and for works outside standard hours there needs to be a strong justification and negotiation with the community.

The ICNG introduces a qualitative method of construction noise assessment to simplify the identification of potential noise impacts, without complex predictions, for short-term works. Short-term works are defined as not likely to affect an individual or sensitive land use for more than three weeks.

The main civil and structural construction works at each ATP site in Area 6A is expected to be complete within three weeks. Construction noise would be generated during rock breaking (if required), supersucking and excavation associated with trenching and ULX construction. Following completion of civil construction works, testing and commissioning of the newly installed system would commence, this is expected to have a negligible noise impact.

The qualitative noise assessment methodology has been adopted for the Proposal due to the anticipated short-term nature of ATP construction works. The assessment uses the ATP construction noise estimation matrix which has been developed utilising inputs and guidance from the ICNG, *Australian Standard 2436 (AS2436) Guide to noise and vibration control on…*
construction, demolition and maintenance sites and AS1055 Acoustics - Description and measurement of environmental noise General procedures.

The qualitative construction noise assessment for the Proposal is provided in Table 6-8. This assessment evaluates key ATP construction activities based on distances to sensitive receivers, hours of works, construction methodology, plant and equipment and screening between the noise source and the receiver. These work activities have been assessed as they represent the worst case scenario (where rock breaking is not required) at each ATP site in Area 6A. Rock breaking and ULX construction would not generally be required. However, if required, this would represent the worst case scenario.

The results from the qualitative construction noise assessment demonstrate that construction works within 25 metres of suburban and urban areas (with and without screening respectively) and within 50 metres of a suburban area (without screening) present a moderate risk of noise impact. All works at other ATP sites in Area 6A would present a low risk of noise impact (refer to Table 6-8). However, there is potential for noise impacts at locations where rock breaking and ULX construction is required. Where this is the case, all residents within 100 metres of the work would be notified prior to the start of works.

Due to access constraints and the requirement for a safe working site, selected construction work may be undertaken outside standard working hours and during scheduled track possessions, although this would be minimised as far as practicable. These works would include the installation of track assets (i.e. controlled balises). It is unlikely high noise generating equipment would be required outside standard working hours and therefore it is unlikely work outside standard working hours would present a high risk of noise impact.

Vibration effects from the operation of heavy machinery, such as vibratory rollers or large earth moving equipment, have the potential to cause structural disturbance or discomfort. The Proposal would not require the use of vibration-causing heavy machinery.

During operation, the ATP is not likely to increase noise or vibration from the rail corridor.
## Table 6-8 Qualitative Construction Noise Assessment

<table>
<thead>
<tr>
<th>Rating</th>
<th>Category (refer AS2436)</th>
<th>Approx. construction noise level at 7m, dB(A)</th>
<th>Noise screening or barriers</th>
<th>Ambient noise environment at receiver</th>
<th>Timing of construction work</th>
<th>Duration of construction work</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rating</td>
<td>Description</td>
<td>Rating</td>
<td>Category</td>
</tr>
<tr>
<td>&lt;10</td>
<td>0</td>
<td>110dB(A) (e.g. rock breaking)</td>
<td>110</td>
<td>Receivers screened from effective noise source</td>
<td>-10</td>
<td>Quiet, rural, or isolated</td>
</tr>
<tr>
<td>10-25</td>
<td>-10</td>
<td>≥100dB(A) (e.g. bored piling, dump truck unloading)</td>
<td>100</td>
<td>Receivers not screened</td>
<td>0</td>
<td>Suburban</td>
</tr>
<tr>
<td>25-50</td>
<td>-16</td>
<td>≥90dB(A) (e.g. concreting, excavator, back hoe, grader, vibratory roller, front end loader, concrete saw)</td>
<td>90</td>
<td>Urban or near busy roads or industrial activity</td>
<td>-55</td>
<td>Night (10pm – 7am weekdays, 10pm – 8am weekends / public holidays)</td>
</tr>
<tr>
<td>50-100</td>
<td>-22</td>
<td>≥80dB(A) (e.g. small generators, trucks, cherry pickers, pneumatic drill)</td>
<td>80</td>
<td></td>
<td>1 to 3 weeks</td>
<td></td>
</tr>
<tr>
<td>100-200</td>
<td>-28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200-500</td>
<td>-34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>500-1000</td>
<td>-40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;1000</td>
<td>-46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance to nearest sensitive receiver</td>
<td>Approx. construction noise level at 7m, dB(A)</td>
<td>Noise screening or barriers</td>
<td>Ambient noise environment at receiver</td>
<td>Timing of construction work</td>
<td>Duration of construction work</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-----------------------------------------------</td>
<td>----------------------------</td>
<td>--------------------------------------</td>
<td>-----------------------------</td>
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<td></td>
</tr>
<tr>
<td>ATP Area 6 Sites 10 to 25 metres from sensitive receivers</td>
<td>≥90dB(A) (e.g. concreting, excavator, back hoe, grader, vibratory roller, front end loader, concrete saw)</td>
<td>Receivers screened from effective noise source</td>
<td>Urban or near busy roads or industrial activity</td>
<td>Day (7am – 6pm weekdays, 8am to 1pm Sat)</td>
<td>0 1 to 3 weeks 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Receivers not screened</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Receivers screened from effective noise source</td>
<td>-10</td>
<td>Suburban</td>
<td>-45</td>
<td></td>
</tr>
<tr>
<td>ATP Area 6 Sites 25 to 50 metres away from sensitive receivers</td>
<td>≥90dB(A) (e.g. concreting, excavator, back hoe, grader, vibratory roller, front end loader, concrete saw)</td>
<td>Receivers screened from effective noise source</td>
<td>Urban or near busy roads or industrial activity</td>
<td>Day (7am – 6pm weekdays, 8am to 1pm Sat)</td>
<td>0 1 to 3 weeks 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Receivers not screened</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Receivers screened from effective noise source</td>
<td>-10</td>
<td>Suburban</td>
<td>-45</td>
<td></td>
</tr>
</tbody>
</table>

Impact / risk level ranges

| Low: <25 | Highly likely that noise mitigation will not be required, other than those identified above and if complaints “hot spots” have been considered |
| Moderate: 25-35 | Consider standard construction noise control measures as per the TfNSW Construction Noise Strategy (7TP-ST-157) |
| High: 35+ | Inform community, implement all practical means to mitigate, >50 requires specialist noise study / advice |
6.5.3. Mitigation measures

Construction works would adopt Best Management Practice (BMP) and Best Available Technology Economically Achievable (BATEA) practices as described in the ICNG and be carried out in accordance with TfNSW’s Construction Noise Strategy (7TP-ST-157). Control measures to minimise noise and vibration impacts would include, but not be limited to, those outlined below:

- Maximise the offset distance between noisy plant items and sensitive receivers
- Orient plant and equipment to minimise noise at sensitive receivers
- Avoid the simultaneous operation of two or more noise plant items in close vicinity and adjacent to sensitive receivers
- Carry out loading and unloading at times and locations to minimise impacts on sensitive receivers
- Where necessary, use structures to shield sensitive receivers from noise sources
- Work would be restricted to standard working hours (7:00am to 6:00pm Monday to Friday and 8:00am to 1:00pm Saturdays) unless otherwise approved by TfNSW. Should works be required outside of standard working hours, community members would be advised where appropriate, and all relevant approvals would be sought, including submission and approval of TfNSW's Out of Hours Works Application Form (9TP-FT-079) in accordance with TfNSW's Construction Noise Strategy (7TP-ST-157)
- Provide mitigation in accordance with the requirements of the TfNSW Construction Noise Strategy (7TP-ST-157) if high noise generating activities occur for extended periods
- Noise complaints would be managed in accordance with TfNSW Construction Noise Strategy (7TP-ST-157). Any noise complaints received would be addressed in accordance with TfNSW complaints management procedures.

In addition, residents within the main catchment area of ATP Area 6A sites identified in the Proposal would be notified of the works prior to the commencement of construction. Notification would include the duration of work, potential impacts and contact details for further information.

6.6. Heritage

6.6.1. Existing environment

A search for non-Aboriginal heritage items was undertaken by consulting the following databases: State Heritage Register (SHR), State Heritage Inventory, Parramatta LEP, Blacktown LEP, Penrith LEP and Hawkesbury LEP, Australian Heritage Database, (including Commonwealth Register of the National Estate), world heritage sites and Sydney Train’s Section 170 Heritage and Conservation Register (Section 170 Register).

The heritage items and conservation areas with the potential to be impacted by the proposal are identified in Table 6-9. The ATP sites within the curtilage of a heritage item listed on the State Heritage Register (SHR) have been classified as high risk from a heritage perspective (refer Table 6-1). Where required site-specific mitigation measures have been identified and
are listed in Section 6.6.3. A number of other heritage items and conservation areas are located adjacent to the Proposal, these include:

- A memorial fountain which is of local significance is located at the main entrance to Wentworthville Station on the Kingsway in proximity to ATP Area 6A site Wentworthville RR
- Parramatta Park and old government house which is listed on the SHR and the, Commonwealth Register of the National Estate and is a World Heritage listed site is located adjacent to the rail corridor at ATP Area 6A site GE457 LOC
- A railway bridge over the Nepean River which is listed on the SHR is located to the east of ATP Area 6A site 34.9B
- Western Sydney University which is of local significance is located immediately east of ATP Area 6A site GE476
- St Pauls Anglican Church and Emu Plains General Cemetery which is of local significance is located in proximity to ATP Area 6A site 36.6
- A hotel and a number of residential properties (i.e. “Prestonville” and “Rhodesia”) which are of local significance are located in proximity to ATP Area 6A site MRCT ATP.

Table 6-9 Heritage items located in the footprint of the proposed ATP sites in Area 6A

<table>
<thead>
<tr>
<th>ATP Area 6A site name</th>
<th>Heritage item</th>
<th>Heritage listing</th>
<th>Heritage significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>St Marys RR 452 460A</td>
<td>St Marys Railway Station Group</td>
<td>SHR (ID: 4801036) Section 170 Register Penrith LEP</td>
<td>St Marys Station Group is of state significance as an early station opened in the 1860s when the Great Western Railway was extended from Parramatta and for the role it played in handling the increased traffic associated with the American ammunition and general store built at Ropes Creek during World War II.</td>
</tr>
<tr>
<td>Riverstone RR</td>
<td>Riverstone Railway Station group and residence</td>
<td>SHR (ID: 4801009) Section 170 Register Blacktown LEP</td>
<td>Riverstone Station is significant as part of the original construction phase of the Richmond line in the 1860s that provided access to the settlements on the Hawkesbury River and the markets of Sydney. The former Station Master's residence is significant as a representative example of a late-nineteenth century Station Master's residence constructed in brick.</td>
</tr>
<tr>
<td>BN5</td>
<td>Seven Hills Railway Station Group</td>
<td>Section 170 Register Blacktown LEP</td>
<td>Seven Hills Railway Station is significant at a local level as one of a number of stations constructed in the 1940s between Parramatta and Blacktown as part of the quadruplication of the Main West Line.</td>
</tr>
<tr>
<td></td>
<td>Rail underbridge at Prospect Highway</td>
<td>Blacktown LEP</td>
<td>Seven Hills flyover is of local significance as evidence of the Post-War quadruplication of the rail network between Seven Hills and Blacktown during 1946 to1955.</td>
</tr>
<tr>
<td>ATP Area 6A site name</td>
<td>Heritage item</td>
<td>Heritage listing</td>
<td>Heritage significance</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------</td>
<td>------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>BN51 to BN71 &amp; BN51 to Blacktown CC</td>
<td>Blacktown Railway Signal Box</td>
<td>Section 170 Register, Blacktown LEP</td>
<td>Blacktown railway signal box is of local significance as the third of a series of four elevated power signal boxes built for track amplification works from Auburn to Blacktown during the 1950s, designed as a cohesive group in a post-World War II period functionalist style.</td>
</tr>
<tr>
<td>33.9 LOC, 34.4 LOC, 34.5 LOC</td>
<td>Penrith Railway Station Group and Residence</td>
<td>SHR (ID: 4801032), Section 170 Register, Penrith LEP</td>
<td>Penrith Railway Station is of state significance as an early railway site with buildings dating from the 1860s and as a former terminus for a number of years during the extension of the railway line over the Blue Mountains.</td>
</tr>
<tr>
<td>Emu Plains RR</td>
<td>Emu Plains railway culvert</td>
<td>Section 170 Register, Penrith LEP</td>
<td>Emu Plains culvert is of local significance as an early example of railway infrastructure dating from the 1860s demonstrating the development of Emu Plains with the arrival of the railway.</td>
</tr>
<tr>
<td>Wentworthville RR</td>
<td>Wentworth Railway Station Group</td>
<td>Section 170 Register, Holroyd LEP</td>
<td>Wentworthville Railway Station is of local significance as evidence of the speculative development of the locality following the subdivision of Wentworth Estate, and as part of the railway station redevelopment that took place during the quadruplication of the Main West Line between Parramatta and Blacktown in 1946.</td>
</tr>
</tbody>
</table>

A search for known Aboriginal heritage items was undertaken for the Proposal, (with a 100 metre buffer of the Proposal area) using the Office of Environment and Heritage’s Aboriginal Heritage Information Management System (AHIMS). Six Aboriginal sites are located within 100 metres of ATP Area 6A sites GE463, BN173, MRCT ATP and GE457 LOC. These items are located outside of the rail corridor.

The Proposal is located within the Deerubbin Local Aboriginal Land Council (LALC).

### 6.6.2. Potential impacts

Proposed ATP works within Area 6A would be within the curtilage of three items listed on the SHR (refer Table 6-9). The proposed works would involve trenching and the installation of trackside equipment. Where possible, the final alignment of any underground cabling would be designed to avoid any potential impacts on this item.

Given the proposed scale of ATP works, the proposal is not anticipated to have a significant impact on the St Marys Railway Station Group, Riverstone Railway Station group and residence and the Penrith Railway Station Group and Residence which are listed on the SHR. As noted in Table 6-9, the heritage values associated with these items relate to the role they played in the history of the local area and/or their aesthetic significance (i.e. rare examples of historic construction or building design methods). No direct and/or indirect impacts to the heritage values and/or aesthetic significance of these heritage items is expected and proposed works would not result in any visual impacts. A heritage exemption under Section 57(2) of the *Heritage Act 1977* would be obtained for all works within the curtilage of SHR listed items.
Proposed ATP works in Area 6A would also be within the curtilage of locally significant heritage items listed under the Section 170 Heritage Register and Blacktown, Penrith and Holroyd LEP (refer Table 6-9). ATP works are unlikely to result in direct and/or indirect impacts on the heritage significance of these items. Consultation with Sydney Trains Heritage and Parramatta, Blacktown and Penrith Council would be required prior to works commencing.

The proposed works would not result in any visual impacts on heritage listed items adjacent to ATP sites in Area 6A.

There are no anticipated impacts on Aboriginal heritage as a result of the Proposal. Due to highly disturbed nature of the rail corridor, it is expected that the potential for items of Aboriginal heritage significance to be buried within the footprint of the ATP Sites is low.

6.6.3. Mitigation measures

Impact on heritage throughout construction would be minimised through a range of control measures, which would include, but not be limited to, those outlined below:

- **ATP Area 6A site St Marys RR, 452 and 460A:** Works would be within the heritage curtilage of the SHR listed St Marys Railway Station Group. A Heritage exemption under s.57 (2) of the *Heritage Act 1977* would be obtained from Sydney Trains prior to any construction commencing at this site. Consultation would also be undertaken with Penrith City Council prior to works commencing at this location.

- **ATP Area 6A site Riverstone RR:** Works would be within the heritage curtilage of the SHR listed Riverstone Railway Station group and residence. A Heritage exemption under s.57 (2) of the *Heritage Act 1977* would be obtained from Sydney Trains prior to any construction commencing at this site. Consultation would also be undertaken with Blacktown City Council prior to works commencing at this location.

- **ATP Area 6A site 33.9 LOC, 34.4 LOC and 34.5:** Works would be within the heritage curtilage of the SHR listed Penrith Railway Station Group and Residence. A Heritage exemption under s.57 (2) of the *Heritage Act 1977* would be obtained from Sydney Trains prior to any construction commencing at this site. Consultation would also be undertaken with Penrith City Council prior to works commencing at this location.

- **ATP Area 6A site BN5:** Works would be within the heritage curtilage of the locally significant Seven Hills Railway Station Group. Consultation with Sydney Trains and Blacktown City Council would be undertaken prior to any works commencing at this location.

- **ATP Area 6A site BN5:** Works would be within the heritage curtilage of the locally significant rail underbridge at Prospect Highway. Consultation Blacktown City Council would be undertaken prior to any works commencing at this location.

- **ATP Area 6A site BN51, BN51 to BN71 and BN51 to Blacktown CC:** Works would be within the heritage curtilage of the locally significant Blacktown Railway Signal box. Consultation with Sydney Trains and Blacktown City Council would be undertaken prior to any works commencing at this location.

- **ATP Area 6A site Emu Plains RR:** Works would be within the heritage curtilage of the locally significant Emu Plains railway culvert. Consultation with Sydney Trains and Penrith City Council would be undertaken prior to any works commencing at this location.
AUTOMATIC TRAIN PROTECTION PROJECT
North Shore, Northern & Western Line and Cumberland Line - Area 6A

- **ATP Area 6A site Wentworthville RR**: Works would be within the heritage curtilage of the locally significant Wentworth Railway Station Group. Consultation with Sydney Trains and Parramatta City Council would be undertaken prior to any works commencing at this location.

- Heritage items and conservation areas which are located adjacent to ATP Area 6A site Wentworthville RR, GE457 LOC, 34.9B, GE47, 36.6 and MRCT ATP would be identified in the location and/or the activity specific ECMs and would be marked as "no go zones" with associated signage established at the site(s).

- If a non-Aboriginal historical relic is discovered, all work likely to affect it would cease and the Project Manager would be contacted immediately. TfNSW Project Manager and Environmental Representative would be notified and will be responsible for notifying the Office of Environment and Heritage (OEH), if required. An investigation would be undertaken by a suitably qualified archaeologist to identify suitable measures to reduce the impact on the relic discovered before work resumes.

- Should Aboriginal heritage items be uncovered, all work in the vicinity would cease and the Project Manager would be contacted immediately. TfNSW Project Manager and Environmental Representative and will be responsible for notifying the Office of Environment and Heritage (OEH), if required. The Local Aboriginal Land Council would be notified by TfNSW and an assessment by an archaeologist would be arranged to determine the significance of the objects and any other requirements before work resumes.

### 6.7. Waste

#### 6.7.1. Overview

TfNSW is required to manage waste in accordance with the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act). The Proposal will follow the waste hierarchy of Avoid, Reuse, Recycle, Energy Recovery and Disposal.

#### 6.7.2. Potential impacts

The main waste streams that may be generated during Proposal construction include:

- excavated material
- slurry from underbore arisings
- concrete
- steel
- wood
- vegetation
- packaging
- General litter including glass, plastic, metal and paper waste.

The volume of concrete waste is expected to be minimal as concrete plinths used for extending existing signal cabinets and bungalows would be pre-manufactured off-site, where possible, and transported to the ATP sites when required.
6.7.3. Mitigation measures

A Waste Management Plan would be prepared to detail waste types and quantities as well as methods for segregation, handling, storing and disposal. Furthermore, waste impacts would be minimised through a range of control measures, (consistent with the WARR Act) which would include, but not be limited to, those outlined below:

- All waste would be classified in accordance with the *Waste Classification Guidelines* (NSW EPA 2014) and transported to a place that can lawfully accept the waste
- Any material that may be classified as a hazardous waste would be managed appropriately and in accordance with TfNSW procedures
- Packaging would be minimised, where possible and where the safety and delivery of services is not compromised
- Wherever possible, suitable excavated material would be reused at each ATP site for backfilling, landscaping and other purposes
- Wherever possible, excess material shall be beneficially reused in accordance with a Resource Recovery Exemption rather than classified and disposed as waste
- Any spoil or waste material tracked onto roads would be swept up immediately
- Adequate numbers of bins and waste containers would be placed available at each ATP site. The site manager would ensure bins are not overflowing and are appropriately covered
- Wastewater generated by non-destructive excavation would be taken off site for treatment and disposal
- All waste would be removed from the ATP site when work is completed.

6.8. Contaminated land and hazardous materials

6.8.1. Existing environment

The proposed ATP sites have been initially investigated for potential land contamination. The investigation included:

- Site assessment
- A review of soil testing undertaken at selected signal locations
- Search of OEH register of contaminated sites
- Search of Sydney Trains records
- Review of all materials that would be used at the signal location to establish their potential for land contamination.

Due to the historical and ongoing use of the signal locations as part of the rail corridor, the following potential sources of contamination may be present in the vicinity of the site:

- Fuel and oil spills and engine emissions
- Rail corridor maintenance activities, such as application of pesticides and herbicides
• Brake linings
• Historical cables / pipework ducting and former site structures, with potential asbestos containing materials
• Fabric of old rolling stock
• Imported fill.

O’Donnell Griffin has completed site assessment at each proposed ATP site using the ballast contamination risk assessment form. The following information was recorded during the site assessments:
• Visual evidence of contamination
• Presence of hazardous building materials
• Waste materials
• Surrounding land use.

The following information sources were searched as part of the site assessment:
• Hazardous sites register
• Contaminated land register
• Local knowledge
• Track maintenance history.

The desktop and site assessments confirmed whether ATP sites had known or potential contamination risks, these ATP sites were classed as high risk from a contamination perspective (refer to Table 6.1). Details of potential sources contamination at ATP sites in Area 8 are provided in Table 6.10.

<table>
<thead>
<tr>
<th>ATP Area 6A Site Name</th>
<th>Potential Contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.2</td>
<td>Suspected hazardous building materials (e.g. asbestos)</td>
</tr>
<tr>
<td>33.9 LOC</td>
<td>Suspected hazardous building materials (e.g. asbestos)</td>
</tr>
<tr>
<td>34.9</td>
<td>Suspected hazardous building materials (e.g. asbestos)</td>
</tr>
</tbody>
</table>

### 6.8.2. Potential impacts

The Proposal requires minimal excavations. The proposed trenching would vary in length and would generally be about 0.3 metres wide and 0.9 metres deep. Supersucking may be undertaken to find empty conduits and once found this practice replaces trenching.

There is a risk of encountering contaminated material and asbestos during excavation (refer Table 6-10.). If encountered, contaminants may pose a risk to health of workers and the environment in general.

If uncontrolled, stockpiling of contaminated spoil could lead to pollution of nearby watercourses due to rainfall runoff or stockpile slippage.

It is noted that site surveys were not completed across the full extent the proposed new cabling routes (refer Table 3-2) therefore a precautionary approach has been taken and these sites have been assessed as high risk with respect to potential contamination (refer
It should be noted that existing cables may be able to be utilised in some areas and where this occurs, soil disturbance and any associated risk of disturbance of contaminants would not occur.

Construction of the Proposal would not require the use of any chemicals and/or hazardous materials.

The operation of the ATP is not expected to cause contamination or generate hazardous materials.

6.8.3. Mitigation measures

The risk of encountering unknown contaminants during excavation shall be managed in accordance with TfNSW’s procedures, the CEMP, ECM and land contamination legislation. Control measures to manage contamination risks would include, but not be limited to, those outlined below:

- All waste spoil would be managed in accordance with the Waste Classification Guidelines (NSW EPA 2014) and National Environment Protection (Assessment of Site Contamination) Measure 1999.
- All hazardous materials removal and clean-up operations must be carried out in accordance with the NSW Work Health and Safety Act and Regulations 2011 and the Safe Work NSW requirements.
- As part of the project induction, construction personnel would receive training in the identification, management and handling of contaminated and hazardous materials should they be encountered during the works.
- During excavation, site workers will look for signs of potential contamination such as presence of waste and/or other imported materials, odours, soil colouring, floating layer in groundwater etc.
- If any previously unidentified contamination is encountered, or suspected, works in the vicinity of the find would be immediately stopped and the affected area fenced off. The site would be investigated and validated, with works to resume after approval from a suitably qualified and experienced Health, Safety and Environment professional is obtained.
- Personnel dealing with the hazardous substances should be appropriately trained.
- Contaminated soil would be segregated and appropriately contained prior to classification and ultimate disposal.
- The quantity of spoil generated would be minimised.
- If hazardous materials are required for any unforeseen reason, a Hazardous Waste Management Plan would be prepared. The plan would detail terms applying to the purchase, storage, use, handling and disposal of such materials.
- Hazardous materials would be transported, stored and used in accordance with the corresponding material safety data sheets which would be available at the ATP site.
- No fuels would be stored at any ATP site location.
- Removal of suspected and/or known asbestos, including building structures likely to contain asbestos requires an experienced, appropriately licensed removal contractor in accordance with the How to Safely Remove Asbestos Code of Practice (Safe Work...
An Occupational Hygienist should be on site during removal works in accordance with the Code of Practice.

6.9. Visual amenity

6.9.1. Existing environment

The Proposal is located within the existing rail corridor of the Main West Line. The rail corridor is generally surrounded by residential, commercial, industrial, rural and bushland land use types.

Residents adjoin the rail corridor at ATP Area 6A at sites in Westmead, Seven Hills, Blacktown, St Marys, Emu Plains, Marayong, Schofields and Mulgrave.

The ATP sites are generally visible to train passengers and often not visible from outside the rail corridor.

6.9.2. Potential impacts

During construction the visual environment would be temporarily altered through the presence of temporary work buildings, plant and equipment.

Due to the relative minor scale of the works, the Proposal is not anticipated to have a long-term impact on the consistency of the character of the rail corridor. It is not expected to cause additional light reflection or shadowing.

Any trimming of native vegetation (refer to Section 6.4) is expected to be minor and is not anticipated to not reduce privacy for adjacent property owners.

6.9.3. Mitigation measures

Visual impact during construction would be minimised through a range of control measures which would include, but not be limited to, those outlined below:

- Clearance of vegetation shall be minimised
- The work area shall be maintained in an orderly manner
- All temporary signage associated with the works must be appropriately displayed
- All work equipment and materials would be contained within the designated boundaries of the work site.

6.10. Land use

6.10.1. Existing environment

The Proposal is situated on land owned by TfNSW and zoned SP2, Infrastructure for Railway purpose under the respective LGA LEPs (i.e. Penrith LEP 2010, Blacktown LEP 2015 Parramatta LEP 2011, Hawkesbury LEP 2012 and Holroyd LFP)
The Proposal is located in the rail corridor and is currently used for rail purposes. Neighbouring land uses include residential, industrial, commercial and national park land uses.

Seven ATP sites in Area 6A are located adjacent to land used for Department of Defence operations (i.e. ATP Area 6A sites BN21, BN20 to BN21, BN20, BN21 to BN31, BN71, BN51 to BN71, and BN82).

6.10.2. Potential impacts

The Proposal would not affect or alter the current use of the proposed ATP sites in Area 6A or the immediate surrounding area as a rail corridor. The Proposal will not have any effects on the use of the neighbouring properties.

6.10.3. Mitigation measures

No specific control measures are required as works will not impact on land use.

6.11. Socio-economic impacts

6.11.1. Existing environment

The Proposal is in the Parramatta, Blacktown, Penrith, Hawkesbury and Cumberland LGAs, which in the 2016 census (ABS 2017) had median ages of between 34, and 38. The main employment areas in the Proposal area are in the Parramatta, Blacktown and Penrith LGAs.

The North Shore, Northern & Western Line and Cumberland Line is regularly used by passenger and freight traffic. The rail line plays an important role in the economic activity of the local areas and enables commuters to travel to and from other major economic areas.

6.11.2. Potential impacts

Social and economic considerations typically focus on the effect on the local community as a whole, and on any local businesses. Amenity issues such as noise and traffic are some of the key issues that can affect the community and are discussed in detail in Section 5 and Section 6.12.

The Proposal is not expected to impact commuter parking, station access or any businesses around any ATP site. The construction of the Proposal would require scheduled track possessions. Noise impacts would be temporary (less than three weeks).

There would be positive long term effects resulting from the Proposal, as the new ATP Project would provide a more reliable and safe rail network.

6.11.3. Mitigation measures

In addition to the control measures proposed in the noise and traffic sections, other control measures are outlined below:

- Nearby residents and businesses would be informed about the nature and timing of works
- Temporary signage is to be appropriately displayed to inform the public about the works.
- Appropriate fencing would help maintain public safety during construction.

### 6.12. Traffic and access

#### 6.12.1. Existing environment

Access to the rail corridor is obtained using existing access gates. Distance from the access gates to the ATP sites can range between approximately 5 metres and 300 metres. These access gates are used regularly by Sydney Train for periodic maintenance activities along the corridor. It is estimated that staff and contractors currently use the gates and access tracks around 14 to 20 times a year.

As noted in Section 6.10.1, seven ATP sites in Area 6A are adjacent to land used for Department of Defence operations and access into the rail corridor may be required through these areas.

Access gates are generally positioned in areas to enable safe access to the surrounding road network. Volumes of traffic on the surrounding road network vary according to time of day and are expected to be busiest during morning and evening peak periods.

As noted in 6.10.1 there are seven sites in Area 6A which are adjacent to land used by the Department of Defence.

#### 6.12.2. Potential impacts

During construction, there would be an increased number of vehicles using the local streets; however, the anticipated increase in the volume of traffic is relatively small (about one vehicle per hour would access / egress the corridor).

Pedestrians are not expected to be affected by vehicles accessing or egressing the work sites.

As works are to take place in the rail corridor, access changes to local roads or access to driveways are not expected.

#### 6.12.3. Mitigation measures

Impacts associated with traffic and access would be minimised through a range of control measures, which would include, but not be limited to those outlined below:

- A traffic speed limit shall be enforced at all ATP sites
- Scheduled road movements must be minimised where possible
- Deliveries of plant and materials must be undertaken outside peak periods where possible
- Vehicles shall be parked within the rail corridor and not in public commuter parking spaces
• Where access to the ATP sites requires access through land not owned by TfNSW (i.e. Department of Defence), consultation would be undertaken with would land owners and consent to access the land would be obtained where required.

6.13. Light spill

6.13.1. Existing environment

Ambient artificial lighting varies at each ATP site depending on the surrounding land use.

The ATP sites are situated in built environments, predominately defined by residential and industrial land uses. Light spillage from street lighting, buildings, railway stations and sporting fields provides artificial light at the ATP sites.

The existing ATP sites are not fitted with external lighting.

6.13.2. Potential impacts

Some work may be undertaken during night-time periods. Lighting towers would be required to illuminate the work areas, which may result in temporary light spill impacts on nearby residents and local faunal assemblages.

No operational light spill is expected.

6.13.3. Mitigation measures

Lighting required during night works shall be directed towards the work area and away from adjacent sensitive receivers.

6.14. Demand on resources

The Proposal would not significantly increase the demand on any current or likely scarce resource. Water, electricity or materials supplies required for the Proposal would not be significant in comparison to other large scale construction projects. All materials used in the construction of the Proposal are common construction materials.

6.15. Cumulative impacts

Cumulative impacts often result when several different construction projects are scheduled for similar times and locations.

A search of government and council registers was conducted in November 2017 to identify projects within proximity to the Proposal which have construction planned around similar timeframes as the Proposal. Register searches included the Department of Planning and Environment’s Major Projects register, Parramatta City Council, Blacktown City Council, Penrith City Council, Hawkesbury City Council and Cumberland Council development application register and the TfNSW projects website. The following projects are located close to the Proposal:

• Transport Access Program at Penrith Station, Blacktown Station, Wentworthville, and Marayong Station to upgrade station and accessibility and construct new commuter car parks is currently underway. ATP Area 6A sites 33.9 LOC and 34.4 LOC are
within 300 metres of the works at Penrith Station, ATP Area 6A sites BN71, BN58 and BN58 to Blacktown CC are within 150 metres of the Blacktown Station, ATP Area 6A site Westmead RR is within 95 metres of the Wentworthville project and ATP Area 6 site BN166 is located within 135 metres of the Marayong Station construction works.

- Road Network Strategy for the North West Priority Land Release Area: upgrading road network to address traffic congestion and heavy vehicle movements in the area. The project is currently under construction. ATP Area 6A site RE10 is located within 200 metres of works associated with this project.

- Western Sydney Inland Container Terminal Facility: The construction and operation of an Inland Container Terminal with a 301,000 container annual throughput operating capacity. The project is going through the assessment process. ATP Area 6A sites St Marys RR and 460A are with 150 metres of this project.

- Parramatta Light Rail Stage 1: construction and operation of a light rail service extending from Westmead to Carlingford via Parramatta CBD. This project is currently in a design and assessment phase. ATP Area 6A sites within close proximity include GE476, Westmead RR, 463 and GE457 LOC.

Where other works are planned during the same scheduled track possessions, coordination meetings would identify the appropriate responsibilities for undertaking notifications to affected stakeholders.

There is also a risk of cumulative impacts if unscheduled work, e.g. emergency work by other utilities or developers is required. Such situations would be monitored and addressed by the Project Manager.

The Proposal involves works at a number of ATP sites along the rail corridor. The construction team would complete works at each ATP site prior to progressing to the next ATP site so cumulative impacts are minimised.

Overall this work, as part of the ATP, would result in significant benefits by providing a more reliable and safe rail network.

6.15.1. Mitigation measures

- Any other major development or works planned in the vicinity of the Proposal would be further investigated before work begins and cumulative impacts minimised where possible

- Consultation with Parramatta City Council, Blacktown City Council, Penrith City Council, Hawkesbury City Council and any other relevant stakeholders regarding other developments would be undertaken on an ongoing basis.
7. Environmental management

This chapter of the REF identifies how the environmental impacts of the Proposal would be managed through environmental management plans and mitigation measures.

7.1. Environmental management plans

A construction environmental management plan (CEMP) for the construction phase of the Proposal would be prepared in accordance with the requirements of the TfNSW (Infrastructure and Services) Environmental Management System (EMS). The CEMP would provide a centralised mechanism through which all potential environmental impacts relevant to the Proposal would be managed, and outline a framework of procedures and controls for managing environmental impacts during construction.

The CEMP would incorporate as a minimum all environmental mitigation measures identified below in Section 7.2, any conditions from licences or approvals required by legislation, and a process for demonstrating compliance with such mitigation measures and conditions.

7.2. Mitigation measures

7.2.1. Standard mitigation measures (for all ATP Area 6A sites)

Standard mitigation measures for the Proposal are listed in Table 7-1. These proposed measures would minimise the potential adverse impacts of the Proposal identified in Chapter 6, should the Proposal proceed.

Table 7-1 Proposed standard mitigation measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Standard mitigation measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>This REF has been developed based on the ATP Concept Design. Further environmental approvals may be required if design developments during the detailed design phase extend proposed works outside the assessed site footprint provided on the ATP Area 6A site location plans.</td>
</tr>
<tr>
<td>G2</td>
<td>Location and/or activity specific Environmental Controls Map (ECM) would be developed prior to commencement of construction in accordance with TfNSW’s Guide to Environmental Control Map (3TP-SD-015). The ECM would be implemented for the duration of construction.</td>
</tr>
<tr>
<td>G3</td>
<td>An ATP Project risk assessment including environmental aspects and impacts would be undertaken prior to the commencement of construction.</td>
</tr>
<tr>
<td>G4</td>
<td>Weekly inspections to monitor environmental compliance and performance would be undertaken during construction.</td>
</tr>
<tr>
<td>G5</td>
<td>Prior to the commencement of construction, all contractors would be inducted on the key project environmental risks, mitigation measures and conditions of approval.</td>
</tr>
<tr>
<td>No.</td>
<td>Standard mitigation measures</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------</td>
</tr>
<tr>
<td>G6</td>
<td>Should ATP works be required outside the site footprint provided in the ATP Area 6A site location plans, a risk assessment would be complete using the ATP preliminary environmental risk assessment criteria (refer Appendix 4). ATP works assessed in consultation with TfNSW as low risk can proceed in accordance with standard mitigation measures for Area 6A provided in this REF. ATP works assessed as medium or high risk would be subject to further assessment and the consideration of likely impacts, for approval by TfNSW.</td>
</tr>
</tbody>
</table>

**Landforms, geology and soil**

| LGS1 | Appropriate stockpiling of materials would take place away from drainage lines, waterways and drains. |
| LGS2 | Any soil that may be contaminated or weed infested would be stockpiled separately before being removed from the site. |
| LGS3 | Stockpiles and disturbed areas shall be appropriately stabilised to minimise erosion. |
| LGS4 | Disturbed areas would be reinstated as soon as possible. |

**Water quality and hydrology**

| WQ1  | Erosion and sediment controls at each worksite would be detailed on the ECM and comply with *Managing Urban Stormwater: Soils and Construction* (Landcom 2004) (the Blue Book). |
| WQ2  | Erosion and sediment controls would be regularly inspected and maintained, particularly following heavy rainfall. |
| WQ3  | The effectiveness of erosion and sediment controls would be monitored daily and adjusted if required. |
| WQ4  | Plant and equipment would be maintained in accordance with the manufacturer’s specifications and checked regularly for oil leaks. |
| WQ5  | Refuelling of plant and equipment would occur in impervious bunded areas located a minimum of 40 metres from drainage lines or waterways. |
| WQ6  | Concrete slurries and wash-out would be collected for reuse or for off-site disposal. |
| WQ7  | Appropriately sized spill response kits must be kept on site and staff trained in their use. |
| WQ8  | Earthworks would be suspended during periods of heavy or prolonged rainfall. Plant and equipment would be removed from site where there is a high risk of inundation. |
| WQ9  | Dry street sweepers or hand-held brooms would be used to clean local roads in the event of tracked sediment. |
| WQ10 | Works are to be undertaken in accordance with the TfNSW *Chemical Storage and Spill Response Guidelines* (9TP-SD-066). |
| WQ11 | Water discharge from site must be carried out as per TfNSW *Water Discharge Guidelines* (7TP-SD-024). |

**Air quality**

<p>| AQ1  | Plant and equipment would be maintained in accordance with manufacturers’ specifications. |
| AQ2  | Regular inspection of plant and equipment would be undertaken to ascertain that fitted emission controls are operating efficiently. |
| AQ3  | Plant or machinery would not be left idling. |
| AQ4  | All work areas and stockpiles would be monitored by construction personnel for dust generation during working hours. |
| AQ5  | Stockpiles would be maintained and contained appropriately, which could include covering or regular watering to minimise dust. |
| AQ6  | Trucks transporting spoil and other waste materials from site would be covered appropriately. |
| AQ7  | Disturbed areas would be rehabilitated as soon as practicable. |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Standard mitigation measures</th>
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<tbody>
<tr>
<td></td>
<td><strong>Biodiversity</strong></td>
</tr>
</tbody>
</table>

**B1**
If threatened and/or protected flora or fauna species are identified, work in the vicinity of the subject flora or fauna would stop immediately. A spotter/catcher or ecologist would be engaged to survey the area, in conjunction with TfNSW’s Environmental Representative, and advise on species management.

Construction staff would be made aware of the ecological constraints and the requirements for no impact to any native vegetation at the following ATP sites in Area 7. This information would be included in the location and/or the activity specific ECMs and would be marked as “no go zones” with associated signage established at the site(s):

- **ATP Area 6A site BN31, NB21 to BN31**: Grey Headed Flying Fox recorded within 8 metres of the site footprint
- **ATP Area 6A site 28.6**: Nodding Geebung recorded within 5 metres of the site footprint
- **ATP Area 6A site 452 and St Marys RR**: Dillwynia tenuifolia, Pultenaea parviflora and Juniper-leaved grevillea recorded within 150 metres of the site footprint
- **ATP Area 6A site BN166**: Spiked rice-flower recorded within 150 metres of the site footprint

**B2**
- **ATP Area 6A site BN173**: Cumberland Plain land snail recorded within 150 metres of the site footprint
- **ATP Area 6A site SS1**: Dusky woodswallow, Eastern free-tail bat, Cumberland Plain land snail recorded within 150 metres of the site footprint
- **ATP Area 6A site SS14**: Cumberland Plain land snail recorded within 150 metres of the site footprint
- **ATP Area 6A site ME1 and Mulgrave RR to ME1**: Downy wattle recorded within 150 metres of the site footprint
- **ATP Area 6A site ME1 and Mulgrave RR to ME1**: Juniper-leaved grevillea has been recorded within the site footprint.
- **ATP Area 6A site MRCT ATP**: Grey Headed Flying Fox has been recorded within the site footprint.

**B3**
**ATP Area 6A sites BN17, BN17 to BN20, 28.6, BN141, BN166, SS1, SS14, RE1, SS16 DIST, BN151, DN DIST, ME1 and Mulgrave RR to ME1**: Prior to the commencement of construction a targeted ecological assessment is to be undertaken by a suitably qualified ecologist to determine the presence of EECs at these ATP sites. Where possible, the final alignment of any underground cabling within the site footprint would be designed to avoid potential impacts on these EECs. The location of EECs would be included in the location and/or the activity specific ECMs and would be marked as “no go zones” with associated signage established at the site(s).

**B4**
**ATP Area 6A site 28.6**: Prior to the commencement of construction works a suitably qualified ecologist would complete a targeted GGBF survey to determine potential impacts from ATP works in this area. If GGBF and/or potential habitat for GGBFs is identified a site specific GGBF management plan would be developed prior to construction commencing, for review and approval by TfNSW. This site specific GGBF management plan would include the following controls:

- All personnel and contractors to undergo environmental induction training before commencing work onsite. The content of this induction would include GGBF profile and identification, frog hygiene protocols and procedures to be followed if GGBFs are found or injured during the works
- Establish signage to identify the site as a sensitive site
- The requirement for a suitably experienced ecologist to be onsite during construction works. If GGBFs are detected the ecologist shall remove all GGBFs from the construction footprint and relocate them to a suitable nearby location outside the construction footprint
- Measures to reduce the risk of introducing the frog Chytrid fungus to the site in accordance with the Hygiene Protocol for the Control of Disease in Frogs (DECC 2008). These measures include ensuring machinery and equipment is clean on entry to the site and washing footwear previously worn in aquatic or damp wet areas using a 5% bleach solution before being worn on site
- Specific controls if works are scheduled to occur in the frog breeding season (i.e. between September and March). These controls include fencing the perimeter of the...
No. | Standard mitigation measures
--- | ---

**construction footprint with frog proof fencing would be developed in consultation with a suitably experienced ecologist**

**B5** ATP Area 6A sites ME1 and Mulgrave RR to ME1: Where disturbance to vegetation is required targeted flora surveys would be undertaken to determine the presence of the Juniper-leaved grevillea in the site footprint. Any cabling routes would be designed to avoid impacts to any identified plants. Where impacts are unavoidable, further assessment would be undertaken to consider the likely impacts, for the approval of TfNSW.

**B6** Following confirmation of the detailed design where disturbance to native vegetation is required, and prior to the commencement of construction works, an experienced and qualified ecologist would undertake a survey to establish the presence of any threatened flora and fauna species and/or communities. Where a threatened species and/or communities are identified, further assessment would be undertaken to consider the likely impacts, for the approval of the TfNSW.

**B7** The ATP site would be inspected for any trapped or injured fauna at the start of each day.

**B8** Trenches/excavations would be covered at the end of each day and inspected before they are backfilled to ensure that no fauna species are harmed.

**B9** Construction areas should be kept to a minimum and be clearly demarcated to prevent accidental damage to native vegetation.

**B10** Stockpiles, plant, equipment and materials storage are to be located on existing cleared lands away from the drip zone of trees or other native vegetation.

**B11** Weeds shall be treated and disposed of appropriately and not mixed with other vegetation to be mulched for reuse.

**B12** Piles of cleared vegetation should be mulched as soon as practicable after clearing and mulch reused where possible.

**B13** Vehicle turning circles and parking areas shall be clearly marked and should occur in areas free of native vegetation.

**B14** Soil and vegetation that could contain weed material should be removed from machinery prior to any movements off site.

**B15** Where space within existing conduits is not available, new GST would be preferred over underground conduits to connect new assets.

**B16** Where trenching or excavation is required for installing new underground conduits or crossings, the route or location would be modified or altered to avoid any damage to trees or tree roots, where possible.

**B17** Any trees requiring removal, trimming or pruning that have not been previously assessed in accordance with this REF must be assessed and approved for removal using the TfNSW Application for Removal or Trimming of Vegetation (9TP-FT-078).

**B18** All cleared vegetation (if any) shall be offset in accordance with TfNSW's Vegetation Offset Guide (9TP-SD-087).

**B19** Management in accordance with TfNSW's guidelines, as applicable:
- *Fauna Management Guideline* (3TP-SD-113)
- *Vegetation Management Guidelines* (9TP-SD-111)
- *Weed Management and Disposal Guideline* (3TP-SD-110).

**Noise and vibration**

**NV1** Maximise the offset distance between noisy plant items and sensitive receivers.

**NV2** Orient plant and equipment to minimise noise at sensitive receivers.

**NV3** Avoid the simultaneous operation of two or more noisy plant items in close vicinity and adjacent to sensitive receivers.

**NV4** Carry out loading and unloading at times and locations to minimise impacts on sensitive receivers.

**NV5** Where necessary, use structures to shield sensitive receivers from noise sources.
<table>
<thead>
<tr>
<th>No.</th>
<th>Standard mitigation measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>NV6</td>
<td>Work would be restricted to standard working hours (7:00am to 6:00pm Monday to Friday and 8:00am to 1:00pm Saturdays) unless otherwise approved by TfNSW. Should works be required outside of standard working hours, community members would be advised where appropriate, and all relevant approvals would be sought, including submission and approval of TfNSW's Out of Hours Works Application Form (9TP-FT-079) in accordance with TfNSW's Construction Noise Strategy (7TP-ST-157).</td>
</tr>
<tr>
<td>NV7</td>
<td>Provide mitigation in accordance with the requirements of the TfNSW Construction Noise Strategy (7TP-ST-157) if high noise generating activities occur for extended periods.</td>
</tr>
<tr>
<td>NV8</td>
<td>Noise complaints would be managed in accordance with TfNSW Construction Noise Strategy (7TP-ST-157). Any noise complaints received would be addressed in accordance with TfNSW complaints management procedures.</td>
</tr>
<tr>
<td>NV9</td>
<td>Residents within the main catchment area of ATP Area 6A sites identified in the Proposal would be notified of the works prior to the commencement of construction. Notification would include the duration of work, potential impacts and contact details for further information.</td>
</tr>
</tbody>
</table>

### Heritage

- **ATP Area 6A site St Marys RR, 452 and 460A**: Works would be within the heritage curtilage of the SHR listed St Marys Railway Station Group. A Heritage exemption under s.57 (2) of the Heritage Act 1977 would be obtained from Sydney Trains prior to any construction commencing at this site. Consultation would also be undertaken with Penrith City Council prior to works commencing at this location.

- **ATP Area 6A site Riverstone RR**: Works would be within the heritage curtilage of the SHR listed Riverstone Railway Station group and residence. A Heritage exemption under s.57 (2) of the Heritage Act 1977 would be obtained from Sydney Trains prior to any construction commencing at this site. Consultation would also be undertaken with Blacktown City Council prior to works commencing at this location.

- **ATP Area 6A site 33.9 LOC, 34.4 LOC and 34.5**: Works would be within the heritage curtilage of the SHR listed Penrith Railway Station Group and Residence. A Heritage exemption under s.57 (2) of the Heritage Act 1977 would be obtained from Sydney Trains prior to any construction commencing at this site. Consultation would also be undertaken with Penrith City Council prior to works commencing at this location.

- **ATP Area 6A site BN5**: Works would be within the heritage curtilage of the locally significant Seven Hills Railway Station Group. Consultation with Sydney Trains and Blacktown City Council would be undertaken prior to any works commencing at this location.

- **ATP Area 6A site BN55**: Works would be within the heritage curtilage of the locally significant rail underbridge at Prospect Highway. Consultation Blacktown City Council would be undertaken prior to any works commencing at this location.

- **ATP Area 6A site BN51, BN51 to BN71 and BN51 to Blacktown CC**: Works would be within the heritage curtilage of the locally significant Blacktown Railway Signal box. Consultation with Sydney Trains and Blacktown City Council would be undertaken prior to any works commencing at this location.

- **ATP Area 6A site Emu Plains RR**: Works would be within the heritage curtilage of the locally significant Emu Plains railway culvert. Consultation with Sydney Trains and Penrith City Council would be undertaken prior to any works commencing at this location.

- **ATP Area 6A site Wentworthville RR**: Works would be within the heritage curtilage of the locally significant Wentworth Railway Station Group. Consultation with Sydney Trains and Parramatta City Council would be undertaken prior to any works commencing at this location.

- **ATP Area 6A site Wentworthville RR, GE457 LOC, 34.9B, GE47, 36.6 and MRCT ATP**: Heritage items and conservation areas which are located adjacent to ATP Area 6A site Wentworthville RR, GE457 LOC, 34.9B, GE47, 36.6 and MRCT ATP would be identified in the location and/or the activity specific ECMs and would be marked as "no go zones" with associated signage established at the site(s).
## Standard mitigation measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Standard mitigation measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>H10</td>
<td>If a non-Aboriginal historical relic is discovered, all work likely to affect it would cease and the Project Manager would be contacted immediately. TfNSW Project Manager and Environmental Representative would be notified and will be responsible for notifying the Office of Environment and Heritage (OEH), if required. An investigation would be undertaken by a suitably qualified archaeologist to identify suitable measures to reduce the impact on the relic discovered before work resumes.</td>
</tr>
<tr>
<td>H11</td>
<td>Should Aboriginal heritage items be uncovered, all work in the vicinity would cease and the Project Manager would be contacted immediately. TfNSW Project Manager and Environmental Representative and will be responsible for notifying the Office of Environment and Heritage (OEH), if required. The Local Aboriginal Land Council would be notified by TfNSW and an assessment by an archaeologist would be arranged to determine the significance of the objects and any other requirements before work resumes.</td>
</tr>
</tbody>
</table>

### Waste

| W1   | All waste would be classified in accordance with the *Waste Classification Guidelines* (EPA 2014) and transported to a place that can lawfully accept the waste. |
| W2   | Any material that may be classified as a hazardous waste would be managed appropriately and in accordance with TfNSW procedures. |
| W3   | Packaging would be minimised, where possible and where the safety and delivery of services is not compromised. |
| W4   | Wherever possible, suitable excavated material would be reused for backfilling, landscaping and other purposes. |
| W5   | Wherever possible, excess material shall be beneficially reused in accordance with a Resource Recovery Exemption rather than classified and disposed as waste. |
| W6   | Any spoil or waste material tracked onto roads would be swept up immediately. |
| W7   | Adequate numbers of bins and waste containers would be made available on site. The site manager would ensure bins are not overflowing and are appropriately covered. |
| W8   | Wastewater generated by non-destructive excavation would be taken off site for treatment and disposal. |
| W9   | All waste would be removed when work is completed. |

### Contaminated land and hazardous materials

<p>| C1   | All waste spoil would be managed in accordance with the <em>Waste Classification Guidelines</em> (NSW EPA 2014) and <em>National Environment Protection (Assessment of Site Contamination) Measure 1999</em>. |
| C2   | All hazardous materials removal and clean-up operations must be carried out in accordance with the NSW Work <em>Health and Safety Act and Regulations 2011</em> and the Safe Work NSW requirements. |
| C3   | As part of the ATP Project induction, construction personnel would receive training in the identification, management and handling of contaminated and hazardous materials should they be encountered during the works. |
| C4   | During excavation, particularly at ATP sites where no site surveys have been undertaken, site workers will look for signs of potential contamination such as presence of waste and/or other imported materials, odours, soil colouring, floating layer in groundwater etc. |
| C5   | If any previously unidentified contamination is encountered, or suspected, works in the vicinity of the find would be immediately stopped and the affected area fenced off. The site would be investigated and validated, with works to resume after approval from a suitably qualified and experienced Health, Safety and Environment professional is obtained. |
| C6   | Personnel dealing with the hazardous substances should be appropriately trained. |
| C7   | Contaminated soil would be segregated and appropriately contained prior to classification and ultimate disposal. |
| C8   | The quantity of spoil generated would be minimised. |
| C9   | If hazardous materials are required for any unforeseen reason, a Hazardous Waste |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Standard mitigation measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Management Plan would be prepared. The plan would detail terms applying to the purchase, storage, use, handling and disposal of such materials.</td>
</tr>
<tr>
<td>C10</td>
<td>Hazardous materials would be transported, stored and used in accordance with the corresponding material safety data sheets which would be available at the on site.</td>
</tr>
<tr>
<td>C11</td>
<td>No fuels would be stored at on site.</td>
</tr>
<tr>
<td>C12</td>
<td>Removal of suspected and/or known asbestos, including building structures likely to contain asbestos requires an experienced, appropriately licensed removal contractor in accordance with the How to Safely Remove Asbestos Code of Practice (Safe Work Australia, 2016). An Occupational Hygienist should be on site during removal works.</td>
</tr>
</tbody>
</table>

### Visual amenity

| VA  | Clearance of vegetation shall be minimised. |
|     | The work area shall be maintained in an orderly manner. |
|     | All temporary signage associated with the works must be appropriately displayed. |
|     | All work equipment and materials would be contained within the designated boundaries of the work site. |

### Land use

- Nil

### Socio-economic impacts

| SE1  | Nearby residents and businesses would be informed about the nature and timing of works. |
| SE2  | Signage would notify the public about the works. |
| SE3  | Appropriate fencing would help maintain public safety during construction. |

### Traffic and access

| TA1  | A traffic speed limit shall be enforced at all sites. |
| TA2  | Scheduled road movements must be minimised where possible. |
| TA3  | Deliveries of plant and materials must be undertaken outside peak periods where possible. |
| TA4  | Vehicles shall be parked within the rail corridor and not in public commuter car parking spaces. |
| TA5  | Where access to the sites requires access through land not owned by TfNSW (i.e. Department of Defence), consultation would be undertaken with land owners and consent to access the land would be obtained where required. |

### Light spill

| L1  | Lighting required during night works shall be directed towards the work area and away from adjacent sensitive receivers. |

### Cumulative impacts

| CI1  | Any other major development or works planned in the vicinity of the site would be further investigated before work begins and cumulative impacts minimised where possible. |
| CI2  | Consultation with Parramatta City Council, Blacktown City Council, Penrith City Council, Hawkesbury City Council, Cumberland Council and any other relevant stakeholders regarding other developments would be undertaken on an ongoing basis. |
8. Conclusion

This REF has been prepared in accordance with the provisions of section 111 of the EP&A Act, taking into account to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the Proposal.

The Proposal will play a key role in delivering faster and more reliable rail services and will provide significant safety benefits to rail customers and staff.

The main environmental issues relate to construction impacts such as erosion and sedimentation risks, potential water quality, biodiversity and heritage impacts as well as short-term traffic and noise issues for nearby sensitive receivers.

This REF has considered and assessed these impacts in accordance with clause 228 of the EP&A Regulation and the requirements of the EPBC Act (refer to Chapter 6, and Appendices 1 and 2). Should the Proposal proceed, these impacts would be effectively managed through the implementation of the mitigation measures and the conditions of approval. As a result, these environmental impacts are not considered to be significant. Accordingly an EIS is not required, nor is the approval of the Minister for Planning.

The Proposal has also taken into account the principles of ESD (refer to Section 4.1). These would be considered further during the detailed design, construction and operational phases of the Proposal. This will ensure the Proposal is delivered to maximum benefit to the community, is cost effective and minimises any adverse impacts on the environment.
References


Transport for NSW (2016), *Water Discharge Guidelines* (7TP-SD-024), New South Wales Government.

Transport for NSW (2016), *Vegetation Management (Protection and Removal) Guideline* (9TP-SD-111/2.0)


Appendix 1 – Consideration of clause 228 factors

The table below demonstrates TfNSW’s consideration of the specific factors of clause 228 of the EP&A Regulation in determining whether the Proposal would have a significant impact on the environment.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Any environmental impact on a community?</strong></td>
<td></td>
</tr>
<tr>
<td>During construction there may be minor noise and traffic disturbances to the nearby community from deliveries and construction works. During track possession, some works would take place outside standard working hours. In the long term, the ATP Project will improve reliability and safety of the Sydney Train services on the North Shore, Northern &amp; Western Line and Cumberland Line.</td>
<td>☑ nil ✔ minor □ significant</td>
</tr>
<tr>
<td><strong>Any transformation of a locality?</strong></td>
<td></td>
</tr>
<tr>
<td>The Proposal would not transform the locality. The works would support the ongoing operation of the rail network.</td>
<td>☑ nil □ minor □ significant</td>
</tr>
<tr>
<td><strong>Any environmental impact on the ecosystem of the locality?</strong></td>
<td></td>
</tr>
<tr>
<td>With the implementation of the proposed control measures, the proposed works are not anticipated to significantly impact on the ecosystem of the locality.</td>
<td>☑ nil ✔ minor □ significant</td>
</tr>
<tr>
<td><strong>Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?</strong></td>
<td></td>
</tr>
<tr>
<td>There will be a minor reduction in the aesthetic values of the neighbourhood due to the anticipated noise, air quality and traffic impacts resulting during construction. However, these will be temporary and minor in nature. No long-term reduction in the quality or value of the locality is anticipated.</td>
<td>☑ nil ✔ minor □ significant</td>
</tr>
<tr>
<td><strong>Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?</strong></td>
<td></td>
</tr>
<tr>
<td>No such significant places will be notably affected during construction or operation.</td>
<td>☑ nil ✔ minor □ significant</td>
</tr>
<tr>
<td><strong>Any impact on the habitat of protected fauna (within the meaning of the National Parks and Wildlife Act 1974)?</strong></td>
<td></td>
</tr>
<tr>
<td>No habitat on which protected or endangered species would be reliant on is anticipated to be significantly impacted by the proposed works.</td>
<td>☑ nil ✔ minor □ significant</td>
</tr>
<tr>
<td><strong>Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?</strong></td>
<td></td>
</tr>
<tr>
<td>No protected or endangered species are anticipated to be significantly impacted by the proposed works.</td>
<td>☑ nil □ minor □ significant</td>
</tr>
<tr>
<td><strong>Any long-term effects on the environment?</strong></td>
<td></td>
</tr>
<tr>
<td>The proposed activities are not anticipated to pose any environmental risks in the long term.</td>
<td>☑ nil □ minor □ significant</td>
</tr>
<tr>
<td><strong>Any degradation of the quality of the environment?</strong></td>
<td></td>
</tr>
<tr>
<td>The proposed work is not expected to have any significant adverse</td>
<td>☑ nil □ minor □ significant</td>
</tr>
</tbody>
</table>
### Factor
impacts on the quality of the environment.

<table>
<thead>
<tr>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ minor</td>
</tr>
<tr>
<td>□ significant</td>
</tr>
</tbody>
</table>

### Any risk to the safety of the environment?
During construction there is a risk to the environment due to accidental spills and sedimentation. These risks would be minimised through the implementation of the proposed control measures.

<table>
<thead>
<tr>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ nil</td>
</tr>
<tr>
<td>✔ minor</td>
</tr>
<tr>
<td>□ significant</td>
</tr>
</tbody>
</table>

### Any reduction in the range of beneficial uses of the environment?
Works are to take place within the existing rail corridor and would not reduce the beneficial uses of the environment.

<table>
<thead>
<tr>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ nil</td>
</tr>
<tr>
<td>□ minor</td>
</tr>
<tr>
<td>□ significant</td>
</tr>
</tbody>
</table>

### Any pollution of the environment?
During construction there is a risk of noise, water and air pollution. These risks would be minimised through the implementation of the proposed control measures.

<table>
<thead>
<tr>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ nil</td>
</tr>
<tr>
<td>✔ minor</td>
</tr>
<tr>
<td>□ significant</td>
</tr>
</tbody>
</table>

### Any environmental problems associated with the disposal of waste?
During construction it is possible spoil may be contaminated and an appropriate remediation plan and/or waste disposal method would be required.

<table>
<thead>
<tr>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ nil</td>
</tr>
<tr>
<td>✔ minor</td>
</tr>
<tr>
<td>□ significant</td>
</tr>
</tbody>
</table>

### Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?
Construction materials are readily available and would be sourced from local contractors where possible.

<table>
<thead>
<tr>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ nil</td>
</tr>
<tr>
<td>□ minor</td>
</tr>
<tr>
<td>□ significant</td>
</tr>
</tbody>
</table>

### Any cumulative environmental effect with other existing or likely future activities?
The distance between the proposed ATP sites is such that cumulative noise, air quality and traffic impacts are not expected. Overall this Proposal, as part of the ATP Project, will have significant benefits in providing a safer and more efficient rail network.

<table>
<thead>
<tr>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ nil</td>
</tr>
<tr>
<td>□ minor</td>
</tr>
<tr>
<td>□ significant</td>
</tr>
</tbody>
</table>

### Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?
The Proposal would not contribute to or be affected by coastal processes or hazards.

<table>
<thead>
<tr>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ nil</td>
</tr>
<tr>
<td>□ minor</td>
</tr>
<tr>
<td>□ significant</td>
</tr>
</tbody>
</table>
Appendix 2 – Consideration of matters of national environmental significance

The table below demonstrates TfNSW’s consideration of the matters of NES under the EPBC Act to be considered in order to determine whether the Proposal should be referred to the Commonwealth Department of the Environment and Energy.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any impact on a World Heritage property?</td>
<td>✗ nil, □ minor</td>
</tr>
<tr>
<td>The nature, scale and location of the works are such that impacts on World Heritage Properties are not expected. Indirect impacts are also not expected. The World Heritage Property ‘Australian Convict Sites’ (Old Government House and Domain) is located approximately 200m from the proposal. The proposal will not have an adverse impact on the property.</td>
<td></td>
</tr>
<tr>
<td>Any impact on a National Heritage place?</td>
<td>✗ nil, □ minor</td>
</tr>
<tr>
<td>The nature, scale and location of the works are such that impacts on National Heritage Place are not expected. Indirect impacts are also not expected. The National Heritage Place ‘Australian Convict Sites’ (Old Government House and Domain) is located approximately 200m from the proposal. The proposal will not have an adverse impact on the property.</td>
<td></td>
</tr>
<tr>
<td>Any impact on a wetland of international importance?</td>
<td>✗ nil, □ minor</td>
</tr>
<tr>
<td>There are no wetlands of international importance in the vicinity of the site.</td>
<td></td>
</tr>
<tr>
<td>Any impact on a listed threatened species or communities?</td>
<td>□ nil, ✗ minor</td>
</tr>
<tr>
<td>The nature, scale and location of the works are such that impacts on any Commonwealth listed threatened species or ecological communities or their habitats are not expected. Indirect impacts are also not expected.</td>
<td></td>
</tr>
<tr>
<td>Any impacts on listed migratory species?</td>
<td>□ nil, ✗ minor</td>
</tr>
<tr>
<td>The nature, scale and location of the works are such that impacts on any Commonwealth listed migratory species or their habitats are not expected. Indirect impacts are also not expected.</td>
<td></td>
</tr>
<tr>
<td>Any impact on a Commonwealth marine area?</td>
<td>✗ nil, □ minor</td>
</tr>
<tr>
<td>The site is not in the vicinity of any Commonwealth marine areas.</td>
<td></td>
</tr>
<tr>
<td>Does the Proposal involve a nuclear action (including uranium mining)?</td>
<td>✗ nil, □ minor</td>
</tr>
<tr>
<td>The Proposal does not involve any nuclear actions.</td>
<td></td>
</tr>
<tr>
<td>Additionally, any impact (direct or indirect) on Commonwealth land?</td>
<td>□ nil, ✗ minor</td>
</tr>
<tr>
<td>The site is adjacent to areas of Commonwealth land. The Proposal does not involve direct works on Commonwealth land.</td>
<td></td>
</tr>
<tr>
<td>In relation to coal seam gas and large coal mining developments, any impact on a water resource?</td>
<td>✗ nil, □ minor</td>
</tr>
<tr>
<td>The Proposal does not relate to a coal seam gas or large coal mining development.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3 – ATP Area 6A site location plans
Automatic Train Protection (ATP) Project

Source: Aurecon, OEH, Sydney Trains, LPI

ATP Area 6A Site 16.1
Automatic Train Protection (ATP) Project

ATP Area 6A Site Wentworthville Relay Room

Projection: GDA 1994 MGA Zone 56

Source: Aurecon, OEH, Sydney Trains, LPI
Automatic Train Protection (ATP) Project

Note: Heritage Item 110 (Rail underbridge at Prospect Highway) is listed on the heritage schedules of Blacktown LEP 2015 as being of state heritage significant. Searches of the Office of Environment and Heritage (OEH) heritage databases confirmed the state heritage listing was revoked in 2013.
Automatic Train Protection (ATP) Project

ATP Area 6A Site BN71

Acid Sulfate Soil Risk
- High risk of ASS occurring within 4m of natural soil surface
- Low risk of ASS occurring within 4m of natural soil surface
- No risk of ASS occurring within 4m of natural soil surface

Source: Aurecon, OEH, Sydney Trains, LPI
Automatic Train Protection (ATP) Project

ATP Area 6A Site Riverstone Relay Room

Projection: GDA 1994 MGA Zone 56
Source: Aurecon, OEH, Sydney Trains, LPI

1:1,750
Projection: GDA 1994 MGA Zone 56

Automatic Train Protection (ATP) Project

Source: Aurecon, OEH, Sydney Trains, LPI

ATP Area 6A Site BN141 to BN151 (2 of 2)
# Appendix 4 – ATP Preliminary environmental risk assessment criteria

<table>
<thead>
<tr>
<th>Environmental issue</th>
<th>Risk Assessment Category</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water Quality and Hydrology</strong></td>
<td></td>
<td><strong>Nearest waterway</strong></td>
<td><strong>Nearest waterway</strong></td>
<td><strong>Nearest waterway</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;150m from works</td>
<td>&gt;25m and ≤150m from works</td>
<td>≤25m from works</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Waterway is relatively degraded</strong></td>
<td><strong>Waterway is relatively sensitive</strong></td>
<td><strong>Waterway is highly sensitive and/or specifically protected</strong></td>
</tr>
<tr>
<td><strong>Non-Indigenous Heritage</strong></td>
<td><strong>Heritage item/place</strong></td>
<td>Works within 100m of a heritage item/place (including works within the curtilage of items on Section 170, LEP Heritage Schedules)</td>
<td>Works within curtilage of item(s) on the State heritage register</td>
<td>Works within curtilage of heritage item/place, or works may affect such a site</td>
</tr>
<tr>
<td><strong>Indigenous Heritage</strong></td>
<td><strong>Heritage item/place</strong></td>
<td>Works within 100m of heritage item/place</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;100m from works</td>
<td>Tree pruning or lopping required</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trees/vegetation within 5m of works</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Works within a bush regeneration area</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Removal of trees/vegetation required</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excavations likely to affect tree roots</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Biodiversity</strong></td>
<td><strong>No threatend species or ecologically sensitive area(s) affected</strong></td>
<td>Threatened species and/or ecologically important area(s) within 150m of works</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Threatened species and/or ecologically important area(s) within 150m of works</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Potential Contamination</strong></td>
<td><strong>No contamination sites identified within vicinity of works (EPA search)</strong></td>
<td>Visual evidence of contamination in ballast environmental site survey, however no evidence of hazardous building materials, waste materials or contamination of land uses (EPA search)</td>
<td>Visual evidence of contamination, hazardous building materials and waste within ballast environmental site survey</td>
<td>Surrounding land uses indicate potential contamination (EPA search)</td>
</tr>
<tr>
<td></td>
<td><strong>No contamination identified in ballast environmental site survey</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Noise</strong></td>
<td><strong>Sensitive receptors are identified greater than 500m of works</strong></td>
<td>Sensitive receptors are located greater than 50m and less than 500m of works</td>
<td>Sensitive receptors are located equal to or less than 50m of works</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Land Use</strong></td>
<td><strong>National park and/or reserve greater than 100m from works</strong></td>
<td>National park and/or reserve within 100m of works</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Works bounded by a national park and/or reserve</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Environmental issue

<table>
<thead>
<tr>
<th>Environmental issue</th>
<th>Risk Assessment Category</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Works unlikely to extend outside the rail corridor</td>
<td>Works may extend outside the rail corridor</td>
<td>Site access through national park and/or reserve</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No disruption to local land uses anticipated</td>
<td>Works could affect the amenity of adjacent land uses (e.g. recreational activities)</td>
<td>Works outside the rail corridor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Works affect the amenity of adjacent land uses (e.g. recreational activities)</td>
</tr>
<tr>
<td></td>
<td>Potential ASS</td>
<td>No risk of ASS occurring within 4m of natural soil surface</td>
<td>Low risk of ASS occurring within 4m of natural soil surface</td>
<td>High risk of ASS occurring within 4m of natural soil surface</td>
</tr>
<tr>
<td></td>
<td>Traffic and access</td>
<td>Works are not considered to have an impact on access or parking for community places or sensitive receptors</td>
<td>Works have the potential to impact on access/parking for community places or sensitive receptors</td>
<td>The rail corridor access gate is located within close proximity to community places or sensitive receptors, the proposed works are considered likely to have an impact on access/parking for community places or sensitive receptors</td>
</tr>
</tbody>
</table>
Appendix 2: Conditions of Approval
CONDITIONS OF APPROVAL

Automatic Train Protection Project North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains & Richmond) – Area 6A

Note: these conditions of approval must be read in conjunction with the final mitigation measures in the Automatic Train Protection (ATP) Project - North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains & Richmond) – Area 6A Review of Environmental Factors.

Schedule of acronyms and definitions used:

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATP</td>
<td>Automatic Train Protection</td>
</tr>
<tr>
<td>CEMP</td>
<td>Construction Environmental Management Plan</td>
</tr>
<tr>
<td>CLP</td>
<td>Community Liaison Plan</td>
</tr>
<tr>
<td>CoA</td>
<td>Condition of Approval</td>
</tr>
<tr>
<td>ECM</td>
<td>Environmental Controls Map</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>EPA</td>
<td>NSW Environment Protection Authority</td>
</tr>
<tr>
<td>EP&amp;A Act</td>
<td>Environmental Planning and Assessment Act 1979</td>
</tr>
<tr>
<td>EPL</td>
<td>Environment Protection Licence issued by the Environmental Protection Authority under the Protection of the Environment Operations Act 1997.</td>
</tr>
<tr>
<td>ISO</td>
<td>International Standards Organisation</td>
</tr>
<tr>
<td>OEH</td>
<td>NSW Office of Environment and Heritage</td>
</tr>
<tr>
<td>OOHWP</td>
<td>Out of Hours Works Protocol</td>
</tr>
<tr>
<td>ADEM</td>
<td>Associate Director Environment Management, TfNSW (or nominated delegate)</td>
</tr>
<tr>
<td>REF</td>
<td>Review of Environmental Factors</td>
</tr>
<tr>
<td>TfNSW</td>
<td>Transport for NSW</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Construction</td>
<td>Includes all work in respect of the Project, other than survey, acquisitions, fencing, investigative drilling or excavation, building/road dilapidation surveys, or other activities determined by the TfNSW ADEM to have minimal environmental impact such as minor access roads, minor adjustments to services/utilities, establishing temporary construction compounds (in accordance with this approval), or minor clearing (except where threatened species, populations or ecological communities would be affected).</td>
</tr>
<tr>
<td>Contamination</td>
<td>The presence in, on or under land of a substance at a concentration above the concentration at which the substance is normally present in, on or under (respectively) land in the same locality, being a presence that presents a risk of harm to human health or any other aspect of the environment.</td>
</tr>
<tr>
<td>Emergency Work</td>
<td>Includes works to avoid loss of life, damage to external property, utilities and infrastructure, prevent immediate harm to the environment, contamination of land or damage to a heritage (indigenous or non-indigenous) item.</td>
</tr>
<tr>
<td>Environmental Impact Assessment (EIA)</td>
<td>The documents listed in Condition 1 of this approval.</td>
</tr>
<tr>
<td>Environmental Management Representative</td>
<td>An independent environmental representative appointed to the Project (or a delegate) nominated by Transport for NSW.</td>
</tr>
<tr>
<td>Feasible</td>
<td>A work practice or abatement measure is feasible if it is capable of being put into practice or of being engineered and is practical to build given project constraints such as safety and maintenance requirements.</td>
</tr>
<tr>
<td>Noise Sensitive Receiver</td>
<td>In addition to residential dwellings, noise sensitive receivers include, but are not limited to, hotels, entertainment venues, pre-schools and day care facilities, educational institutions (e.g. schools, TAFE colleges), health care facilities (e.g. nursing homes, hospitals), recording studios, places of worship/religious facilities (e.g. churches), and other noise sensitive receivers identified in the environmental impact assessment.</td>
</tr>
<tr>
<td>(the) Project</td>
<td>The construction and operation of the Automatic Train Protection (ATP) Project as described in the environmental impact assessment.</td>
</tr>
<tr>
<td>(the) Proponent</td>
<td>A person or body proposing to carry out an activity under Part 5 of the EP&amp;A Act – in the case of the Project, Transport for NSW.</td>
</tr>
<tr>
<td>Reasonable</td>
<td>Selecting reasonable measures from those that are feasible involves making a judgment to determine whether the overall benefits outweigh the overall adverse social, economic and environmental effects, including the cost of the measure.</td>
</tr>
</tbody>
</table>
Conditions of Approval

1. Terms of approval
   The Project shall be carried out generally in accordance with the environmental impact
   assessment (EIA) for this Project, which comprises the following documents:

<table>
<thead>
<tr>
<th>DOCUMENT</th>
<th>AUTHOR</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Train Protection (ATP) Project – North Shore,</td>
<td>Aurecon</td>
<td>December 2017</td>
</tr>
<tr>
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<td>Automatic Train Protection (ATP) Project – North Shore,</td>
<td>TfNSW</td>
<td>December 2017</td>
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   In the event of an inconsistency between these conditions and the EIA, these conditions will
   prevail to the extent of the inconsistency.

2. Project modifications
   Any modification to the project as approved in the EIA would be subject to further assessment.
   This assessment would need to demonstrate that any environmental impacts resulting from the
   modifications have been minimised. The assessment shall be subject to approval under delegated
   authority by TfNSW. The Proponent shall comply with any additional requirements from the
   assessment of the project modification.

3. Statutory requirements
   These conditions do not relieve the Proponent of the obligation to obtain all other licences,
   permits, approvals and land owner consents from all relevant authorities and land owners as
   required under any other legislation for the Project. The Proponent shall comply with the terms
   and conditions of such licences, permits, approvals and permissions.

4. Community liaison plan
   The Proponent shall develop and implement a community liaison plan (CLP) to engage with
   government agencies, relevant councils, landowners, community members and other relevant
   stakeholders (such as utility and service providers, bus companies and businesses) where
   required. The CLP shall comply with the obligations of these conditions and should include, but
   not necessarily be limited to:

   (a) details of the protocols and procedures for disseminating information and liaising with the
       community and other key stakeholders about construction activities (including timing and
       staging) and any associated impacts during the construction period

   (b) stakeholder and issues identification and analysis

   (c) procedures for dealing with complaints or disputes and response requirements, including
       advertising the 24 hour construction response line number

   (d) details (including a program) of training for all employees, contractors and sub-contractors on
       the requirements of the CLP.

   Sub-plans to the CLP will be developed as required. These sub-plans will detail site-specific
   consultation and communication requirements for construction works that impact residents, other
   stakeholders and businesses. They will also identify further mitigation measures and processes to
## Conditions of Approval

### Condition

reduce construction impacts.

The CLP shall be prepared to the satisfaction of the Director Community Engagement prior to the commencement of construction and implemented, reviewed and revised as appropriate during construction of the Project.

### 5. Community notification and liaison

The local community shall be advised of any activities related to the Project with the potential to impact upon them.

Prior to any site activities commencing and throughout the Project duration, the community is to be notified of works to be undertaken, the estimated hours of construction and details of how further information can be obtained (i.e. contact telephone number/email, website, newsletters etc.) including the 24 hour construction response line number.

Construction-specific impacts including information on traffic changes, access changes, detours, services disruptions, public transport changes, high noise generating work activities and work required outside the nominated working hours shall be advised to the local community at least seven (7) days prior to such works being undertaken or other period as agreed to by the Technical Director Project Communications or as required by Environment Protection Authority (EPA) (where an environment protection licence (EPL) is in effect).

### 6. Website

The Proponent shall provide electronic information (or details of where hard copies of this information may be accessed by members of the public) related to the Project, on dedicated pages within its existing website, including:

(a) a list of environmental management reports that are publicly available
(b) 24 hour contact telephone number for information and complaints.

All documents uploaded to the website must be compliant with the Web Content Accessibility Guidelines V2.0.

### 7. Complaints management

The Proponent shall set up a 24 hour construction response line number.

Details of all complaints received during construction are to be recorded on a complaints register.

A verbal response to phone enquiries on what action is proposed to be undertaken is to be provided to the complainant within two (2) hours during all times construction is being undertaken and within 24 hours during non-construction times (unless the complainant agrees otherwise). A verbal response to written complaints (email/letter) should be provided within 48 hours of receipt of the communication. A detailed written response is to be provided to the complainant within seven (7) calendar days for verbal and/or written complaints.

Information on all complaints received during the previous 24 hours shall be forwarded to the environmental management representative (EMR) each working day.

### Environmental management

### 8. Construction environmental management plan

The Proponent shall prepare a construction environmental management plan (CEMP) prior to commencement of construction which addresses the following matters, as a minimum:

(a) traffic and pedestrian management (in consultation with the relevant roads authority)
(b) noise and vibration management
(c) water and soil management
(d) air quality management (including dust suppression)
(e) indigenous and non-indigenous heritage management
Conditions of Approval

(f) flora and fauna management
(g) storage and use of hazardous materials
(h) contaminated land management (including acid sulphate soils)
(i) weed management
(j) waste management
(k) sustainability
(l) environmental incident reporting and management procedures
(m) non-compliance and corrective/preventative action procedures

The CEMP shall:

i. comply with the Conditions of Approval, conditions of any licences, permits or other approvals issued by government authorities for the Project, all relevant legislation and regulations, and accepted best practice management

ii. comply with the relevant requirements of Guideline for Preparation of Environmental Management Plans (Department Infrastructure, Planning and Natural Resources, 2004)

iii. include an Environmental Policy.

The Proponent shall:

1. consult with government agencies and relevant service/utility providers as part of the preparation of the CEMP
2. submit a copy of the CEMP to the ADEM for approval at least 21 days prior to the commencement of construction (or within such time as otherwise agreed to by the ADEM)
3. review and update the CEMP at regular intervals, and in response to any actions identified as part of Project audits
4. ensure updates to the CEMP are made within seven days of the completion of the review or receipt of actions identified by any audit of the document, and be submitted to the ADEM for approval

The CEMP must be approved by the ADEM prior to the commencement of construction work associated with the Project.

9. Environmental management representative
Not Used

10. Environmental controls map
A site specific environmental controls map(s) (ECM) shall be prepared in accordance with TfNSW’s Guide to Environmental Controls Map (3TP-SD-015) prior to the commencement of construction for implementation for the duration of construction, and may be prepared in stages as set out in the CEMP.

A copy of the ECMs must be submitted to the ADEM for approval, at least 14 days prior to commencement of construction of the Project (or within such time as otherwise agreed by the ADEM).

The ECM shall be prepared as a map – suitably enlarged (e.g. A3 size or larger) for mounting on the wall of a site office and included in site inductions, supported by relevant written information.

Updates to the ECM shall be made within seven days of the completion of the review or receipt of actions identified by any audit of the document, and submitted to the ADEM for approval.
## Conditions of Approval

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<th>Condition</th>
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<tr>
<td><strong>Hours of work</strong></td>
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<td>11. <strong>Standard construction hours</strong></td>
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<td>Construction activities shall be restricted to the hours of 7:00 am to 6:00 pm (Monday to Friday); 8:00 am to 1:00 pm (Saturday) and at no time on Sundays and public holidays except for the following works which are permitted outside these standard hours:</td>
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<tr>
<td>(a) any works which do not cause noise emissions to be more than 5dBA higher than the rating background level at any nearby residential property and/or other noise sensitive receivers</td>
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<td>(b) out of hours work identified and assessed in the EIA or the approved out of hours work protocol (OOHWP)</td>
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<tr>
<td>(c) the delivery of plant, equipment and materials which is required outside these hours as requested by police or other authorities for safety reasons and with suitable notification to the community as agreed by the ADEM</td>
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<td>(d) emergency work to avoid the loss of lives, property and/or to prevent environmental harm</td>
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<td>(e) any other work as agreed by the ADEM (or nominated delegate) and considered essential to the Project, or as approved by EPA (where an EPL is in effect).</td>
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<td>12. <strong>High noise generating activities</strong></td>
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<td>Rock breaking or hammering, jack hammering, pile driving, vibratory rolling, cutting of pavement, concrete or steel and any other activities which result in impulsive or tonal noise generation shall not be undertaken for more than 3 hours, without a minimum 1 hour respite period unless otherwise agreed to by the ADEM (or nominated delegate), or as approved by EPA (where relevant to the issuing of an EPL), unless inaudible at nearby residential properties and/or other noise sensitive receivers.</td>
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<td>13. <strong>Construction noise and vibration</strong></td>
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<td>Construction noise and vibration mitigation measures shall be implemented through the CEMP, in accordance with TfNSW’s <em>Construction Noise Strategy</em> and the EPA <em>Interim Construction Noise Guideline</em> (July 2009). The mitigation measures shall include, but not necessarily be limited to:</td>
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<td>(a) details of construction activities and an indicative schedule for construction works</td>
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<td>(b) identification of construction activities that have the potential to generate noise and/or vibration impacts on surrounding land uses, particularly sensitive noise receivers</td>
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<tr>
<td>(c) detail what reasonable and feasible actions and measures shall be implemented to minimise noise impacts (including those identified in the environmental impact assessment)</td>
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<td>(d) procedures for notifying sensitive receivers of construction activities that are likely to affect their noise and vibration amenity, as well as procedures for dealing with and responding to noise complaints</td>
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<td>(e) an out of hours work protocol (OOHWP) for the assessment, management and approval of works outside the standard construction hours identified in Condition 11 of this approval, including a risk assessment process which deems the out of hours activities to be of low, medium or high environmental risk, is to be developed. All out of hours works are subject to approval by the EMR and/or ADEM (or nominated delegate) or as approved by EPA (where relevant to the issuing of an EPL). The OOHWP should be consistent with the TfNSW <em>Construction Noise Strategy</em></td>
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<td>(f) a description of how the effectiveness of actions and measures shall be monitored during the proposed works, identification of the frequency of monitoring, the locations at which monitoring shall take place, recording and reporting of monitoring results and if any...</td>
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Conditions of Approval

Condition

exceedance is detected, the manner in which any non-compliance shall be rectified.

14. Vibration criteria

Vibration (other than from blasting) resulting from construction and received at any structure outside of the Project shall be limited to:

(a) for structural damage vibration - German Standard DIN 4150:Part 3 – 1999: *Structural Vibration in Buildings: Effects on Structures*

(b) for human exposure to vibration – the acceptable vibration values set out in the *Environmental Noise Management Assessing Vibration: A Technical Guideline* (DEC 2006).

These limits apply unless otherwise approved by the ADEM through the CEMP.

15. Non-tonal reversing beepers

Non-tonal reversing beepers (or an equivalent mechanism) shall be fitted and used on all construction vehicles and mobile plant regularly used on site (i.e. greater than one day) and for any out of hours work.

**Contamination and hazardous materials**

16. Unidentified contamination (other than asbestos)

If previously unidentified contamination (excluding asbestos) is discovered during construction, work in the affected area must cease immediately, and an investigation must be undertaken and report prepared to determine the nature, extent and degree of any contamination. The level of reporting must be appropriate for the identified contamination in accordance with relevant EPA guidelines, including the *Guidelines for Consultants Reporting on Contaminated Sites* (OEH, 2011).

A copy of any contamination report must be submitted to the ADEM for review for a minimum period of seven days. The ADEM shall determine whether consultation with the relevant council and/or EPA is required prior to continuation of construction works within the affected area.

*Note: In circumstances where both previously unidentified asbestos contamination and other contamination are discovered within a common area, nothing in these conditions shall prevent the preparation of a single investigation report to satisfy the requirements of both Condition 16 and Condition 17.*

17. Asbestos management

If previously unidentified asbestos contamination is discovered during construction, work in the affected area must cease immediately, and an investigation must be undertaken and report prepared to determine the nature, extent and degree of the asbestos contamination. The level of reporting must be appropriate for the identified contamination in accordance with relevant EPA and WorkCover guidelines and include the proposed methodology for the remediation of the asbestos contamination. Remediation activities must not take place until receipt of the investigation report.

Works may only recommence upon receipt of a validation report from a suitably qualified contamination specialist that the remediation activities have been undertaken in accordance with the investigation report and remediation methodology.

*Note: In circumstances where both previously unidentified asbestos contamination and other contamination are discovered within a common area, nothing in these conditions shall prevent the preparation of a single investigation report to satisfy the requirements of both Condition 16 and Condition 17.*

18. Storage and use of hazardous materials

Construction hazard and risk issues associated with the use and storage of hazardous materials shall be addressed through risk management measures, which shall be developed by the
Conditions of Approval

**Condition**

construction contractor prior to construction as part of the overall CEMP, in accordance with relevant EPA guidelines, TfNSW *Chemical Storage and Spill Response Guideline* and Australian and ISO standards. These measures shall include:

(a) the storage of hazardous materials, and refuelling/maintenance of construction plant and equipment to be undertaken in clearly marked designated areas that are designed to contain spills and leaks

(b) spill kits, appropriate for the type and volume of hazardous materials stored or in use, to be readily available and accessible to construction workers. Kits to be kept at hazardous materials storage locations, in site compounds and on specific construction vehicles. Where a spill to a watercourse is identified as a risk, spill kits to be kept in close proximity to potential discharge points in support of preventative controls

(c) all hazardous materials spills and leaks to be reported to site managers and actions to be immediately taken to remedy spills and leaks

(d) training in the use of spill kits to be given to all personnel involved in the storage, distribution or use of hazardous materials.

**Erosion and sediment control**

19. Erosion and sediment control

Soil and water management measures shall be prepared as part of the CEMP for the mitigation of water quality impacts during construction of the Project. The management measures shall be prepared in accordance with *Managing Urban Stormwater; Soils and Construction 4th Edition* (Landcom, 2004).

**Heritage management**

20. Indigenous and non-Indigenous heritage

If previously unidentified Indigenous or non-Indigenous heritage/archaeological items are uncovered during construction works, the procedures contained in the TfNSW *Unexpected Heritage Finds Guideline* (3TP-SD-115) shall be followed, and all works in the vicinity of the find shall cease and appropriate advice shall be sought from a suitably qualified heritage consultant (and in consultation with the OEH Heritage Branch where appropriate). Works in the vicinity of the find shall not re-commence until clearance has been received from the heritage consultant.

**Flora and Fauna**

21. Removal of Trees or Vegetation

Separate approval, in accordance with TfNSW’s *Removal or Trimming of Vegetation Application* (9TP-FT-078), is required for the trimming, cutting, pruning or removal of trees or vegetation where the impact has not already been identified in the EIA for the Project. The trimming, cutting, pruning or removal of trees or vegetation shall be undertaken in accordance with the conditions of that approval.

22. Replanting program

All cleared vegetation shall be offset in accordance with TfNSW’s *Vegetation Offset Guide* (9TP-ST-149). All vegetation planted on-site is to consist of locally endemic native species, unless otherwise agreed by the ADEM, following consultation with the relevant council, where relevant, and/or the owner of the land upon which the vegetation is to be planted.

END OF CONDITIONS
Appendix 3: Determination

Automatic Train Protection (ATP) Project – North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains & Richmond) – Area 6A

REVIEW OF ENVIRONMENTAL FACTORS AND DETERMINATION REPORT

APPROVAL

I, Ben Groth as delegate of the Secretary, Transport for NSW:

1. Have examined and considered the Proposed Activity in the Automatic Train Protection (ATP) Project North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains & Richmond) – Area 6A Review of Environmental Factors (December 2017) and ATP Project North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains and Richmond) – Area 6A Project Determination Report (December 2017) in accordance with the provisions of section 111 of the Environmental Planning and Assessment Act 1979.

2. Determine on behalf of Transport for NSW (the Proponent) that the Proposed Activity may be carried out in accordance with the Conditions of Approval in this Determination Report, consistent with the proposal described in the ATP Project North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains and Richmond) – Area 6A Review of Environmental Factors (December 2017) as amended by this Determination Report.

Ben Groth
Associate Director, Environmental Impact Assessment
Planning and Environment Services
Integrated Planning, Infrastructure and Services
Transport for NSW

Date: 14/12/17
MEMO

TO: Ben Groth
FROM: Lisa Montesin
DATE: 5 December 2017
CC: Geoff Webb, Peter Jones, Jeremy Pereira, Kirsten Velthuis
SUBJECT: Recommendation to Determine Automatic Train Protection (ATP) Project – North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains and Richmond) – Area 6A

Issue:
To determine the Automatic Train Protection (ATP) Project for the North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains and Richmond) – Area 6A (the Proposed Activity), as assessed in the Review of Environmental Factors (REF) prepared by Aurecon.

Background:
Transport for NSW is the proponent for the Proposed Activity. An environmental impact assessment has been carried out for the Project in accordance with the provisions of the Environmental Planning and Assessment Act 1979 and the Environmental Planning and Assessment Regulation 2000.

Internal approval to the final reports, the mitigation measures and conditions has been obtained from the relevant directorates.

Community feedback:
The works being undertaken as part of the proposal are based on safety and rail system requirements. For this reason, there is limited opportunity for any community feedback into project deliverables. As such, the REF for the ATP Project North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains & Richmond) – Area 6A has not been placed on public display.

Current Position:
The Proposed Activity is ready to be approved, subject to mitigation measures contained in the REF (October 2017) and Conditions of Approval (attached)

Recommendation:
It is recommended that TfNSW determine to approve the Proposed Activity in accordance with the provisions of the Environmental Planning and Assessment Act 1979 by signing the Approval in the attached Determination Report.

Lisa Montesin
Environment and Planning Manager
MEMO

TO: Geoff Webb
FROM: Ben Groth
DATE: 5th December 2017
CC: Lisa Montesin, Peter Jones, Jeremy Pereira
SUBJECT: Decision to Proceed

Automatic Train Protection (ATP) Project – North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains and Richmond) – Area 6A

Issue:
Decision to proceed with ATP Project North Shore, Northern & Western Line and Cumberland Line (Parramatta to Emu Plains and Richmond) – Area 6A (the Proposed Activity), as determined herein and assessed by the Review of Environmental Factors (REF) prepared by Aurecon (December 2017) and the Conditions of Approval prepared by Transport for NSW (December 2017).

Background:
The Proposed Activity is now approved, subject to mitigation measures contained in the REF and Conditions of Approval.

Recommendation:
It is agreed that the Decision to Proceed with the construction of the Proposed Activity may now be commenced, consistent with the proposal described in the REF and the Conditions of Approval.

Ben Groth
Associate Director
Environmental Impact Assessment
Date: 14/12/17

Geoff Webb
Project Director
Automatic Train Protection
Date: