NORTHWEST RAPID TRANSIT

PROJECT INTEGRATED MANAGEMENT SYSTEM

CONSTRUCTION TRAFFIC MANAGEMENT PLAN

FOR

SYDNEY METRO NORTHWEST
OPERATIONS, TRAINS and SYSTEMS PPP

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Construction Traffic Management Plan Approval Records

Approval Record

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Amendment Record

Changes made to this document since its last revision, which affect its scope or sense, are marked in the right margin by a vertical bar (|).

DATE	REV	AMENDMENT DESCRIPTION	BY	INITIALS
21/10/2015	03	Amendment to include Stakeholders comments	Kamoru Adetunmbi	KA
25/02/2016	04.01	To remove Site-Specific TMPs from CTMP	Kamoru Adetunmbi	KA
01/06/2016	04.02	To include the approval requirements for Norwest Pedestrian Link and the Willoughby to Chatswood 33kV works.	Kamoru Adetunmbi	KA
11/08/2016	04.03	To include TfNSW's comments	Kamoru Adetunmbi	KA
30/11/2016	05	Address MEO and Yearly update	Kamoru Adetunmbi	KA
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67/11/2018	07	Update to include temporary access for Norwest Ped Link Site Review and update as part of annual certification	Peter Monsted	PM

Certification Record

DATE	REV	AMENDMENT DESCRIPTION	BY	INITIALS
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07/10/2015	01	NWRLOTS-OIC-1NL-PM-CER-000039	OIC	OIC
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15/11/2017	06	NWRLOTS-OIC-1NL-PM-CER-000151	OIC	OIC

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1 Introduction

This *Construction Traffic Management Plan* (CTMP) outlines the construction environmental management arrangements by which Northwest Rapid Transit (NRT), in partnership with Transport for NSW (TfNSW), is delivering the Operations, Trains and Systems Public Private Partnership (OTS PPP) component of the Northwest Rail Link (NWRL) Project, now renamed as 'Sydney Metro Northwest'.

Note: In June 2015, TfNSW changed the project's name to Sydney Metro Northwest (from the North West Rail Link) to reflect its role in Sydney's new railway network. Any references to the North West Rail Link in this plan can be assumed to be referring to the Sydney Metro Northwest. Similarly, the Rapid Transit Rail Facility (RTRF) is now known as the Sydney Metro Trains Facility (SMTF).

1.1 OTS PPP

Sydney Metro is Australia's largest public transport project. Sydney Metro Northwest, formerly known as the North West Rail Link, is the first stage of Sydney's new fully-automated metro system and will open to customers in the first half of 2019.

Stage 2, Sydney Metro City & Southwest, will extend metro rail under Sydney Harbour, through the CBD and southwest to Bankstown.

The $8.3 billion Sydney Metro Northwest will deliver eight new railway stations and 4,000 commuter car parking spaces to Sydney's growing North West. Services will start with a train every four minutes in the peak. The project also includes the upgrade and conversion of five existing railway stations to metro standards.

The Operations, Trains and Systems (OTS PPP) contract is a 15-year Public Private Partnership project – the largest in the history of New South Wales as well as the largest of the three delivery contracts for Sydney Metro Northwest.

Northwest Rapid Transit is delivering Sydney's new generation metro trains; building the new stations and car parks; installing tracks, signalling, mechanical and electrical systems; building and operating the Rapid Transit Rail Facility at Tallawong Road; upgrading and converting the railway between Epping to Chatswood to rapid transit standards; and operating Sydney Metro Northwest – including all maintenance work.

Subsequent to the approval of the OTS Contract, two additional items were approved to be delivered as part of the OTS contract. These include

- October 2015 approval for the provision of northern entry to Norwest Station to provide direct pedestrian entrance from the retail precinct on the northern side of Norwest Boulevard to the station via a subsurface pedestrian link.
- March 2016 approval for the provision of bulk power supply for the eastern end of the Sydney Metro Northwest was approved. This involves provision of a dedicated 33kV underfeeder power line to the Sydney Metro Northwest at Chatswood.

1.2 Purpose and application

The CTMP has been developed to demonstrate how the NRT Consortium will comply with the traffic management and traffic access requirements of the Conditions of Approval (CoA) during the delivery of the OTS Works package as specified in the following approval documents:

- Project Planning Approval - Rapid Transit Rail Facility *(ref SSI-5931*)
- Project Planning Approval – NWRL Stage 2 – Stations, Rail Infrastructure & Systems (SSI-5414)
- Applicable **Environmental Management Measures** from Project EISs:
- Environmental Impact Statement 2 (EIS2) and Submissions Report – NWRL Stage 2 Stations, Rail Infrastructure and Systems (2012/3);
- Environmental Impact Statement and Submissions Report – Tallawong Road, Rouse Hill Rapid Transit Rail Facility (RTRF, 2013).
- Determination Report 2015 – Epping to Chatswood Railway Conversion to Rapid Transit.
- Review of Environmental Factors – Epping to Chatswood Railway – Conversion to Rapid Transit (Parsons Brinckerhoff, 2014)
- Determination Report 2015 – Norwest Station Subsurface Pedestrian Link and Northern Entry
- Determination Report 2016 – Willoughby to North Chatswood 33kV underground feeder power line
- Rouse Hill Temporary Bypass Power Environmental Impact Assessment (EIA)
- Project Contract Requirements, including TfNSW specifications.
- Applicable Legislative Obligations.
- RMS Works Authorisation Deed (WAD).

In summary, the CTMP describes how the North West Rapid Transit Consortium (NRT) will manage construction traffic and transport access impacts during the delivery of the NWRL OTS Works for the North West Rail Link Project.

Annexure B provides a comprehensive list of compliance requirements, environmental documents and the contract documents. Additional detail on compliance management is also contained in Section 3.2.

This Plan is a sub plan of the NWRL OTS CEMP. The relationship of this Plan to other NRT *OTS Works Management Plans* is described in detail in Section 1.4.

Strategies and procedures developed as part of this Plan also take into consideration the impacts associated with works completed by the Early Works and Major Civil Works contractors.

1.3 Scope and Objectives

The traffic management objectives defined in the NWRL Construction Environmental Management Framework that apply to the delivery of OTS works are:

- Minimise disruptions to pedestrians, cyclists, buses and motorists
- Minimise heavy vehicle movements during peak traffic periods
- Minimise access disruptions to adjoining properties
- Encourage sustainable transport options by site workers.

During development of this plan, and as part of the overall strategy of the EMS, the objectives above will be reviewed and additional objectives and key performance indicators added.

1.4 NRT Integrated Management System

In accordance with the OTS Project Deed, Exhibit 1, Scope and Performance Requirements, Section 5.2, NRT must implement and maintain an effective Management System which addresses all its obligations under the deed. The Management Systems must seamlessly integrate all NRT's systems and processes, including those related to rail safety and rail accreditation, quality, environmental, sustainability, health and safety and they must accommodate, coordinate and give effect to the project plans.

The NRT Integrated Management System (NRT-IMS) will be the overarching management system implemented on the OTS PPP. It combines the NRT Project Integrated Management System (NRT-PIMS), to be used during the Delivery Phase, with the NRT Service Integrated Management System (NRT-SIMS), to be used during the Operations Phase. The NRT-IMS is shown in Figure 1.

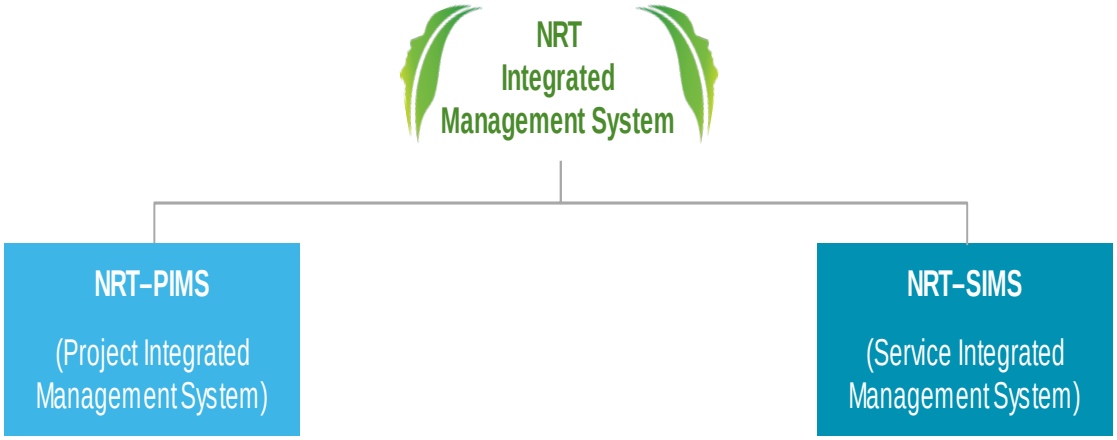


Figure 1 NRT Integrated Management System

As a sub-plan of the CEMP the CTMP is part of the suite of plans that has been developed to ensure successful delivery of the OTS Works.

CEMP provides details of the interrelationship between this sub plan, other sub plans, the CEMP and other project plans. Figure 2 shows the relationship between this sub plan and other planning documents that influence the development of the plan.

The CEMP is part of the NRT-PIMS. The components of the NRT-PIMS are shown in Figure 2

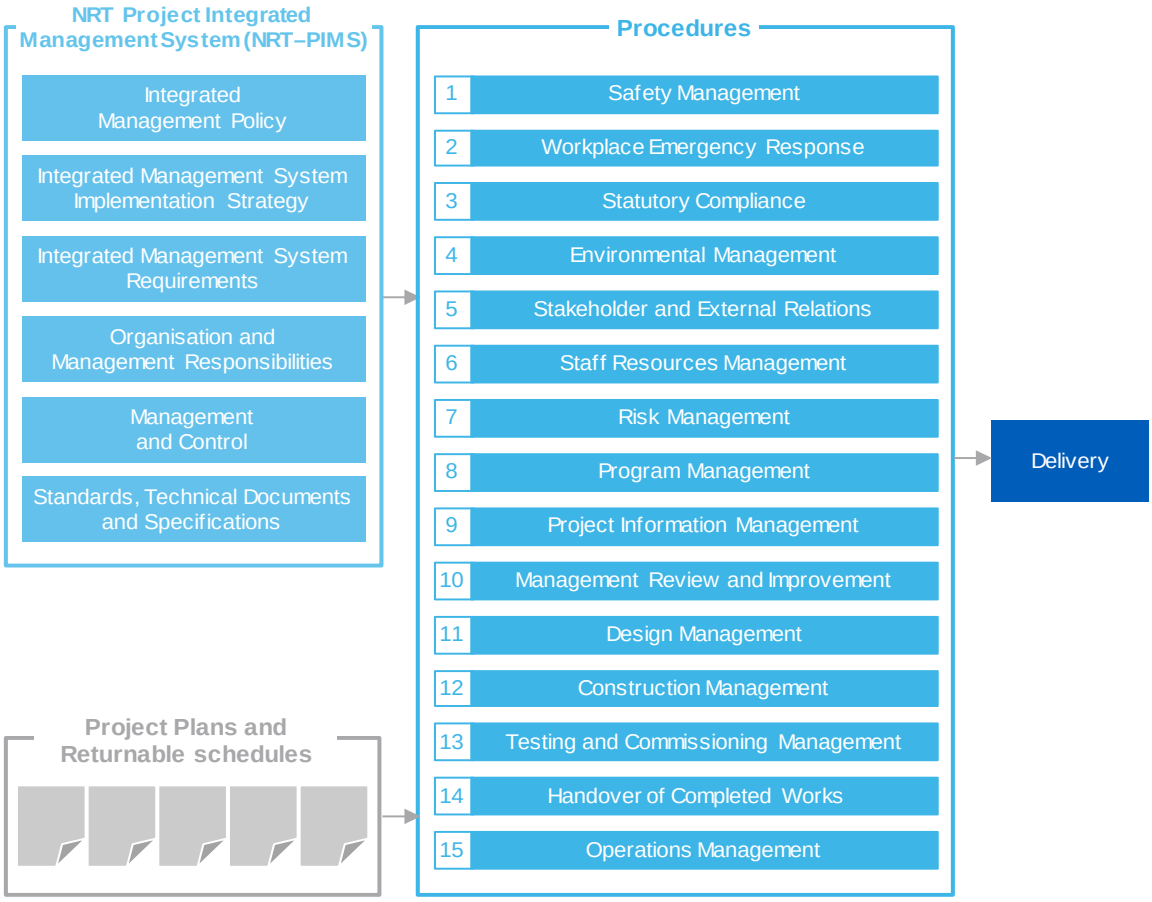


Figure 2 The NRT Project Integrated Management System (NRT-PIMS)

1.5 Approval before Submission.

The *CTMP* and future updates are to be approved by NRT's CEO before being submitted to TfNSW.

1.6 Certification by Independent Certifier

This updated CTMP and any future update is to be submitted, in accordance with the provisions of clause 8 of the Deed, to TfNSW for comment and to the OTS Independent Certifier for certification prior to its implementation by NRT.

1.7 Update and Ongoing Development

The *CTMP* is incorporated as Appendix 76 of the Deed.

The *CTMP* will be updated regularly in accordance with the requirements of the *Deed,* clause 8 and annually as required in *Exhibit 1, Scope and Performance Requirements, Appendix 54 – Project Plan Requirements, Table 1.*

NRT will undertake the ongoing development, amendment and updating of the *CTMP* to ensure it remains consistent with Project priorities, risk management, client requirements and Project objectives, taking into account:

- The status and progress of NRT's activities
- Changes in the design, delivery and operations processes and conditions
- Lessons learnt during delivery and operations
- Changes in other related Project Plans
- Requirements and matters not covered by the existing Project Plans
- Changes to Plans resulting from any comments from the OTS Independent Certifier
- Changes to Project Plans as directed by TfNSW's Representative under the Deed.

1.8 Agency and Stakeholder Consultation

The CTMP requires consultation with relevant stakeholders through the Traffic and Transport Liaison Group (TTLG), including the affected Local Councils, Roads and Maritime Services, emergency services and public transport operators. The plan has been forwarded to these stakeholders via the TTLG.

2 Structure of the Construction Traffic Management Plan

2.1 Structure

This CTMP is part of the Construction Environmental Management Plan (CEMP) (C280-EN-EMP-00-Rev 1.2) and also operates as the over-arching document to a set of site or station specific Traffic Management Plans (and their associated Traffic Control Plans and Temporary Works Drawings). Together they deal with the safe and effective management of traffic during the design and construction phase of the OTS Works.

The following documents and associated operational procedures are integrated with and are referenced from the CTMP:

- Traffic Staging Drawing(s);
- (Site Specific) Traffic Management Plan(s);
- Traffic Control Plans (TCP's);
- Temporary Works Drawing(s);
- Process instructions;
- Traffic instructions,
- Safety Health Environment Work Method Statements (SHEWMS), and
- Vehicle Movement Plans

The relationship between the various traffic management documents is shown in Figure 3. The NRT will prepare and submit this CTMP to the Independent Certifier and the TfNSW's Representative for approval. Further, the NRT will promptly submit each further version of the CTMP to the Independent Certifier and TfNSW's Representative as it is further developed, amended or updated.

2.2 Traffic Staging Drawings

Traffic Staging Drawings illustrate the traffic staging to be implemented during the delivery of the OTS Works.

These drawings:

- outline the overarching staging strategy,
- basic construction methodology,
- identify the areas for temporary works,
- define work areas, and
- indicate the available travel lanes.

The staging drawings are based on the design drawings, and are prepared in association with the construction program.

The Traffic Staging Drawings shall be consistent with and shall comply with the requirements of TfNSW G10. The Traffic Management Plans and associated Traffic Control Plans shall detail the sign-posted road works speed zones during the delivery of the NWRL OTS works.

The Traffic Management Plans and associated Traffic Control Plans shall more fully address the construction staging for the works at each precinct.

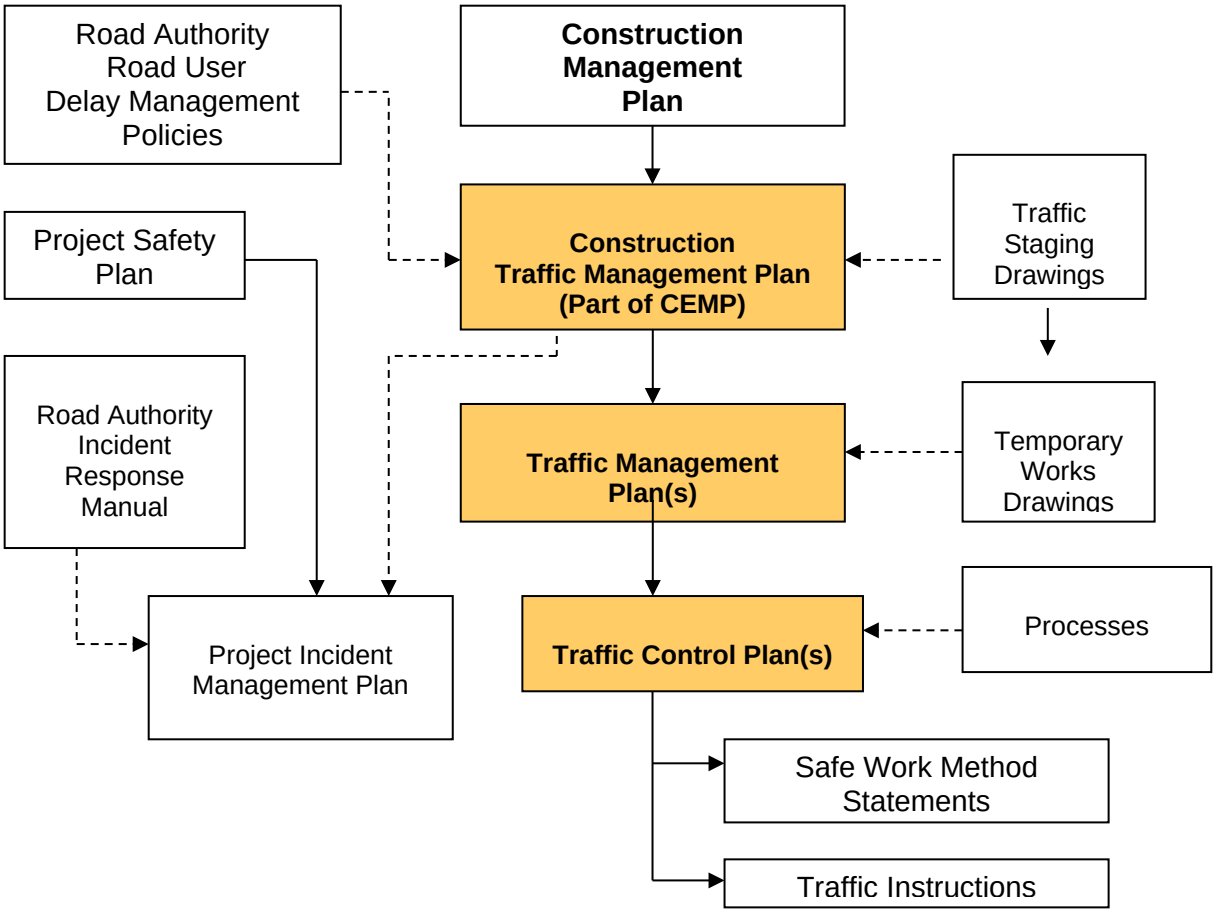


Figure 3 The relationship between the various traffic management documents

2.3 Traffic Management Plans

A site - specific Traffic Management Plan (TMP) will be prepared for the works at each of the stations and precincts. The TMPs will detail the specific road safety and traffic management measures that will be applied during the staged delivery of the elements of a specific area of the project. These plans are sometimes called Traffic Management and Safety Plan (TMSP). Therefore any reference to TMSP can be assumed to be referring to TMP.

The TMPs will be based on:

- the principles and strategies of this CTMP;
- the Traffic Staging Plans;
- the obligations under the Project Deed, TfNSW's G10 Specifications, environmental approvals; and,
- RMS Traffic Control at Worksites Manual, v4
- AS 1742.3 – Manual of Uniform Traffic Control Devices, Part 3: Traffic Control for works on roads
- Austroads Guide to Traffic Management – Part 2: Traffic Theory.

The NRT will plan all activities associated with the NRT's Work to avoid delays and detours that will inconvenience motorists and other road users (including pedestrians, cyclists and public transport) or interfere with traffic during periods of heavy traffic flows.

The NRT will revise the TMP as required, and implement more appropriate procedures, especially if the original pedestrian, cyclist, public transport service and road traffic management practices prove not to be fully effective.

A TMP shall include Traffic Control Plans (TCPs), and contain detailed provisions covering all of the following matters outlined in Section 5, Annexure A of the Works Authorisation Deed between TfNSW and RMS as follows:

The Traffic Management and Safety Plan must include Traffic Control Plans (TCPs) and contain detailed provisions covering (as a minimum) all of the following matters, or how the following outcomes are to be achieved, as the case may be:

a. how work practices and equipment must provide for the safe passage of all road users, including public transport, pedestrians and pedal cyclists, at all times during the Works;
b. comply with TfNSW Specification G10, traffic management practices set out in the TCAWS Manual, all RMS Technical Directions (current as at the date of this Deed), Austroads and RMS Supplements and Australian Standard AS1742.3 – 2008, other relevant Australian Standards and this CTMP;
c. contain scaled drawings of the affected section of road including lane widths, sign spacing and traffic control devices proposed. If temporary pavement marking changes are proposed then a TCP is also required for the pavement marking. The Designer of the TCP must have visited the site to ensure that the proposed location of signage is suitable and practical;
d. how access to private land is to be maintained or appropriate detours and arrangements provided;
e. contain appropriate signage to warn road users of construction vehicle entry/exit points and of excavations;
f. identify a Vehicle Movement Plan (where required by TCAWS) showing signage and other directional devices;
g. be signed and dated including the Designer's certificate number;
h. how and when road safety audits of all traffic management, compliance with the Traffic Management Plan and all TCPs are to be carried out;

i obtain approval from the RMS Representative and other relevant Government Agencies, prior to implementing any traffic adjustments or interruption, noting that that traffic changes or lane closures which are considered by RMS as likely to cause unnecessary delay or disruption to traffic will not be permitted;

j how TCPs must be regularly reviewed and modified in conjunction with the RMS Representative, traffic management personnel, and emergency services personnel and any other relevant Government Agency;

k where road works speed zone restrictions are proposed, a Speed Zone Authorisation is required;

l how traffic will be managed during any emergency identified in the Emergency Response Plan or other emergency work; and

m how TfNSW or its contractor must manage, control, maintain and operate all construction vehicles including to ensure:

- no loss of fuels, lubricants, loads or other substances, whether in the form of dust, liquids, solids or otherwise and also loads must be covered to prevent loss / nuisance;
- that no mud, dirt or other material is deposited onto any road which is open to the public by installing, maintaining and utilising wheel wash facilities or other devices; and
- that all vehicles involved in the Works must only enter, operate within or exit from a traffic flow in a manner which does not endanger the public and under suitably designed and appropriate traffic control measures.

The processes to comply with TfNSW's Specification G10 and other standards and guidelines are detailed in Section 7.

Each of the TMPs will be submitted separately to the RMS and the relevant local council for approval after including the detailed Traffic Control Plans.

The Traffic Management Plans will be complied with at all times, except:

(a) with the prior written approval of RMS to a particular departure from that Plan; and

(b) where any provision of, or anything done under, the RMS WAD requires something different, in which case the specific direction or requirement applies.

2.4 Temporary Works Drawings

Temporary Works Drawings are detailed design plans of changes to roadways that are required to facilitate construction staging.

These drawings are based on the traffic staging drawings and will include details of the required earthworks, drainage, horizontal and vertical alignments, carriageway cross sections, lane configuration, intersection treatments, property access modifications, environmental controls, pavement design, lines and sign posting, TCP, safety barriers and road side furniture.

The Design Manager will prepare temporary works drawings as required, for road widening, side-tracks, median crossovers, temporary pavement tie-ins, contra-flow utilising opposing carriageways, etc.

2.5 Traffic Control Plans (TCP's)

TCP's are diagrams that illustrate the signs, road markings and devices that will be installed to warn traffic, and guide it around, past or, if necessary, through the construction site. They cover both long term and short term traffic control.

Site specific TCP's will be issued to the relevant road authority (local council or TMC) for approval and will be regularly reviewed, modified or re-drawn as required.

In accordance with Clause 6.5.18(d) of Exhibit 1 Scope and Performance Requirements of the main body of the OTS Project Deed, all approved TCPs will be forwarded to TfNSW and OTS Independent Certifier.

The NRT is aware that the TMC Representative may order removal, or cessation of any activity, which causes delay to traffic or threatens the safety of the public, notwithstanding that approval has been given to the traffic change.

Short Term Traffic Control

Details of daily effects on and changes to traffic flow, vehicle and pedestrian / cycle movements on arterial and local roads will be prepared by the NRT and submitted to the TMC at least 10 working days before the work is required. This 10 working day period can be shortened on agreement from both the NRT and TMC.

Site specific TCP's based on the RMS Traffic Control at Work Sites Manual and AS1742.3 are considered appropriate.

Long Term Traffic Control

Details on traffic control devices required for longer than one shift are covered by the Temporary Works Drawings. If a TCP is required to cover a missing, or manage a deficient temporary works then the short term traffic control system outlined above will apply.

The NRT will keep records of the selection, approval and implementation of the TCP's; and provide copies of Location Risk Assessments (LRA) to the road authority's Representative (RMS's or Council) when submitting the TCPs for hold point release.

All approved TCPs will be accompanied by the following details, where appropriate:

- Regulatory traffic control devices
- temporary speed zoning signs;
- portable traffic signals (complying with the RMS Traffic Control at Work Sites Manual);
- temporary fixed traffic signals.
- Road occupancy licences including times of operations
- Special event details and management responses
- Over-dimensioned and over-mass vehicle particulars
- Bus route and bus stop changes and associated arrangements
- Truck call forward locations and arrangements

- Boom gate arrangements
- Safety barriers with a minimum offset of 0.5m unless otherwise approved by the relevant road authority.
- Portable traffic signal arrangements, and
- Temporary fixed traffic signal arrangements.

Development of traffic control plans will be in accordance with the following documents and order of precedence:

- TfNSW General Specification G10
- RMS Traffic Control at Worksites Manual
- AS 1742.3-2009 “Traffic Control Devices for Works on Roads”

The NRT will supply and erect signs, cover the Temporary Speed Zoning signs and keep them covered when the speed zone is not in use and remove the signs when the speed zone is no longer required as part of the provision for traffic.

Temporary fixed traffic signals will be installed in accordance with RMS's 'Traffic Signals Equipment Specification No SI/TCS/8' and associated Drawings.

2.6 Processes

Processes are instruction documents that detail how particular activities are carried out during the construction of the project. Specific Processes will be developed for traffic management activities as the need arises during the Upgrade.

2.7 Traffic Instructions

Traffic Instructions are issued for specific road safety and traffic management matters that are applicable project wide. The types of issues may relate to: unsafe practices, reinforcement of road rules, new or amended instructions, non-conformance to standards etc. The instructions will concisely detail the problem identified, the corrective action that needs to be applied and method of communicating the instruction to the relevant personnel. Each traffic instruction will have a unique reference number.

2.8 Safety, Health and Environment Work Method Statements (SHEWMS)

Where it is considered that a work process must be carried-out in a strictly controlled manner to ensure the specified safety and quality requirements will be met, a specific Safety, Health and Environment Work Method Statements (SHEWMS) will be prepared and implemented. The Traffic and Transport Manager will prepare SHEWMS, in consultation with workers, for working, on and/or adjacent to roadways.

2.9 Vehicle Movement Plans

Vehicle Movement Plan (VMP) demonstrates how the entry and exit of construction vehicles is to be satisfactorily managed to and from worksites onto the local roads and from local road to the nearest arterial roads. It consists of a diagram that shows travel paths for construction

trucks at key points (including turn around point, ramps and side roads) on routes from construction site to the nearest arterial roads.

VMPs shall be developed in accordance with the RMS Traffic Control at Work Sites Manual and shall include suitably designed site entry and exits to prevent endangering the public including Temporary Works intersection designs with public roads that maintain the same LOS as existed prior to commencement of construction activities.

In reflecting the work activity needs described by the Construction Program and the Traffic Staging Drawings, the VMPs will also meet the requirements of this Plan and the Site-Specific TMPs, in order that the Intended Purpose and Objectives described herein are met. The VMPs developed for each precinct on the OTS contract are described in Section 7 and shown in Annexure G.

3 Legal and other requirements

3.1 Relevant legislation

- *Environmental Planning and Assessment Act, 1979* (EP&A Act)
- *The Roads Act 1993.*
- *Heavy Vehicle National Law 2014*
- *Workplace Health and Safety (WHS) Act 2011.*

Section 138 of the *Roads Act 1993* requires that consent is obtained from the appropriate roads authority for the erection of a structure or the carrying out of work in, on or over a public road. If the applicant is a public authority, the roads authority must consult with the applicant, before deciding whether or not to grant consent.

RMS will take roads authority powers for those sections of the works identified in the RMS WAD as well as arterial roads within and adjacent to the OTS Works.

Local councils will be the roads authority for other roads that are affected by OTS works.

3.2 Compliance requirements

3.2.1 Works Authorisation Deed (WAD)

The Works Authorisation Deed – North West Rail Link – Operations Trains and Systems (OTS) Works (WAD) is the contractual agreement between TfNSW and Roads and Maritime Services (RMS) (as a delegated authority). These agreements set out the obligations of the Contractor as engaged by TfNSW (the Principal named in the WAD) in managing, maintaining and handing over any noted road or bridge asset affected by the Project. The WAD governs how road and bridge assets are safeguarded from impacts as well as how any resulting impacts are dealt with. It also specifies the activities that NRT must carry out to ensure sound management of the noted road and bridge assets.

As part of the agreement under WAD;

(a) RMS may direct NRT to alter the method or manner of carrying out the Works if in RMS's opinion such alteration is necessary as a consequence of any proposal by RMS to carry out any works on any Road including the widening or reconstruction of the Road. NRT acknowledges that it must comply with this direction within a reasonable period of time.

(b) Compensation will be paid by RMS to NRT for any such alteration, such that NRT is reimbursed for any additional cost incurred by NRT under the OTS Project Deed as a result of the alteration.

Annexure A, Technical and Other Requirements, of the RMS WAD references a number of other plans that relate to the management of construction and public traffic. These include:

- **Annexure A –** Section 5: *Traffic Management and Safety Plan* (TMSP); this document will describe how traffic will be managed for each of the construction sites. It includes *Traffic Control Plans* (TCPs) which will be prepared prior to construction and in advance of any application for road occupancy.

  Apart from this CTMP, a site-specific TMSP will be prepared for each precinct in the OTS works to the section of Annexure A and to incorporate any additional requirements prior to being submitted to the relevant road authority for approval.

- **Annexure A** – Section 6: Road condition reports and monitoring plans; these documents describe how road pavement conditions will be regularly monitored.

The WAD also includes all traffic signal works on the project. In accordance with the requirements of clause 13.10 of the WAD, NRT will consult with RMS regarding the advance notice requirement for release of signal specification hold points prior to installation of any traffic control signals. NRT will provide the required advance notice so that a representative of the RMS can witness the achievement of the specification.

3.2.2 Councils' Interface Agreements

TfNSW entered into a contractual agreement with each of Blacktown City Council, The Hills Shire Council and Hornsby Shire Council. The agreement sets out the obligations and procedure to manage the interfaces and regulate the relationships between the TfNSW, the NRT and each of the Local Council Authority in respect of the OTS works.

As part of the agreement with the Councils, each council must assess a road occupancy application within 7 days and respond to the NRT within 10 days. However, if the grant of the road occupancy will have a substantial effect on the traffic flows of the road, or roads on the application, then the Council will assess the application and respond to NRT as soon as reasonably practicable.

3.2.3 NWRL CEMF

Section 8 of the NWRL *Construction Environmental Management Framework* (CEMF) outlines the objectives for construction traffic management, documentation and consultation. It also provides examples of mitigation measures. The compliance matrix in Annexure A outlines the management and mitigation measures and indicates where they are addressed in this Plan or other documents linked to this Plan. The objectives of the framework are listed in Section 1.3 of this Plan.

3.2.4 ECRL Conversion to Rapid Transit REF

Section 6 of the ECRL Conversion to Rapid Transit Review of Environmental Factors identifies a range of environmental impacts including traffic impacts as a result of the construction of the ECRL Conversion. Section 7 outlines the environmental mitigation measures to manage the potential environmental impacts of the construction. The compliance matrix in Annexure A outlines the traffic related mitigation measures and indicates where they are addressed in this plan or other documents linked to this plan.

3.2.5 Norwest Station Subsurface Pedestrian Link REF

Section 7 of the Norwest Station Subsurface Pedestrian Link and Northern Entry Review of Environmental Factors provides a summary of safeguards and management measures to reduce potential environmental impacts of the construction of Norwest Station Pedestrian Link. The traffic related management measures and where are addressed in the plan or other documents are outlined in the compliance matrix in Annexure B.

3.2.6 Willoughby to North Chatswood 33kV

The Willoughby to North Chatswood 33kV Underground power line Review of Environmental Factors and Submissions provide a range of potential environmental impacts of the construction of the underground power line. These two documents and the Conditions of Approval contained in the March 2016 Determination Report for the Willoughby to North Chatswood 33kV underground feeder power line specified a number of management mitigation measures to manage the potential environmental impacts associated with the construction of the proposal. The traffic-related management and mitigation measures and where they are addressed in this plan or other documents linked to it are outlined in the comopliance matrix in Annexure B.

3.2.7 Rouse Hill Temporary Bypass Power EIA

The Rouse Hill Temporary Bypass Powerline EIA assessed the traffic impacts associated with the construction works. There will be short term and localised traffic impacts associated with this proposal, they are with the crossing of Schofields Road and Windsor Road/the TWay.

3.2.8 Specifications, policies and guidelines

A number of guidelines and specifications relating to traffic and transport management are referenced in the RFP, the WAD, TfNSW General Specification G10, environmental documents and the Project Approval. On award this section will be updated and a full list of Specifications, policies and guidelines will be provided. Relevant guidelines and specifications are included in Annexure C Applicable Specification, Standards and Guides.

3.2.9 Licensing and approvals

Annexure A Compliance Requirements will also include:

- Construction traffic management requirements prescribed by the Project's Conditions of Approval (CoA)
- Relevant sections of the Environmental Protection Licence issued to the project.

3.2.10 Construction Hours

In accordance with Conditions E12 of the Minister's Conditions of Approval, all construction activities associated with the OTS works shall be undertaken during the following standard construction hours:

- 7:00am to 6:00pm Mondays to Fridays, inclusive; and
- 8:00am to 1:00pm Saturdays
- at no time on Sundays or public holidays

However, notwithstanding the above conditions, track work, tunnel systems works and fit out works within the tunnel may be undertaken 24 hours, seven days a week.

In addition, work may be undertaken outside these hours where:

- the delivery of materials is required outside these hours by the Police or other authorities for safety reasons;
- it is required in an emergency to avoid the loss of lives, property and /or prevent environmental harm; or
- the work can be undertaken in such a way that would be inaudible at sensitive receivers.

The early works for the ECRL conversion to Rapid Transit will affect the existing train operations and will therefore be carried out at night and weekends during rail possessions as follows:

- Weekend: 2:00am Saturday - 4:00am Monday
- Weeknights:
  - 10:00pm – 4:00am for works for works that do not impact on North Shore Line at Chatswood
  - 12:00am – 4:00am for works that impact on North Shore Line at Chatswood

The main works for the ECRL conversion will be carried out in two stages as follows:

- From mid-2018, 24 hours, 7 days a week for 15 weeks. The existing ECRL is shut down and Hornsby to City service will be re-routed to Epping, West Ryde, and Strathfield.
- From Late 2018 to early 2019, 24 hours, 7 days a week. During this stage a temporary transport plan will be implemented involving replacement of ECRL service with five bus routes.

Refer to *Construction Noise and Vibration Management Plan* (CNVMP) for specific information about noise and vibration impacts relating to traffic and transport. The CNVMP outlines the process for ensuring traffic noise is included and assessed as a part of the Construction Noise Impact Statements developed for each work area.

4 Roles and responsibilities

4.1 Traffic and Transport Management Team

The NRT is required to engage a dedicated Traffic Team, to support the Delivery Team, focussing on the traffic management and access issues during the design and construction phase of the OTS works. Traffic and Transport Management Team will be responsible for the day to day implementation of this CTMP and all other associated obligations.

The Traffic and Transport Manager is the designated NRT representative on the Traffic and Transport Liaison Group (TTLG) for the duration of the design and delivery of OTS works.

Traffic and Transport Manager

The selected Traffic and Transport Manager:

- Has recognised and appropriate traffic management and/or traffic planning qualifications
- has a minimum 15 years traffic and transport management experience on similar projects, including preparation and implementation of traffic management plans and traffic control plans;
- has current RMS accreditation in ‘Prepare Work Zone Traffic Management Plan’;
- has level 2 Road Safety Audit qualification
- has experience in regulatory liaison and consultation;
- has the authority by the Director Design and Delivery to act freely and independently, to require all reasonable steps to be taken to avoid or minimise adverse traffic impacts and to stop the progress of the relevant part of the Project Works and Temporary Works when any non-conformity with the traffic management requirements of the environmental approval and is identified;
- reports to the Senior Project Manager Infrastructure and provides advice on upcoming and ongoing TMPs and VMP’s as relevant,
- full-time on or around the Construction Site during the design and delivery phase of the OTS works with responsibility for the management of traffic and at all times has the appropriate delegated authority to act on behalf of the NRT in respect of the OTS Works.

NRT has engaged a full-time Traffic and Transport (TTM) Manager whose responsibilities are limited to traffic and transport management activities of design and delivery phase of the OTS works**.** The TTM is Kamoru Adetunmbi who can be contacted at all times on mobile (0419 309 608). The address of TTM has been provided to the NSW Police Service, Quakers Hill Local Area Command which covers Phase 1 of the project. TTM’s contact details will be provided to other Local Area Commands of the NSW Police Service when construction works commence in the areas covered by Phase 2 of the project.

Using the required experience and qualifications, the Traffic and Transport Manager’s role and responsibilities shall include:

- Ensuring controlled copies of the CTMP are issued to the relevant construction and maintenance staff and the TfNSW’s Representative.

- Managing the dedicated Traffic Crew in the delivery of required maintenance activities, incident and emergency support, and providing support/resources during traffic switches.
- Providing summary reports to the Senior Project Manager Infrastructure and for inclusion in the Monthly Progress Report to the TfNSW's Representative including incidents, maintenance and repairs, asset and infrastructure inspections, road occupancies, traffic management plans submitted and/or approved, and any other relevant traffic related issues.
- Support the project in achieving the road safety and traffic management objectives.
- Provide technical advice to the design and construction teams in the areas of road safety, traffic engineering and traffic management.
- Assist with the planning, development and revisions of the CTMP, the Traffic Staging Plans and the Emergency and Incident Response Plan.
- Prepare Precinct/Station specific TMPs and submit to TMC for approval.
- Develop principles and strategies to ensure traffic management measures are planned, implemented and maintained in accordance with best practice, including all relevant safety regulations and standards.
- Establish contacts and maintain a productive relationship with the TMC, Local Councils, Police, emergencies service agencies, and other stakeholders on all traffic and incident related issues.
- Monitor and evaluate the ongoing effectiveness of traffic management activities of the project, including road user delays and where necessary suggest corrective actions to mitigate any deficiencies.
- Updating the CTMP in response to any incidents arising from the project's work or road authorities' maintenance requirements.
- Develop and monitor the project's road safety audit and inspection process, implement corrective actions and maintain detailed records.
- Manage the Road Occupancy Licence application process for all relevant local roads, state roads and Transitways, and maintain records.
- Manage the Speed Zone Authorisation (SZA) process including maintaining detailed records.
- Maintain detailed TCP records, including Location Risk Assessments (LRA's).
- Liaison with the Transport Management Centre, local councils, and the Traffic and Transport Liaison Group
- In coordination with the Stakeholder and Community Liaison Manager, develop a strategy for the dissemination of changed traffic condition information to potentially affected parties, including road users, local communities and transport operators.
- In coordination with the Sustainability and Environmental Manager manage the implementation of and the compliance reporting for the Traffic and Transport related Conditions of Approval.

Traffic Engineer

- Tertiary Qualifications in engineering, traffic management or road safety

- Current RMS accreditation in Design and Inspect Traffic Control Plan (orange card), or Prepare Works Zone Traffic Management Plan Licence.
- Postgraduate Qualifications in Traffic Engineering or Transport Planning
- Level 2 (Senior) Road Safety auditor accreditation
- 5 years traffic engineering experience
- Experience in Preparing Work Zone Traffic Management Plan and obtaining ROL
- Experience in development of Traffic Management Plans and Traffic Control Plans
- Knowledge of relevant RMS and local Council requirements in traffic management
- Ability to liaise with key stakeholders
- support the project in the functional area of traffic management

- Manage the activities of the traffic management contractor
- Liaise and maintain productive relationship with RMS, TMC, local councils, and TTLG members
- Liaise and maintain productive working relationships with construction teams

- Planning of cost effective Traffic Control that achieves the traffic management and safety objectives of the project
- Assist the TTM in the review and forecast of traffic control expenditure with the construction teams
- In the event of a traffic incident or personnel hit by Live Traffic on the road network in the vicinity of the site, immediately notify TfNSW and TMC and record knowledge of the facts and photograph the approach to the incident site including the location of all safety devices and signs as soon as possible after the incident. Provide report to Traffic & Transport Manager for reporting to TfNSW and TMC.
-

Traffic control Supervisor (Supplied by Traffic Control Sub-Contractor)

- Have current RMS accreditations in RMS Blue Card, RMS Yellow Card and RMS Red Card.
- Manage the day to day operations and work load of the traffic control teams
- Manage the implementation of traffic control layouts ensuring adequate number of staff and equipment on-site
- Undertakes pre-starts for each traffic control teams at the beginning of every shift.
- Provides relevant copies of TCPs, ROLs and SZAs to traffic control teams
- Undertakes daily inspections of short-term traffic control, maintains records and provide copies to TTM weekly.
- Installs and maintains long-term traffic control layouts
- Manages all VMPs for construction deliveries, haul movements, site accesses and crane works on-site.
- In conjunction with the TTM, investigate traffic related incidents/ hazards, identify preventative measures and manage the implementation of actions to mitigate future occurrences.
- Ensure the OH&S needs of all staff, especially traffic control team members, are met.

- Assists with the development of traffic control plans
- Any other duties as directed by the Traffic Control Team

Team Leader (Supplied by Traffic Control Sub-Contractor)

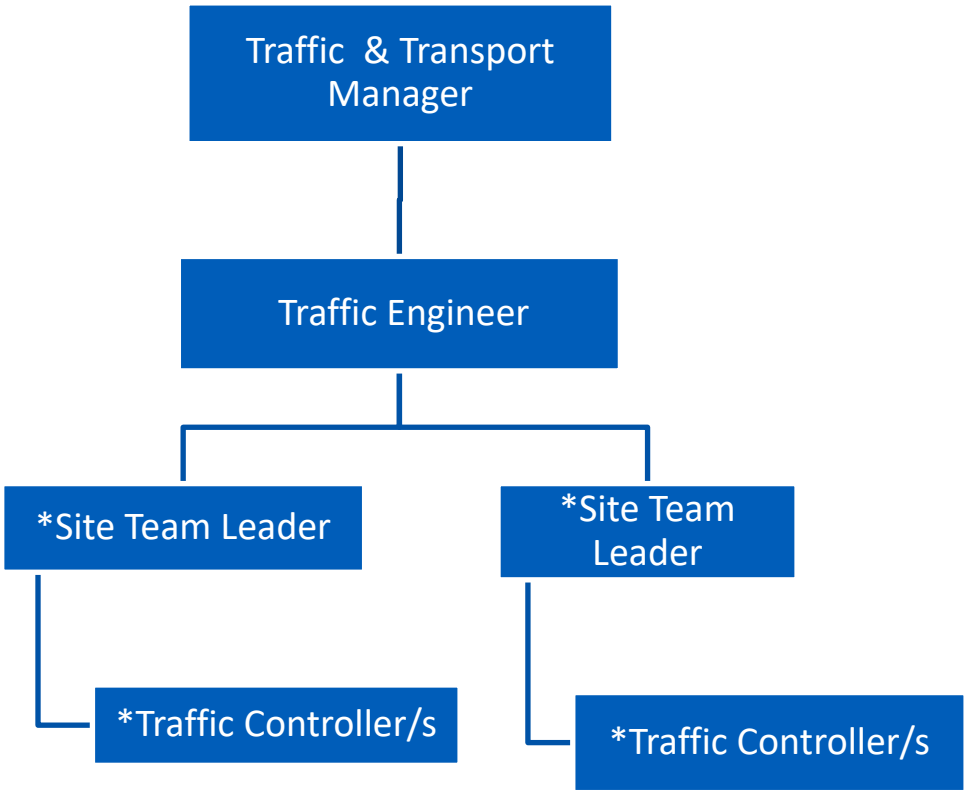
- Is a senior member of a traffic control team
- Have current RMS accreditations in RMS Blue Card, RMS Yellow Card and RMS Red Card.
- Implements Traffic Control Plans, including installation and removal of all necessary signs and devices as shown on the TCP.
- Maintains traffic controls signs, devices and plant to a high standard of cleanliness.
- Relocate traffic control plant and equipment such as portable VMS, trailer-mounted arrow boards, vehicle-mounted arrow boards, crash cushions and vehicle-mounted attenuators.

Traffic Controller (Supplied by Traffic Control Sub-Contractor)

- Have current RMS accreditations in RMS Blue card and RMS Yellow card.
- Implements Traffic Control Plan under the guidance of the team leader.
- Maintains traffic control signs, devices and plant to a high standard of cleanliness
- Provides assistance during incidents, including direction from emergency services, e.g. Police.

NRT will engage a specialist traffic control organisation registered under RMS' Registration Scheme Category G (Traffic Control) who will supply traffic control personnel (the traffic supervisor, team leaders and traffic controllers) when required.

Formal lines of communication between traffic management personnel on the project are shown on the organisation chart in Figure 4.



*Traffic Supervisor, Site Team Leader and Traffic Controller/s are to be supplied by the traffic control sub-contractor engaged by the NRT. Traffic Supervisor will only be required during dayshifts when traffic control is being implemented in at least three worksites at a station.

Figure 4 Traffic Management Organisation Chart

4.2 Key Construction Personnel

The responsibilities of other key project personnel in relation to traffic and transport management are listed in Table 1below.

Table 1 Traffic and Transport roles of construction Personnel

Roles	Responsibilities
Operations Manager	• Oversee implementation of the *Construction Traffic Management Plan* during delivery of the OTS Works • Coordinates traffic management activities within the construction team • Provides direction and support to the TTM to enable effective planning of temporary traffic management arrangements • Ensures all construction team members receive the appropriate training

Roles	Responsibilities
General Superintendent	• Allocate field resources as required • Supports the delivery of the road safety and traffic management objectives • Assists with the implementation of the CTMP. • Ensures all field members involved with traffic management receive the appropriate training
Environment and Sustainability Manager	• Ensure compliance of Traffic Management activities with the project's environmental and sustainability obligations.
Commercial Manager	• Ensure that requirements associated with traffic and transport are accounted for during procurement of materials and services
Station and Precinct Managers/ Above-ground Managers/ Underground Managers	• Plans work activities and identify the required traffic management to facilitate works • Liaise as required with the Traffic and Transport Manager, Planning/Approvals Manager and the Environment and Sustainability Managers in relation to transport and traffic management matters • Prepares VMPs for construction deliveries, haul movements and crane works within site. • Ensure compliance with this Plan • Actively participates in the response to unplanned incidents/ hazards, and task incident management teams accordingly, to make the site safe • Actively participates and manages the implementation of actions to mitigate, future occurrences of unplanned incidents
Stakeholder and Community Liaison Manager	• Represents the project for all community and stakeholder issues • Conducts consultation with stakeholders and the wider public for traffic and access issues and provides an ongoing liaison role. • Attend TTLG meetings when required • Liaise with Station or Precinct Managers to resolve traffic complaints
Sustainability Manager	• Oversee tracking and reporting of traffic and transport requirements associated with sustainability targets • Ensure compliance with environmental approvals and planning documents associated with the CTMP
Environment Coordinators	• Monitor traffic management procedures during construction works and manage environmental aspects • Review and update SEPs for the duration of construction activities in consultation with TTMT
Project Engineers/Site Engineers/Supervisors	• Implement traffic management activities during construction works

Roles	Responsibilities
Safety Manager	• Represents the project for all work safety and health matters • Conducts inspections of Traffic Control Subcontractor in respect to safety • Prepares toolboxes and inductions to address project traffic and transport issues. • Reviews and approves SHWMS
Site personnel	• Compliance with this Plan
Drivers (construction)	• Compliance with this Plan

5 Construction Activities and Access Points

This process identifies the construction activities and their potential impacts. The process includes details of the: construction activities; construction site office(s); access points; traffic generation; major traffic diversions; existing road network; and specific construction impacts.

The Traffic and Transport Manager in conjunction with the Safety Manager and Precinct Manager will sequence construction works with the objective to; maximise safety for workers and road users by isolating work areas from traffic flow, maintain existing capacity where possible, minimise road user delays, minimise heavy vehicle movements during peak periods, and minimise disruptions to pedestrians, cyclists and buses.

The effective planning of all construction activities is the key to achieving these objectives.

5.1 Construction sites and activities

OTS Works will take place simultaneously at multiple sites along the alignment of the NWRL Project. The activities occurring at each site will determine the traffic management measures needed to mitigate the impacts on the road network in the vicinity of the site.

The areas chosen for the site compounds have been considered by NRT to offer the best proximity to the worksites to minimise travel time on site. There were numerous physical and logistical constraints to locating the compounds and the best possible sites have been chosen. Plans showing the location of construction sites are provided in Annexure D. Site compound layouts at each construction site will be included in the precinct specific Traffic Management Plans.

All site office access points will be: located at points that, as a minimum, provide safe intersection sight distance (SISD) designed to accommodate the turning movements of the largest vehicle servicing the site, and appropriately signposted. Further, security fencing, flood lighting and an appropriate security system to restrict public access to the compound areas will be provided.

The proposed construction sites and a summary of the primary construction activities are provided in Table 2 below.

Table 2 Construction site location and activities

Construction Sites	Construction Activities
Epping Services Facility	• Construction and fit out of services facility • Installation of rail track and rail systems • Landscaping
Cheltenham Services Facility	• Construction and fit-out of services building • Reinstatement and upgrade of public amenities (netball courts, playgrounds, walking tracks and car parking) • Installation of rail systems • Landscaping

Construction Sites	Construction Activities
Cherrybrook Station	• Station and service building construction and fit-out • Installation of rail track and rail systems • Construction of transport interchanges (bus bays and taxi ranks), park-and-ride facilities (400 car parking spaces), kiss-and-ride facilities and internal roads including access ways to the services buildings. Road kerb realignment and pavement widening on Franklin Road between Castle Hill Road and Neale Avenue • Isolated road kerb realignment and pavement widening on Robert Road between the station access road and John Road • Kerb realignment and pavement widening on Robert Road between the Castle Hill Road intersection and the station access road • Construction of pedestrian and cycle connections, including footbridge over railway, footpath upgrades between Castle Hill Road and Neale Avenue and construction of bicycle storage areas • Landscaping
Castle Hill Station	• Station and service building construction and fit-out • Installation of rail track and rail systems • Construction of access roads to services buildings, transport interchanges (bus bays and taxi ranks) and kiss-and-ride facilities • Construction of bicycle storage areas • Landscaping
Showground Station	• Station and service building construction and fit-out • Installation of rail track and rail systems • Construction of transport interchanges (bus bays and taxi ranks), park-and-ride facilities (600 car parking spaces), internal roads, including access to the services buildings, and kiss-and-ride facilities • Construction of bicycle storage areas • Construction of a new footpath • Landscaping
Norwest Station	• Station and service building construction and fit-out • Installation of rail track and rail systems • New signalised intersection on Norwest Boulevard • Road works to Brookhollow Avenue • Construction of transport interchanges (bus bays and taxi ranks), internal roads including access to service buildings, and kiss-and-ride facilities • Landscaping
Bella Vista Station	• Station and service building construction and fit-out • Installation of rail track and rail systems • Construction of transport interchanges (such as bus bays and taxi ranks), park and ride facilities (800 car parking spaces), internal

Construction Sites	Construction Activities
	roads including access to service buildings, and kiss-and-ride facilities • Construction of pedestrian and cycle connections, including a footbridge over Old Windsor Road • New signalised intersection at Celebration Drive and Lexington Drive • Major road works to Celebration Drive • Landscaping
Balmoral Road and Memorial Avenue site	• Installation of rail track and rail systems • Possible use for plant and material deliveries into the tunnel • Landscaping
Kellyville Station	• Station construction and fit-out • Installation of rail track and rail systems • Construction of transport interchanges (such as bus bays and taxi ranks), park-and-ride facilities (1,400 car parking spaces), internal roads including access to service buildings, and kiss-and-ride facilities. Widening of Samantha Riley Drive and installation of a new signalised intersection • Construction of pedestrian and cycle connections, including a footbridge over Old Windsor Road • Landscaping
Windsor Road site	• Rail systems fit-out, rail track installation • Landscaping
Samantha Riley Drive to Windsor Road	• Rail systems fit-out, rail track installation • Landscaping
Old Windsor Road to White Hart Drive	• Installation of rail track and rail systems • Southern bus layover • Landscaping • Traction substation
Rouse Hill Station	• Station construction and service building fit-out • Installation of rail track and rail systems • Construction of transport interchanges (such as bus bays and taxi ranks), access to service buildings, and kiss-and-ride facilities • Construction of bus-only T-Way; reconfiguration of Tempus Street, White Hart Drive and Rouse Hill Drive • Northern bus layover • Landscaping
Windsor Road Viaduct	• Installation of rail track and rail systems • Landscaping

Construction Sites	Construction Activities
Windsor Road viaduct to Cudgegong Road	• Installation of rail track and rail systems • Landscaping
Cudgegong Road Station to Rapid Transit Rail Facility	• Station construction and service building fit-out • Installation of rail track and rail systems • Construction of access to stabling yard facilities • Construction of shared user path; construction of transport interchanges (bus bays and taxi ranks), park-and-ride facilities (1,000 car parking spaces), internal roads including access to service buildings, and kiss-and-ride facilities • New Tallawong Road overbridge • New Cudgegong Road overbridge • New Cudgegong Precinct Road overbridge • Construction of pedestrian bridge • Landscaping • Construction of stabling yard and associated facilities
ECRL sites (Subject to other approvals)	• Enabling works involving segregation of ECRL from the Sydney Trains heavy rail system • New signalling and control systems • Station modifications including installation of platform screen doors • Traction power upgrade and segregation • Installation and removal of turnout and crossover • Installation of chiller units
Norwest Station Subsurface pedestrian Link	• Construction of a surface entry portal on the northern side of Norwest Boulevard • A 11.5m deep vertical entrance shaft • A 40m long subsurface pedestrian tunnel extending under Norwest Boulevard with a concrete base slab • Improvements to the footpath and planting around the entrance • A breakout panel (false wall) at the northern end of the tunnel
Willoughby to North Chatswood 33kV	• Installation of underground conduits and cables • Installation of cable tray over the existing Sydney Trains rail track • Installation of associated infrastructure, including jointing bays, pulling , communication and acces pits

5.2 RMS WAD Packages

As part of the OTS approval, RMS reached agreement with the TfNSW to carry out some roadworks as part of the NWRL OTS works. These works are outlined in Annexure G and Annexure H of the RMS Works Authorisation Deed for the NWRL OTS Works. The

roadworks include Intersection and Road Modifications and Road Condition and pedestrian bridges, and are outlined in Table 3. Plans showing these works are provided in Annexure E.

Table 3 RMS Authorised Road Works

Package	Description of Road Works
1	Proposed Removal of Construction Access Points constructed by TSC, SVC and OTS at the following locations: • Beecroft Road, Epping Service Facility • Castle Hill Road at Franklin Road, Cherrybrook Station • Castle Hill Road at Glenhope Road, Cherrybrook Station • Old Northern Road at McMullen Avenue, Castle Hill Station • Old Northern Road at Terminus Street, Castle Hill Station • Showground Road, Showground Station • Balmoral Road, Kellyville • Memorial Avenue and Northwest T-way, Kellyville • Riley T-way station, Samantha Riley Drive, Kellyville Station • Windsor Road and Northwest T-way, Kellyville • Sanctuary Drive and T-way, Kellyville • White Hart Drive, Rouse Hill • Windsor Road median island, Rouse Hill • Schofields Road, Rouse Hill
2	Beecroft Road – Proposed extension of the existing deceleration lane to the south and construction of heavy duty vehicular crossing
3	Castle Hill Road at Franklin Road – Extension of the existing left-turn slip lane to provide entry to Franklin Road
4	Castle Hill Road at Glenhope Road – Adjustments to the linemarking and existing traffic signals and associated drainage
5	Castle Hill Road at New Precinct Street A – Adjustment of the kerb lines, linemarking and provision of new traffic signals
6	Old Northern Road at Terminus Street – Establishment or modification of traffic signals, adjustment of kerb lines and linemarking
7	Old Northern Road at Old Castle Hill Road –Adjustment of kerb lines, marked footcrossings, linemarking and existing traffic signals of the five-way intersection at the intersection of Old Northern Road, Old Castle Hill Road, Castle Street and Crane Road.
8	Old Northern Road east of Crane Road – Conversion of traffic to two-way and installation of a mid-block marked footcrossing.
9	Showground Road at New Precinct Street B – Modification of traffic signals at the intersection of Showground Road and New Precinct Street B.
10	Carrington Road at Middleton avenue – Establishment of traffic signals at the intersection of Carrington Road and Middleton Road

Package	Description of Road Works
11	Carrington Road at Doran Drive – Establishment of traffic signals at the intersection of Carrington Road and Doran Drive.
12	Norwest Boulevard at Brookhollow Avenue – establishment of new traffic signals at the intersection of Norwest Boulevard and Brookhollow Avenue
13	Norwest T-way at Bella Vista – Construction of a new priority controlled intersection and associated works at the intersection of New Precinct Street D and the T-way.
14	Celebration Drive at Old Windsor Road – Adjustment of existing traffic signals, linemarking and islands on Old Windsor Road to allow for widening of Celebration Drive.
15	Celebration Drive at Lexington Drive – Establishment of new traffic signals and widening of Celebration Drive.
16	Samantha Riley Drive at New Precinct Street B – Establishment of new traffic signals and intersection of Samantha Riley Drive and New Precinct Street B.
17	Norwest T-way at Rouse Hill – Extension of the existing Norwest T-way from White Hart Drive to the Rouse Hill Drive.
18	Northern Bus Layover – Establishment of a new 9 Space Bus Layover north of Rouse Hill Drive and Driver Facility.
19	Cudgegong Road– Establishment of a new intersection and traffic signals at Cudgegong Road and New Precinct Street A.
20	Tallawong Road – Establishment of a new intersection and traffic signals at Tallawong Road and New Precinct Street A.
21	Modification of Windsor Road between White Hart Drive and Commercial Road and modification of the four way intersection of Windsor Road, Rouse Hill Drive and Schofields Road.
25	Old Windsor Road at Bella Vista Station – Construction of a pedestrian bridge over Old Windsor Road with associated stairs and lifts or ramps at Bella Vista Station
26	Old Windsor Road at Kellyville Station – Construction of a pedestrian bridge over Old Windsor Road with associated stairs and lifts or ramps at Kellyville Station

Source: OTS Works Authorisation Deed – Annexure G and Annexure H.

5.3 Construction staging

The initial construction program outlines the sequence and staging of construction activities across all sites and shows that there will be some overlap of activities as shown in **Error! Reference source not found.** below.

As availability of the construction sites for OTS works depends on the completion of either the TSC or SVC works, the sites will be available at different times. However the following works do not depend on the TSC or SVC works and will be able to commence before the others:

- RTRF Works
- Cudgegong Road Station
- Kellyville Station Pedestrian Bridge
- Bella Vista Station Pedestrian Bridge
- ECRL Conversion to Rapid Transit

The remaining sites will be available mainly between 2016 and 2017 as shown on the site access schedule provided in Annexure F.

The Details of construction works and staging, impacts and mitigation measures at each precinct will be provided in the Traffic Management Plan for each precinct. The construction timeframes for the OTS works are shown in **.** In the table below. A more detailed construction timeframes for each precinct will be included in future revision of the CTMP.

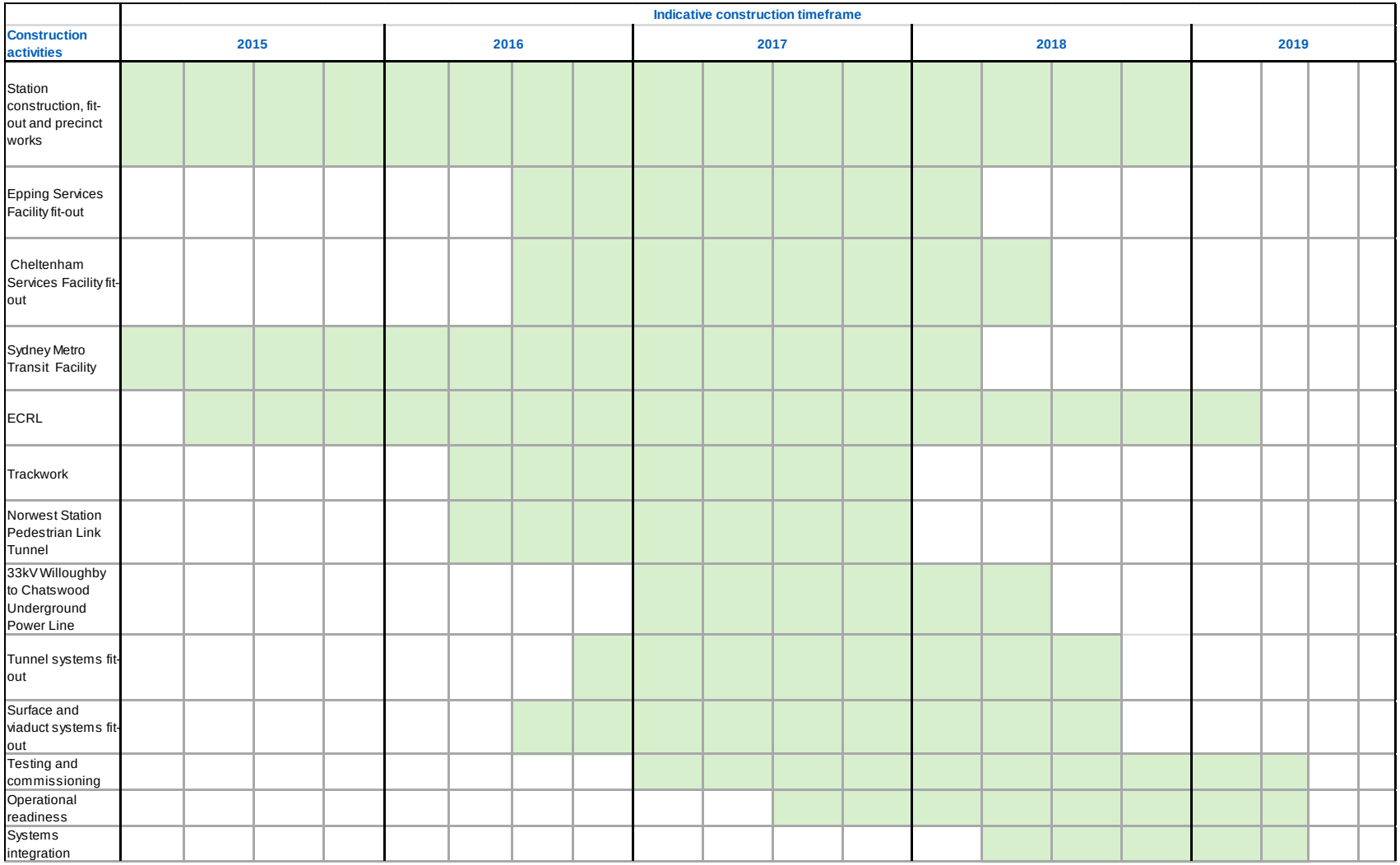


Figure 5 Construction Timeline for the OTS Works

5.4 Traffic Generation

Removal of spoil, installation of rail infrastructure and construction of station precincts (including transport interchange facilities and landscaping) will require a range of vehicle movements involving cars, light vehicles, heavy vehicles and specialised vehicles, mainly associated with the delivery and on-site movement of materials.

The traffic generation is based on the experience of previous road projects with similar staff numbers. The adopted vehicle occupancy rates for: office staff, design staff, managers, supervisors, and technical staff, are 1 per vehicle, and 3 per vehicle for construction workers.

Due to the nature of their work, managers, supervisors, surveyors, soil lab technicians, and plant mechanics will conduct regular trips throughout the day. In this regard, it has been estimated that these staff on average will undertake two in and out movements per day. All other staff will undertake one in and out movement per day.

The typical site traffic flows will occur between 0630 and 1830 Monday to Friday, and between 700 and 1330 Saturdays. The estimated evening peak hour is based on most staff / workers departing between 1630 and 1830, (approximately 50% of total vehicles departing per hour).

Estimates of the potential traffic generation at each precinct are discussed in the Site-Specific TMPs for each precinct. **in table 4.** summarises the potential traffic generation during the peak of construction activities at each of the construction sites. The volume of traffic requiring access to and egress from each of the precincts will fluctuate throughout project delivery and is influenced by factors such as construction programming, construction hours and requirements for delivery of materials and equipment.

Table 4 Traffic Generation of Construction Sites

Construction site	Average Daily Heavy Vehicle Movement	Average Daily Light Vehicle Movement
Epping Services Facility	30	100
Cheltenham Services Facility	20	68
Cherrybrook Station	42	300
Castle Hill Station	30	228
Showground Station	40	292
Norwest Station	62	225
Bella Vista Station	87	500
Kellyville Station	50	185
Rouse Hill	40	185

Construction site	Average Daily Heavy Vehicle Movement	Average Daily Light Vehicle Movement
Cudgegong Road Station & RTRF Facility	200	606
ECRL Weekend Rail Possession	12	168
Major ECRL Shutdown#	12	194
Chiller Units Construction	2	30
Main Project Office (Macquarie Park)	0	99*
Norwest Station Pedestrian Link Tunnel	20	40
Willoughby to Chatswood 33kV Underground Power Supply	5	60

During major works when existing Epping to Chatswood Rail Service is removed temporarily.

*The average daily light vehicle movement for the main project office is low due to the non-availability of parking for the majority of staff. All staff, other than senior management will commute to work by public transport (trains and buses).

The construction traffic generated at each precinct informs the management strategies and mitigation measures that will be implemented to minimise the impacts associated with traffic and access. The impacts of the construction traffic generated by each station or precinct have been assessed in the Site Specific TMPs.

5.5 Traffic Noise Impacts

Working hours will generally be as follows:

- Below-ground activities east of Bella Vista may occur 24 hours per day, 7 days a week
- Noisy activities at noise-sensitive locations will be restricted during evening and night-time periods
- Most work from Tallawong Road to Bella Vista (on the above-ground alignment) will be performed only during standard construction hours only.

Heavy vehicle movements will be minimised during peak periods and special events, particularly where sites have access to arterial roads, are located in busy centres, where construction traffic can increase traffic congestion or interfere with peak shopping activities.

Specific information on noise and vibration impacts of the OTS project is provided in the *Construction Noise and Vibration Management Plan* (CNVMP).

5.6 Construction workforce parking management

Limited workforce parking is available at some of the construction sites; however, other sites will have adequate space for workforce parking. There is also the opportunity for some of the workforce to use public transport for commuting to and from the construction sites. Where feasible, this will be encouraged. Through induction and regular toolbox , NRT will discourage parking in local roads. In addition NRT will not seek exemption from Council's parking regulation at any of its worksites.

Parking demand at each precinct is based on the vehicle occupancy rates adopted in Section 5.4, that 1 per vehicle for office/design & managers, and 3 per vehicle for workers. The estimated demand for carparking and the available parking supply at each precinct are outlined in Table 5 below.

Table 5 Worksites Carparking Supply and Demand at Peak of Activities

Precinct/ Station	Maximum Office/ Design Staff, Managers & Supervisors	Parking Demand (1)	Maximum Trades/ Workers	Workers Parking Demand (2)	Peak Parking Demand (1) + (2)	Parking Supply (Available Parking Spaces)
RTRF & Cudgegong Road Station	93	93	435	145	238	350
Rouse Hill Station	22	22	165	55	77	80
Kellyville Station	22	22	165	55	77	100
Bella Vista Station	93	93	275	92	185	250
Norwest Station	27	27	200	67	94	50
Showground Station	47	47	200	67	114	175
Castle Hill Station	27	27	200	67	94	60
Cherrybrook Station	45	45	225	75	120	120
Cheltenham Service Facility	15	15	75	25	40	40
Epping Service Facility	15	15	75	25	40	50
Epping ECRL#	60	60	140	47	107	50#
Macquarie Uni ECRL	5	5	15	5	10	10#

Precinct/ Station	Maximum Office/ Design Staff, Managers & Supervisors	Parking Demand (1)	Maximum Trades/ Workers	Workers Parking Demand (2)	Peak Parking Demand (1) + (2)	Parking Supply (Available Parking Spaces)
Macquarie Park ECRL	5	5	15	5	10	10#
North Ryde ECRL	5	5	15	5	10	10#
Chatswood ECRL	60	60	140	47	107	107#
Main Project Office	350	350	0	0	350	99
Warehouse	12	12	30	10	22	30
Norwest Station Pedestrian Link Tunnel	4	4	16	16	10	20
Willoughby to Chatswood 33kV Underground Power Supply	4	4	24	8*	12	4

(*The workforce, 10-30 people, for the 33kV will be mobile spending between one to five days at worksites which are located in built-up areas. It is therefore not practical to provide dedicated carparks at each work location. However, essential work vehicles will be parked within the work areas in the closed sections of the affected street. Other personal vehicles will be parked in public long-term carparks in Chatswood CBD, such Wilson Parking and Meriton Serviced Apartment Parking and workers carpool to site. Engineers and office staff will be based in the project office located in Victoria Avenue, Chatswood).

As shown in Table 5, estimated workforce parking demand cannot be met at some stations or precincts by the available parking spaces due to the limited area of worksite. These include Norwest Station, Castle Hill Station, the Main Project Office, the ECRL stations and the mobile worksites for the Willoughby to Chatswood 33k. At these precincts the measures that will be implemented to discourage parking on local roads are as follows:

- Norwest Station: Only 50 parking spaces can be provided at the worksite, compared to the estimated workforce parking demand of 94, resulting in a shortfall of 44 parking spaces. Workers will be asked to park at Bella Vista Station worksite and then carpool with four to five workers coming to Norwest Station in one car. It should be noted that Bella Vista Station will have 250 parking spaces for the estimated parking demand of 185 parking spaces. Workers will also be encouraged to take advantage of the following public transport services (buses) on Norwest Boulevard to Castle Hill, Baulkham Hills and Parramatta:
  - Route 610: ROUSEHILL TO CITY
  - Route 612: RILEY T-WAY TO MILSONS POINT

  - Route 614x: CRESTWOOD TO CITY
  - Route 615x: KELLYVILLE TO CITY
  - Route 618: CITY TO NORWEST
  - Route 619: ROUSE HILL - CASTLE HILL TO MACQUARIE PARK
  - Route 628: NORWEST TO MACQUARIE PARK
  - Route 715: SEVEN HILLS TO BELLA VISTA
  - Route T60: CASTLE HILL TO PARRAMATTA VIA T-WAY
  - Route T62: T -WAY- PARRAMATTA - BELLA VISTA TO CASTLE HILL
  - Route T64: T - WAY - PARRAMATTA - BELLA VISTA TO ROUSE HILL
  - Route T70: BLACKTOWN TO CASTLE HILL VIA NORWEST AND BELLA VISTA
  - Route 745: ST MARYS TO CASTLE HILL VIA NORWEST BOULEVARDE

- Castle Hill Station: Limited Car parking for staff at the Castle Hill Station will be in a basement parking with a driveway off Old Castle Hill Road. 60 parking spaces will be provided for a potential parking demand of 94 spaces, resulting in a short-fall of 34 parking spaces. Workers will be asked to park at the Showground Station worksite and then carpool with four to five workers coming to Castle Hill Station in one car. Showground Station will have 175 parking spaces for the estimated parking demand of 114 parking spaces. Workers will also be encouraged to take advantage of the following public transport services (buses) at the Castle Hill Bus Interchange to the City, Hornsby, Parramatta and the Hills District:
  - Route 600:
  - Route 603:
  - Route 604:
  - Route 610:
  - Route 612:
  - Route 619:
  - Route 621:
  - Routes 631 - 639: Services between Castle Hill and Beecroft, Pennant Hills, West Pennant Hills, Dural and Pitt Town.
  - Route 644:
  - Route 651:
  - Route 715
  - Routes T60 &T62 & T64: CASTLE HILL TO PARRAMATTA and ROUSE HILL VIA T-WAY
  - Route M60: HORNSBY AND CASTLE HILL TO PARRAMATTA
  - Route M61: CASTLE HILL TO CITY
- Main Project Office: 99 carparking spaces will be provided for senior management staff out the 350 employees at the main project office. The remaining employees will be required to commute to work by public transport. The main project office is located in Macquarie Park within walking distance of Macquarie Park Train Station on the Epping to

Chatswood Rail Link (ECRL). The ECRL has 4 services per hour in each direction with a stop at every station, including Macquarie Park. These services, together with around 30 bus routes services between Macquarie Park/ North Ryde area from Castle Hill, Chatswood, and North Sydney would provide excellent public transport facilities to the main compound during construction of the OTS Works.

Staff will be discouraged from driving to work as on-street parking in Macquarie Park is restricted during the daytime and pay parking scheme operates on the majority of the streets in the Macquarie Park Business Precinct. It is considered that staff working in the OTS main project office will commute to work by public transport as staff in the existing businesses in Macquarie Park currently does. A number of pool vehicles will also be available for staff for site inspection.

- ECRL Stations: Parking at ECRL will be managed as follows:
  - Epping: Staff will park at Epping Services Facility Site. The remaining staff will come to work by public transport (rail and buses)
  - Macquarie University & Macquarie Park: Staff will park at ticket parking facilities in in the vicinity of Waterloo Road. The remaining staff will come by public transport.
  - North Ryde: Staff parking will be accommodated in the station precinct behind the Train Station on the southern side of Delhi Road.
  - Chatswood: Staff will use the all-day paid parking facilities available in Chatswood CBD. The remaining staff will come by public transport.

- The workforce for the 33kV, 10-30 people, will be mobile spending between one to five days at worksites which are located in built-up areas. It is therefore not practical to provide dedicated carparks at each work location. However, essential work vehicles will be parked within the work areas in the closed sections of the affected street. Other personal vehicles will be parked in public long-term carparks in Chatswood CBD, such Wilson Parking and Meriton Serviced Apartment Parking and workers carpool to site. Engieers and office staff will be based in the project office located in Victoria Avenue, Chatswood. Workers will also be encouraged during induction to take advantage of the public transport services (Chatswood and Artarmon train stations, and Sydney buses) available in close proximity to the work areas.
- All workers operating between Bella Vista Station and Kellyville Station will be able to park at the site compound provided at each work area. Likewise workers operating at the western end of the project (Cudgegong Road and RTFR Facility) will be able to park in the site compound. However, some of the workers operating at the Rouse Hill Compound will use public transport facilities provided via the Rapid Bus Transitway. The remaining workers will have opportunity to park in the RTRF facility compound or come by train via Schofields Station and be ferried to site by a mini-bus from Schofields Station or RTRF compound.
- The measures to discourage parking on local roads will be enforced through information provided at induction and regular toolbox talks on the requirement of the project. During the induction of every staff, staff will be advised that parking on local streets is not permitted, and that staff should either park in the site compound where it is available or use public transport. Staff who failed to comply with the Project's parking management plan at each precinct will face disciplinary action as advised during induction. Parking management will be on the weekly tool-box topic at each worksite, emphasising that

parking on local streets is not acceptable to the project. With these measures, parking on local streets in the vicinity of construction sites will be minimal.

These measures will ensure that employees at the OTS construction sites are discouraged from parking on local roads.

5.7 Material haulage operations

NRT recognises that the effective management of haulage operations is not only critical to the success of the project, but is necessary to minimise the impact on the road network.

The material will be transported across the site and to the handling yard using single unit trucks, with and without dog trailers.

The construction of this project will involve excavation and earthworks to achieve the final alignment. To minimise the impact, NRT has fine-tuned the alignment to achieve an earthworks balance, which minimises the need to transport spoil and fill. In addition, NRT will reuse the material generated by excavations to reduce the need for transportation. For example, topsoil will be stripped and recovered for reuse in landscaping and revegetation.

The locations of schools and childcare centres along proposed haulage routes on local roads would be considered during the route identification. Where schools and childcare centres are identified on local roads proposed as haulage routes, these roads would be avoided wherever feasible and reasonable to do so. This will be achieved by:

- assessing alternative access routes around the school etc.,
- determining if they are suitable for heavy construction traffic (road weight limits, surface conditions, grades, road geometry and other accessibility considerations) and
- identifying and assessing the potential sensitivity of other receivers along the alternate routes condition

Where haulage routes are proposed along local roads with schools and childcare centres cannot be avoided, the presence of the sensitive area shall be communicated to the vehicle drivers and need for safe and careful driving in accordance with all applicable rules of the road shall be reinforced. Wherever practicable, high volume usage of haulage routes on these roads shall be avoided during school pick up and drop off periods.

Spoil and fill material types and quantities, on-site reuse, generation and fill demand, haulage routes and potential sources of required material are described in the Spoil Management Plan.

Haulage of fill material will be limited to the construction site where practicable; however, haulage along the public road will be required as there are numerous obstructions, e.g. natural watercourses.

The primary roads for the delivery of construction materials and exporting of excavated fill material by haulage trucks are presented in Table 6. Where feasible, heavy vehicle haulage and deliveries will be scheduled to outside of peak hours.

Table 6 Construction Access Points and Primary Haulage Routes

Construction Sites	Site Access Points	Route to Arterial Road
Epping Services Facility	Primary access via Beecroft Road (left in/left out)	Nil
	Secondary access via Ray Road (off-peak only 10:00am-3:00pm. Mon- Fri for trucks)	Ray Road to Carlingford Rd
Cheltenham Services Facility	Kirkham Street (left in/right out)	Kirkham Street to Beecroft Rd
Cherrybrook Station	Castle Hill Road at Glenhope Road (all movements). Until Robert Road signalised intersection is completed.	Nil
	Franklin Rd (left in/left out)	Franklin Rd to Castle Hill Rd (between site access and Castle Hill Road intersection.
	Robert Road (left-out only at the initial stages and then all movements after completion of signalisation of Castle Hill Road intersection)	Castle Hill Road
Castle Hill Station	Old Northern Road/Terminus Street (all movements)	Nil
	Old Castle Hill Road – Light Vehicle Access to carpark only	McMullen Avenue
Showground Station	Showground Road to new Showground access road and then left into site	From site, right into new access road and then into Showground Road
	Windsor Road – Victoria Avenue – Carrington Road and left into site	From site, right into Carrington Road, left into Victoria Avenue and then Windsor Road
Norwest Station	Brookhollow Avenue	Norwest Boulevard to Windsor Road
Norwest Station Subsurface Pedestrian Link	Norwest Boulevard right into Century Circuit and right into site	From site left onto Century Circuit, right into Norwest Boulevard and then Old Windsor Road or Westlink M7, or From site left into Century Circuit, left into Norwest Boulevard and then Windsor Road

Construction Sites	Site Access Points	Route to Arterial Road
Bella Vista Station	Old Windsor Road to Celebration Drive and left into site	From site right into Celebration Drive, and then into Old Windsor Road
	Old Windsor Road left into the slip lane at Old BP site and left into site	From site, left into slip lane, right into Celebration Drive and left / right onto Old Windsor Road
	After upgrading of Balmoral Road/Miami Road/ Old Windsor Road intersection, From Old Windsor Road to Balmoral Road and right onto site	From site, left onto Balmoral Road and left/ right onto Old Windsor Road
Balmoral Road and Memorial Avenue Corridor site	Memorial Avenue, left into site via haul road. Or From Old Winsor Road to Balmoral Road and left into site (after completion of the Old Windsor Road/ Balmoral Road intersection upgrade works)	From site, left into Memorial Avenue, or From site left into Balmoral Road and then Old Windsor Road
Kellyville Station	Old Windsor Road to Samantha Riley Drive, and left/ right onto site	From southern section, left into Samantha Riley Drive and then Old Windsor Road, or from northern section (carpark site), left into Samantha Riley Drive and then Windsor Road
	Windsor Road into Samantha Riley Drive, left or right into site	From site into Samantha Riley Drive and then onto Old Windsor Road
Windsor Road to Sanctuary Drive Corridor	From Windsor Road right into Sanctuary Drive and right into site, and From Windsor Road, east of Old Windsor Road, left into site	Exit from site, left into Sanctuary Drive and then Windsor Road. From the southern end, left into Windsor Road
Rouse Hill Station	Left-in from Windsor Road into White Hart Drive and right into the station site via the Old T-way Bus Stops (Note T-way Bus Stop has been relocated to Tempus Street Southern Bus Layover – Left-in from Windsor Road via the slip lane south of White Hart Drive across the T-way and then into site.	From site, left onto Tempus Street, left onto Rouse Hill Drive then left/ right onto Windsor Road Left into T-way, across Sanctuary Drive into rail corridor site, then loop around within site, and left into sanctuary Drive and then Windsor Road
	Northern Bus Layover – Left in and left from Commercial Drive Left out onto Windsor Road	Windsor Road

Construction Sites	Site Access Points	Route to Arterial Road
Cudgegong Road to Windsor Road Corridor site	From Schofields Road, right into site at the existing signalised access used by SVC Contractor From Windsor Road, left into site From Windsor Road, left/ right into Rouse Road, left into Terry Road , and left into site From Schofields Road, right into Cudgegong Road, and right into site	From site, left onto Schofields Road From site, left into Windsor Road From site, left into Terry Road, right into Rouse Road and then onto Windsor Road From site, left into Cudgegong Road, left or right onto Schofields Road.
Cudgegong Road Station to Sydney Metro Trains Facility	From Schofields Road, right or left into Tallawong Road, then onto site	From site, left or right onto Tallawong Road, then Schofields Road
ECRL Western Section (Epping, Macquarie University & Macquarie Park)	From Pennant Hills Road or M2 Motorway, into Beecroft Road and left into site	Left onto Beecroft Road
ECRL (North Ryde & Chatswood Stations)	From Pacific Highway, left into Ashley Street, right into Anderson Street, right into Wilson Street and left into site via the hi-rail pad access From Boundary Street, into Archer Street, right into Ashley Street, left into Anderson Street, right into Wilson Street and left into site	From site, right into Wilson Street, left into Anderson street, left into Ashley Street, left or right into Pacific Highway. From site right into Wilson Street, left into Anderson Street, right into Ashley Street, left into Archer Street and then Boundary Street
Willoughby to Chatswood 33kV Underground power line	• SOUTH END: From Gore Hill Freeway to Reserve Road Exit, right onto Jersey Road and right onto Hampden Road. • MIDDLE SECTION: From the Pacific Highway to Mowbray Road and left into Devonshire Street • NORTHERN END: From the Pacific Highway into Boundary Street, right into Archer	• Hampden Road, left onto Mowbray Road and then Pacific Highway • Devonshire Street right into Mowbray Road and then the Pacific Highway • From Archer Street, left into Boundary Street and then the Pacific Highway

Plans showing construction vehicle routes for the worksites in all precincts are provided in Annexure G. The potential impacts of these routes and mitigation measures are outlined in Section 6.

5.8 Traffic and Property Impacts

The construction of this project will impact on the existing traffic flows along the various arterial and local roads in close proximity to the project. However, as detailed in this plan, NRT will aim to isolate work areas, keep road user delays to an absolute minimum and maintain access for transport operators.

Wider traffic implications and significant impacts that could result from construction activities within local roads have been avoided during pre-construction planning regarding traffic management. Some traffic impacts are, however, unavoidable. During the construction phase, the potential restrictions on the existing public roads will include:

- reduced roadwork speed limits which will potentially increase travel times,
- one lane alternate (stop/slow) operations which may result in temporary delays and increased travel times
- haulage operations and over-dimension vehicle movements which may create temporary traffic hazards for other vehicles.
- full closure of local roads during bridge construction which may result in temporary delays and increased travel times.
- Short-term traffic control comprising one lane alternate or traffic detour during installation of pre-cast bridge beams.
- Re-routing of bus routes from Tallawong Road to Cudgegong Road during construction of the rail tracks and bridges in Tallawong Road and Cudgegong Road, or relocation of bus stops in Norwest Boulevard

Prior to construction, relevant sections of all roads potentially used/affected by construction traffic will be part of a dilapidation survey (excluding regional or arterial roads). Specific information on the details of the dilapidation survey is provided in Section 9.

To keep the road user delays to a minimum, NRT will plan and phase all works to avoid road occupancies during peak periods.

The TTM will conduct an assessment of the road network directly affected by the construction activities and where required include the results in the relevant site-specific TMP. This assessment will assist in determining the need for specific mitigation measures. The facilities to be assessed will include, but are not limited to:

- Existing on-street parking, (including type and associated time limits)
- Existing Traffic Controls
- Traffic Control Signals (TCS) at intersections
- Existing intersection configurations
- Restrictions on existing traffic movements (right turn bans etc.)
- Local Area Traffic Management Schemes (LATMS)
- Existing road occupancies
- Public Transport (buses (includes stops), taxis)

- Traffic generating developments, (e.g. schools, shopping centres, churches, industrial areas, hospitals, etc.)
- Temporary access arrangements or restrictions for local residents, businesses,
- Emergency vehicle access points
- Heavy vehicle movement restrictions, including over dimension vehicle loads
- Pedestrians, including disabled persons
- Cyclists (local roads)

Property Access

NRT considers minimising the impact and maintaining the amenity of local residents in the vicinity of the construction works to be very important. In this regard, various environmental and traffic management measures will be applied, in particular those measures that maintain access to the road network.

. These will include:

- Considering the access requirement of adjacent properties when determining compound and construction site access points,
- Minimising queuing of construction vehicles in the local road network (as outlined in Section 7.9)
- Using major arterial roads and regional roads wherever practicable for haulage routes
- Implementation the shuttle bus service and encourage usage by construction personnel to limit potential parking impacts in the local road network
- Providing sufficient parking facility for compound personnel at the construction
- Reinforcing the need to maintain property access throughout the project via awareness training as required.
- Reviewing potential property access issued during site inspections and implementing appropriate corrective actions if issues are identified.

On all local roads affected by construction, NRT will aim to maintain existing property access points. Where this cannot be achieved, NRT will provide temporary alternative access.

All proposed changes to existing access arrangements will be discussed with residents and/or businesses prior to the commencement of works. Upon completion of the construction works, the original property access will be re-instated.

5.9 Potential Environmental Impacts

Construction site access ways will include paved roads or unsealed tracks. In the case of unsealed tracks, these will be regularly maintained (e.g. wetted down) to minimise dust generation.

Each site will have appropriate drainage and sedimentation control including (where necessary) sedimentation basins and silt traps. Wheel washers and cattle grids will also be

used to minimise wheel transfer of mud and silt onto surrounding streets. Street sweepers will be provided to remove any dirt tracked onto roads.

The access and egress driveways, as well as public footpaths surrounding the site will be regularly inspected for mud and silt with appropriate actions taken to remove/control the contamination and keep these areas in a serviceable condition.

Detailed information concerning air quality, dust and mud impacts is provided in the *Soil and Water Management Plan* and the *Air Quality Management Plan*.

Detailed information concerning noise impacts is provided in the draft *Noise and Vibration Management Plan*.

6 Construction Access Impacts and Mitigation Measures

Heavy vehicle routes for access to and egress from construction sites have been developed with a view to

- minimising heavy vehicle movements during peak traffic times.
- Avoiding local roads for heavy vehicle routes, where feasible.
- Providing safe pedestrian and cyclist movements around construction sites.

These planned construction vehicle routes are illustrated in Annexure G.

It should be noted that NRT will make use of existing access points already negotiated and constructed by the TSC and SVC contractors, where required. In accordance with RMS WAD Package 1, all the access points will then be removed after completion of the OTS works.

General mitigation measures to be implemented during construction works to manage impacts on road traffic and public areas and minimise impacts on landowners and local businesses are outlined below:

- Directional signage and linemarking will be used, where required, to direct and guide motorists, cyclists and pedestrians past construction sites and on the surrounding road network. This would be supplemented by permanent and portable Variable Message Signs (VMS), where reasonable and feasible, to advise motorists of any potential delays, traffic diversions, speed restrictions, or alternative routes. Traffic controllers and physical barriers would be installed to manage local traffic, pedestrians and other road users.
- The public would be notified of proposed traffic changes by newspaper, radio, project web site and other forms of community liaison.
- Access to existing properties and buildings will be maintained.
- Construction vehicle parking would be discouraged on local roads and construction staff encouraged to use public transport, car share, or park in a designated off-site area and ferried to site via a shuttle bus.
- Where schools occur in the immediate vicinity of the construction sites, heavy vehicle movement would be minimised (where reasonable and feasible), between 08:00-09:30 and 14:30 – 16:00 Monday to Friday (on School Days).
- During the ECRL stage of works the following management measures would be implemented:
  - Establishing designated temporary parking facilities for construction workers to minimise the impact on local facilities.
  - Scheduling the movements of heavy vehicles haulage and deliveries outside peak periods, where reasonable and feasible.
  - Liaison and consultation with the RMS and stakeholders to manage cumulative impacts during construction.

Impacts of construction access routes at each construction site and suggested mitigation measures are outlined below. More details, including Traffic Control Plans, will be provided in the site-specific TMP for each Precinct.

6.1 Epping services Facility

Access and egress will be provided at two locations at this site. Along Beecroft Road, a left-turn entry lane will be provided to the north of the Carlingford Road intersection. This will allow northbound spoil removal trucks to enter the site, load, and then egress via a left-turn back onto Beecroft Road at the northern end of the site.

During the PM peak hours (4:00pm – 6:00pm), construction trucks exiting from site and turning left into Beecroft Road to head north will be managed by a traffic controller such that there will be a maximum of one truck every 5 minutes. This will reduce conflict with Beecroft Road traffic in the critical northbound direction at PM peak hours.

During the AM Peak hours, the peak traffic direction is southbound while construction traffic movement will be northbound entry and exit (left-turn only). As such there is no conflict between construction traffic and peak traffic direction.

Alternative combined access and egress gate will also be provided on Ray Road. This access point will be mainly for light vehicles. Use of this route by heavy vehicles is restricted to off-peak hours only (10:00am- 3:00pm, Monday to Friday) to minimise impacts on the residential amenity of Ray Road.

A parking area for light vehicles will be provided at the southern end of the site. A summary of the impacts and mitigation measures for this access point is provided in Table 7 below. More detailed information of impacts of the construction of the Epping Service Facility, and proposed mitigation measures, including Traffic Control Plans will be provided in the Precinct Specific Traffic Management Plan.

Table 7 Epping Service Facility Access Impacts and Mitigation Measures

Potential impacts	Management and mitigation measures
Potential safety implications and delays due to spoil trucks entering and egressing from the site	• Access to the site will be restricted to left-in and left-out only, thus reducing potential impacts with traffic on Beecroft Road. • To improve safety for construction traffic and public road users, an indented deceleration lane will be provided for the left-turn access • The egress lane and the northern end of the site will be GIVE WAY controlled and will be constructed as a Basic Left Turn Treatment • Planning to allow sufficient space for truck layover. Truck queuing can be wholly accommodated on site with minimal risk of truck parking/queuing on surrounding roads
Impacts on residential amenity on Ray Road	• No construction traffic is allowed on Ray Road to the north of the site gate • Only light vehicles will use Ray Road to access the carpark. Construction trucks will be restricted to off peak hours (10:00am – 3:00pm.

6.2 Cheltenham Service Facility

Dedicated and exclusive light and heavy vehicle accesses/egresses are proposed for this construction site via Kirkham Street north of the bridge over the M2 Motorway. . Temporary signage will be implemented as necessary to ensure that public road users are aware of the changes to the intersection layout and control.

The pedestrian bush track at Cheltenham will not be affected by construction works and will be maintained during the delivery of the OTS works. A summary of the impacts and mitigation measures for this access point is provided in Table 8.

Table 8 Cheltenham Service Facility Access Impacts and Mitigation Measures

Potential impacts	Management and mitigation measures
Safety of access and egress from the site onto Kirkham Street	A dedicated heavy vehicle access and egress will be provided on Kirkham Street to the north of the bridge over the NWRL OTS Motorway
Safety of access at Kirkham Street/ Beecroft Road intersection	Access to be limited to Left-In/ Left Out for all Construction Vehicles (light and heavy vehicles). In addition, during PM peak hours (4:00pm- 6:00pm), heavy vehicles will be banned from using this intersection during the critical northbound direction

6.3 Cherrybrook Station

The existing priority controlled T intersection of Castle Hill Road and Glenhope Road has been upgraded to a signalised intersection as part of the Enabling Works package and was be in place prior to the commencement of the NWRL construction phase. This access point was terminated in 2017 to allow for construction of the station.

The existing left-turn only T intersection at Castle Hill Road/Franklin Road will provide exit. This will provide left out movements.

A left-turn slip lane in the eastbound direction of Castle Hill Road to the west of Franklin Road to provide uninterrupted access for vehicles entering the site and accessing the car parking facilities at the eastern end of the site,.

Two additional access points are proposed along Franklin Street. The southern-most one will be a light and heavy vehicle exit access point. The northern-most access will be for light vehicle access and egress.

A disused vehicular access on the eastern side of Robert Road, near Castle Hill Road will provide left turn exit for heavy vehicle from the western section of the site.

In late 2018, the permeant precinct road will be utilised for completion of construction. This will facilitate entry to the site at the intersection of Robert Road and Castle Hill Road and exit to Franklin Road.

A summary of the impacts and mitigation measures for this access point is provided in Table 9 below.

Table 9 Cherrybrook Station Access Impacts and Mitigation Measures

Potential impacts	Management and mitigation measures
Potential conflicts between light and heavy vehicles	The signalised construction access at Glenhope Road intersection provides dedicated access for the majority of heavy vehicles. This arrangement will also separate light vehicle movements from heavy vehicle movements, as the latter will use the other gates.
Potential Conflicts with School traffic in Franklin Road	School traffic to Tangara School for Girls in Franklin Road has safe access from the signalised intersection of John Road and County Drive. School Zone starts from Kayla Way and extend north on Franklin Road well away from Cherrybrook Station site. Construction trucks will access the site without passing through the frontage of the school. In addition, any school children walking to school will walk safely on the footpath on the eastern side of Franklin Road, behind a pedestrian fence. Therefore there is minimal conflict with the school in Franklin road, north of the site.

6.4 Castle Hill Station

The primary heavy vehicle access to the Castle Hill construction site will be via a gate on Old Northern Road/ Terminus Street intersection. The section of Old Northern Road between Old Castle Hill Road and Terminus Street (the Eastern Ring Road) is to be reconfigured as a one-way westbound road for the TSC works. As such, traffic from Terminus Street will be able to enter this site without any other vehicular conflicts. This will increase the capacity and safety of this access point. From this access, heavy vehicles will then circulate around the boundary of the site. Heavy vehicles will egress from the access point, turn left into Old Northern Road or right into Terminus Street.

The works to reconfigure the intersection of Old Northern Road and Terminus Street has already been delivered as part of the Enabling Works and will be available for use from the start of the NWRL OTS construction program.

Construction workers will park in an existing basement parking facility with access from the roundabout at Old Castle Road. As such this access point will be the light vehicle access for the Castle Hill Station site.

Roadworks in Old Northern Road and Old Castle Hill Road will be managed in consultation with the bus operators (Busways and Hills Bus) through the TTLG to minimise impact on bus services.

Two new construction access gates were installed in Old Castle Hill Road to provide separated entry and exit to the Pedestrian Link work area on the eastern side of Old Castle Hill Road in February 2017. Trucks will travel north in Old Castle Hill Road from the intersection of Crane Road, then turn right into site via the first gate (entry gate), and exit via the second gate further north. As these gates are located within the existing bus layover spaces on the eastern side of Old Castle Hill Road, arrangement were made to provide additional layover spaces in the vicinity of Castle Towers before the gates were made operational full-time. As such the entry gate was only to operate during the off-peak hours

until alternative bus layover spaces are available. Exit gate was only operational full-time once the existing bus layover is extended further south.

The exit gate was later relocated 50m further north in July 2017 to allow commencement of excavation behind the original location.

Potential impact of this access point and mitigation measure is outlined in Table 10 below.

Table 10 Castle Hill Station Access Impacts and Mitigation Measures

Potential impacts	Management and mitigation measures
Potential crash conflicts at the western egress gate from the site due to weaving demands	The western egress gate will provide an un-opposed egress directly onto Old Northern Road. This is affected by the reconfiguration of Old Northern Road, between Crane Road and Terminus Street, to one-way in the westbound direction. Although this is in close proximity to the signalised intersection of Old Castle Hill Road/ Old Northern Road/Crane Road, the single lane of traffic on Old Northern Road will eliminate any conflicts with opposing vehicles. Exiting trucks will be able to turn left onto Old Northern Road without conflict with any vehicle.
Potential loss of bus layover spaces in Old Castle Hill Road	Additional bus layover spaces will be provided by extending the existing bus layover further south by one space and providing additional layover spaces at other location in Castle Hill.

6.5 Showground Station

Primary vehicular accesses to the site will be provided from Showground Road and Carrington Road. A new signalised T intersection is to be provided on Showground Road to the north-west of the Carrington Road intersection, providing for all turning movements. This intersection has already been constructed under the Enabling Works Package and is already being used for the TSC works. This new intersection will also provide vehicular access to the Castle Hill Showground.

Access for construction of the permanent detention basin on the has also been provided via the signalised access off Showground Road and then via the private road owned by Castle Hill Showground.

After the new precinct road is completed and the primary access is closed, a new priority controlled T intersection will be provided on Carrington Road to the west of Ashford Avenue. This will consist of a new driveway providing access to the construction site via the new precinct road.

Special event bus services will be maintained during the construction of the OTS works. Alternative parking to replace the loss of parking for the patrons of the Special event buses as a result of the site establishment for the TSC works has already been investigated by TfNSW.

Potential impacts of this access point and mitigation measure is outlined in Table 11 below.

Table 11 Showground Station Access Impacts and Mitigation Measures

Potential impacts	Management and mitigation measures
Potential impacts to public access to the showground	The new signalised intersection of Showground Road and Showground Access Road is adequate to provide access to both the construction site and the Castle Hill Showground. Pedestrian access to Showground will continue to be provided directly from the pedestrian gates at the frontage of Showground Road.
Loss of Parking at the Showground	Alternative parking will be provided in consultation with the TfNSW, The Hills Shire Council and the Castle Hills and Hills District Agricultural Society via the TTLG. This matter has already been resolved during the tunnel construction works (TSC Contract).

6.6 Norwest Station Precinct

Access to the site for small and medium rigid trucks will be provided from Windsor Road, Norwest Boulevard and then via the roundabout at the western end of Brookhollow Avenue, opposite Century Circuit. However, longer trucks (semi-trailers) will access Brookhollow Avenue from the eastern roundabout to allow adequate turning radius via right turn into the site.

Also During the later stage of the works excavation works will be carried out at the western end of Brookhollow Avenue, effectively closing this access to Norwest Boulevard for up to three months. Access to the site will be via the eastern end of Brookhollow Avenue at the intersection of Norwest Boulevard/ Columbia Circuit/Brookhollow Avenue during this stage.

The indented bus bay in Norwest Boulevard, east of Century Circuit will not be affected by the OTS works at Norwest Station. The VMP for the Norwest Station site will indicate that parking at the indented bus bay at any time is not permitted. Workers will also be reminded during the regular tool box at the site.

Potential impacts of this access point and mitigation measure is outlined in Table 12 below.

Table 12 Norwest Station Access Impacts and Mitigation Measures

Potential impacts	Management and mitigation measures
The loss of the western connection of Brookhollow Avenue to Norwest Boulevard results in a loss of a ‘drainage’ point for the local area traffic to re-enter the arterial network.	• Appropriate way finding signage and Traffic Control Plan to detour traffic to use the eastern connection will be provided. • Consultation will be carried out with neighbouring property owners and building managers
Potential demand for truck layover on Brookhollow Avenue	The internal track will contain sufficient space for truck layover which also has advantages in allowing trucks to be held prior to dispatch from site. This would also allow staged release of construction trucks, when required, thus avoiding truck convoys.

6.7 Bella Vista Station

The principal construction access to the site will be via the signalised intersection of Old Windsor Road and Celebration Drive. Construction vehicles will be able to access the site safely via the signalised intersection of Celebration Drive and Old Windsor Road.

Entry to the site from Celebration Drive is from a new left-turn slip lane from the eastbound travel lane of Celebration Drive, east of the roundabout at Lexington Drive. Egress from the site will be from a segregated exit driveway on Celebration Drive, east of the entry driveway.

Additional vehicular access to the site will be provided from the northern end of Celebration Drive. Access to the northern side of the site and to the rail corridor north of the site will be from Balmoral Road, off Old Windsor Road after the Old Windsor Road/ Balmoral Road intersection upgrade is completed by the SVC Contractor.

Carparking will be lost at the Burns T-Way bus Stop during construction. Investigation to replace the lost parking at the Balmoral Road T-Way bus stop will commence during the SVC works. The alternative carparking will be maintained during the OTS works.

Potential impacts of this access point and mitigation measure is outlined in Table 13 below.

Table 13 Bella Vista Station Access Impacts and Mitigation Measures

Potential impacts	Management and mitigation measures
Potential delays and queues in the eastbound direction of Celebration Drive due to increased traffic volumes in this approach	Provision of left-turn slip lane east of Celebration Drive/ Lexington Drive roundabout will provide uninterrupted left-turn entry for construction vehicles. Thus there will be no queue on the eastbound lane as a result of construction traffic access.
Potential increase in crash conflicts due to turning movements associated with construction sites	Separation of the access and egress points to the construction site will reduce conflict with vehicles on Celebration Drive. Sight distance for westbound vehicles will be assessed during preparation of detailed TMP for the site and appropriate traffic control will be installed for exiting vehicle if required.
Potential perceived impacts to access/egress from McDonalds and BP	Separate construction access currently used for the TSC works will be used. The McDonalds and BP will have similar access/egress provisions as existing and hence there will be negligible impact to access/egress provisions for these properties

6.8 Kellyville Station

Heavy vehicle access to the site will occur along Samantha Riley Drive generally from Old Windsor Road, Samantha Riley Drive and then into the southern site via the existing roundabout in Samantha Riley Drive. Access to the site on the northern side of Samantha Riley Drive will be via a new left-in left out driveway off Samantha Riley Drive, west of the existing roundabout.

Egress from the sites will be left-out from the southern site and then into Windsor Road. Exit from the northern site will be left-out onto Samantha Riley Drive, then U-turn at the

roundabout then onto Old Windsor Road. Alternatively, the exiting vehicle may continue on Samantha Riley Drive to exit onto Windsor Road.

When the new precinct road is completed in the southern site, access via the roundabout will be closed. A new left-in/ left-out access will be provided from the Precinct Road onto Samantha Riley Drive.

Access to the temporary public car park constructed by the SVC contractor will be maintained via the existing access point at the roundabout on Samantha Riley Drive at the early stage of works. After the new precinct road is completed, access to the carpark will be provided from the Precinct Road.

Carparking will be lost at the Riley T-way bus Stop during construction. Investigation to replace the lost parking at the Balmoral Road T-Way bus stop will commence during the SVC works. The alternative carparking will be maintained during the OTS works.

Potential impacts of this access point and mitigation measure is outlined in Table 14 below.

Table 14 Kellyville Station Access Impacts and Mitigation Measures

Potential impacts	Management and mitigation measures
Pedestrian access from the car parks to the T-Way station	Pedestrian paths around the bus stop and along Samantha Riley Drive will be modified to some extent
Loss of carparking in Burns T-way Bus Stop	Alternative temporary parking can be provided at the Balmoral Road T-way Bus Stop and an area north of Samantha Riley Drive.

6.9 Rouse Hill Station

Rouse Hill Station will be located on top of the existing T-way terminal outside the Rouse Hill Town Centre. This T-way terminal will be relocated to Tempus Street during the SVC works such that the T-way operations can continue during construction of the NWRL.

Entry to this site will be via White Hart Drive onto the old T-way site. Egress will be via the old T-way exit onto Tempus Street and Rouse Hill Drive.

Access to and egress from the northern bus layover will be left in/left out access via a new construction access point on the southern side of Commercial Road. This access point has already been constructed by and is being used by the SVC contractor.

Access to the southern bus layover will be left-in entry via a new slip lane from Windsor Road into southern bus layover via the T-way. Exit will be left into the T-way, continue on T-way across Sanctuary Drive, left into the rail corridor site north of Sanctuary Drive, loop round within construction site, left into Sanctuary Drive and then onto Windsor Road. These routes are currently being used by the SVC contractor in consultation with TMC and bus operators.

NRT will obtain ROL from TMC for construction access via the T-way as outlined in Section 7.5. In addition, will obtain permits for relevant vehicles to access the T-way prior to commencement of T-way access.

Any Bus Driver Facilities located on the northern bus layover and the southern bus layover at the Rouse Hill Town Centre will be maintained throughout the construction of the OTS works.

Details of construction access and management of buses at the Rouse Hill Station site will be reviewed during detailed construction planning and after the SVC contractor's accesses are finalised. The review will be carried out in consultation with bus operators to minimise impact on bus services. These details will be included in the Rouse Hill Station TMP.

Potential impacts of this access point and mitigation measure is outlined in Table 15 below.

Table 15 Rouse Hill Station Access Impacts and Mitigation Measures

Potential impacts	Management and mitigation measures
Informal east-west pedestrian routes through the existing T-Way interchange will be lost during the construction period	Pedestrians will be redirected via either Rouse Hill Drive or White Hart Drive
There are a number of cycle lockers located within the existing interchange area	An alternative location for these will be identified during construction in consultation with the TTLG.
Some vehicular drop-offs may be restricted on Tempus Street adjacent to the construction site	Additional kiss and ride facilities will be provided in close proximity to the Transitway Station. This location will be identified during detailed construction planning.
confusion for bus drivers as a result of many changes to access and egress points in the vicinity of the interchange.	Any proposed change will be discussed with bus operators prior and only agreed changes will be implemented.

6.10 Rail Corridor Tracks and Tunnel Works

The Rail Corridor spans over 5km, from Cudgegong Road, Rouse Hill to Balmoral Road, Bella Vista. It includes the whole length of the viaduct constructed by the SVC contractor and the area between Cudgegong Road and the western end of the corridor. As such construction access points to the rail corridor have already been constructed by the SVC contractor under RMS approval and used over the last 3 years. In addition, all the access points are already included in the EIS for the OTS works, except the access via Terry Road.

The access via Terry Road is located at the southern end of the Road, at the cul-de-sac. As such there is no conflicting turning movement as trucks will drive in straight and drive out is straight direction. Also the number of trucks entering the rail corridor from this gate is expected to be less than 10 trucks per day. Thus the traffic impact is considered to be low.

6.11 Cudgegong Road Station & RTRF

This precinct has three components: RTRF site, Cudgegong Road Station site and the rail corridor between Cudgegong Road and Windsor Road.

Access to the three construction areas will be via Cudgegong Road and Tallawong Road. Access to the site will be staged during construction.

- Stage 1: Tallawong Road will be closed to public traffic to allow bridge construction and for haulage between the Cudgegong Station (cut area) to the RTRF site (fill area). Alternative public access from Schofields Road will be via Cudgegong Road. Primary Construction access will be from the intersection of Tallawong Road and Schofields Road. Alternative access will be from northern side of construction site in Tallawong Road via Macquarie Road and Cudgegong Road and directly from Cudgegong Road.
- Stage 2: Cudgegong road will be closed to allow for bridge construction and diversions. Alternative public access will be via Tallawong Road. Primary Construction access will be from Schofields Road into Cudgegong Road. Alternative construction access will be from Tallawong Road, and also northern side of Cudgegong Road via Tallawong Road, Macquarie Road and Cudgegong Road.

Other access points are:

- Existing access from the eastbound carriageway of Schofields Road will be retained for light vehicle access to the site shed on the southern side of Cudgegong Road Station site.
- Left-in/ Left-out access will be provided from Schofields Road to the rail corridor site, east of Cudgegong Road

Access to the northern side of the site in Tallawong Road will access Schofields Road via Macquarie & Cudgegong Roads.

Construction access to all the sites will be located where adequate sight distances are available. Otherwise, the access points will be managed by traffic controllers.

All of the site parking for both RTRF and Cudgegong Stations will be accommodated within the site compound in RTRF site.

Potential impacts of these access points and mitigation measure is outlined in Table 16 below. Details of the impacts of construction of RTRF and Cudgegong Stations on transport and access and mitigation measures are provided in the site-specific Traffic Management and Safety Plan No 1 - RTRF.

Table 16 Cudgegong Road Station Access Impacts and Mitigation Measures

Potential impacts	Management and mitigation measures
Impacts on access to properties as a result of closure of Cudgegong Road and Tallawong Roads for construction of new bridges	Construction staging will be planned such that the two roads will not be closed at the same time. Either Tallawong Road or Cudgegong Road will be open to traffic at any time for access to properties in the area.
Delays at intersections as a result of construction traffic	No delay as a result of construction traffic is anticipated at the intersections of Schofields Road with Cudgegong and Tallawong Roads as the intersection has been upgraded to provide capacity for future development including the NWRL and new release areas.
Potential impacts on Route T75 Bus	Buses will need to be re-routed via Cudgegong Road when Tallawong Road is closed for bridge work and earthworks movements Access along Tallawong Road or Cudgegong

	Road will be provided at all times during construction. Consultation with the bus operator (Busways Western Sydney) and property owners will be carried out before the road is closed.
Impacts on pedestrians and Cyclists	Pedestrian and cyclist activity in the vicinity of the Schofields Road construction sites is low. Pedestrian and cycling routes will remain largely unaffected. Should it be required, details of traffic management measures to minimise any impacts on pedestrians and cyclists will be provided in the Precinct Specific TMP for Cudgegong Station and RTRF worksites
Cumulative impacts of RTRF and Cudgegong Road Station construction	Either Tallawong Road or Cudgegong Road will be open to traffic at any time during construction of both facilities. Additional mitigation measures will be detailed in the precinct TMP and managed in consultation with the TTLG.

6.12 ECRL Conversion to Rapid Transit

The Epping to Chatswood Railway is currently part of the Sydney Trains suburban train network. The works involve segregation of the ECRL from the Sydney Trains network and conversion of the existing line to rapid transit standard as part of the NWRL project.

The *Epping to Chatswood Railway – Temporary Transport Plan* (Parsons Brinckerhoff, 2014b; 'Temporary Transport Plan') would be implemented during the proposed Epping to Chatswood Railway temporary removal of rail services periods.

Vehicular access into the rail corridor will be provided at the following locations:

- Beecroft Road, Epping – located on the east side at the Hi-rail access to the western end of ECRL tunnel.
- Wilson Street, Chatswood – located at Wilson Street Hi-rail access
- Albert Avenue, Chatswood – Vehicular access to the rail corridor from the northern side of Albert Avenue, under the rail overbridge.
- Delhi Road, North Ryde – Vehicular access to the North Ryde Station precinct via the existing signalised access on the southern side of Delhi Road.

In addition, Chiller Units will be installed to provide temperature control at the underground station platforms at Epping, Macquarie University, Macquarie Park and North Ryde Stations. The existing service building housing ventilation unit at each of these stations will be extended and the Chiller Units will be manufactured off-site and assembled.

The locations of the Chiller Units will be as follows:

- Epping Station – at the existing service building (ventilation unit) in High Street, Epping.
- Macquarie University – Waterloo Road, north side, adjacent to the Macquarie Centre.
- Macquarie Park – Waterloo Road, east of Lane Cove Road.
- North Ryde Station – Delhi Road, south side, adjacent to the station.

Short-term traffic control will be implemented with traffic controllers provided to manage the conflicts between construction vehicles, public traffic, pedestrians and cyclists. Details of

traffic management and mitigation measures are provided in the site-specific TMP for ECRL Conversion.

6.13 Norwest Station Subsurface Pedestrian Link

The approved design for Norwest Station includes entry from the southern side of Norwest Boulevard and only people who have destination on the northern side will need to cross the road to access the station.

The Norwest Station Subsurface Pedestrian Link provides a second entry to the station from the northern side of the road, and connects to the station via a subsurface pedestrian link. The pedestrian link would include:

- A 11.5m deep vertical entry to access the Norwest Station via the pedestrian link
- Two escalators and one elevator
- A glazed and/ or metal clad entrance canopy/ portal about five metres high.
- Improvements to the footpath and planting around the entrance
- A 40m long x 5m wide pedestrian tunnel
- Connection to the mezzanine level of the Norwest Station.

The construction of the pedestrian link would be carried out from the main construction compound for the Norwest Station and from a new compound on the north-eastern corner of Norwest Boulevard/ Century Circuit (Old KFC Restaurant site). Access for construction will be from Brookhollow Avenue for the pedestrian link tunnel and from southern side of Century Circuit for northern entry. An alternative temporary access for plant will be from Norwest Market Town Liquorland car park.

Table 17 Norwest Pedestrian Link Access Impacts and Mitigation Measures

Potential impacts	Management and mitigation measures
Impacts on parking in the Norwest Marketown shopping Centre Parking	There will be maximum of 20 workers at the peak of construction of the pedestrian link. Parking provision in the northern compound will exceed 20 parking spaces.
Delays at the roundabout in Century Circuit as a result of construction traffic	There will be up to 22 construction trucks per day during the peak of activities compared to over 3,000 vehicles that visit the shopping centre and event centre on an average day.
Impacts on pedestrians in Century Circuit	Accredited traffic controllers will manage the conflict between construction vehicles and pedestrians and other vehicles

Details of construction access impacts and mitigation measures will be provided in the site-specific TMP for Norwest Station and Norwest Pedestrian link.

6.14 Willoughby to Chatswood 33kV Underground power line

Willoughby to Chatswood 33kV Underground feeder power line involves provision of approximately 5.2 kilometres of 33kV underground feeder line from Austgrid's Willoughby Sub Transmission Substation in Campbell Street, Artarmon to the TfNSW's Chatswood North Traction Substation to provide bulk power supply for the Sydney Metro Northwest. The main features of the power line construction involves:

- Installation of underground conduits and cables from Campbell Street, Artarmon to William Street, Chatswood, mainly with trenching on various roads, and underboring for the crossing of Gore Hill Freeway.
- Installation of cable tray over the North Shore Railway Line at Waratah Street to provide a connection to the Chatswood North Traction Substation.
- One to two weeks for Installation of jointing bays for connection of adjacent sections

The worksites would be transient in nature and located within the public roadway. The main storage area for materials will be the Sydney Metro Northwest construction compound for the Epping Services Facility in Beecroft Road, Epping. Construction access points at each work area will be directly off the relevant road, as the worksite locations varies from street to street.

Table 18 Willoughby to Chatswood 33kV potential impacts and mitigation measures

Potential impacts	Management and Mitigation measures
Impacts on access to residential and commercial properties	Traffic Control Plans that will be prepared for each worksite will ensure that access to residential and commercial properties are maintained.
Impacts on traffic and transport accessibility within the Artarmon Business area	Consideration will be given to measures to minimise impact on traffic and transport accessibility in Hampden Road and surrounding street, including avoidance of peak business hours and night works
Potential use of on-street parking spaces by construction workers	Not more than 10 parking spaces will be required at any work site. Some of the workers will take advantage of public transport facilities and come to work by train or bus. Others will be directed to park in the public paid parking in Chatswood CBD and carpool to site.

Details of construction access impacts and mitigation measures will be provided in the site-specific TMP for the Willoughby to Chatswood 33kV to be submitted to Willoughby City Council for approval.

The exact locations of all proposed jointing bays would be refined during detailed design to minimise potential traffic and transport impacts during construction. The exact locations of these jointing bays, especially the one at the corner of Hampden Road and Brand Street, will be included the site-specific TMP.

6.15 Cumulative Impacts of Surrounding Infrastructure Developments

As NWRL project will be constructed between 2014 and 2019, the construction will overlap with other major infrastructure or development projects. Major infrastructure or developments in the vicinity of the NWRL have been reviewed and their impacts are discussed below. It should be noted that due to the long length of the project, and its spatial distribution, these infrastructure developments can only have localised impacts that are limited to one or two stations or precincts but not project-wide impacts.

6.15.1 Schofields Road Upgrade

The stage 1 of the Schofields Road Upgrade, involving upgrading of Schofields Road to four lanes divided road between Windsor Road and Tallawong Road has been completed. Construction works for the Schofields Road Upgrade Stage 2, comprising upgrade to four lanes, from Tallawong Road to Veron Road has commenced, and is scheduled to be completed in early 2017. Construction access to the Stage 2 works is directly off Schofields Road east of Tallawong Road. As such there will be minimal conflict with the construction vehicles accessing the NWRL OTS works.

Construction vehicles for both projects will travel on Schofields Road, between Tallawong Road and Windsor Road. This section of Schofields Road has already been upgraded to four- lane divided road with adequate capacity to cater for future traffic growth as a result of Northwest Growth Centre development as well as the Northwest Rail Link Project. There is therefore adequate capacity in this section of Schofields Road to cater for the construction traffic without any traffic congestion or traffic safety issue.

The NRT has already consulted with the Schofields Road Upgrade project team to share information on both projects, especially to coordinate traffic management activities on Schofields Road.

6.15.2 Castle Towers Extension

Construction works for Castle Towers Extension will take place at the same time as the OTS works. However, heavy vehicle access to the OTS works will be limited to the section of Old Northern Road between Crane Road and Terminus Street, which is not used by the Castle Towers Development traffic which has its site compound in Pennant Street. Thus conflict between construction vehicles for the OTS works and Castle Towers work is minimal.

The access point for construction staff parking is located on Old Castle Hill Road which is used by shopping centre traffic. However, this access point is off an existing intersection controlled by a roundabout, thus providing safe access and egress. In addition, workers will generally arrive between 06:00 and 07:00 when there is minimal shopping centre traffic. Also staff departure in the evening is spread over a two-hour period (16:00 and 18:00), thus minimising traffic volume and impact on other traffic.

The NRT will consult with the owners of the Castle Towers as part of the on-going agency and stakeholders briefing session where relevant information on the OTS works are provided. This will allow coordination of any conflicting traffic management activities on the surrounding roads.

6.15.3 Epping to Thornleigh Third Track (ETTT) Project

The Traffic Management Plan for the ETTT has been reviewed. The volume of construction trucks to each of the constructions site ranges from 2 -5 vehicles per hour. The Epping to Thornleigh Third Track (ETTT) project is a key component of the Northern Sydney Freight Corridor program of works. The project is already under construction and is due for completion in mid-2016.

Some of the ETTT Project works includes the detailed design, construction, commissioning and handover of:

- Rail works of approximately 6km of new track and three turnouts
- Bridge works over Devlins Creek, the M2 Motorway and viaducts between Epping and Cheltenham
- Station works at Cheltenham Station, Pennant Hills Station and Beecroft Station

The construction site for the Epping Service Facility is located on the western side of Beecroft Road, while the ETTT works sites are located on the eastern side (rail side), with left-in/ left-out access in the southbound direction. There will be minimal conflict between the construction vehicles for the OTS works and the ETTT works in Epping.

Similarly the Cheltenham Service Facility is located between the M2 Motorway and Castle Howard Road, well away from the rail corridor where the ETTT works sites are located. There will be minimal conflict between the OTS works and ETTT works in Cheltenham.

In addition, the worksites for both the Epping and Cheltenham Service Facilities will be handed over to the NRT in August 2016, at the end of the ETTT project. Therefore the impact of OTS works on ETTT works will be negligible.

6.15.4 NorthConnex Project

The construction of the NorthConnex project linking M2 Motorway at West Pennant Hills to M1 Pacific Motorway at Wahroonga is scheduled to occur between early 2015 and late 2019 which overlaps with the majority of OTS works. A review of the EIS for the NorthConnex Project indicated that the construction sites will be located along the M2 Motorway and Pennant Hills Road. The majority of construction routes will therefore be outside the vicinity of the OTS construction sites.

The only exception is at the northern end of Beecroft Road, at intersection with Pennant Hills Road, where vehicles entering and exiting one of the NorthConnex site compounds (Wilson Road) on the northern side of Pennant Hills Road will turn into Beecroft Road and exit back into Pennant Hills Road. This section of Pennant Hills Road has been constructed as one-way separated entry and exit.Around 25 construction vehicles per hour (less than 1 every 2 minutes) will use this section of Beecroft Road from the Wilson Road compound. A total number of 100 construction trucks per day or (10 vehicles per hour) will use Beecroft Road from both Epping Services Facility and Cheltenham Services Facility combined. The additional vehicle movements from both the OTS works and NorthConnex will result in negligible cumulative impacts on Beecroft Road.

6.15.5 Showground Road Upgrade

The NSW Government proposed to upgrade 1.5km section of Showground Road from two lanes to a four lane divided road between Carrington Road and Old Northern Road. A review of the EIS for the Showground Road indicated that construction is expected to be carried out over 18 months, between 2015 and 2016. The EIS estimated that 40 truck movements per day (or 4 truck movements per hour) would occur during the peak of construction activities. The construction would also generate 90 light vehicle movements during morning and evening peak hours.

The construction of this project would coincide with the construction period for the OTS project (2015 – 2019). However, the worksites for the OTS are being taken over from the SVC and TSC contractors progressively from mid-2016, starting with Norwest and Bella Vista. The Showground and Castle Hill Stations that are located in the vicinity of Showground Road will not be available for the OTS works until late 2016. The cumulative impacts of the OTS works and Showground Road Upgrade works will be minimal as major earthworks on the Showground Road would have been completed before the OTS works commence on Showground and Castle Hill Stations.

However, NRT will liaise with the Showground Road Upgrade contractor to minimise any potential cumulative impacts on traffic and access on Showground Road before commencing works.

6.15.6 Memorial Avenue Upgrade

The NSW Government proposed to upgrade Memorial Avenue, Kellyville from two lanes to four-lane divided road between Old Windsor Road and Windsor Road. A review of the Road projects section on RMS website indicated that the project is at the concept design stage. Community consultation on the Review of Environmental Factors is currently on display until Friday 12th December 2014. Discussion with the RMS representative on the NWRL TTLG confirmed that the design will be finalised sometimes in 2015. Details of construction and timeline for the project will then be available at a later date.

Information on the cumulative impact of Memorial Avenue and the OTS project will be included in later revisions of this CTMP. However, OTS works in the vicinity of Memorial Avenue will involve mainly fitting out of rail tracks on the viaduct to be constructed by the SVC contractor. The impact is therefore likely to be minimal.

6.15.7 Rouse Hill Town Centre Northern Frame Development

It is proposed to develop the northern section of the Rouse Hill Regional Centre called “The Northern Frame”. The area is bounded by Windsor Road to the west, the existing town centre to the south, Caddies Boulevard to the east and Commercial Road to the north. The proposed works would be an extension of the existing Regional Centre, and would include:

- 65,000m2 of additional gross leasable retail floor area;
- 40,000m2 of additional net leasable commercial floor area
- 375 residential dwellings of various sizes;
- 0.71 hectares of open space areas

Information from minutes of the Hills Shire Council Meeting of 9th December 2014 indicated that the developer, Lend Lease GPT, stated that the works will be fully developed by 2025. However, details of the development are not currently available. NRT will continue to liaise with the developer and The Hills Shire Council, and measures to mitigate the cumulative impacts of the construction of the two projects will be included in Site Specific Traffic Management Plan for the precinct.

6.15.8 ECRL Alternative Public Transport Arrangement

To facilitate the conversion of the ECRL to rapid transit rail system, rail services will be shut down between Epping and Chatswood for around seven months starting from the second half of 2018. TfNSW has prepared a Temporary Transport Plan that involves provision of a five-route bus strategy to replace the existing rail services on the ECRL route.

Construction access for the ECRL conversion will be from the two ends as follows:

- Epping Station:
  - Left-in/Left-out access via the hi-rail vehicle access pad at Epping Dive, on the east side of Beecroft Road. Beecroft Road is located on the west side of the Railway.
  - During the AM peak hours (7:00am – 9:00am), construction trucks exiting from site and turning left into Beecroft Road to head south will be managed by a traffic controller such that there will be a maximum of one truck every 5 minutes. This will reduce conflict with Beecroft Road traffic in the critical southbound direction at AM peak hours
  - Access to the main northern line is also available on the Down side of the rail track off Beecroft Road.
- Chatswood Station: Hi-rail vehicle access at Wilson Street, Chatswood and Albert Avenue, Chatswood.

The routes for construction trucks to the ECRL construction sites are provided on plans NRT-VMP-012 and NRT-VMP-013 in Annexure F.

A review of the Traffic and Transport Assessment of the Alternative Transport Arrangement for the ECRL shutdown indicated the following:

- Epping Station: Replacement buses will pick up and set down passengers at Cambridge Street and Pembroke Street, on the east side of the railway.
- Chatswood: Replacement Buses will pick up and set down passengers from Railway Street, with bus layover in Victoria Avenue.

As construction access for the ECRL works at Epping and Chatswood are located at different locations away from the pick-up and set-down activities associated with the alternative transport arrangement, there will be minimal cumulative traffic impacts of the two activities. More details of the ECRL conversion works will be included in later revisions of the CTMP as more information becomes available.

7 Key Traffic Management Issues and Processes

The key traffic management and safety issues and the strategies to address the issues are provided below. Details of how these strategies will be implemented will be provided in the site-specific Traffic Management and Safety Plan that will be prepared for each work area (Station and Precincts) on the project.

7.1 Safety and Amenity of the Public and Road Users

The construction of the NWRL will impact the current and established traffic movements and patterns. NRT acknowledges that the management of this impact through compliance with this CTMP is essential to ensure the ongoing safety and amenity of road users and the public throughout the construction period.

Process

Management

The measures necessary to manage the safety and amenity of road users and the public include:

- Developing a traffic staging sequence that minimises disruption to local and through traffic and maintains access to affected properties and land.
- Ensuring that the Temporary Works design meets the requirement of TfNSW G10 Specification.
- Maintaining wherever the practicable the current level of amenity for all road users during the construction period.
- Through thorough planning, minimise areas of unplanned delays.
- Plan and implement traffic management stages that address the needs of cyclists, pedestrians and public transport.
- Plan and stage all works to avoid lane closures / road occupancies during peak periods on arterial roads and to comply with ROL periods specified in any ROL issued by TMC and local council authority. To assist the planning process, the Traffic and Transport Manager will liaise with TMC analyse the historical traffic data and prepare demand profiles to illustrate the peak periods.
- The traffic volume data of the various roads should be documented by the Traffic and Transport Manager. This should include a summary of the traffic volume data, AADTs, and where possible hourly, daily, weekly, and yearly traffic flow demand profiles
- All excavations adjacent to RMS road infrastructure shall meet the requirements of RMS Technical Direction GTD 2012/0001 “Excavation adjacent to RMS infrastructure”.

Implementation

Measures to ensure the ongoing safety and amenity of road users and the public during any major infrastructure project starts during the concept design phase and continues through to the opening and operation phase.

The NRT acknowledges that there are various measures that can be applied to ensure the ongoing safety and amenity of road users and the public, which are generally divided in four categories:

- design;
- isolation of work areas;
- work methods; and
- planning of lane closure / road occupancies.

Where practicable, the Traffic and Transport Manager will implement the following:

- Ensure road user delays are minimised during the concept design phase (i.e. develop alignments to avoid conflicts and potential impacts with the existing road network).
- During the design phase develop traffic staging and temporary works that: avoid conflicts with the existing road network; maximises separation between work areas and travel lanes or isolates work areas, and maintains existing Level of Service of the road network.
- Isolate work areas from traffic flows (e.g. using alternative routes, temporary side-tracks, lane deviations / widenings and temporary safety barriers).
- Restrict heavy vehicle routes to the shortest and safest route to an arterial road.
- Minimise heavy vehicle traffic in peak traffic periods and during the opening and closing periods of schools and childcare centres if they are located on construction traffic routes.
- Develop alternative work methods to minimise impacts (e.g. utilise more efficient plant / equipment, apply different design solution, enclosed work platforms, time of day applications).
- Plan all lane closures / road occupancies with the aim to: minimise the actual work area, limit obstructions and restrictions, maximise the roads capacity, avoid peak traffic flow periods and comply with ROL specified by the TMC or Local Council.
- Program all construction activities to coordinate with other stakeholder maintenance / construction activities within the project boundaries.
- Analyse traffic volume data to: establish the capacity of the road; assess the potential impact on traffic flows, and identify the best time to apply temporary traffic arrangements, to minimise the inconvenience to road users.
- Provide road users with changed traffic condition information to enable them to plan their journey and avoid the roadworks.

7.2 Site security, Site access and signage

Site security, site access and signage will be managed through the implementation of the Site Management Plan and the Traffic Control Plans covering the area in and around the work-site access points. The Site Management Plan will also provide details of the layout within the worksites and the site compound area, including:

- the movement of construction and other vehicles within the construction site and site compound area and the associated signage including off-road plant movements;
- the location of and access to parking areas and the associated signage;
- visitor parking areas;
- pedestrian routes;
- access paths to crib sheds, offices and the like;
- all associated signage; and,
- security point locations including boom-gates, if required.

Fencing will be installed to restrict physical access to hazardous areas and for site security, which will be appropriately sign posted. Various types of temporary and semi-permanent fencing may be installed, including plastic mesh; water filled plastic delineators; weldmesh pool fencing; chain wire mesh and so on. All physical barriers will be maintained during the project and appropriately secured to prevent injury to the public.

Signage for every construction access points from each construction site and any public road will include advance signage and gate signage designed specifically for the NWRL OTS works, standard signage to provide advance notice of trucks turning, and traffic control signs facing both entering and exiting vehicle, such as ‘Stop’ sign, ‘No Entry, Construction Vehicles Excepted’, ‘No Right/Left Turn’, depending on the specific requirement of each access point and its location.

The location of rumble grids, wheel washes and other environmental protection measures will be included in the Site Management Plan and will be as determined by the requirements of the Construction Environmental Management Plan.

7.3 Road User Delay Management

A key issue for the NWRL OTS works is the minimising of delays and inconvenience experienced by road users during the construction phase of this project. The NRT will develop delay minimisation strategies and specific measures that can be applied in the station specific Traffic Management Plans.

The NRT will ensure that works will be arranged to minimise:

- interference with pedestrians, cyclists and public transport services.
- disruption of established traffic movements and patterns;
- interference with traffic at peak movement periods and at night, weekends, holiday periods and special events; and
- interference with public transport services.

The NRT acknowledges that maintaining the Level of Service (LOS) of the road network and minimising the delays experienced by road users during the construction of any project is important. This process outlines the various strategies and measures that can be applied to minimise road user delays.

a. Road Occupancy

The NRT will ensure that free flow of traffic under Road Occupancy shall not be delayed in any direction by:

- greater than five (5) minutes at any single Road Occupancy, and,
- greater than seven (7) minutes cumulative for all successive Road Occupancies along the same road.

b. Delay minimisation strategies

The delay minimisation strategy will include:

- minimising the impacts of each work area,
- maximising the operating performance of the individual routes;
- aim to maintain access; and
- coordinating works at each work area to ensure road users do not encounter several delays in quick succession.

c. Measures

Measures to minimise road user delays for the development of any major infrastructure project starts during the concept design phase and continues through to the opening and operation phase. The NRT acknowledges there are various measures that can be applied to minimise road user delays, which are generally divided in four categories:

- Design
- Isolation of work areas
- Work methods
- Planning of lane closure/ road occupancies

The Traffic and Transport Manager will apply the following measures:

- During the design phase, develop traffic staging and temporary works that: avoid conflicts with the existing road network; maximises separation between work areas and travel lanes or isolates work areas, and maintains existing Level of Service of the road network.
- Isolate work areas from traffic flows (e.g. using alternative routes, temporary side-tracks, lane deviations / widenings and temporary safety barriers).
- Develop alternative work methods to minimise impacts (e.g. utilise more efficient plant / equipment, apply different design solution, enclosed work platforms, time of day applications).
- Plan all lane closures / road occupancies with the aim to: minimise the actual work area, limit obstructions and restrictions, maximise the roads capacity, avoid peak traffic flow periods, and comply with Road Occupancy Licence periods.
- Analyse traffic volume data to: establish the capacity of the road; assess the potential impact on traffic flows, and identify the best time to apply temporary traffic arrangements, so as to minimise the inconvenience to road users.

- Ensure all work activities are coordinated to reduce road user delay.
- Provide road users with changed traffic condition information to enable them to plan their journey and avoid the roadworks.

7.4 Information Signage and Advance Warning Signs

The installation of information signage, distance information and advance warning signs will be managed through the implementation of Specific Traffic Management Plans and their associated Traffic Control Plans for each station work area. These plans will allow for the temporary relocation of any existing signs in consultation with the TfNSW and TMC and/or the relevant local council authority.

Directional signage and line marking (where feasible) will be used to direct and guide drivers, cyclists and pedestrians past constructions sites and on the surrounding road network.

Advance warning signs will also be installed on approaches to the construction site to complement the project information signs. The location and design of these signs will be determined in consultation with the TfNSW, TMC and/or the relevant local council authority.

NRT will utilise permanent VMS, (where available and in consultation with TMC) and provide trailer-mounted variable message signs (VMS's) on the construction site from the start of any construction activity until the date of Construction Completion. The VMS shall have, and the NRT will operate a 24-hour remote message change facility to allow for message changes.

It should be noted that in 2013 RMS installed five permanent VMS boards on approaches to the Sydney Metro Northwest Project to provide information to road users during the construction of the project. NRT will make use of these VMS boards (in consultation with TMC) during construction of the project. The locations of these boards are:

- Pennant Hills Road, Carlingford, north of Evans Road
- Windsor Road, Baulkham Hills, 120m south of Charles Street
- Windsor Road, Castle Hill, 320m north of Showground Road
- Windsor Road, Rouse Hill, 280m north of Commercial Road
- Showground Road, Castle Hill, 320m north of Old Northern Road

7.5 Road Occupancy, Detours and Closures

NRT shall apply for the necessary approvals to occupy the road network and install temporary traffic control signs or devices for the purpose of road occupancies, detours and closures.

Road occupancy is defined as any part of the OTS activities that shall or is likely to obstruct or have effect of restricting, closing, interfering with or obstructing the free flow of traffic on any lane or shoulder of a public road, any part of temporary Works opened to traffic.

Road occupancies include but are not limited to:

- Temporary or permanent installation and/ or change of any regulatory traffic control device on a road,
- Shoulder or Lane occupancies and/or closures,
- Any occupation of the Construction Site by the NRT's labour, sub-contractors, equipment or plant that requires a Traffic Control Plan under the provisions of the TfNSW's G10, and
- Any event that causes stoppages and/or slowing or delays of any traffic flow.

Identify the road authorities

The road authorities responsible for roads affected by the Project depend on the classification of the roads and whether the section of the road is affected by RMS WAD works. The roads and road authorities are outlined in Table 19 below. NRT will liaise with these road authorities and other stakeholders via the TTLG during the delivery of the project.

Table 19 Roads and Road Authorities

Classification	Road Authority
State Roads	RMS
Regional Roads	Local Council Authority
Local	Local Council Authority
Transitway	RMS
All roads affected by RMS WAD works	RMS

The NRT acknowledges that a Road Occupancy Licence (ROL) scheme applies on all state and regional roads and understands the benefits of co-ordinating the occurrence of delays at separate construction sites related to the OTS works. Consequently, except in the case of an emergency, or when directed by Police, TfNSW or Emergency Services, the NRT will obtain an ROL prior to the commencement of any works which:

- slows, stops or otherwise delays traffic*;*
- diverts traffic from its normal course along the road carriageway, including lane closures, turning restrictions, side-tracks, detours and diversions; or
- occupies any portion of the road that is normally available for traffic, including road shoulders.

An emergency is defined as an unforseen event, which requires urgent attention to protect life or property or an occasion when emergency services (Police, Fire Brigade, Ambulance or State Emergency Services) take control of a portion of the road network. As such NRT will immediately comply with any instructions from the NSW Police Service, a relevant Authority or the TfNSW's Representative to re-open a lane, shoulder, footpath or shared path without delay, whether or not that lane, shoulder, footpath or shared path was closed by prior agreement.

Lane closure & road occupancy submission procedure

To obtain ROL for OTS works on State Road, or a road section affected by RMS WAD works, an ROL application will be sent to TMC using the new OPLINC (Online Planned Incident System).

The TMC has the responsibility for processing and approving ROLs. TMC generally requires at least 10 working days to process the application and will either grant or reject application within this period.

To obtain ROL for OTS works on a Local Road or Regional Road an ROL application will be sent to the relevant Local Council, with a concurrent notification sent to the TfNSW and RMS.

To obtain ROL for works affecting the transitway or works that require access through the Transitway, access protocols will be agreed with the RMS, TMC and Bus Operators. NRT will adhere to the agreed protocols during the delivery of the project.

It should be noted the road occupancy requests must comply with the various road safety and traffic management principles outlined in this CTMP.

NRT acknowledges all road occupancies will be subject to the specific period of operation stated on the approved ROL, and conditions on obtaining other necessary approvals.

Extensions of lane closure & road occupancy approvals

Despite the hours of operation stated in Section 3.2.10, all road occupancies will be subject to the specific period of operation stated on the approved Licence and conditions on obtaining the other necessary approvals.

The TMC has limited the maximum period of a ROL to one month to 6 months. To obtain extensions, NRT will be required to re-submit a completed ROL Application Form with a copy of original TCP, quoting the previous ROL number.

If the original lane closure & road occupancy submission is to be altered or changed, (e.g. change to times, TCP or proposed occupancy, work type etc.), a new ROL submission will need to be prepared.

It is the responsibility of NRT to ensure the validity of each approved lane closure and road occupancy, thus regular monitoring of approval expiry dates is essential. The TTM will maintain a database, which will contain details of road occupancy approvals to assist with this process.

Road occupancy conditions

Generally, the TMC will apply conditions to the approvals, which may include:

- maximum traffic stoppage times and maximum queue lengths;
- maximum travel time delays;
- measures to provide information to road users;
- records detailing the date and time of the road occupancy, and the location of all signs, and any other relevant information associated with the traffic control, must be kept.

The TMC has the power to revoke the approvals at any time for breaches of the associated conditions.

Authorisation limitations

Generally, in accordance with the TMC's requirements, the responsibility for implementation, coordination, and compliance with the lane closure & road occupancy approvals remains with NRT and specifically, the TTM. The TMC's granting of the approval does not:

- constitute approval by the TMC of any actions that relate to traffic safety, occupational health and safety, or environmental issues and management;
- relieve NRT or any person of their responsibility for compliance with legislation, regulations, or established operational procedures; or
- change any management accountability or responsibility.

Unplanned Lane Closure

In case any unplanned closure of a lane or a restriction in the flow of traffic occurs on any road, NRT will immediately advise the RMS representative of the nature of the closure or restriction and of the schedule for reopening the lanes as quickly as possible.

NRT will supply and install regulatory traffic control devices, and remove them when the devices are no longer required in accordance with the requirements of the relevant Authorities, and as specified in the Road Occupancy Licence.

7.6 Speed Limit Signage

Temporary roadwork speed limits are one of many traffic controls that will be implemented to manage the speed of traffic approaching and passing through the construction sites on the road network.

For long term speed zones, the issue of speed limit signage is managed through the implementation of the Station Specific TMPs and their associated TCP's.

These plans will allow for the temporary removal or relocation of the existing speed signs in consultation with TMC and the relevant local Council authority

a. Determining the need for a roadwork speed zone

A reduced roadwork speed zone must only be implemented where it is warranted.

The Traffic and Transport Manager will assess whether roadwork speed zones are necessary to assist in controlling vehicle speeds in circumstances that may include:

- traffic travelling directly through a construction site;
- workers placed in danger by the high speed or speeding traffic;
- a Road Occupancy,
- reduction in visibility via smoke, dust, fog or poor weather conditions; and
- unusual road conditions such as:
  - loose material on the road surface;
  - road geometry limitations;

- urgent or imperative construction activities adjacent to the travel lanes; and
- crossover and temporary contra-flow diversions.

NRT will address the RMS's Traffic Control at Worksites (TCAWS) Manual and Australian Standards 1742.3 to provide guidance with the selection and installation of roadwork speed zones. Specifically, Section 8.2 of the RMS's TCAWS manual outlines: the general principles; what to consider when selecting the speed limit (40, 60 or 80 km/h), installation guidelines and regulatory issues.

b. Submission procedure

The NRT will apply for Speed Zone Authorisation (SZA) as described in the RMS Road Occupancy Manual issued by the TMC. The manual contains a number of explanatory notes, checklists, and application forms. The documents applicable to this project include: DTR (SZA) Application Explanatory Notes Form R and DTR (SZA) Application Form R.

When deemed necessary, the Traffic and Transport Manager will process a submission to the TMC in accordance with the ROL/SZA process flow chart. The SZA Application will be forwarded to the TMC for processing and approving the SZA within a period of up to 10 working days.

An approved copy of the SZA will be forwarded to the local NSW Police Highway Patrol Office, and if necessary to the Local Council. The NRT will manage the records associated with the speed zone in accordance with Section 8.2.6 of the RMS's TCAWS Manual.

c. Extensions to SZA period of operation

TMC limits the period of operation of a SZA from one month to six months. To obtain extensions, the Traffic and Transport Manager will be required to re-submit a SZA submission.

If there are no amendments, other than dates, to the original submission, the Traffic and Transport Manager will submit a completed SZA Application Form R with a copy of original TCP, quoting the previous SZA number, otherwise a new SZA submission will need to be prepared and submitted.

It is the responsibility of the Project/Discipline Project Manager for each Work area (e.g. Station Manager) to ensure the validity of each approved SZA, thus regular monitoring of SZA expiry dates is essential. The Traffic and Transport Manager will maintain an ROL database, which will contain details of SZA to assist with this process.

d. Road Occupancy Speed Limits and Zoning

Roadworks speed limits and zoning in road occupancies shall comply with Section 8.2 of the RMS's "Traffic Control at Work Sites" manual and Section 5.6 of the RMS's NSW Speed Zoning Guidelines. The Traffic and Transport Manager shall issue copies of speed zone authorisations applicable to any road occupancies to the Engineer(s) and Supervisor(s) responsible for the construction activities within the area of the Road Occupancy who shall retain the copies for the period of the ROL.

Authorisation limitations

Generally, in accordance with the RMS requirements, the responsibility for implementation, coordination, and compliance of the speed zone remains with the Project. The RMS granting of the approval does not:

- constitute approval by the RMS of any actions that relate to traffic safety, occupational health and safety, or environmental issues and management;
- relieve the Project or any person of their responsibility for compliance with legislation, regulations, or established operational procedures; or
- change any management accountability or responsibility.

7.7 Traffic Switching Procedures and Arrangements

Traffic switches will be required to be carried out during the staged delivery of the project. The traffic switches will be localised to each of the station work areas with varying impacts on the through traffic, local traffic, public transport, school buses, bicyclists and pedestrians. There will also be a number of minor traffic switches within each section of the project.

Specific Traffic Management Plans and accompanying TCP's will be developed for each traffic switch. In doing so, NRT will:

- Comply with Appendix 58 of the Scope and Performance Requirements of the project - TfNSW General Specifications G10 to ensure that the design of any temporary works associated with the traffic switch provides a satisfactory temporary pavement design, vertical profile, horizontal alignment, sight distances, and lane and shoulder widths.
- Comply with the Australian Standard 1742 and AUSTROADS Guide to Traffic Engineering Practice to ensure the temporary traffic control devices used are appropriate for the traffic switch.
- Ensure the road lane capacity is not impacted where-ever practicable.
- Obtain all necessary TMC and local council approvals.
- Inform the public through the processes described in the Stakeholder and Community Involvement Plan.
- Program and resource the traffic switch event to the satisfaction of the TMC and local authorities, ensuring adequate labour, plant, traffic control devices, traffic barriers, asphalt milling resources and pavement marking resources.
- Tool-box the traffic switch with all relevant staff, labour and subcontract resources to ensure a clear understanding of individual and team responsibilities during the day / night of the traffic switch.
- Brief the any relevant emergency services agencies about the proposed traffic switch, including the police, ambulance, fire brigade, rural fire brigade and any affected service authorities.
- Make due allowance for the impact of holidays, other peak traffic events and special events.
- Organise an independent pre and post-opening road safety audits on the proposed traffic switch, and invite TfNSW representative to participate in the audits.

- Address and respond to the issues, deficiencies and recommendations identified in the independent road safety audits.
- Ensure all signposting, pavement marking, safety barriers and any portable or temporary traffic signals are completed before the opening of temporary roadways to traffic, pedestrian and cyclist route changes and public transport facility changes.
- Ensure sufficient resources are available to monitor the traffic after the traffic switch and to carry out minor adjustments.
- Inform the TfNSW of any circumstances that require modifications to the approved temporary traffic arrangement.
- Continue monitoring the new temporary traffic arrangement on a regular basis.

Unless otherwise approved by the TfNSW Representative, traffic will be switched to a temporary roadway or detour only where the NRT's usual workforce will be on site for a minimum of two days thereafter.

7.8 Provisions for Special Events

A special event in traffic management terms is defined as any planned activity that is wholly or partially conducted on a road, requires multiple agency involvement, requires special traffic management arrangements and may involve large numbers of participants and/or spectators. The special event will ordinarily generate increased traffic volumes, reduce traffic speed and lower the capacity of the road network.

Special events for the project may include:

- major construction milestones,
- road openings requiring the planning of an event to mark the opening, or
- externally hosted events such as marathons, fun runs, cycling races and rides, parades, marches, motor sport events and major sporting events and festivals or street market days.

Other special events may be related to the cumulative effect of construction – a wide range of city construction projects will be underway at the same time.

Special events that may affect the OTS works include:

- Major Events in the Sydney Olympic Park
- Castle Hill Show (Castle Hill Showground)
- Circus (Castle Hill Showground)
- Orange Blossom Festival, Castle Hill Main Street (Old Northern Road, between Showground Road and Crane Road)
- Sydney Country Music Festival (Bella Vista)
- Castle Hill Growers Market (Castle Hill Showground)
- Hillsong Church events, e.g. November Men's Conference (Norwest)

Details of special events in the vicinity of the site are provided in the Stakeholders and Community Involvement Plan (SCIP). The Traffic and Transport Manager and Stakeholder and Community Liaison Manager will consult with each of the event organisers regarding the dates for their events, liaise with the Traffic and Transport Liaison group and work closely with the TMC, Sydney Olympic Park Authority (SOPA), Blacktown City Council, Hills Shire Council and Hornsby Council regarding events for which they are coordinating.

In particular, during construction works at the Showground Station Site, Special event bus services at Carrington Road, Castle Hill, for Royal Easter Show, and other major sporting and entertainment events in the Sydney Olympic Park will be maintained. Details of measures that NRT will implement to minimise disruption to these services will be provided in the Station specific TMP that will be prepared for the Showground Station.

NRT shall cooperate with the TfNSW's Representative, the TMC and other relevant authorities in the running of the event and in the logistics involved in facilitating traffic and pedestrian flows on the existing road network or through the Construction Site. The NRT shall participate in regular forums, communicate, and cooperate in the management process with the road authority, event organisers and relevant project members and clients.

The NRT Traffic and Transport Manager and Stakeholder and Community Liaison Manager shall hold ongoing discussions with TfNSW regarding dates for major milestones, traffic switch or road openings, some three (3) months prior to anticipated events. A schedule has been developed by TfNSW with a comprehensive listing of sporting fixtures, rail line closures for work possessions, events such as concerts, festivals, public events such as Anzac day, major cruise line arrivals etc.

The NRT Traffic and Transport Manager and Stakeholder and Community Involvement Manager shall provide at least eight (8) weeks' notice to the TfNSW's representative of the intended date for a major milestone, traffic switch or road opening to enable TfNSW to organise official media and/or community events. TfNSW and the Stakeholder and Community Involvement Manager will commence early discussions within the TTLG as to what measures to be implemented to ensure minimal disruption to each event as a result of OTS construction activities. Suggestions or comments from the TTLG will be included in any review of this CTMP or the Precinct specific TMP. The Operations Manager, Traffic and Transport Manager and Stakeholder and Community Involvement Manager will then resource and implement the desired plan.

Similarly, ideas shall be considered for any other opportunities for media events – milestone achievement, local road openings etc. at least four (4) weeks prior to the event.

In consultation with TfNSW, the Traffic and Transport Manager shall develop a specific TMP and accompanying TCP's for the special events in accordance with NSW Government's 'The Guide to Traffic and Transport Management for Special Events'.

7.9 Manage Construction Traffic

Description

This process covers the management of construction vehicle movements on site and throughout the road network on projects. It details driver responsibilities, types of vehicles,

hazardous movements, planning vehicle movements, haulage route on site, haulage route on-road network, access points (gates), traffic control, monitoring, and safety and environmental controls.

NRT will monitor the use of local roads by construction heavy vehicle traffic and will prepare a road dilapidation report for all non-arterial roads likely to be used by construction traffic prior to commencement of construction and after construction is completed. A copy of this report will be provided to all affected Local Councils. With the exception of damage resulting from normal usage of the road, NRT will repair any damage that has resulted from the construction of the project. The methods that will be used to manage the survey and repair of local roads are discussed in Section 9.

Process

The effective management of construction vehicle movements on site and throughout the road network is critical to the success of the project. NRT will plan all construction vehicle movements with the aim to minimise the risk to other road users and keep the traffic generated by the project to minimum.

The types of construction vehicle movements will include:

- Deliveries of sheds for site compound
- deliveries of materials, supplies, plant or equipment to site;
- transportation of over dimension loads;
- deliveries of rail sleepers, concrete, steel and road, and
- regular trips by construction personnel in work trucks and utes.

Driver responsibilities

All drivers employed on the NWRL OTS project, whether direct employees or contractors, have a responsibility to drive safely, and comply with State road regulations, the Australian Road Rules and any other directives issued on the project.

Drivers will exercise care at all times. Special care will be taken when exiting and entering traffic flows, and whilst travelling within the construction site.

Where issued, drivers will comply with requirements of the project's "Safe Driving Policy" and any Vehicle Movement Plans (VMPs) developed for each precinct.

Drivers will aim to reduce the impacts of noise and light, from vehicle movements, e.g. avoiding unnecessary and excessive use of horns and compression breaking.

During project inductions, all heavy vehicle drivers would be provided with the emergency response plan for construction traffic incidents.

Types of vehicles

The types of vehicles used will vary depending on the type of infrastructure being constructed.

- Off-road plant items / vehicles include: excavators, dump trucks and all wheel drivers tippers.
- On-road registered vehicles include: 4wd utilities; single unit trucks with or without dog trailers; semi-trailers; B-Doubles; and over dimension floats / platforms and so on.

Hazardous movements

A SH&EWMS will be prepared to address the requirements for the hazardous movements below:

- entering and exiting construction sites to and from adjacent travel lanes;
- reversing manoeuvres within the work area and in the adjacent travel lanes;
- travelling through the work area intermingling with construction personnel and in the vicinity of unprotected hazards, and
- slew/turning paths of excavators and cranes

NRT will apply controls and measures to mitigate the risk of these hazardous movements including, but not limited to: restrict the practice of specific movements (e.g. turning bans); the provision of permanent major traffic controls and devices, installation of temporary traffic controls; the installation of deceleration, acceleration and turning lanes outside of the through lanes; educating drivers; installation of warning devices on vehicles and the application of VMPs.

Plan vehicle movements

NRT acknowledges that attention must be given to the safe movement of construction vehicles when planning construction activities.

Construction vehicle movements for each phase of work will:

- comply with all relevant environmental approvals and the project deed;
- minimise the number of vehicle movements by balancing earthworks and recycling excavated materials;
- undergo a risk assessment to identify specific hazards and facilitate the application of mitigation measures;
- promote safe driving principles;
- provide an efficient operation and use of major roads, but minimises the impact on the local road network and local community;
- Have depots and stock piles at locations that minimise travel distances and impacts;
- Operate under a Vehicle Movement Plan (VMP) whether on-site or on-road
- where feasible, restrict haulage operations to the construction corridor;
- implement appropriate environmental controls;
- include safe access points (gates);
- provide an efficient and well maintained vehicle fleet; and

- determine the most appropriate hours of operation that will minimise the impact on the road network and local communities.
- reduce light vehicle movements by encouraging use of public transport or providing remote parking then ferrying staff to the construction site using mini-bus/es
- project staging, vehicle movement and scheduling, equipment and resourcing would be coordinated.

A Vehicle Movement Plan (VMP) is defined as a diagram that shows the preferred travel paths for vehicles associated with a construction site entering or leaving the traffic stream. A VMP will show travel paths for trucks at key points on routes remote form the construction site such as places to turn around, accesses, ramps and side roads.

Manage haulage routes on-site

Whilst driving on construction sites there are a number of hazards a driver may experience, including: rough surfaces; deep excavations; low clearance; other larger plant; steep embankments, existing infrastructure etc. Of equal importance is the safety of unprotected construction personnel working within the construction site. For each phase of work NRT will ensure that:

- a risk assessment is conducted for all work activities and vehicle movements;
- VMPs are developed for all regular vehicle movements;
- regular toolbox meetings to discuss on-site vehicle movements and changes to work areas;
- all plant are fitted with flashing yellow lights, reversing alarms, horns and two-way radios;
- access tracks are clearly defined and sign posted;
- pedestrian tracks and crossing points are defined and clearly sign posted;
- where possible, large items of plant, such as scrapers are separated from smaller plant items;
- where possible, workers do not operate within 3 metres of moving plant, and plant operators are tool boxed when moved into a new work area;
- spotters and / or Traffic Controllers are positioned when workers are operating in close proximity to access tracks and plant;
- appropriate warning signs are installed on the approach to hazards or conflict points;
- where necessary appropriate traffic controls are installed;
- consideration is given to the installation and enforcement of reduced on-site speed limits (i.e. maximum of 10km/h whilst passing workers on foot); and
- as necessary, delivery vehicles are to be managed on-site.

Manage haulage routes on the road network

NRT will plan all vehicle movements to minimise the impact on the road network. Where possible, movements will be limited to the construction site, by fine tuning the alignment to achieve an earthworks balance and reusing materials generated by excavations to reduce the need for off-site transportation.

When on-road haulage operations are required NRT will, for each phase of work:

- conduct a traffic analysis to determine the number of vehicle movements and assess the potential impact on the road network;
- develop a route that maximises the use of the arterial roads and minimises the use of local roads;
- assess the route and determine the potential impacts on existing developments / traffic generating facilities (such as schools and child care facilities, shopping centres, intersections, LATM etc.);
- select a route that has a minimal impact, and or where the potential impacts can be effectively managed;
- as required, consult with Local Councils, TMC and key stakeholder via the TTLG;
- select haulage vehicles that can safely negotiate the route;
- where possible, avoid movements during peak periods;
- develop a detailed VMP and toolbox all drivers;
- ensure the fleet are regularly maintained;

Minimise need for queuing in the local road network

The majority of heavy vehicle movements will be associated with the removal of spoil and other materials and the delivery of construction materials to construction sites. To minimise need for queuing in the local road network, project compounds will be used as marshalling and staging areas for heavy vehicle trips associated with the removal of spoil and other materials and the delivery of construction materials to construction sites. Trips will be managed by radio communication between construction sites and truck drivers.

Plan construction access points (gates)

The most hazardous movement for construction vehicles occurs when the vehicle is entering or exiting the construction site to and from the public road as drivers do not expect vehicles to be turning from or entering the traffic flows.

The hours of operation for the movement of construction vehicles will be in accordance with the approved operating hours as required by the Contract and in accordance with the environmental approvals.

To provide a safe entry and exit to the construction site from the public roads, safe access points or gates, NRT will:

- where feasible, utilise existing local road to access construction work areas;
- keep the number of access points to a minimum;
- ensure the new construction access points do not adversely impact on any existing intersections, traffic facilities or traffic generating developments;
- only install access points that are clearly visible, and have adequate sight distance (minimum Safe Intersection Site Distance (i.e. 155m @ 60km/h), unless managed by traffic controllers;

- design intersections and access points in accordance with AUSTROADS Guide to Road Design, Part 4A (2009), the RMS Supplement and the RMS Road Design Guide;
- ensure the intersection configuration has sufficient capacity to accommodate the traffic generated by the construction site;
- the access is designed to accommodate the turning movements of the largest vehicles that will be accessing the site;
- ensure the treatment maximises rear end protection for vehicles turning right into the access;
- appropriate acceleration and deceleration lanes are provided;
- where installed, security fences and gates are indented to maintain clear sight lines and enable vehicles to park clear of the adjacent travel lanes;
- ensure access points are constructed of a suitable all weather surface that prevents debris from being tracked onto the travel lanes
- ensure all access points are clearly visible to approaching traffic and signposted accordingly.

The AUSTROADS Guide to Road Design, Part 4A – Unsignalised and signalised intersections and the RMS Road Design Guide provide guidance on the design of intersections and access points. No matter the type of intersection configuration implemented, temporary traffic controls may be required from time to time to facilitate short-term major haulage and the movement of over-dimension vehicles.

Implement traffic controls

The risk assessment conducted as part of the project safety risk assessment and/or VMP will identify specific locations where traffic controls are required to mitigate a particular hazardous movement.

The type of temporary traffic controls to be installed by NRT will include:

- truck warning signs in advance of access points;
- reduced speed zones on the approaches to access points and turning locations;
- traffic controllers at access points to facilitate entry and exit movements;
- provision of deceleration and acceleration lanes, and

In addition, all access points will be appropriately sign posted on the approaches and at the access with a unique identification number. A Traffic Control Plan (TCP) will be developed for sign posting schemes, which may be a separate plan or incorporated within the TMP and /or VMP.

Implement environmental controls

The Project will implement various environmental controls and measures for the haulage operations to mitigate the impacts on surrounding environment and road network. Environmental controls are outlined in the Project's CEMP.

Main measures to be applied by NRT will include:

- the compulsory covering of all loads prior to leaving the site;
- provision of suitable wheel cleaning facilities at all major access points;
- dust suppression measures will be implemented at loading / unloading areas and along the routes;
- haulage vehicle noise and pollution emission will be monitored to ensure they are in compliant with the vehicles manufacturer's specifications;
- clean-up crews, including street sweepers, will be available to manage material spills;
- all materials will be managed in strict accordance of the Project's and any subsequent approvals.

Monitor haulage operations

During haulage operations NRT will conduct regular monitoring of various haulage routes to ensure that:

- operations are complying with the Project's approvals and the requirements of the CTMP.
- haulage vehicles are travelling along routes that have been agreed for use with road authorities;
- haulage operations are not causing traffic congestion throughout the road network;
- the VMPs are being applied and complied with;
- haulage vehicles are fitted with appropriate warning devices;
- all necessary Traffic Control Plans are installed, and
- the required vehicle and access point environmental controls are applied.

The monitoring of local roads can be conducted in consultation with the Local Councils.

Managing Compound Traffic

The following management and mitigation measures shall be assessed and implemented where reasonable and feasible at all construction compounds and other ancillary facilities associated with construction:

- Compound access points will be developed with appropriate consideration of access requirements for adjacent properties and businesses.
- TCPs would be prepared, where required, for any temporary changes to the traffic environment associated with compound use and establishment.
- Access for emergency vehicles and to fire-fighting equipment will be maintained.

Manage Deliveries

NRT acknowledges that attention must be given to the safe deliveries to all site compounds when planning construction activities. All delivery drivers and subcontractors will be provided NRT's policy on deliveries to worksites and project offices which will consist of, but not limited to the following:

- All drivers making deliveries to any NRT's construction sites or site compounds will be provided the relevant Vehicle Movement Plan that indicates the approved routes for construction vehicles.
- Traffic warning signs will be installed on approaches to each construction access points in accordance with approved Traffic Control Plans.
- All construction access points (gates) will have specific numbers and project-specific gate signs will be installed at every access point as shown in Figure 6 below.
- All drivers will be inducted regarding gate numbers, approved access routes, timing of deliveries and parking area on-site.
- Queuing of delivery vehicles outside the construction site before construction hours will not be permitted. Only approved roadside lay-bys are to be used by delivery vehicles.
- Drivers must not use wait in private properties or block private driveways .
- All deliveries will be planned to be carried out during the approved construction hours.
- Delivery of any over-dimension loads will be in accordance with conditions stated in RMS permits.

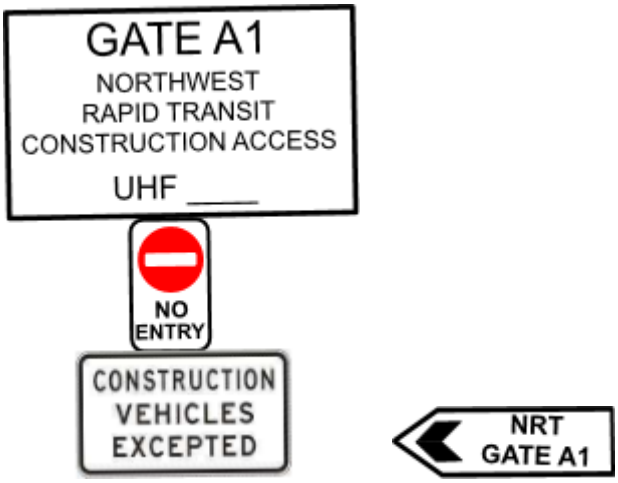


Figure 6 Typical NRT Construction Gate Signage

7.10 Traffic Control Inspections

This process focuses on the continuous monitoring of temporary traffic controls at construction sites during the construction phase. The aim of this process is to provide a safe environment for workers and road users, monitor compliance against the Traffic Control Plan and identify safety hazards in order to implement corrective solutions. This process details the type, frequency, responsibility and checklists for inspections.

Process

Inspections of the temporary traffic controls will be conducted during the construction phase, focusing on monitoring compliance against the TCP and identifying safety hazards, to enable implementation of corrective solutions.

The NRT will conduct four main types of inspections on projects:

- pre-start and pre-close down inspections of short-term traffic control;
- Fortnightly inspections of long-term traffic control
- Night inspections of long-term traffic control; and
- pre-opening inspections of minor temporary traffic switches.

These inspections will be carried out in accordance with Appendix A of Australian Standard 1742.3.

Frequency

The Traffic and Transport Manager will ensure regular inspections of temporary traffic controls are conducted during the construction of this project.

The frequency of the traffic control at work sites inspections will be subject to the construction program and the types of activities in progress. The responsibility and frequency of inspections are summarised in Table 20 below.

Table 20 Frequency of Inspections

Inspection	Responsibility	Frequency
Pre-start & pre-close down	Traffic Control Leading Hand and Site / Project Engineer	Before works start and prior to closing down. The Leading Hand must also conduct regular inspections throughout the shift.
Fortnightly inspections	Foreman and Site / Project Engineer	On the day before the work begins, and at least once per fortnight thereafter.
Night Inspections	Foreman and Site / Project Engineer, Traffic & Transport Manager	Once during the first week, and at least once every two months
Pre-opening inspections of minor temporary traffic switches	Station/Area Manager & Traffic & Transport Manager	Prior to opening any minor temporary traffic switches, lane deviations or side-tracks.

Note: The reference to the Site / Project Engineer in the above table refers to the engineer that is responsible for the work activity and the development / implementation of the TCP.

Inspection checklists

The NRT will apply comprehensive checklists to assist the inspection process.

The short-term, long-term, or night inspections checklist is based on the Appendix E of the RTA's TC@WS Manual. The pre-opening inspection of minor temporary traffic switches is based on Checklist 4 of the AUSTROADS Guide to Road Safety, Part 6: Road Safety Audit.

Amendment

If issues, deficiencies and improvement opportunities are identified relevant to this plan, the plan shall be amended as required by the Traffic and Transport Manager. The amendment plan will then be submitted to the relevant road authority for approval.

7.11 Emergency and Incident Responses

NRT will provide support to emergency service agencies and road authorities in the management of emergencies and unplanned incidents on roadways approaching and within the construction area, and will assist in the restoration of normal traffic conditions.

The types of emergencies or unplanned incidents that may occur include, but not limited to:

- Motor vehicle crashes
- Grass, bush and building fires
- Environmental spills
- Terrorist attacks and bomb threats
- Construction type incidents involving closure of a lane, shoulder, footpaths or shared path.
- Structural/ catastrophic failures
- Police operations
- Inclement weather conditions, including flooding and major storm events
- Anti-social behaviour

As part of the Project's Occupational Health and Safety Plan, the Safety Manager has developed an *Incident Management* Plan [LINK PP46-11.0-01] which will incorporate standard operating procedures for managing emergencies and unplanned incidents. This plan will:

- define the NRT's roles and responsibilities in the event of incident and emergencies;
- establish and define NRT's emergency response procedures dealing with different category of emergency arising from construction, traffic, environmental incidents;
- identify and define the roles and responsibilities of key NRT's project personnel during emergencies and incidents;
- list the available NRT's resources;
- define the road authority and emergency services roles and responsibilities in the event of an incident or emergency;

- outline the communication protocols and system (see also the Stakeholder and Community Involvement Plan);
- outline incident administration procedures including training, record keeping etc.;
- establish formal arrangements for the review and maintenance of the plan;
- communicate the incident and emergency procedures to the wider construction team as part of the Site Induction process; and
- disseminate summary copies of the procedures to senior staff responsible for traffic and safety on the NWRL OTS Project.

The Safety Manager will:

- undertake regular tool-box talks with the project team to reinforce the procedures; and
- issue a copy of the Incident and Emergency Management Plan to relevant agencies.

In the event of an incident or emergency, the TTM will:

- immediately notify the TFNSW representative and the TMC of the occurrence of the incident or emergency.
- ensure the Infrastructure Director, the Safety Manager and the Stakeholder and Community Involvement Manager are made aware of the incident as soon as practicable;
- follow the procedures set down in the Incident and Emergency Management Plan and a Crisis Management Plan;
- record its knowledge of the facts and will photograph the approach to the accident site including the location of all safety devices and signs as soon as possible after the accident. A report with this information is to be forwarded to the TMC and RMS within 2 days of the accident.
- provide a recommendation on any changes that may be required to the CTMP or to the TMP that may be in operation for the area in which the incident occurred.

During Project inductions, all construction workers would be provided with the emergency response plan for construction traffic incidents.

In the event of an incident or emergency involving environmental harm, the station or precinct manager will notify Environmental & Sustainability Manager and relevant authorities as required by POEO Act immediately.

7.12 Road Safety Audits

NRT will conduct road safety audits during the construction phase, aiming to identify any deficiencies and or safety hazards, regardless of current practice, standards or operations, to enable NRT to implement appropriate corrective solutions.

The management of road safety audits covers:

- the types of road safety audits;
- methodology for conducting road safety audits;
- frequency of audits;

- responsibility for conducting the various audits; and
- comprehensive audit checklists.

Management Overview

AUSTROADS defines a road safety audit as a formal examination of a future road or traffic project or an existing road, in which an independent, qualified auditor(s) reports on the roads crash potential and safety performance.

NRT will arrange for independent road safety audits to be undertaken immediately prior to and after opening any part of the Project Works or Temporary Works to traffic. In addition, an external road safety audit of long-term signage plan on public road on, the entire project, may be carried out every 6 months

NRT will engage road safety auditor(s) who are pre-qualified with the RMS to conduct the external audits.

Audit Methodology

- A commencement meeting held between auditor(s) and Traffic and Transport Manager
- A review undertaken of the relevant documents (e.g. design plans, TMPs, TCP's)
- Site inspections conducted day and the night, noting deficiencies and hazards.
- All findings assessed in accordance with relevant practices, guides and standards.
- A draft list of deficiencies will be forwarded to the Traffic and Transport Manager for review and, where necessary, actioned immediately.
- Concise audit reports, including tables detailing identified deficiencies drafted
- A Completion Meeting conducted with the Traffic and Transport Manager
- Audit report, without items actioned, forwarded to TfNSW Representative and TTLG.
- The Traffic and Transport Manager provides a response to the audit findings, including copies to TfNSW, TTLG and independent auditors
- Station or Precinct Manager(s) provide resources to rectify deficiencies.

NRT will consider and respond to the recommendations of the independent road safety audits and to the recommendations of any road safety audits that may be undertaken by RMS.

Copies of all road safety audits, without items actioned, will be issued to TfNSW's Representative and TTLG within 24 hours of it being supplied to NRT. The items will then be actioned as required and once completed, a final report of issues and actions will be issued to TfNSW and TTLG. A copy of the report will also be made available to the Director General, Planning and Infrastructure, upon request.

Audit Frequency and Responsibility

The Traffic and Transport Manager will be responsible for managing the project's road safety audit program. The frequency of road safety audit on the project is outlined in Table 21 below.

Table 21 Road safety audit frequency and responsibilities

Audit Type	Responsibility	Frequency
External audit of temporary traffic arrangements	Traffic and Transport Manager to engage a pre-qualified auditor who is external to the NWRL OTS project	At least every 6 months
Pre-opening audit of new roads and or temporary traffic switches		Prior to the opening of all new roads and temporary traffic switches
Post-opening audit of new roads and or temporary traffic switches		After the opening of all new roads and temporary traffic switches

7.13 Design of Traffic Control Plans

Description

A Traffic Control Plan is defined in the RMS's "Traffic Control at Worksite Manual", as a diagram showing signs and devices arranged to warn traffic and guide it around, past or, if necessary through a construction site or temporary hazard.

All Traffic Control Plans (TCP's) will be developed with the aim to:

- **Warn** drivers of changes to the usual road conditions.
- **Inform** drivers about changed conditions.
- **Guide** drivers through the work site.
- **Safety** for workers, motorists, pedestrians and cyclists.

The TCP's prepared by the NRT will be based on the principles and measures outlined in the CTMP,

Design Process

Traffic control plans for any activity associated with the OTS works, including the use of temporary warning signs, must be developed based on the following documents:

- TfNSW G10;
- RMS Traffic Control at Worksites Manual, v4, 2010.;
- AS 1742.3 – 2009 "Traffic Control Devices for Works on Roads"; and
- CTMP.

TCP's will be designed using Rapid Plan software for shorter term construction TCP's and CAD software for longer term operational TCP's.

Types of TCP's

Site specific TCP's will be developed for both long and short term works.

TCP's for long-term works will be prepared for the installation of side-tracks, diversions, reduced roadwork speed limits, road closures, auxiliary lane closures, shoulder closures, provision of temporary safety barriers and construction access points. Where required, enhanced sign posting and road markings schemes will be applied along side-track and where significant changes have been made to intersections.

Long-term TCPs will include wayfinding signage to direct pedestrians, commuters and vehicles around the construction site.

Short-term TCP's will be installed as required to facilitate day-to-day construction activities such as, the: installation of side-tracks, median crossovers, installation of safety barriers, surveying and geotechnical activities, line marking, sign installation, construction of tie-ins of new precinct roads to existing roads, site deliveries, plant movements and haulage operations.

Site Inspection

Prior to preparing a TCP, the Traffic and Transport Manager and the Station Manager or Construction Engineer responsible will conduct a detailed site inspection with the aim to identify the existing: lane configurations, intersection treatments, traffic control signage, speed zone locations, side roads, alignment restrictions horizontal and vertical, private access points, bus stops, cycle/pedestrian facilities, bridge structures, roadside furniture, and any feature that may affect the installation of the desired TCP.

It should be noted: TMC will generally not approve a road occupancy application unless evidence is shown that a site inspection has been conducted. Details of the site inspection should be recorded on the Location Risk Assessment (LRA) form located in the RMS's TC@WS Manual.

Qualifications

A TCP can only be prepared or modified by a suitably qualified person who has successfully completed the RMS's TCAWS select / modify TCP's course (red card). In addition, a TCP can only be designed or audited by a person who has completed the RMS's TCAWS design and inspect TCP's course (orange card).

7.14 Traffic Controllers

The NRT will ensure that all persons who are required to perform the duties of a traffic controller have completed the relevant training package(s) and are examined and certified as competent to perform their respective traffic controller duties including:

- Package T89.4 Guidelines for the Selection of Traffic Controllers; and
- Package T89.5 So You Think You are Going to be a Traffic Controller?

Prior to engaging Traffic Controllers in the Project Works and/or Temporary Works, the NRT will ensure that the persons required to perform the duties of a traffic controller have completed the relevant training package(s) and are examined and certified as competent to perform their respective traffic controller duties.

The TTM will keep a record of all Traffic Controllers and their traffic controller certifications and will advise the TfNSW's Representative of the names of proposed traffic controllers and their RMS Traffic Controller's Certificate Numbers and expiry dates. The organisation undertaking the traffic control will be registered under RMS's Registration Scheme Category G Traffic Control.

The Traffic Controllers must wear high visibility safety vest and bearing the RMS logo and the words 'Authorised Traffic Controller'. The vest will only be worn when controlling traffic.

The TTM will ensure the Traffic controllers carry their current RMS or RMS endorsed Traffic Controller's Certificate and wear the vest as an outer garment at all times when controlling traffic.

7.15 Manage Pedestrians

This process describes how NRT will safely manage pedestrians on roads, businesses, homes and any directly affected schools during construction. NRT recognises the importance of giving consideration to all road users, including vulnerable users and not just vehicle traffic. This process covers pedestrian needs; defining the work area; provision of temporary footpaths and provision of pedestrian crossings.

NRT will identify pedestrian needs by considering the:

- number of pedestrians;
- type of pedestrian activity: whether office, retail, residential, school or recreational;
- origin and destination points of the pedestrians, and their desired travel path;
- needs of vulnerable pedestrians, such as young children, the elderly, vision impaired, disabled people, people with prams and trolleys and
- proximity of pedestrian generation developments, such as schools, shopping centres, railway stations, bus terminals etc.

Guidance on the needs of pedestrians is provided in various parts of AUSTROADS Guide to Road Design and AUSTROADS Guide to Traffic Management.

Pedestrian access requirements and impacts as a result of construction will be assessed, maintained considered during the development of TMPs, TCPs and PMPs in consultation with the relevant public transport providers and other transport stakeholders via the TTLG.

Define the work area

Unlike motor vehicles, pedestrian movements within and outside of the road reserve are generally unrestricted, with free access available to most areas.

To provide a safe environment for pedestrians, NRT will clearly define the boundaries of all work areas, and where required provided defined walking paths.

Fencing will be installed to restrict physical access to hazardous areas and for site security, which will be appropriately sign posted. Various types of temporary and semi-permanent fencing may be installed, including plastic mesh; water filled plastic delineators; weldmesh

pool fencing; chain wire mesh and so on. All physical barriers will be maintained during the project and appropriately secured to prevent injury to the public.

Provide temporary footpaths

Where the work areas restrict access to existing footpaths, NRT will implement alternative routes and facilities. Alternatives may include using the opposite footpath, detours via other streets, or the provision of temporary footpaths through the work area.

All temporary footpaths will be:

- clearly defined;
- signposted appropriately to indicate the direction of the footpath;
- constructed of an all-weather surface, free of trip hazards;
- designed to accommodate the type of pedestrians to be encountered within the area;
- where required, provided with pram ramps, hand rails and street lighting;
- the minimum width specified by the RMS and
- kept well maintained whilst in operation.

When pedestrians are diverted onto the existing roadways adjacent to traffic flows, additional treatments will be implemented by NRT to ensure adequate separation is provided and clearly delineated. Section 9.3 of the RMS's Traffic Control at Worksites (TC@WS) manual provides guidance on the design parameters of footpaths.

The AUSTROADS Guide to Road Safety provides guidance on the design parameters of footpaths. RMS requirements and specifications will be considered when designing alternative pedestrian footpaths and associated facilities.

Provide pedestrian crossings

Where feasible, NRT will aim to maintain all existing pedestrian crossing facilities. Where this cannot be achieved alternative facilities that are a similar standard to the present facility will be provided. Table 22 lists potential construction activities that may impact pedestrians. At construction access points, traffic controllers will manage heavy vehicle movements and pedestrian movement across access points.

Table 22 Potential pedestrian impacts

Precinct	Location	Impacts
Epping Service Facility	Beecroft Road	The footpath on the western side of Beecroft Road outside the Epping Service facility site will be closed during construction. Alternative path for pedestrian movements between Epping Town Centre and the Beecroft Road/ M2 overbridge via Ray Road and Kandy Avenue has already been signposted to facilitate the TSC works. This signage will be maintained during the OTS works.
Epping Service Facility	Ray Road	Management of pedestrians/ vehicle conflict at vehicle access point

Precinct	Location	Impacts
Cheltenham Service Facility	Kirkham Street	Management of pedestrian/ vehicle conflict at vehicle access point Access to pedestrian bush track to be maintained.
Cherrybrook Station	Castle Hill Road	Management of pedestrian/ vehicle conflict at vehicle access point
Castle Hill Station	Terminus Street & Old Northern Road	Management of pedestrian/ vehicle conflict at vehicle access point
Showground Station	Carrington Road	Management of pedestrian/ vehicle conflict at vehicle access point
Showground Station	Access road to Showground	Management of pedestrian/ vehicle conflict at vehicle access point and along road
Norwest Station	Brookhollow Road	Management of pedestrian/ vehicle conflict at vehicle access point
Bella Vista Station	Celebration Drive & Balmoral Road	Management of pedestrian/ vehicle conflict at vehicle access point
Kellyville Station	Samantha Riley Drive	Management of pedestrian/ vehicle conflict at vehicle access point
Rouse Hill Station	Commercial Drive	Management of pedestrian/ vehicle conflict at vehicle access point out of Northern Bus Layover site
Cudgegong Road Station & RTRF	Cudgegong Road and Tallawong Road	Management of pedestrian/ vehicle conflict at vehicle access point out of Northern Bus Layover site

Guidance on the design parameters of pedestrian crossing facilities is provided in various parts of The AUSTROADS Guide to Road Design and AUSTROADS Guide to Road Safety. A Traffic Control Plan will be developed by NRT for all alterations to existing pedestrian crossing facilities. All provision for pedestrians will comply with pedestrian aspects of The Austroads Guide to Road Design and Austroads Guide to Road Safety. NRT will obtain approval from the relevant road authority (Local Council and/or the TMC), prior to adjusting any existing pedestrian crossing facility or the implementation of any new temporary facility.

7.16 Manage Bicycles

This process describes how the NRT will safely manage cyclists during the construction of this project. NRT recognises the importance of giving consideration to all road users, including vulnerable users and not just vehicle traffic.

NRT will maintain all existing cycling facilities during the construction of the OTS works. Alternative temporary facilities that comply with cycling aspects of Austroads Guide will be provided if any cycling facilities are affected by construction works.

The following considerations will be made during design of an alternative cycle route or cyclist detours.

Consider cyclist needs
When planning the alternate route activities, NRT will give consideration to the:

- number of cyclists;
- type of cycling activity: school children, recreational, commuter, utility, touring or sport training;
- origin and destination points of the cyclists, and the connectivity of their routes;
- needs of vulnerable cyclists, such as young children;
- proximity of cyclist generating developments, such as schools, universities, public transport terminals etc., and
- the travel speed of cyclists.

Cycling aspects of Austroads Guide (2014) and NSW Bicycle guidelines provides guidance on:

- the needs of cyclists,
- the design parameters of on-road facilities
- the design parameters of cycle crossing facilities.

A TCP will be developed by the NRT for all alterations to existing cycle paths or existing cycle crossing facilities.

7.17 Maintain Access for Over-dimension Vehicles

The RMS Special Permits Unit controls the issuing of permits to enable operators to travel on the NSW route network. Subject to the size of the load, co-ordination with the NSW Police may be required. The RMS Operating Conditions: “Special permits for oversize and over mass vehicles and loads”, (2007) document outlines the various operating restrictions and conditions.

All operators are required to apply to the RMS for a permit for oversize and overmass vehicles that exceed the statutory dimension limits, (e.g. semi-trailer over 4.3m height, 2.5m wide, 19.0m in length, or exceeding the maximum axle loadings for the vehicle configuration). In Sydney Metropolitan Zone during daytime, an oversize vehicle must not travel after 6:00am.

All over-dimension vehicles utilised on the project, such as for delivery of bridge girders or rolling stocks, will be procured through specialist haulage contactors who will determine the vehicle configuration and apply for permits. NRT will ensure that the movement of any oversize loads to and from the site, including the hours of movement, would be in accordance with the conditions specified in the RMS permits.

To facilitate the movement of heavy vehicles/over-dimension loads NRT will:

- consider the movement of heavy vehicles and over-dimension loads when developing Traffic Staging and Traffic Control Plans;
- avoid unnecessary traffic control operations so as not to disrupt freight movement;
- limit restrictions on the carriageways, and when required provide alternatives to maintain access for transport operators;
- liaise with the police, permit authority and operators, and provide up-to-date information of any obstructions that may impact on movement of over-dimension vehicles;
- when traffic control operations are in place, Traffic Controllers will effectively co-ordinate the movement of over-dimension vehicles through the construction site;
- Assist the RMS Special Permits Unit and over-dimension operators by notifying the RMS of any obstructions that may impact on over-dimension vehicle movements; and
- If required, arrange the removal and re-instatement of roadside furniture and traffic control devices that impede over-dimension vehicle movements.

7.18 Property Access and Services

NRT considers minimising the impact and maintaining the amenity of local residents in the vicinity of the construction works to be very important. In this regard, various environmental and traffic management measures will be applied, in particular those measures that maintain access to the road network.

NRT will manage the impact of construction activities on the access to properties and the interruption of existing services.

TTM shall ensure the precinct specific TMPs address instances whereby:

- property access is impacted or disrupted by the construction activities, and,
- properties are impacted by interruptions to services.

The TMPs and the associated TCPs shall indicate how suitable access will be maintained at all times to all properties and between severed portions of properties, and the arrangements to be made with all persons affected by interruption of any Services.

NRT shall maintain property access unless approval from all persons having legal access to the property has been obtained. NRT shall ensure that there is no reduction to the level of access (vehicle, cyclist or pedestrian) to any commercial property during its relevant trading hours without the written agreement of the owner and occupier.

Should existing access require modification the following principles will be applied:

- The location of the entry is to be as close as practicable to the existing entrance
- Entrances to businesses are to be sign-posted
- Changes to level of access during business hours will be by written agreement from the owner
- Temporary restrictions to access, for construction reasons, shall be managed in consultation with the owner of the premises.

- Arrangements will be made with all affected persons in relation to the impacts and consequences of the interruption of any Utility Services.
- All arrangements made for entry to private property are to be approved by the Infrastructure Director.
- Suitable access will be maintained at all times to all properties and between severed portions of properties. In this case, appropriate detours will be planned and implemented.

The TTM shall ensure the Stakeholder and Community Liaison Manager is kept informed of the construction activities impacting property access or interruptions to Services, in sufficient time (minimum 4 weeks) to ensure that the required community consultation and notification processes can be carried out in a timely manner.

7.19 Manage Public Transport

NRT acknowledges the importance of maintaining access for public transport. This process provides details on the management of buses during construction

Process

It is noted that potential impacts to public transport during the construction period will be determined and managed in consultation with the relevant public transport providers and other transport stakeholders via the TTLG.

NRT will consider the potential impacts on bus routes and bus stop facilities when preparing Traffic Management Plans and Traffic Control Plans for the relevant precinct.

NRT will maintain the existing facilities, however where this cannot be achieved, equivalent temporary facilities will be provided. All temporary facilities will be developed and constructed in accordance with the RMS, Council/s, and Ministry of Transport requirements. All proposed changes to existing routes and bus stops facilities will be discussed with the bus operator, prior to the commencement of works, and notifications provided to passengers.

Where required as part of the traffic control plan, NRT will supply and install public transport service-related portable and temporary signage, and remove them when the signs are no longer required.

Bus stops located on Tallawong Road, Rouse Hill may require temporary relocation to Cudgegong Road during the construction of new overbridge in Tallawong Road. Any changes to the existing bus stops would be detailed as part of the precinct TMP and discussed with the bus operators.

The management of buses at key transport interchanges such as Castle Hill and Rouse Hill will be further reviewed during the development of the detailed construction staging plans and associated precinct Traffic Management Plans to minimise impacts on existing services. It is expected that the bus terminal at Rouse Hill Town Centre will be moved to Tempus Street during the SVC works prior to the start of the OTS works.

Special event services for Sydney Olympic Park (Royal Easter Show, and Major Sporting and Entertainment Events) will be managed in consultation with relevant stakeholders; in particular, in Carrington Road at the Showground Station site.

The North West T-Way (T-Way) operations will be maintained at all times during construction. The T-Way stops at Memorial Avenue (Burns), Samantha Riley Drive (Riley) and Rouse Hill will require some alteration to operations or car parking. However, this will be carried out to ensure that bus operations are not hindered and that safe conditions are provided for passengers at all times. Construction access may be required via short sections of the T-Way at:

- Rouse Hill – in the vicinity of the White Hart Drive intersection
- Sanctuary Drive – in the vicinity of the Sanctuary Drive/Windsor Road intersection
- Memorial Avenue – both sides of Memorial Avenue
- Bella Vista – south of Balmoral Avenue.

7.20 Conduct Reporting

NRT acknowledges the importance of keeping the client and stakeholders regularly informed. NRT will report to the TfNSW, the TTLG and other stakeholders on all traffic and transport management matters during the delivery of the OTS works. The process of submitting these reports will be as follows:

Frequency of reporting

The frequency of reports provided by NRT will be in the following four categories:

- immediate - reporting of major vehicle accidents (with a report following within two days), breaches of any ROL conditions ;
- weekly reports - on planned lane closures / road occupancies and the performance results of recently implemented changed traffic conditions / operations;
- monthly reports - summarising: construction activities; proposed major traffic changes; upcoming media releases; incidents; This will be done via the Traffic and Transport Liaison Group (TTLG).

Methods of reporting

The methods of reporting to be applied by NRT will include:

- verbal reports on issues of an urgent nature, (e.g. initial reporting of major unplanned incidents, adverse community / political feedback);
- safety incidents will be recorded in the safety database: ‘Cintellate’, as per Safety reporting process.
- formal written reports in a format subject to client and stakeholder needs and
- presentations to consultative and stakeholder forums.

8 Communication and consultation

The NRT will meet the reasonable needs and desires of the community for information on changed traffic conditions including property access provisions, bicyclist impacts, pedestrian impacts and heavy haulage transport impacts. The NRT will ensure that the public are informed of planned traffic arrangements, including any temporary traffic switches or other activities resulting in likely delays. This includes emergency services, the road transport industry, driving community and cyclists.

Communications, consultation and the dissemination of information associated with traffic and access will be undertaken as outlined in this section.

The aim of consultation and broad communication on traffic and access matters is to:

- Facilitate community feedback regarding traffic issues
- Recommend alternative and appropriate travel patterns during periods of change
- Manage traffic impacts to protect affected residential and business amenity
- Provide timely, accurate and comprehensive traffic information using all available media to inform road users and the community of the project's traffic impact mitigation measures.

Ongoing consultation with stakeholders will ensure that traffic management measures are developed, which minimise disruption or inconvenience.

All information to be released to the community in relation to the management of road networks and traffic systems will be submitted to the TfNSW's Representative for approval before being distributed.

Details of NRT's processes and procedures for community liaison are contained in the *Community Liaison Implementation Plan*.

8.1 Planning

Minimisation and, where possible, elimination of disruption will be achieved through implementation of effective traffic management solutions tailored to project and community/stakeholder needs. These solutions will be achieved in conjunction with a comprehensive construction staging planning process and require ongoing consultation and communication on traffic and access matters.

The planning process will ensure clear guidance is given to drivers, pedestrians, cyclists, consulting authorities and the community well before the work begins.

The measures that will be used for effective traffic management and planning include:

- be available at all reasonable times to address any community questions concerning planned traffic arrangements including any temporary traffic switches
- attend and participate in the Traffic and Transport Liaison Group meetings

- Provide project display material when key project milestones are reached. The display material must include, as a minimum:
  - access information for temporary and permanent works, including pedestrian/cyclist access and temporary traffic arrangements
  - any traffic disruptions and restrictions, and,
  - the construction of temporary detours.
- Directional signage and line marking to direct and guide drivers and pedestrians through or around worksites
- Portable Variable message signs (VMS) and/ or RMS permanent VMS in consultation with TMC, to advise drivers of potential delays, traffic detours, speed restrictions or alternative routes (where required/possible)
- Notification of proposed traffic changes via newspaper, radio, internet and community briefing/consultation sessions
- Active on-site management by traffic controllers, physical barriers or temporary traffic signals to facilitate access and egress around and through construction sites
- Maintenance of the implemented traffic management scheme
- Ensuring access to existing business premises and residents for pedestrians, servicing and parking needs is maintained.
- Local emergency services would be advised of any planned changes to traffic arrangements beforehand. Advice would include information about anticipated delays to traffic, extended times of work, locations of lane possession or any likely major disruptions.
- Preserving existing public transport, kiss and ride and taxi zones.

A rapid response to issues, events and incidents as they arise during the construction works will be particularly important for ensuring ongoing road user safety, traffic efficiency as well as local access and amenity.

8.2 Consultation

NRT recognises a critical first step is to identify the audience and relevant stakeholders. A list of identified stakeholder groups is provided in the SCIP and the Project stakeholder and communications database (Stakeholder and Community Liaison Manager). The key traffic and transport stakeholders identified for this project are outlined in Table 23.

Table 23 Project Traffic Stakeholders

Stakeholders and Target Audiences	Interest
Affected Landholders	
See SCIP for complete list of landholders	High

Stakeholders and Target Audiences	Interest
Local Government Authorities	
The Hills Shire Council	Medium
Blacktown City Council	Medium
Hornsby Council	Medium
Road User Groups and Service Providers	
Private road users	High
Public transport users	High
Norwest Association Limited	
NRMA	High
Bicycle NSW and Bike North	High
Transport NSW	Medium
Public Transport Providers (Hillsbus / Busways / STA)	Medium
Sydney Trains	High
Bus and Coach Association	High
NSW Taxi Council	High
Freight & logistics industry	High
Australian Trucking Association	High
Australian Logistics Council	Medium
Quarry industry	Low
Construction Industry	Medium
Emergency Services – Police, Fire, Rural Fire, Ambulance, SES	High
Utility Providers	Medium
Transport Workers Union	Low
Government Agencies	
Department of Infrastructure and Transport	Medium
Political Representatives (See CSCP for details)	Medium
National Transport Commission	Medium
Roads and Maritime Services	High

Stakeholders and Target Audiences	Interest
Transport Management Centre	High

It is noted that the TfNSW has already established a Traffic and Transport Liaison Group (TTLG) for the entire North West Rail Link Project after commencement of the TSC work. The Traffic and Transport Manager (TTM) will be a member of the TTLG and will act as the authorised representative for the OTS Project.

This CTMP has been developed in consultation with and meet the reasonable requirements of the relevant road authorities (RMS, TMC and Councils) and transport operators via the TTLG. TTM will continue to consult with relevant stakeholders via the Traffic and Transport Liaison Group (TTLG).

The Traffic and Transport Manager will, if required, attend and update Local Council Traffic Committees and provide information sessions and workshops with key stakeholders. In addition, a copy of this CTMP will be issued to all members of the TTLG, including relevant road authorities, public transport operators, the NSW Police and other emergency service agencies.

Issues to be discussed at these forums may include but are not limited to: potential risks associated with proposed changed traffic conditions; public safety; construction activities; community concerns; public transport issues; pedestrian and bicycle movements; and communication strategies etc. Traffic and Transport Liaison Group

As mentioned in Section 8.2, TfNSW has established a Traffic and Transport Liaison Group (TTLG) for the entire North West Rail Link Project. The group is chaired by the representative of the TfNSW. The Traffic and Transport Manager (TTM) will be a member of the TTLG and will act as the authorised representative for the Project. The TTM will inform the group of the following matters relating to the OTS Works:

- Construction staging (existing or proposed)
- Copies of the CTMP for comments
- Traffic operations, including changes in regulatory traffic controls
- Community concerns, comments and feedback
- Impacts on road-based transport operations
- Issues related to pedestrians, cyclists or mobility-impaired road users
- Communication strategies and actions to be taken.

In addition to the TTM, a representative from the Stakeholder and Community Relations Team, the Construction Team or other relevant specialists, as required, may also attend TTLG meetings to discuss and provide input regarding:

- Community and other stakeholder concerns, comments or feedback
- Communication strategies and actions to be taken
- Construction works, design or staging issues.

8.3 Notifications and Advertising

A co-ordinated approach between the Principal's Representative, the TTLG, and the TTM will enable the public to receive timely and accurate information relating to the OTS works.

The communication tools that the NRT will use for information dissemination with regard to traffic and transport for the project are outlined below:

- **Notification to emergency services:** Emergency service agencies provide a vital service to the community, and they need to have up to date information about changed traffic conditions and potential delays they may experience throughout the road network.

  The Traffic and Transport Manager will ensure all emergency services agencies are regularly consulted about proposed changed traffic conditions, with the TTLG being the main forum for notification of major changes.

- **Static roadwork information signs:** The installation of roadwork information signs is considered the most effective method to notify road users of changes to the road network. Several standard roadwork information signs are available for use during construction. These will be utilised to advertise changed traffic conditions, such as road closures, turning restrictions and periods where delays are expected.

  The design of all signs (i.e. letter height, colours and wording) will comply with the Australian Standards and RMS sign posting guidelines.

  These information signs will be incorporated within the site specific TCP, and are to be installed a minimum of one week prior to the traffic changes. Further, when changes to the existing lane, and/or intersection configurations occur (T1-23) "Changed Traffic Conditions Ahead" warning signs may be incorporated within the site specific TCPs. These signs will remain in position for between four to eight weeks after the change has been made. In consultation with the TMC, permanent VMS, where available, may also be used to advise motorists of lane and/or intersection changes.

- **Variable Message Signs (VMS):** Variable message signs (VMS) are real-time traffic communications tools that help reduce delays, keep traffic flowing smoothly and can enhance road safety. During construction NRT will utilise portable and existing permanent VMS to enhance advanced warning signage and provide changed traffic condition information to road users.

  When VMS are not being used for construction purposes, they can also be utilised to support incident management operations, and for the display of road safety messages. The message library for all VMS will be developed in consultation with the TfNSW representative.

- **Changed traffic condition advertising:** Changed traffic conditions that have the potential to impact on road users will be advertised, via newspaper media, radio, the project website and weekly traffic updates. All advertising will be developed by the Community Team in consultation with the client, and is not to be released until the client's acceptance has been obtained.

  The NRT's advertising strategy has two components. These include the provision of regular updates disseminated via e-mail, the project website, facsimile etc., and any required advertisements for major traffic changes/impacts. The traffic updates are distributed to various key stakeholders including the TMC for dissemination on the Live Traffic/IRIS information service.

- **Community letterbox notifications:** In addition to the above, the Community team will also distribute letterbox notifications to residents and commercial developments that may be affected by construction activities, including changes to traffic conditions. The client will be given notice to review and approve prior to distribution.

  Table 24 provides a summary of all the methods that will be used to inform the community of changes to road conditions. It also provides a summary of the purpose and frequency of each method of communication.

Up to date information on both existing road conditions and project activities that are likely to affect traffic in the general site area will be provided by a variety of methods and media.

Table 24 Community notification methods

Tool	Purpose	Frequency
Advertisements	To inform of significant traffic changes, detours and traffic disruptions as required to comply with approvals; in local newspapers	At least 7 days prior to change
Community email	To allow communication with the Project team	monthly
Community information line	Access to the project team during construction hours with message service after hours via a 1800 number	N/A
Letterbox notifications	Notification letters to inform identified sensitive receivers (local residents and businesses) affected by changes to road network and traffic conditions	At least 7 days prior to change
Site-specific construction update newsletter	Information about traffic changes will be included in the monthly newsletter to be distributed to residents adjacent to construction sites	Distributed quarterly
TfNSW website	Information provided to TfNSW in electronic format to be uploaded to the TfNSW website include copies of advertisements, traffic alerts, notification letters and other public material related to the works, CLIP, Business Management Plan, photos of completed and current activities, and responses required for online discussion forum enquiries.	To coincide with distribution
NRT website	Information about the construction activities will be placed on the website including information about traffic changes, and executive summaries of publicly available reports relating to NRT's activities.	As required
Signposting	Information or directional signage at the location of the traffic change to give advice to road users and pedestrians on duration of change of alternative paths. Temporary signage to indicate changes to bus stops or pedestrian paths and crossings	At least 7 days prior to change
Social media updates	Site-specific social media pages will be updated daily and will be used to communicate targeted information including changes to traffic conditions	Daily
Traffic alert email	Communication to transport authorities, operators and emergency services to advise of traffic changes including road or lane closures and detours	At least 7 days prior to change

Tool	Purpose	Frequency
Variable Message Signs (VMS)	Electronic variable message signs provide advanced notice to road users of major traffic changes. Provide advance notice on emergencies, incidents and traffic delays	At least 7 days prior to change, or as required

8.4 Media and Community Events

The NRT will:

- Hold on-going discussions with TfNSW's Representative regarding dates, commencing at least 2 months prior to the anticipated occurrence of the event, for major milestones / traffic detours and the opening of the Works or any stage of the Works and Local Road Works to traffic.
- Give the TfNSW's Representative at least 8 weeks' written notice of the date for commencement of Construction and at least 8 weeks' written notice of the date of opening of the Works or any stage of the Works and Local Road Works to traffic, to enable the TfNSW's Representative to organise any associated official media / community events.
- Plan for an event of some form to mark the opening of the Works to traffic.
- Not announce the proposed opening of the Works and / or any stage of the Works or Local Road Works to traffic without the approval of the TfNSW's Representative.

9 Road Maintenance during Construction

Description

The NRT shall maintain and repair, from the commencement of Construction until the Date of Construction Completion:

- All local roads used by heavy vehicles associated with the OTS works from construction access points to the arterial road;
- The Temporary Works, including temporary pedestrian and cyclists thoroughfares and detours, temporary public transport facilities, and temporary roadways and detours.
- Any potholes and other failures within 2 days of the occurrence of the pothole or failure.

Upon completion of the OTS works, all temporary traffic arrangement or detours will be removed and the area restored to at least the state which existed prior to the commencement of the OTS works. The NRT shall ensure that all infrastructure, assets and amenities in the stated areas are at all times fit for purpose, clean and tidy in accordance with condition E5 of the Minister's Conditions of Approval (SSI 5414) and the Annexure A, Section 6 of the RMS Works Authorisation Deed for the NWRL OTS Works.

- NRT will repair immediately, any damage caused by NRT's activities, to any road, footpath, shared path or cycleway which is open to the public, and restore the road, footpath, shared path or cycleway to a condition at least equivalent to the condition it was in immediately prior to the occurrence of the damage.

Process

In consultation with the TfNSW and RMS representatives, NRT will appoint a qualified person, independent of the NWRL OTS project to carry out a dilapidation report of all local roads from the construction access or egress point to the arterial road. In accordance with the requirements of the RMS WAD and the Interface Agreements with Blacktown City Councils, The Hills Shire Council and Hornsby Shire Council, the maintenance of and monitoring of local roads on the routes of heavy vehicles will include the following methods:

9.1 Condition Surveys

Prior to commencement of Construction of the Project Works and / or Temporary Works, the NRT will undertake a condition surveys of all local roads in the heavy vehicle routes to record the condition of the existing road using the following tests:

- Falling Weight Deflectometer (FWD)
- Rutting, Roughness & Texture Depth
- Visual Survey
- Cracking

These surveys will be conducted in both directions, i.e. loaded in one direction and empty in the return direction on each haulage route.

Details to be included in these survey methods are provided in Annexure A.

9.2 Condition Reports

All survey results must be included in Condition Reports which must also include:

- ground and infrastructure condition survey outcomes which include detailed records (such as dated photographs) of the pre-construction conditions of the ground and infrastructure which could be affected; and
- details of all locations and the extent of existing visible failures/ cracking including photographs and maps identifying each failure/ cracked area must be kept with a unique number and description.

9.3 Monitoring Plan

The Monitoring Plan must as a minimum:

- identify the haulage routes, including potential alternative routes;
- include a map and a list of identified impacted roads;
- list the current base level of heavy vehicle volumes / ESA's on identified routes;
- cover the area of pavement to be monitored, including kerbs, kerb ramps, verge (back of kerb to property boundary), bridges;
- identify the initial routes to be surveyed and schedule of the planned future surveys;
- include a schedule of Condition Surveys, with at least one survey to be conducted not more than three months and not less than one month before the commencement of use of the respective haulage route as required by clause 14.4;
- estimate remaining pavement life under existing traffic flow for each haulage route;
- estimate remaining pavement life under proposed increased traffic flows as a result of construction traffic for each haulage route;
- include recommendation to protect and manage the structural integrity of the pavement during the period of construction works;
- determine actions if the end of the pavement life is reached during the predicted construction traffic usage; and
- recommend restoration methodology and/or method to measure pavement dilapidation in monetary terms.

9.4 Maintenance and Repair

The dilapidation reports will be submitted to TfNSW , RMS and the relevant local council authority. The maintenance and repair of the affected local roads will include the following :

- the identification, planning, programming, design, scheduling, delivery, recording and reporting on all required maintenance and repair activities;
- Maintain functional performance to the condition and standards that existed at the time of the pre-construction survey.

- Be carried out in accordance with the recommendations of the dilapidation report.

9.5 Final Inspections

Following completion of construction, a final dilapidation report will be carried out by an independent and qualified person or team acceptable to the RMS and TfNSW representatives to assess any damage that may have resulted from construction of the NWRL. NRT will reinstate the roads in accordance with the methods specified in the final dilapidation report and in consultation with RMS and the relevant local council authority.

Inspections shall include a survey jointly with the RMS's Representative and relevant local council authorities of the condition of the affected local roads within four weeks of the anticipated Date of Construction Completion to verify the condition of the roads since the pre-construction survey was undertaken.

9.6 Record Keeping

Records and reports of all maintenance activities will be documented accordingly. The Traffic and Transport Manager shall be responsible for the keeping of records of road maintenance and shall provide the Monthly Summary Reports to the Infrastructure Director for inclusion within the Monthly Progress Reports.

10 Monitoring, Review and Amendment

The NRT shall review the effectiveness of the implementation of the CTMP and modify the CTMP accordingly.

Roles

Quality Manager, Traffic and Transport Manager

Management

In accordance with the requirements of the Quality Plan, the Quality Manager shall undertake periodic audits of the procedures and checklists covering the processes set down in the CTMP.

The Traffic and Transport Manager shall make the time available to provide the necessary assistance to the Quality Manager in carrying out the audit.

Together with the Infrastructure Director and the Quality Manager, the Traffic and Transport Manager shall review the outcomes from the audit. Non-conformances discovered during the audit shall be addressed within a stipulated time-frame. The Traffic and Transport Manager and Quality Manager shall agree whether the corrective actions determine if the CTMP requires amendment, updating or further development.

Each amended, updated or further developed version of the CTMP shall be promptly submitted to the Project Verifier and the TfNSW's Representative for review.

The Traffic and Transport Manager shall also undertake ongoing development, updating and amendment of the CTMP at regular intervals during the delivery in accordance with the process set out in the CEMP. Additional reviews of the plan shall be undertaken under the following conditions:

- Changes in design and construction process
- Prevention of the recurrence of any compromise to the safety of road users and the public,
- Significant change to the scope of works,
- Changes in Law,
- Any breach, or potential breach, of fitness for purpose warranty of the CTMP;
- The outcomes of quality audits and corrective actions that recommended a review of the CTMP.
- If the Director Design and Delivery determines that it is appropriate

The relevant TCPs and VMPs will also be reviewed when there is a change in the routes of construction vehicles, addition or deletion of construction access points or substantial changes in construction methods.

Records

NRT will keep the following records for the purpose of Quality Assurance Specification Q6:

- Construction Traffic Management Plan
- TCPs including temporary signposting, traffic control devices and traffic control methods
- Notice that temporary roadways and detour to traffic (including portable signs or temporary traffic signals) are conforming.

Annexure A Consultation

Condition of Approval SSI-5931	Condition of Approval SSI-5414	CEMP Document	Agency Consultation	Status	Comments	NRT Response
E29(c)	E34(c)	Construction Traffic Management Plan	Roads and Maritime Services	Submitted	None received to date	
			Blacktown City Council	Submitted	BCC notified that the Plan is to be sent to the Council Traffic Committee in Feb 2015 prior to provision of comments	Site Specific Traffic Management Plan for Phase 1 approved by BCC Local Traffic Committee on 3 February 2015 and adopted by Council on 18th February 2015
			Traffic and Transport Liaison Group	Submitted	Comments from RMS are as follows: "RMS has reviewed the NRT Construction Traffic Management Plan and have no comments on its content and no objection to its utilisation."	Noted
			Hill Shire Council		Section 3.2.1 Page 17 This section relates to the WAD as being a contractual agreement between either TfNSW and RMS or TfNSW and the relevant Council. The Councils actually have an Interface Agreement with TfNSW and not a WAD. This needs to be clarified in this and other subsequent sections of the CTMP where the WAD is referred to.	CTMP updated to include Councils' Interface Agreements. See Section 3.2.2.
					Table 2 Page 27 At the Norwest Station construction site no mention is made of the removal of the temporary bridge on Brookhollow Ave or is this covered by the 'Road works to Brookhollow Ave'?	Yes, removal of the temporary bridge is covered by the 'Roadworks to Brookhollow Avenue'. Details of construction staging for Norwest Station will be included in TM&SP for the station.
					Section 5.6 Page 36 Council is still concerned about the potential for NRT employees to use street parking around those construction sites where there is a parking deficit. The CTMP says they will 'be asked' to park at other sites and then car pool but this seems to rely on the cooperation of the employees rather than making it mandatory for them not to use street parking. There is also concern that while mention is made of street parking, at a number of the sites there are existing public and private carparks where workers could also choose to park if they cannot park within the construction site. These carparks also need to be mentioned in the CTMP as not to be used by workers.	Noted. Failure to comply with Project's parking management plan at each precinct will result in disciplinary action as advised during induction. Public/ Private carpark will be mentioned in the TM&SP for each precinct.
					Section 6.6 Page 49 In Paragraph 1 Line 2 it refers to 'opposite Fairway Drive'. It should be Century Circuit. The section also refers to the closure of the western end of Brookhollow Avenue for 'up to three months'. NRT needs to be reminded that a TMP will need to be prepared and considered by the Local Traffic Committee and this will need at least three months lead time	Corrected.
					Section 6.8 Page 50 Paragraph 1 Line 2 and Paragraph 2 Line 1 both refer to 'Windsor Rd' instead of 'Old Windsor Rd'.	Noted. Windsor Road replaced with Old Windsor Road.

Condition of Approval SSI-5931	Condition of Approval SSI-5414	CEMP Document	Agency Consultation	Status	Comments	NRT Response
					Section 6.11 Pages 53 – 55 No mention is made of some other major infrastructure developments such as the Showground Rd and Memorial Ave upgrades, or major commercial developments such as the expansion (both north and south) of the Rouse Hill Town Centre, the Dyldam development in Samantha Riley Dr and the Zerefos development adjacent to the Castle Hill bus interchange	Section 6.11 updated to include other major infrastructure developments.
					Section 7.8 Page 66 The CTMP lists a number of Special Events that may affect the OTS works. Although the Orange Blossom Festival in Castle Hill Main street is mentioned, Council conducts a number of other events at various times of the year using the Main Street precinct which could have an impact.	Noted.
					Section 8.2 Consultation In Table 21 the level of interest for each stakeholder is listed as either high, medium or low. Interested in knowing how the Taxi Council or Bicycle NSW are nominated as 'High' whereas each of the Councils are only 'Medium'	Corrected.
					Section 9 Page 93 Under 'Process' no mention is made of consultation with Councils or of the obligations under the Interface agreement with each Council. In fact the Interface Agreements are not mentioned at all. It is possible that NRT are confusing the RMS WAD with the Interface Agreements?	Consultation with Council is carried out through the TTLG. Councils are listed as members of TTLG>See Section 8.2.
					Section 9.1 Page 93 Again no mention is made of the Interface Agreement. Annexure A needs to be compliant with the conditions of the Interface Agreement as it relates to road condition surveys. There appears to be some discrepancies, certainly with The Hills OTS Interface Agreement.	Interface agreements included in Section 9.1
					Annexure B Page 117 As per the Interface Agreement, other standards that must be complied with and should be listed are Council's 'Subdivision and Engineering Specifications' and Development Control Plan 12.	Noted. The Requirements of Blacktown City Council, The Hills Shire Council and Hornsby Council added to list of standards and specifications
		CTMP Phase 2 Annexure I	Hornsby Shire Council	Draft	It is unclear whether workers will be making their own way to the site. 3 workers per vehicle is a high occupancy rate that can only be accepted at Epping as this has good public transport connections. Not acceptable at Cheltenham and Cherrybrook which will require street parking contingency plans to manage any overflow of worker parking. The OTS construction phase will involve more trades subcontractors driving their own vehicles creating greater parking demand.	The vehicle occupancy rates of 1 per vehicle for engineers and technical staff and 3 per vehicle for workers and trades are based on observation of occupancy rates at previous construction projects. Trades vehicles will create additional parking demand as these have already been included in the overall parking demand. It should be noted that the same rate of 3 per vehicle was used in the Construction Traffic Management Plan for Tunnel Contract.
		NWRLOTS-NRT-PRD-TM-PRO-910240-A	Hornsby Shire Council		Page 16. Section 2.3.3 – refers to TfNSW Temporary Transport Plan. Council has not seen a copy of this.	Temporary Transport Plan for the proposed ECRL shutdown was prepared for and managed by the TfNSW, not NRT. It is likely that HSC would have been consulted during the preparation of the plan. The plan is a public document available in the TfNSW's NWRL website.
		NWRLOTS-NRT-PRD-TM-PRO-910240-A	Hornsby Shire Council		Page 39. Appendix A. Stakeholder Table rates Taxi Council as "Low interest". Taxi Council will have a keen interest in changes to parking management in Langston Place that will impact on taxi services.	Noted. Taxi Council's interest corrected.
		NWRLOTS-NRT-PRD-TM-PRO-910380-A	Hornsby Shire Council		Page 10. First sentence refers to Showground Road instead of CSF.	Noted. Sentence corrected

Condition of Approval SSI-5931	Condition of Approval SSI-5414	CEMP Document	Agency Consultation	Status	Comments	NRT Response
		NWRLOTS-NRT-PRD-TM-PRO-910380-A	Hornsby Shire Council		Page 13. Section 2.6.1. Reference to gate K1 states exit left onto Kirkham. This should be exit right into Kirkham.	Noted. Sentence corrected
		NWRLOTS-NRT-PRD-TM-PRO-910380-A	Hornsby Shire Council		Page 15. Section 2.8. Second paragraph first sentence – refers to bus track – should be bush track.	Noted. Sentence corrected
		NWRLOTS-NRT-PRD-TM-PRO-910379-A	Hornsby Shire Council		Page 18. Section 2.6.1. Refers to Showground Road instead of Cherrybrook	Noted. Sentence corrected to Cherrybrook Station
		NWRLOTS-NRT-PRD-TM-PRO-910379-A	Hornsby Shire Council		Page 21. Section 2.9. Last sentence refers to Cherrybrook Rd instead of ????	Noted. Sentence corrected to Cherrybrook Station.
		NWRLOTS-NRT-PRD-TM-PRO-910379-A	Hornsby Shire Council		Page 26. Section 2.18. Refers to Showground Rd instead of Cherrybrook Station.	Noted. Sentence corrected to Cherrybrook Station.
		CTMP Phase 2	The Hills Shire Council		The TMPs are satisfactory. No objection or comments.	

Annexure B Traffic Management Measures and Compliance Matrix

Clause	Requirement		Reference in this document
Construction Traffic Management Plan			
	(j)	In addition to the requirements identified in the Environmental Documents, the *Construction Traffic Management Plan* must comply with and address the requirements of TfNSW's General Specification G10 and OpCo's traffic management and safety obligations detailed in the deed. The *Construction Traffic Management Plan* must also address and detail the:	
	(i)	traffic and transport management team structure, including key personnel, authority and roles of key personnel, lines of responsibility and communication, minimum skill levels of each role and interfaces with the overall project organisation structure	Section 4.1
	(ii)	traffic management responsibilities of all relevant construction personnel in regard to all aspects of construction of the OTS Works and the Temporary Works	Section4.2
	(iii)	strategies and methodology for the management of impacts on road traffic and public areas including the minimisation of impacts on landowners and local businesses that are affected by OpCo's Activities	Section 6
	(iv)	strategies and methodology for ensuring the safety and amenity of the public and road users affected by OpCo's Activities	Section 7.1
	(v)	traffic and transport management arrangements and procedures for the construction site, including those relating to: A. site security, site access and signage B. road user delay management C. information signage and advance warning signs D. speed limit signage E. traffic switching procedures and arrangements F. provisions for special events G. frequency of inspections H. emergency and incident responses	Sections 7.2, 7.3, 7.4, 7.6, 7.7, 7.8, 7.10, & 7.11

Clause	Requirement	Reference in this document
	(vi) traffic management strategies and construction staging in relation to the properties around the construction site and the road network that are affected by OpCo's Activities	Section 7.18
	(vii) strategies and methodology for the communication of changes to traffic flow, vehicle, pedestrian and bicycle movements and arrangements to road users and the affected public affected by OpCo's activities	Section 8
SSI 5414 Infrastructure Approval Conditions of Approval		
E34	(c) A ***Construction Traffic Management Plan*** to manage construction traffic and transport access impacts of the SSI. The Plan shall be developed in consultation with and meet the reasonable requirements of the relevant road authority and transport operator(s), and shall include but not be necessarily limited to:	Section 8.2
	(i) a *Traffic Route Management Plan* that identifies: i traffic generation from other major infrastructure developments ii construction traffic and heavy routes and associated traffic impacts iii types and volumes of construction vehicles and associated route and time restrictions, including details of oversized load movements iv potential traffic disruptions and temporary and permanent detours v traffic noise impacts, sensitive receivers and times of the day vi management, mitigation and restoration measures	Sections 5.4 - 5.8 and Section 6
	(ii) a *Parking Management Plan* that identifies: i parking requirements and on and offsite parking arrangements and associated impacts ii remote parking arrangements and associated access between sites and public transport nodes iii alternate parking arrangements for displaced parking iv communication and parking management measures	Section 5.6

Clause	Requirement	Reference in this document
	(iii) site traffic and access management plans that detail: v site access and associated route and turning movements and the design and signalisation of intersections vi potential activities that could result in disruption to traffic and transport networks, including pedestrian, cyclist and public transport networks and during special events vii the timing of works to limit disruptions to the road and transport networks viii the maintenance of access to and safety of transport networks, parking and property ix service facilities, station sites and other locations identified by the relevant road authority or transport operator	Section 6.10
	(iv) an *Incident Response Plan* detailing responses to the management of an event that directly involves or impacts on traffic and transport networks	Section 7.11
	(v) mechanisms for the monitoring, review and amendment of this Plan	Section 10
C2((a)-(e))	The SSI shall be designed and constructed with the objective of integrating with the existing and proposed road and related transport networks and minimising adverse changes to the efficiency, accessibility and safety of the networks, and where feasible and reasonable, facilitate an improved level of service, in relation to permanent and operational changes. Detailed design and assessment of related traffic, parking, pedestrian and cycle accessibility impacts and changes shall be undertaken: (a) In consultation with, and to the reasonable requirements of the Traffic and Transport Liaison Group (a) In consideration of existing and future demand, connectivity (in relation to permanent changes), performance and safety requirements (b) To minimise and manage regional and local area traffic impacts (c) To ensure access is maintained to property and infrastructure (d) To meet relevant design, engineering and safety guidelines, including Austroads, Australian Standards and RMS (RTA) requirements Changes shall be certified by an appropriately qualified person(s) and certified copies of civil, structural and traffic signal design plans shall be submitted to the relevant road authority for consideration and acceptance prior to the commencement of the relevant works	Beyond the scope of CTMP (See Design Report)
C3	Bridgeworks (under and over) and other structures in the proximity of the road and associated transport networks shall be designed to ensure the efficient and safe operation of the networks	See Design Report

Clause	Requirement	Reference in this document
C4	Permanent road works, including vehicular access, signalised intersection works and works relating to pedestrians, cyclists, and public transport users will be subject to safety audits demonstrating consistency with relevant design, engineering and safety standards and guidelines. Safety audits shall be submitted to the Traffic and Transport Liaison Group (condition C8) prior to the completion and use of the subject infrastructure and shall be made available to the Director General upon request	Section 7.12
C8	A Traffic and Transport Liaison Group shall be established to inform the detail design of temporary construction and permanent operational traffic and transport measures and to inform ongoing management measures prior to and during construction of the SSI. The Group shall be chaired by the Proponent and shall comprise representatives from the Department (Land Release) relevant road authorities (including the RMS and Councils), transport operators (including bus and taxi operators), and emergency services as required. The Group shall be consulted on and shall inform the preparation of the *Construction Traffic Management Plan* (condition E34) and *Station Access Plan(s)* (condition C5)	Section 0
C9	The Proponent shall undertake supplementary analyses as required by the Traffic and Transport Liaison Group and, where relevant, detailed modelling of traffic changes and impacts that have the potential to have a significant detrimental impact on traffic flow efficiency with the objective of informing and improving road network changes and traffic management measures. The requirement for and details of the modelling shall be undertaken in consultation with the Traffic and Transport Liaison Group. The revised traffic management measures, including changes to the pedestrian, bicycle and public transport networks, shall be incorporated into the *Construction Traffic Management Plan* (condition E34(c)) and *Station Access Plan(s)* (condition C5)	Section 0
C13	The Proponent shall, during the detailed design of stations, consult with bus operators in relation to the provisions of both short and long term bus layover facilities, including driver facilities, during construction and operation. The Proponent shall ensure that the reasonable requests of bus operators are met	Section 7.19 Also see design report for details of consultation during design.
C48	The Proponent shall prepare dilapidation surveys and reports (including movement prediction studies) on the condition of roads, footpaths, services and utilities affected by construction. The Proponent shall carry out rectification work at the Proponent's expense and to the reasonable requirements of the owners.	Relevant dilapidation surveys Section 9
C49	All excavations adjacent to RMS road infrastructure shall meet the requirements of RMS Technical Direction GTD 2012/0001 "Excavation adjacent to RMS infrastructure".	Section 7 - Management
C50	The Proponent shall consult with relevant Councils regarding the use of any weight restricted road by heavy construction vehicles if required.	Section 1.8, 8.2

Clause	Requirement	Reference in this document
E1	Where construction will impact the efficiency and safety of road and related transport networks (including traffic flow, access, bus routes, parking and user safety), the Proponent shall develop, assess and implement appropriate management measures in consultation with the relevant road authority, transport operator(s) and emergency services, and adjoining major land holders, as relevant. Such measures shall be addressed in the *Construction Traffic Management Plan* (E34(c)) and shall include but not be limited to: (b) Construction site access, including the efficient and safe egress and ingress of vehicles, consistent relevant Austroads, Australian Standards and RMS requirements (e) Parking management, including on and off street and remote parking and access (f) Heavy vehicle management, the restriction (unless otherwise approved) of heavy vehicles on certain routes (for example T-Ways and past education facilities) and the minimisation of heavy vehicle traffic in peak traffic periods (g) Bus rerouting and access to bus stops (h) Full and partial road closures and associated restrictions, detours and the like (i) Special event management (j) The retention and reinstatement of emergency and property access (k) The retention of user and passenger safety, including pedestrians, cyclists, public transport users, including at stops and related facilities Incident response planning	Section 6
E2	Access to property shall be maintained during construction unless otherwise agreed with the property owner in advance. A landowner's access that is physically affected by the SSI shall be reinstated to at least an equivalent standard, in consultation with the property owner	Section 7.18
E3	Impacts to existing parking (on and off street) should be minimised, including the amount of spaces reduced and the time associated with this reduction. Where parking is impacted, particularly for periods greater than four weeks, the proponent shall identify and implement, where feasible and reasonable, alternate parking arrangements. Displaced vehicles must not be accommodated on the state road network	Section 5.6 for specific details on Phase 1 works
E4	Without limiting the outcomes of the *Construction Traffic Management Plan* for the SSI, construction traffic shall be scheduled, where feasible and reasonable, to outside of AM and PM peak hours, and also during special events. Methods used to limit construction traffic outside of peak traffic periods shall be incorporated into the *Construction Traffic Management Plan* (E34(c))	Sections 6 & 7.5 (ROL Process).

Clause	Requirement	Reference in this document
E5	Upon determining heavy vehicle routes associated with the SSI, and prior to use of these route(s) by heavy vehicles, an independent and qualified person or team shall undertake a Road Dilapidation Report on local roads from the construction access/egress point(s) to the arterial road network. The report shall assess the current condition of the road and describe mechanisms to restore any damage that may result due to traffic and transport related to the construction of the SSI, during construction. The Report shall be submitted to the relevant road authority for review prior to use of the haulage routes(s). Following completion of construction, a subsequent report shall be prepared to assess any damage that may have resulted from the construction of the SSI. Measures undertaken to restore or reinstate roads affected by the SSI shall be undertaken in a timely manner, in accordance with the reasonable requirements of the relevant road authority, and at the full expense of the Proponent	Section 9
E7	Safe pedestrian and cyclist access through or around worksites shall be maintained during construction. In circumstances where pedestrian and cyclist access is restricted due to construction activities, a feasible and reasonable alternate route shall be provided and signposted	Sections 7.15 & 7.16
E7	Construction vehicles (including staff vehicles) associated with the SSI shall be managed to: (a)Minimise parking or queuing on public roads and non-associated sites (b) Minimise the use of local roads (through residential streets and town centres) to gain access to construction sites and compounds (c)Minimise traffic past schools and child care centres, particularly during opening and closing periods (d)Adhere to the nominated heavy vehicle routes identified in the *Construction Traffic Management Plan* (E34(c))	Sections 5.6, 5.7 & 6
SSI 5931 Infrastructure Approval Conditions of Approval		
C21	All excavations adjacent to RMS road infrastructure shall meet the requirements of RMS Technical Direction GTD 201210001 "Excavation adjacent of RMS infrastructure".	Section 7.1 - Management
C22	The Proponent shall consult with relevant Councils regarding the use of any weight restricted road by heavy construction vehicles if required.	Section 1.8, 8.2
C25	The Proponent shall undertake regular consultation with the RMS to negotiate road access during construction of the SSI in conjunction with the establishment of the signalled intersection of Schofields/Tallawong Road.	Section 1.8, 8.2
C26	Without limiting the outcomes of the Construction Traffic Management Plan for the SSI, construction traffic shall be scheduled, to the greatest extent practicable, to outside of AM and PM peak traffic periods, and special events. Methods used to limit construction traffic outside of peak traffic periods shall be incorporated into the Construction Traffic Management Plan (condition E29(c)).	Section 5.7

Clause	Requirement	Reference in this document
C27	Road network works, including infrastructure and restoration works, vehicular access, signalised intersection works, and works relating to pedestrians, cyclists, and public transport users will be subject to safety audits demonstrating consistency with relevant design, engineering and safety standards and guidelines. Safety audits shall be submitted to the relevant road authority and or transport operator prior to the use of the subject infrastructure and shall be made available to the Director General upon request.	Section 7.2
E22	Upon determining the haulage route(s) for construction vehicles associated with the SSI, and prior to construction, an independent and qualified person or team shall undertake a Road Dilapidation Report. The report shall assess the current condition of the road and describe mechanisms to restore any damage that may result due to traffic and transport related to the construction of the SSI, both during and after construction. The Report shall be submitted to the relevant road authority for review prior to the commencement of haulage. Following completion of construction, a subsequent report shall be prepared to assess any damage that may have resulted from the construction of the SSI. Measures undertaken to restore or reinstate roads affected by the SSI shall be undertaken in a timely manner, in accordance with the reasonable requirements of the relevant road authority, and at the full expense of the Proponent."	Section 9
E23	Safe pedestrian and cyclist access through or around worksites shall be maintained during construction. In circumstances where pedestrian and cyclist access is restricted due to construction activities, a satisfactory alternate route shall be provided and signposted.	7.15, 7.16
E24	Construction vehicles (including staff vehicles) associated with the SSI shall be managed to: (a) minimise parking or queuing on public roads; (b) minimise idling and queuing in local residential streets where practicable; (c) minimise the use of local roads (through residential streets and town centres) to gain access to construction sites and compounds; and (d) adhere to the nominated haulage routes identified in the Construction Traffic Management Plan (condition E29(c)).	Section 5.6, 5.7 and 7.9
E29	**(c)** a Construction Traffic Management Plan to manage construction traffic and access impacts of the SSI. The Plan shall be developed in consultation with the relevant road authority and shall include, but not necessarily be limited:	Sections 5.4 - 5.8 and Section 6

Clause	Requirement	Reference in this document
	(i) identification of construction traffic routes and construction traffic volumes (including heavy vehicle spoil haulage) on these routes;	Section 5.6
	(ii) details of vehicle movements for construction sites and site compounds including parking, dedicated vehicle turning areas, and ingress points;	Section 6
	(iii) identification of construction impacts that could result in disruption of traffic, public transport, pedestrian and cycle access, property access, including details of oversize load movements;	Section 6
	(iv) details of management measures to minimise traffic impacts, including temporary road work traffic control measures, onsite vehicle queuing and parking areas and management measures to minimise peak time congestion and measures to ensure safe pedestrian and cycle access;	Section 7.9
	(v) a response plan which sets out a proposed response to any traffic, construction or other incident; and	Section 7.11 l
	(vi) mechanisms for the monitoring, review and amendment of this Plan.	Sections 1.7 & 10
E20	Traffic generation from other major developments shall be taken into account and addressed during preparation of the Construction Traffic Management Plan (See Condition (c)).	Section 6.11
E21	A Traffic and Transport Liaison Group shall be established by the Proponent to inform the detail design of temporary and permanent traffic and transport measures and to inform ongoing management measures prior to and during construction of the SSI. The Group shall be chaired by the Proponent and shall comprise of representatives from relevant road authorities (including RMS and councils), transport operators, and emergency services. The Group shall be consulted on and shall inform the preparation of the Construction Traffic Management Plan and associated plans	Section 8.2
SSI 5414 REMMS		
T1	Directional signage and line-marking will be used to direct and guide drivers, cyclists and pedestrians past construction sites and on the surrounding network. This will be supplemented by permanent and portable Variable Message Signs, where reasonable and feasible, to advise drivers of any delays, traffic diversions, speed restrictions, or alternative routes	Sections 7.2 & 7.4
T2	The public will be notified of proposed traffic changes by newspaper, radio, project web site and other forms of community liaison	Section 6

Clause	Requirement	Reference in this document
T3	Co-ordination will occur with TfNSW and RMS via the transport management centre's Operations Manager in the event of incidents or undue congestion	Section 7.11
T4	Management of pedestrian, cyclist and vehicular access to and past construction sites will occur to ensure safe entry and exit procedures. Depending on the location, this may require manual supervision, physical barriers, temporary traffic signals and modification to existing signals or, on occasion, police presence	Sections 7.15 & 7.16
T5	Access to existing properties and buildings will be maintained	Section 7.18
T6	Traffic controllers will manage heavy vehicle movements at worksites, and monitor the need for pedestrian control	Sections 7.9 & 7.15
T7	All trucks will enter and exit the worksites in a forward direction, where feasible and reasonable	Section 7.9
T8	The management of buses at key transport interchanges such as Castle Hill and Rouse Hill will be reviewed during detailed construction planning to minimise impacts on existing services	Sections 6.4 & 6.9.
T9	The T-way operations including car parking will be maintained at all times during the construction of the NWRL. This includes maintained existing sight lines to T-way bus stops and within T-way car parks, where possible. Where this is not possible, suitable alternative measures will be implemented (e.g. CCTV with active surveillance) where reasonable and feasible	Section 6.9
T10	The need for, and provision of, alternative remote parking locations and shuttle bus transfers for daytime and night time construction staff will be considered for all construction sites during detailed construction planning	Section 6
T11	Special event bus services for Sydney Olympic Park (Royal Easter Show, and Major Sporting and Entertainment Events) will be managed, in particular, in Carrington Road at the Showground Station site, to ensure minimal disruption	Sections 5.6 & 6.5
T12	The Traffic and Transport Liaison Group, established for the NWRL will consider individual events and any other special event needs, and make reasonable and feasible short-term adjustment to the construction phase activities and/or review and update detailed *Construction Traffic Management Plans*	Section 7.8
T13	Site traffic will be managed, where reasonable and feasible to avoid significant movements in the AM peak in the critical southbound direction and in the PM peak in the critical northbound direction on Beecroft Road at Epping	Section 6.1
T15	Access will be maintained to sections of the pedestrian bush track at Cheltenham which will not be affected by construction works. Additionally, the provision of an alternative track will be considered during construction planning	Section 6.2

Clause	Requirement	Reference in this document
T16	Access to the Bella Vista Station site during the daytime will be at a location off Celebration Drive to the east of the Lexington Avenue intersection, to minimise traffic impacts at the Celebration Drive/Lexington Avenue intersection	Section 6.7
T17	If construction of NWRL occurs before the Schofields Road upgrade, interim upgrading of the road will be undertaken (unless otherwise agreed with RMS) with improved pavement quality and wider sealed shoulders to accommodate heavy vehicle usage	Section 6.15.1
T18	A dilapidation report will be prepared prior to construction for all affected local roads from the construction access/egress point to the arterial road	Section 9
T19	An alternative pedestrian route via Ray Road and Kandy Avenue will be appropriately signposted for pedestrian movements between Epping Town Centre and the Beecroft Road NWRL OTS Motorway overbridge	Section 7.15
T20	Truck movements on Ray Road will be restricted during the AM and PM peak periods. During these times, truck access and egress to and from the site will be via Beecroft Road only	Section 6.1
T21	Staff working at the Epping Services Facility will be discouraged from parking on local roads and encouraged to: • Use public transport • Car share • Park in a designated off-site area and access the site via shuttle bus	Section 5.6
T22	Where schools occur in the immediate vicinity of the construction sites, heavy vehicle movements will be minimised (where reasonable and feasible), Between 8:00-9:30 am and 2:30-4:00 pm Monday to Friday (on school days)	Section 6
T23	Access and egress via Norwest Boulevard will be intermittent and only outside peak periods	Section 6.6
T24	Signage will be established at Epping to direct pedestrians via the alternative pedestrian route along Ray Road and Kandy Avenue	Section 7.15
T25	Construction traffic to and from the Cheltenham Service Facility will be directed to treat Beecroft Road/Kirkham Street intersection as left in left out only	Section 6.2
T26	Alternative access to the showground will be developed and detailed in the relevant *Construction Traffic Management Plans*	Section 6.5
T27	Alternative parking will be provided in consultation with Hills Shire Council and the Castle Hills and Hills District Agricultural Society for car spaces lost within the showground precinct	Section 6.5

Clause	Requirement	Reference in this document
T28	Provision for busses to safely pull up to the intended bus bay located on Norwest Boulevard east of Century Circuit will be investigated as part of the relevant *Construction Traffic Management Plan*	Section 6.6
T29	Alternative car parking will be provided for car spaces lost in the Burns T-way bus stop. The alternative parking may be accommodated at the Balmoral Road T Way bus stop	Section 6.7
T30	Alternative car parking will be provided for car spaces lost in the Riley T-Way bus stop. The alternative parking is likely to be provided north of Samantha Riley Drive	Section 6.8
T31	An alternative location for the Cycle lockers at Rouse hill will be identified during detailed construction planning	Section 6.9
T33	Either Cudgegong Road or Tallawong Road will remain open to traffic and bus services to maintain a route from Guntawong Road to Schofields Road	Section 6.10
T34	Shuttle services for construction workers will be provided to service strategic off-site parking areas and public transport facilities, such as Schofields Railway Station	Sections 6
T35	Scheduling the movement of heavy vehicle haulage and deliveries outside peak periods, where feasible and practicable	Section 5.7
T36	TfNSW will liaise with RMS and other stakeholders to manage cumulative issues during RTRF construction	Section 6.10
A12	Longer term and/or heavily used haul roads will generally be sealed. The criteria for sealing haul roads will be defined during detailed construction planning. Sealed haul roads will be regularly cleaned	Section 5.9
A13	Unsealed haul roads will be regularly damped down with a fixed or mobile sprinkler system	Section 5.9
A14	Vehicular and foot traffic will be restricted to designated areas	Section 7.9
A15	Appropriate site speed limits will be imposed and signed on haul routes	Section 7.6
A16	Wheel-wash facilities or rumble grids will be provided and used near site exit points, and a street-cleaning regime will be implemented to remove any dirt tracked onto roads	Section 5.9
NWRL Construction Environmental Management Framework		

Clause	Requirement	Reference in this document
	The following traffic management objectives will apply to the construction of the project: • Minimise disruptions to pedestrians, cyclists, buses and motorists • Minimise heavy vehicle movements during peak traffic periods • Minimise access disruptions to adjoining properties • Encourage sustainable transport options by site workers	Section 1.3
8.2a	NWRL principal contractors will develop and implement a hierarchy of traffic management documentation including: i A *Construction Traffic Management Plan* setting out the overall traffic management resources, processes and procedures for the management of traffic and transport during construction of the Project Works and Temporary Works ii *Construction Traffic Control Plans* setting out the specific traffic and transport management arrangements to be implemented at specific locations during the construction of the project works and temporary works	Section 2.1
8.2 b	TfNSW and its Contractors will undertake liaison with agencies and the community regarding traffic management. This will involve: i Establishment of a Traffic and Transport Liaison Group likely to consist of representatives from NWRL Contractors, TfNSW, RMS, NSW Police and bus operators. The group will review Road Occupancy Licence Application to monitor potential cumulative impacts from multiple road occupancy licences operating concurrently in one area ii Establishment of a Central Project Coordination Committee which will seek to coordinate NWRL works with other major developments. The committee will also take a strategic approach to longer term traffic and transport management and review permanent arrangements including network integration with NWRL facilities	Section 0
8.3	Examples of traffic mitigation measures include: • Minimising heavy vehicle movements during peak traffic times • Avoidance of local road for heavy vehicle routes, where feasible • Providing safe pedestrian and cyclist movements around the worksites	Section 6
	NWRL-OTS-SPR-Main Body	
2.1.2(a)xv	Implement all necessary traffic and transport management methods and procedures to effectively and safely manage all road, public transport and public space users affected by the OTS works, the temporary works and the delivery activities during construction	Section 7.1
2.1.2(a)xvi	Re-open roads affected by the local area works to traffic in accordance with the deed	Section 7.7

Clause	Requirement	Reference in this document
2.2.7(a)	Local area works include: (i) those works which are identified in Appendices 6 and 8 (ii) all adjustments to any existing local area, footpath, shared path, cycleway, park or other publicly accessible area or street which are: A. necessary as a consequence of performing the delivery activities B. required by the operations activities C. required by the environmental documents, or D. including, as a minimum, resurfacing or reconstruction of affected streets and roads (iii) all fencing, drainage including subsurface drainage, erosion and sediment control works, earthworks, all structures (including retaining walls and bridges), pavements and planting (iv) all provisions to allow pedestrians, pedal cyclists and disabled persons to use the surrounding transport networks, including footpath, shared path, cycleway, bus and road networks, affected by the OTS works and the NWRL (v) all permanent arrangements to allow people and vehicles access to property affected by the NWRL (vi) provision of adjustments to pavement markings, signs, sign support systems, Traffic control signals and street lighting (vii) items of street furniture erected to improve safety (particularly safety barriers) and the provision of all fencing and other security measures necessary to prevent unlawful or accidental access (viii) measures to minimise and mitigate noise and vibration during the performance of the local area works (ix) those parts of the property works which relate to adjustments to roads, footpaths, shared paths and cycleways (x) all environmental safeguards necessary to mitigate environmental impacts which might arise as a consequence of the use of the local areas, including those identified in the environmental documents	Noted

Clause	Requirement	Reference in this document
2.2.10 (a)	Temporary Works include: (i) temporary measures necessary to meet the needs of all road, public area and pathway users during the Delivery Activities, including the requirements for any temporary footpaths, shared paths and public transport facilities if applicable (xi) temporary arrangements to divert and control traffic and to provide public amenity, security and safety during the delivery activities (xii) temporary arrangements for people and vehicles to access all property affected by the delivery activities (xiii) all environmental safeguards and measures necessary to mitigate environmental effects during construction of the OTS works (xiv) sustainability initiatives to minimise resource use during construction of the temporary works (xv) cleaning, maintenance, repair, replacement and reinstatement, as required, of all areas occupied by OpCo during construction of the OTS Works (xvi) the maintenance of local areas during construction of the OTS works (xvii) temporary site facilities required for construction of the OTS works (xviii) temporary infrastructure installed or erected to undertake construction of the OTS works	Noted
3.18b (vi)	Identify all activities associated with the delivery activities, including traffic management, mobilisation, management plans, approvals, site establishment activities, test program and ETS program	Section 5.1
4.1(b)(ii)	(ii) required to allow all road users and the affected public to safely use any Local Area affected by the OTS Works or OpCo's Activities;	7.1
4.1(e)	(e) OpCo must carry out the Local Area Works in such a way as to minimise delay and disruption to all road users (including pedestrians, cyclists, public transport passengers and operators) .	7.3
4.1(f)	(f) OpCo must use appropriate traffic and transport management methods and procedures to effectively and safely manage all road users throughout the Delivery Phase.	7.1, 7.15, 7.16
4.1(g)	(g) OpCo must maintain access to and minimise disruption to affected businesses, properties and land throughout the Delivery Phase.	7.18
4.2(b)	(b) OpCo must carry out all Property Works required to provide people and vehicles access to and egress from existing buildings, infrastructure and properties which are affected by OpCo's Activities or the OTS Works.	7.18

Clause	Requirement	Reference in this document
4.2(c)	(c) OpCo must carry out all Property Works necessary to ensure the amenity or the functionality of any property (including any building or structure) which is affected by OpCo's Activities or the OTS Works is maintained to at least the standard prior to OpCo's Activities.	7.18
5.14(a)	(a) OpCo must manage the impacts of OpCo's Activities on the capacity and performance of the surrounding pedestrian, road traffic and public transport network.	7.15, 7.19 & 7.3
5.14(b)	(b) OpCo must develop, implement, maintain and update a Construction Traffic Management Plan, including any relevant traffic management plans and traffic control plans in accordance with the deed and the requirements of all relevant Authorities.	10
5.14(c)	(c) OpCo must provide a traffic and transport representative who has authority and responsibility for issues relating to traffic and transport management, including liaison with relevant Authorities, the Transport Management Centre, and the Traffic and Transport Liaison Group.	S4.1
5.14(d)	(d) The traffic and transport representative must be given the responsibility for and authority to develop and implement the Construction Traffic Management Plan.	S4.1
5.14(e)	(e) The traffic and transport representative must have recognised and appropriate traffic management and/or traffic planning qualifications and at least fifteen years relevant traffic and transport management experience on projects similar to OpCo's Activities.	S4.1
5.14(f)	(f) The traffic and transport representative must be engaged full time on or around the Construction Site during the Delivery Phase with responsibilities limited to traffic and transport management of the Delivery Activities.	S4.1
5.14(g)	(g) OpCo must provide appropriate OpCo's personnel and technical experts to attend the Traffic and Transport Liaison Group meetings, as required and requested by TfNSW's Representative.	S8.3
6.5.12(b)	(b) OpCo must prepare and install way-finding signage to direct pedestrians, commuters and vehicles around the construction site	S7.13
6.5.17(d)	(d) OpCo must apply appropriate treatments to roads, footpaths, shared paths or cycleways that protect the roads, footpaths, shared paths or cycleways from damage arising from OpCo's Activities and allow for repair if damage occurs.	S9
6.5.17(e)	(e) OpCo must repair immediately any damage caused by OpCo's Activities, to any road, footpath, shared path or cycleway which is open to the public, and restore the road, footpath, shared path or cycleway to a condition at least equivalent to the condition it was in immediately prior to the occurrence of the damage.	S9

Clause	Requirement	Reference in this document
6.5.18(a)	(a) Traffic and transport management associated with the Delivery Activities must be planned to avoid delays and detours that will inconvenience the affected public or road users or interfere with traffic during periods of heavy traffic flows.	7.3 & 7.5
6.5.18(b)	(b) OpCo must obtain approval from TfNSW's Representative and relevant Authorities prior to implementing any changes to traffic flow, vehicle, pedestrian, public transport and bicycle movements or adjustments to arrangements for control of traffic on roads, footpaths and shared paths.	S7.5, 7.6 & 7.7
6.5.18(c)	(c) All traffic and transport management associated with the Delivery Activities must comply with the Environmental Documents and the following:	5.9
6.5.18(c)(i)	(i) TfNSW's General Specification G10;	2.3
6.5.18(c)(ii)	(ii) RTA Traffic Control at Worksites Manual;	2.3
6.5.18(c)(iii)	(iii) AS1742.3;	2.3
6.5.18(c)(iv)	(iv) Austroads AGTM 02/08: Guide to Traffic Management - Part 2: Traffic Theory; and	2.3
6.5.18(c)(v)	(v) the Construction Traffic Management Plan.	2.3, 7.5
6.5.18(d)	(d) Copies of any traffic control plans approved by relevant Authorities that set out specific traffic and transport management arrangements to be implemented at specific locations during the construction of the OTS Works and Temporary Works must be issued to the TfNSW and the OTS Independent Certifier.	2.5
6.5.18(e)	(e) Unplanned traffic management activities, including emergency work due to incidents, must be addressed and covered in the Construction Traffic Management Plan, and must be to the satisfaction of relevant Authorities.	7.11
6.5.18(f)	(f) Where traffic control devices include safety barriers, the safety barriers must:	2.5
6.5.18(f)(i)	(i) comply with the RTA Traffic Control at Work Site Manual; and	2.5
6.5.18(f)(ii)	(ii) be offset a minimum of 0.5m from the edge of the nearest adjacent traffic lane unless approved otherwise with the relevant Authorities.	2.5

Clause	Requirement	Reference in this document
6.5.18(g)	(g) Temporary traffic lanes on roads must comply with the requirements of all relevant Authorities.	2.4, 2.5
6.5.18(h)	(h) Vehicles involved in the Delivery Activities must only enter, operate within or exit from a work site in a manner which does not endanger the public and under suitably designed and appropriate traffic control measures.	7.9
6.5.18(i)	(i) OpCo must provide suitable intersections or points of access for vehicles entering or leaving the Construction Site and at locations where the traffic volumes are increased as a result of the Delivery Activities. The intersection and access treatments must comply with the requirements of all relevant Authorities.	7.9
6.5.18(j)	(j) Advertising must be undertaken by OpCo to advise the affected public and road users of the proposed changes to traffic flow, vehicle, pedestrian and bicycle movements and arrangements for control of traffic on roads in accordance with the requirements in Appendix 51.	8
6.5.19(a)	(a) OpCo must obtain approval from relevant Authorities for all road, footpath and shared path occupancies, detours and closures. Relevant Authorities may elect to prohibit road, footpath and shared path occupancies, detours or closures due to Special Events or other high traffic demands. An occupancy licence must be obtained from relevant Authorities for all road, footpath and shared path occupancies, detours and closures.	7.5
6.5.19(b)	(b) When any unplanned closure of a lane, shoulder, footpath or shared path or a restriction in the flow of pedestrians, cyclists, public transport services or traffic occurs, OpCo must immediately advise TfNSW's Representative and the relevant Authorities of the nature of the closure or restriction and of the schedule for reopening of the lanes, shoulders, footpaths or shared paths. OpCo must take all required measures to open the lanes, shoulders, footpaths or shared paths as quickly as possible.	7.11
6.5.19(c)	Compliance with traffic instructions during construction	7.5
6.5.19(c)	(c) OpCo must comply with any traffic direction or instruction given by the NSW Police Service, a relevant Authority or the TfNSW's Representative in respect of traffic and transport management.	7.5
6.5.19(d)	(d) The NSW Police Service, a relevant Authority or the TfNSW's Representative may, at any time, instruct OpCo to re-open a lane, shoulder, footpath or shared path without delay, whether or not that lane, shoulder, footpath or shared path was closed by prior agreement. OpCo must immediately comply with such instructions.	7.5

Clause	Requirement	Reference in this document
6.5.19(e)	Bicycle provisions	7.16
6.5.19(e)	(e) OpCo must plan and execute OpCo's Activities to ensure safe cycling conditions are maintained at all times during OpCo's Activities.	7.16
6.5.19(f)	(f) OpCo must comply with "AustRoads Guide to Traffic Engineering Practice - Part 14 - Bicycles" in relation to the measures to be taken to ensure safe cycling conditions.	7.16
6.5.19(g)	(g) Temporary or modified provisions for bicycles must comply with the requirements of relevant Authorities.	7.16
6.5.19(h)	Pedestrian provisions	7.15
6.5.19(h)	(h) OpCo must plan and execute OpCo's Activities to ensure safe pedestrian conditions are maintained at all times during OpCo's Activities.	7.15
6.5.19(i)	(i) OpCo must comply with "AustRoads Guide to Traffic Engineering Practice - Part 15 - Pedestrians" in relation to the measures to be taken to ensure safe pedestrian conditions.	7.15
6.5.19(j)	(j) Temporary or modified provisions for pedestrians must comply with the requirements of relevant Authorities.	7.15
6.5.19(k)	Traffic controllers	7.14
6.7(b)	(b) OpCo must ensure that suitable access is maintained at all times to all properties and between severed portions of properties. Appropriate detours must be arranged and provided.	S7.18
6.7(c)	(c) No reduction to the level of access (vehicle, cyclist or pedestrian) to any commercial property during its relevant trading hours is permitted without the written agreement of the owner and occupier.	7.18
6.7(d)	(d) OpCo must make all arrangements with all affected persons in relation to the impacts and consequences of the interruption of any Utility Services.	7.18 & 5.8
	Exhibit 1 App 26 - Access to Sydney Trains	
3.3(d)	(d) Vehicular access to the main northern line is available on the Down side of the track off Beecroft Rd.	6.11.8

Clause	Requirement	Reference in this document
3.3(e)	(e) Vehicular access to the ECRL is available at the hi-rail access pad located on the ECRL down track at Epping dive.	6.11.8
	Exhibit 1 App 58.G10 - TfNSW's General Specifications	
1.3(a)	(a) The Hold Points listed in Table 1 in Annexure G10/A must be observed by OpCo.	S7.7
1.3(b)	(b) Identified records are nominated for the purposes of the TfNSW's Specification Q6 and are required to be created by OpCo.	S10
2.1(a)	(a) OpCo must construct the OTS Works, construct and remove the Temporary Works and undertake OpCo's Activities with the least possible obstruction to pedestrians, cyclists, public transport services and road traffic.	2.3
2.1(b)	(b) OpCo must undertake all work necessary to provide for the safe movement of pedestrians, cyclists, public transport services and road traffic and the protection of persons and property around the NWRL Site and all other areas affected by the OTS Works, the Temporary Works and OpCo's Activities.	7.1
2.1(c)	(c) OpCo must prepare and submit the Construction Traffic Management Plan and all Traffic Control Plans to all relevant Authorities and obtain all necessary Approvals from relevant Authorities for temporary pedestrian, cyclist, public transport service and road traffic arrangements, including the installation of and changes to any regulatory traffic control devices, road or thoroughfare.	7.5
2.1(d)	(d) OpCo must also obtain all necessary Approvals from relevant Authorities to enable it to direct traffic and to appoint traffic controllers to provide for the safe movement of pedestrians, cyclists, public transport services and road traffic and the protection of persons and property around the NWRL Site.	7.5
2.1(e)	(e) OpCo must conform to the requirements of all relevant Authorities, the RTA Traffic Control at Work Sites Manual, AS 1742.3-2009 Manual of uniform traffic control devices Part 3: Traffic control devices for works on roads and this TfNSW's Specification G10, when planning and carrying out traffic and transport management.	2.3
2.2(a)	(a) OpCo must submit to the TfNSW's Representative a Construction Traffic Management Plan that complies with and addresses the requirements of the following:	2.3
2.2(a)(i)	(i) RTA Traffic Control at Work Sites Manual;	2.3
2.2(a)(ii)	(ii) AS 1742.3 -2009 Manual of uniform traffic control devices Part 3: Traffic control for works on roads; and	2.3
2.2(a)(iii)	(iii) Austroads AGTM02/08 Guide to Traffic Management - Part 2 Traffic Theory.	2.3

Clause	Requirement	Reference in this document
2.2(b)	(b) OpCo must revise the Construction Traffic Management Plan and implement more appropriate procedures if the original pedestrian, cyclist, public transport service and road traffic management practices prove not to be fully effective.	2.3
2.2(c)	(c) The Construction Traffic Management Plan must include:	2.3
2.2(c)(i)	(i) details of any temporary roadways and detours;	2.3
2.2(c)(ii)	(ii) details of arrangements for construction under traffic;	2.3
2.2(c)(iii)	(iii) a signpost layout plan showing:	2.3
2.2(c)(iii)A.	A. location, size and legend of all temporary signs**;**	2.3
2.2(c)(iii)B.	B. temporary regulatory signs and temporary speed zones; and	2.3
2.2(c)(iii)C.	C. all traffic control devices including temporary traffic signals, road marking, pavement reflectors, guideposts, safety barrier systems and barrier boards;	2.3
2.2(c)(iv)	(iv) the names and addresses of, and means of communications with personnel nominated for contact outside normal working hours to arrange for adjustments or maintenance of traffic control devices and temporary roadways with confirmation that this has been supplied to the New South Wales Police Service;	4.1,
2.2(c)(v)	(v) vehicle movement plan/s and arrangements;	2.9
2.2(c)(vi)	(vi) pedestrian and cyclist movement plan/s and arrangements; and	2.3
2.2(c)(vii)	(vii) public transport service arrangements, including any temporary facilities and route relocations.	2.3
2.3(a)	(a) OpCo must submit to the TfNSW's Representative all traffic controls plans.	2.5
2.3(b)	(b) The traffic control plans must contain the following details, where appropriate:	2.5
2.3(b)(i)	(i) proposal/s to erect regulatory traffic control devices showing locations and times of operation;	2.5

Clause	Requirement	Reference in this document
2.3(b)(ii)	(ii) temporary speed zoning signage;	2.5
2.3(b)(iii)	(iii) road occupancy proposals;	2.5, 7.5
2.3(b)(iv)	(iv) special event details and management responses;	2.5
2.3(b)(v)	(v) over dimensioned and over mass vehicle particulars;	2.5
2.3(b)(vi)	(vi) bus route and bus stop changes and associated arrangements;	2.5
2.3(b)(vii)	(vii) truck call forward locations and arrangements;	2.5
2.3(b)(viii)	(viii) boom gate arrangements;	2.5
2.3(b)(ix)	(ix) portable traffic signal arrangements; and	2.5
2.3(b)(x)	(x) temporary fixed traffic signal arrangements.	2.5
2.3(c)	(c) All traffic control plans must be approved by relevant Authorities.	2.5
3.1(a)	(a) OpCo must supply and install regulatory traffic control devices, and remove them when the devices are no longer required, as part of the provisions for control of traffic in accordance with the requirements of all relevant Authorities.	7.5
3.1(b)	(b) OpCo must supply and install temporary speed zoning signs in accordance with the requirements of all relevant Authorities. Temporary speed zoning must only be implemented with the approval of all relevant Authorities.	7.6
3.1(c)	(c) OpCo must supply and install portable and temporary fixed traffic signals, and remove them when the signals are no longer required, as part of the provisions for control of traffic in accordance with the requirements of all relevant Authorities.	2.5
3.1(d)	(d) OpCo must supply and install public transport service related portable and temporary fixed regulatory and advisory signage, and remove them when the signs are no longer required, as part of the provisions for control of pedestrians, cyclists, public transport services and road traffic in accordance with the requirements of all relevant Authorities.	7.19

Clause	Requirement	Reference in this document
3.2(a)	(a) OpCo must at all times provide safe and convenient passage for vehicles, pedestrians and cyclists along, to and from roads and property.	7.1
3.2(b)	(b) OpCo's Activities that affect the use of areas around the NWRL Site and existing accesses must not be undertaken without providing adequate alternative provisions, as required by all relevant Authorities and affected property owners, and to the prior satisfaction of the TfNSW's Representative.	7.18
3.3(a)	(a) OpCo must advise TfNSW's Representative of the names of proposed traffic controllers and their traffic controllers' certificate numbers and expiry dates.	7.14
3.4(a)	(a) All signposting, pavement marking, safety barriers and portable or temporary traffic signals must be completed before the opening of temporary roadways to traffic, pedestrian and cyclist route changes and public transport facility changes.	7.7
3.4(b)	(b) Unless otherwise approved by TfNSW's Representative, traffic may only be switched to a temporary roadway or detour where OpCo's Staff will be working on that site for a minimum of 2 days thereafter.	7.7
3.5(a)	(a) OpCo is responsible for the maintenance of temporary pedestrian and cyclist thoroughfares and detours, temporary public transport facilities and temporary roadways and detours and must ensure the thoroughfares and road surfaces are kept safe for pedestrians, cyclists and traffic.	9
3.5(b)	(b) Any potholes or other failures must be repaired without delay and within 2 days of the occurrence of the pothole or failure.	9
3.6(a)	(a) Upon completion of the OpCo's Activities, all temporary pedestrian and cyclist thoroughfares and detours, temporary public transport facilities and temporary roadways and detour arrangements must be removed and the area restored to at least the state which existed prior to the commencement of OpCo's Activities.	9
	Exhibit 05 - Planning Approval 1	
E35	E35. Where construction will physically affect or likely impact the efficiency and safety of road and related transport networks (including traffic flow, access, parking and user safety), the Proponent shall develop, assess, and implement appropriate management measures in consultation with the relevant road authority, transport operator(s), and emergency services, as relevant. Such measures shall be addressed in the Construction Traffic Management Plan (condition E46(c)) and shall include but not be limited to:	7.1 &7.3
	Exhibit 14 - Works Authorisation Deed	
13.3(c)	(c) obtain Road Occupancy Licences from the TMC as required;	7.5

Clause	Requirement	Reference in this document
13.4	TfNSW must, in respect of any work that affects any Road, ensure to the satisfaction of RMS that:	
18.2	The Traffic Management and Safety Plan must be complied with at all times, except: (a) with the prior written approval of RMS to a particular departure from that Plan; and (b) where any provision of, or anything done under , this Deed (including any direction or requirement under this clause 18) requires something different, in which case the specific direction or requirement applies.	2.3
18.3	TfNSW must comply with any Requirement in respect of any traffic control proposal or arrangement including any instruction to re-open any traffic lane or shoulder to traffic without delay, whether or not that lane or shoulder was closed by prior agreement or approval pursuant to this Deed or otherwise.	7.5
18.4(a)	(a) TfNSW must obtain approval from the RMS Representative and the Transport Management Centre for all road occupancies, detours and closures in accordance with this Deed. RMS may elect to prohibit road or lane closures due to special events or other high traffic demands.	7.5
18.4(b)	(b) Road Occupancy Applications must be submitted at least 10 days before the Works requiring road occupancies, detours and closures are scheduled to commence.	7.5
18.5	When any unplanned closure of a lane or a restriction in the flow of traffic occurs on any Road, TfNSW must immediately advise the RMS Representative of the nature of the closure or restriction and of the schedule for reopening of the lanes. TfNSW must take all required measures to open the lane or remove the restriction in the flow of traffic as quickly as possible.	7.5
18.6	TfNSW must ensure that:	
18.6(a)	(a) any Traffic controlling person or entity used to manage traffic in relation to the Works is registered with RMS as Category G; Traffic Controlling; and	7.14
18.6(b)	(b) all persons who are required to perform the duties of a traffic controller have undertaken training in the following relevant training package(s) and are examined and certified as competent to perform their respective traffic controller duties:	7.14
18.6(b)(i)	(i) Guidelines for the Selection of Traffic Controllers; and	7.14

Clause	Requirement	Reference in this document
18.6(b)(ii)	(ii) So You Think You are Going to be a Traffic Controller?	7.14
18.7	Where Special Events are expected to generate additional vehicle or pedestrian traffic in any areas directly or indirectly affected by the construction of the Works and Temporary Works, TfNSW must co-operate, and must ensure that its contractors co-operate, with RMS and other Government Agencies to facilitate traffic and pedestrian flows on the existing road network or through the construction site.	7.8
19.2	If TfNSW removes any of the Temporary Works on any Road it must rehabilitate the Road to the condition that the Road was in prior to the installation and carrying out of the Temporary Works.	9
19.3(d)	(d) TfNSW must comply with a direction given under clause 19.3(a) within a reasonable period of time.	3.2.1
Annexure A-5	The Traffic Management and Safety Plan must include Traffic Control Plans (TCPs) and contain detailed provisions covering (as a minimum) all of the following matters, or how the following outcomes are to be achieved, as the case may be:	2.3
Annexure A-5(a)	(a) how work practices and equipment must provide for the safe passage of all road users, including public transport, pedestrians and pedal cyclists, at all times during the Works;	2.3
Annexure A-5(b)	(b) comply with RMS QA Specification G10, traffic management practices set out in the TCAWS Manual, all RMS Technical Directions (current as at the date of this Deed), Austroads and RMS Supplements and Australian Standard AS1742.3 - 2008 and any other relevant Australian Standards;	2.3
Annexure A-5(c)	(c) contain scaled drawings of the affected section of road including lane widths, sign spacing and traffic control devices proposed. If temporary pavement marking changes are proposed then a TCP is also required for the pavement marking. The Designer of the TCP must have visited the site to ensure that the proposed location of signage is suitable and practical;	2.3
Annexure A-5(d)	(d) how access to private land is to be maintained or appropriate detours and arrangements provided;	2.3
Annexure A-5(e)	(e) contain appropriate signage to warn road users of construction vehicle entry/exit points and of excavations;	2.3
Annexure A-5(f)	(f) identify a Vehicle Movement Plan (where required by TCAWS) showing signage and other directional devices;	2.3

Clause	Requirement	Reference in this document
Annexure A-5(g)	(g) be signed and dated including the Designer's certificate number;	2.3
Annexure A-5(h)	(h) how and when road safety audits of all traffic management, compliance with the Traffic Management and Safety Plan and all TCPs are to be carried out;	2.3
Annexure A-5(i)	(i) obtain approval from the RMS Representative and other relevant Government Agencies, prior to implementing any traffic adjustments or interruption, noting that that traffic changes or lane closures which are considered by RMS as likely to cause unnecessary delay or disruption to traffic will not be permitted;	2.3
Annexure A-5(j)	(j) how TCPs must be regularly reviewed and modified in conjunction with the RMS Representative, traffic management personnel, and emergency services personnel and any other relevant Government Agency;	7.10
Annexure A-5(k)	(k) where road works speed zone restrictions are proposed, a Speed Zone Authorisation is required;	7.6
Annexure A-5(l)	(l) how traffic will be managed during any emergency identified in the Emergency Response Plan or other emergency work; and	7.11
Annexure A-5(m)	(m) how TfNSW or its contractor must manage, control, maintain and operate all construction vehicles including to ensure:	7.9
Annexure A-5(m)(iii)	(iii) that all vehicles involved in the Works must only enter, operate within or exit from a traffic flow in a manner which does not endanger the public and under suitably designed and appropriate traffic control measures.	7.9
Annexure J-1.	The following assets are identified as TfNSW Maintained Assets as at the date of the deed, and must be maintained by TfNSW from the date of the deed:	6.9
Annexure J-1(a)	(a) [bus driver facilities located in the northern bus layover and southern bus layover at Rouse Hill Town Centre];	6.9
	OTS Interface Agreement - Blacktown City Council	

Clause	Requirement	Reference in this document
9.3(b)	(b) obtain Road Occupancy Licences as required;	7.5
	OTS Interface Agreement – Hills Shire Council	
8.5(b)	(b) obtain Road Occupancy Licences as required;	7.5
	OTS Interface Agreement – Hornsby Shire Council	
8.4(b)	(b) obtain Road Occupancy Licences as required;	7.5
	OTS Project Deed	
9.6(b)	(b) not interfere with the passage of people and vehicles, access to any premises, car parks, roads or pedestrian ways or the operations or activities carried out on or adjacent to the NWRL Site, except to the extent that such interference is required for purposes of public health or safety or is not reasonably avoidable or is permitted by Legislation.	7.3
9.7	OpCo:	7.3
9.7(a)	(a) is responsible for the control, direction and protection of all road and pedestrian traffic, in any way affected by the carrying out of OpCo's Activities;	7.3
9.7(b)	(b) must manage all such traffic to ensure:	7.3
9.7(b)(i)	(i) its continuous, safe and efficient movement;	7.3
9.7(b)(ii)	(ii) the traffic carrying capacity of Local Areas is maintained; and	7.3
9.7(b)(iii)	(iii) that any delays and disruptions to road traffic and the movement of road traffic are kept to an absolute minimum;	7.3
9.7(c)	(c) must at all times comply with the Construction Environmental Management Plan, Transport Integration Plan and the requirements of the SPR and any Third Party Agreement in respect of road traffic management and safety; and	1.2
9.7(d)	(d) must comply with the directions of any relevant Authority and TfNSW's Representative with respect to such management.	7.5

Clause	Requirement	Reference in this document
12.1(g)(i)	(i) must access the Construction Site only at the points of entry and exit and via the routes set out in the Environmental Documents; and	7.9
	Blacktown City Council Requirements	
	Hills Shire Council Requirements	
	Hornsby Shire Council Requirements	
	Exhibit 05 – Planning Approvals ECRL Conversion	
13(a)	(a) The proponent shall undertake the works in accordance with a Roads and Maritime Services approved Traffic Management Plan (TMP) and the Works Authorisation Deed	2.3
13(b)	(b) The proponent shall limit parking on local roads as far as reasonably practical	5.6
13 (c)	(c) The proponent must as a minimum document the environmental management measures described in the EIA.	6.11
	ECRL Conversion to Rapid Transit – REF Environmental Management Measures	

Clause	Requirement	Reference in this document
A.1	• Ensure public safety • Maintain a reasonable level of public access across the rail line and to public transport services • Minimise disruption to public transport services and, where necessary, manage disruption in consultation with the relevant transport provider. • Ensure that affected local residents and businesses are advised of any disruption to traffic flows, parking and public transport services • Ensure that disruptions to traffic flows on public streets are minimised and, where unavoidable, managed in consultation with the relevant road authority • Reduce the exposure of the community to heavy construction vehicle traffic impacts and associated noise and vibration, where possible. • Ensure adequate access to worksites including sight distances • Ensure that road damage from construction traffic is monitored and addressed in consultation with the relevant roads authority.	6.11
A.2	Road occupancy licences for temporary closure of roads would be obtained, where required.	S7.5
A.3	Heavy vehicles would be restricted to the routes specified and route markers installed for heavy vehicles along designated routes.	S7.9
A.4	Signs would be provided at each access point to assist in deliveries to each worksite.	S7.9
A.5	Signs would be provided at each access point for pedestrian and cyclist guidance.	S7.15 & 7.16
A.6	Traffic controllers would be located at each access point to direct vehicle movements, vehicle deliveries, pedestrians and cyclists.	80
A.7	Local bus operators would be consulted to ensure that they are aware of proposed operation changes and that impacts to bus services are minimised.	S7.19
A.8	An emergency response plan would be developed for construction traffic incidents.	s7.11
A.9	A pre- and post-construction assessment of road pavement assets would be conducted in areas likely to be used by construction traffic.	S9
A.10	Public communications would be conducted to warn the community and local residents of vehicle movements and anticipated effects on the local road network relating to the site works.	S8

Clause	Requirement	Reference in this document
A.11	Access to all private properties adjacent to the works would be maintained during construction.	S7.18
A.12	During project inductions, all heavy vehicle drivers would be provided with the emergency response plan for construction traffic incidents.	s7.9
A.13	Road safety audits would be undertaken where required or deemed necessary.	s7.12
A.14	Project staging, vehicle movement and scheduling, equipment and resourcing would be coordinated.	s7.9
A.15	The *Epping to Chatswood Railway – Temporary Transport Plan* (Parsons Brinckerhoff, 2014b; 'Temporary Transport Plan') would be implemented during the proposed Epping to Chatswood Railway temporary removal of rail services periods.	6.11
	Norwest Station Subsurface Pedestrian Link REF Conditions of Approval	
5(a)	The proponent shall manage any impact the construction of the Project may have on the efficiency and safety of road and related transport netwoks (including traffic flow, access, bus routes, parking and user safety), in accordance with the existing Construction Traffic Management Plan (CTMP). The CTMP shall detail any consultation required with the relevant road authority, transport operator(s), and emergency services, and adjoining major land holders, as relevant. •	7.1, 7.3, 7.9 & 8.2
5(b)	Safe pedestrian and cyclist access through or around worksites shall be maintained during construction. In circumstances where a pedestrian and cyclist access is restricted due to construction activities, a feasible and reasonable alternate route shall be provided and signposted. •	7.15 & 7.16
5(c)	Emergency access to all properties and access to emergency facilities shall be maintained, unless otherwise agreed by the respective emergency service. Access to properties and services and bus passenger waiting areas shall be maintained during construction unless agreed with the property owner in advance.	7.18

Clause	Requirement	Reference in this document
6	Upon determining heavy vehicle routes associated with the Project, and prior to use of these route(s) by heavy vehicles, an independent and qualified person or team shall undertake a Road Dilapidation Report on local roads from the construction access/ egress point(s) to the arterial road network. The report shall assess the current condition of the road and describe mechanisms to restore any damage that may result due to traffic and transport related to the construction of the Project, during construction. The Report shall be submitted to the relevant road authority for review prior to use of the haulage route(s). Following completion of construction, a subsequent report shall be prepared to assess any damage that may have resulted from the construction of the Project. Measures undertaken to restore or reinstate roads affected by the Project shall be undertaken in a timely manner, in accordance with the reasonable requirements of the relevant road authority, and at the full expense of the Proponent.	9
7	The proponent shall continue to consult with the Traffic and Transport Liaison Group throughout the construction of the works	8.2
	Willoughby to North Chatswood 33kV underground feeder power line- Conditions of Approval	
12	The following are to be implemented during detailed design:	
a)	A construction traffic management plan and associated traffic control plan(s) would be developed during detailed design and would identify all traffic control arrangements required to be implemented during construction.	2.3
b)	The construction traffic management plan and traffic control plan(s) would be provided to Willoughby City Council before implementation during construction.	2.3, 6.13
c)	Road occupancy licence(s) would also be obtained from Willoughby City Council and/or the Traffic Management Centre for approval before commencement of construction.	7.5

Clause	Requirement	Reference in this document
d)	A pre and post-construction assessment of current road pavement assets would be conducted in areas likely to be used by construction traffic or disturbed by the proposed trenching and horizontal directional drilling activities.	9
e)	The exact locations of all proposed jointing bays would be refined during detailed design to minimise potential traffic and transport impacts during construction. In particular, the proposed jointing bay at the corner of Hampden Road and Brand Street.	6.13
13	The following are to be implemented during construction:	
a)	During Project inductions, all construction workers would be provided with the emergency response plan for construction traffic incidents.	7.13
b)	Construction vehicle parking would be discouraged on local roads and construction staff toolbox talked on the need to use public transport, car share, or park in a designated off-site area and ferried to site via a shuttle bus where ever possible.	5.6
14	Construction vehicle parking would be managed through the following methods:	
a)	The proposal will review the need for and provision of alternate parking locations, such as the existing Sydney Metro construction compound at Epping	5.6 & 6.13
b)	Shuttle bus transfers would be arranged by NRT and car share incentives offered for staff, where possible.	6.13
c)	Construction vehicle not required for the immediate work being undertaken at the time parking would be discouraged from parking within the works area on local roads and nearby timed car spaces, particularly around Artarmon shops	6.13
d)	TfNSW and NRT are not to seek Willoughby City Council parking exemptions or exceptions.	5.6
e)	Temporary adjustment of any bus stops impacted by the works would be coordinated with bus companies and advertised locally in advance.	7.19
15.	Measures to be implemented during construction to minimise the proposal's impact on pedestrian traffic would include:	
a)	Consideration given to the requirements of all pedestrians and especially vulnerable users (e.g. those with mobility limitations)	7.15
b)	Temporary way-finding signage would be used to indicate temporary changes to pedestrian paths, alternative route(s) and alternative crossing point(s)	7.15

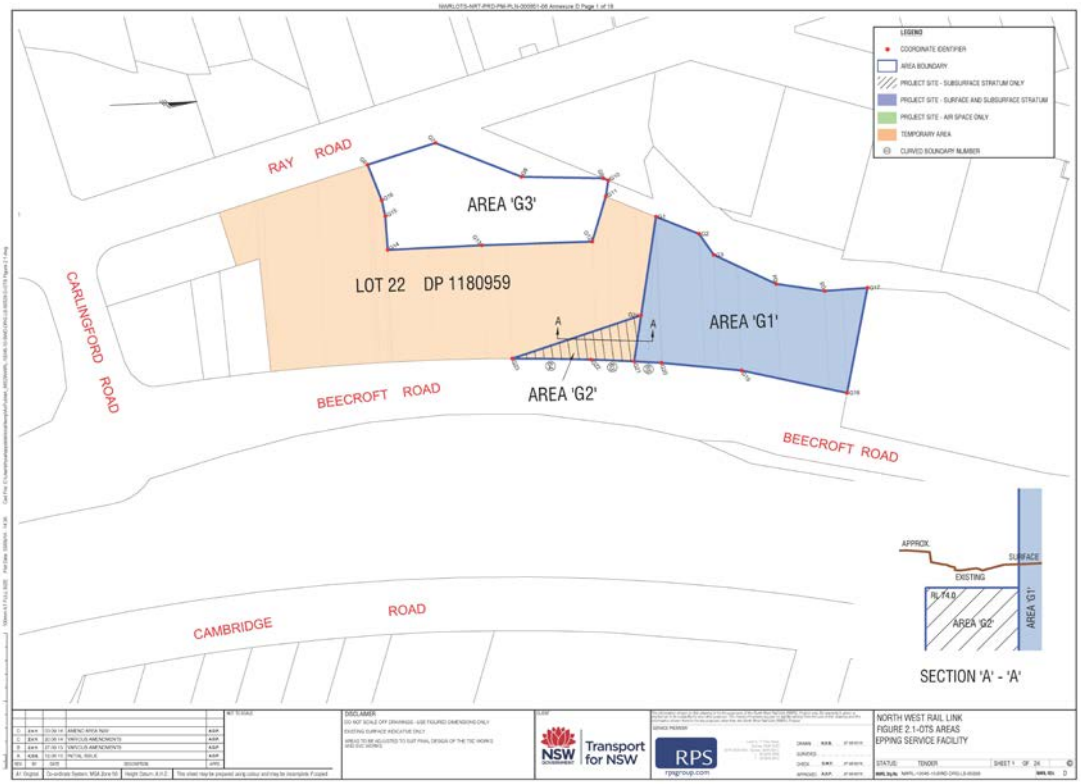
Clause	Requirement	Reference in this document
c)	Consultation with businesses and residents during the construction of the proposal would be undertaken to ensure that impacts to key pedestrian routes are minimised.	8.1
16.	Local emergency services would be advised of any planned changes to traffic arrangements beforehand. Advice would include information about anticipated delays to traffic, extended times of work, locations of lane possession or any likely major disruptions.	8.1
17.	Consultation with stakeholders such as Willoughby City Council (e.g. for garbage collection) and local bus operator(s) would be undertaken to advise of potential impacts throughout construction.	8.1
18.	Temporary and permanent reinstatement of affected road surface would be undertaken in consultation with the relevant authority (e.g. council and/or Roads and Maritime) and in accordance with any relevant Willoughby City Council or Roads and Maritime standards for road restoration.	9

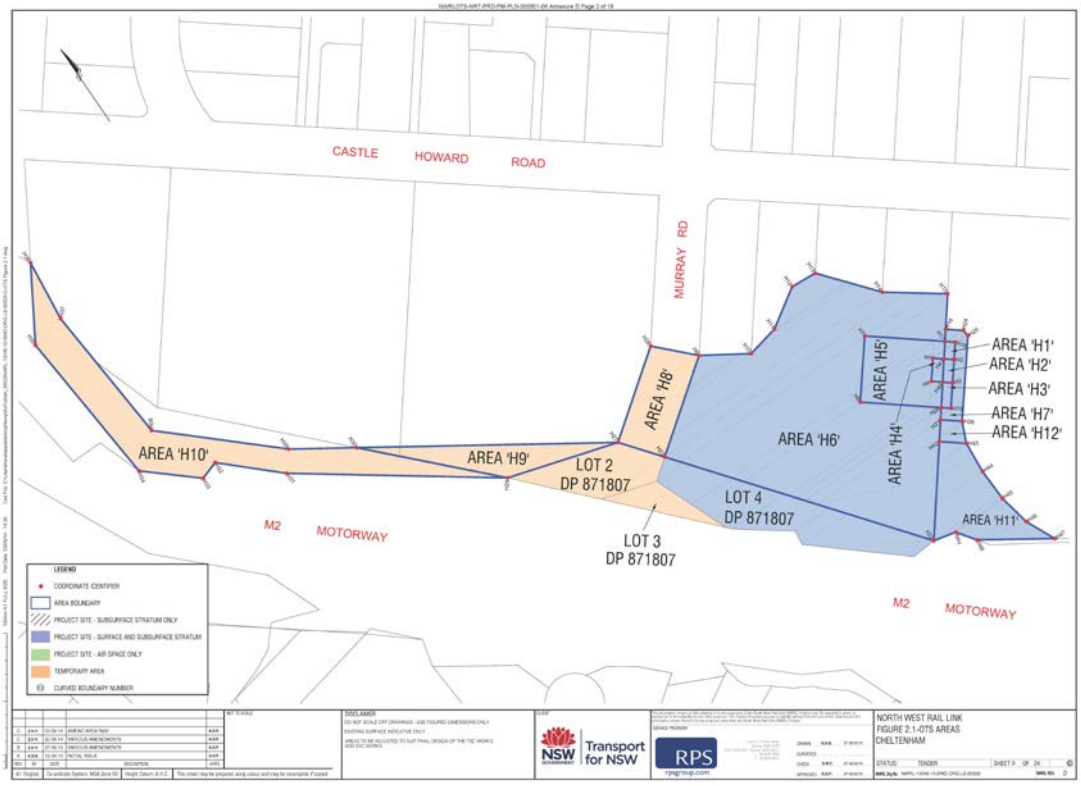
Annexure C Applicable Specifications, Standards and Guides

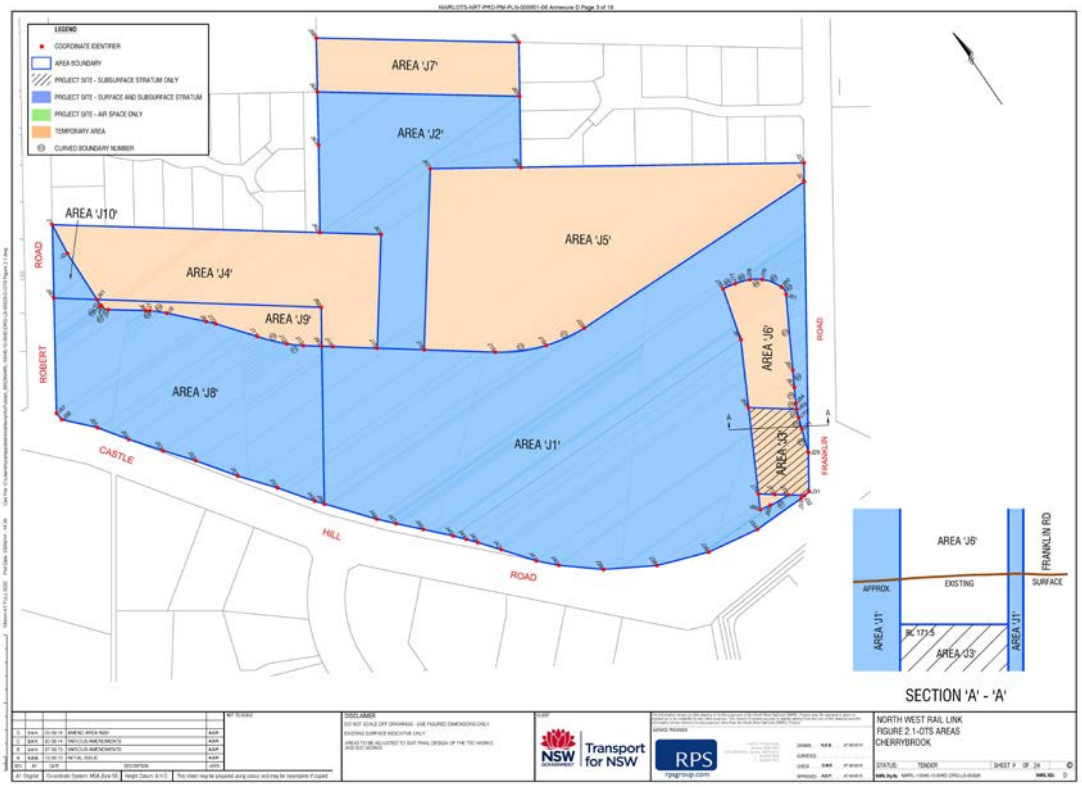
- Project Design Report
- TfNSW General Specification G10 – Control of Traffic
- Scope and Performance Requirements
- Australian Road Rules.
- Australian Standard 1742.3, Traffic control devices for works on roads.
- Australian Standard 1742 Parts 1 to 14, Manual of uniform traffic control devices (as required).
- Australian / New Zealand Standard – AS/NZS3845 Road Safety Barrier Systems.
- RMS Delineation Manual (From RMS Website)
- Relevant RMS Technical Direction and Guides
- RMS Australian Standard Supplements
- RMS Austroads Guides Supplements
- RMS Documents – Operating Conditions: Specific Permits for Oversize and Overmass
- AUSTROADS Guide to Traffic Management – Part 1 Introduction to Traffic Management
- AUSTROADS Guide to Traffic Management – Part 2 Traffic Theory
- AUSTROADS Guide to Traffic Management – Part 3 Traffic Studies and Analysis
- AUSTROADS Guide to Traffic Management – Part 6 Intersections, Interchanges and Crossings
- AUSTROADS Guide to Traffic Management – Part 8 Local Area Traffic Management
- AUSTROADS Guide to Traffic Management – Part 9 Traffic Operations
- AUSTROADS Guide to Traffic Management – Part 10 Traffic Control and Communication Devices
- AUSTROADS Guide to Traffic Management – Part 11 Parking
- AUSTROADS Guide to Road Design – Part 4 Intersections and Crossings General
- AUSTROADS Guide to Road Design – Part 4A Unsignalised and Signalised Intersections
- AUSTROADS Guide to Road Design – Part 6A Pedestrian and Cyclist Paths
- AUSTROADS Guide to Road Safety – Part 6 Road Safety Audit
- Cycling aspects of Austroads Guide (2014)
- Hills Shire Council: Subdivision and Engineering Specifications' and Development Control Plan 12.
- Hills Development Control Plan 12.
- The Blacktown Development Control Plan 2006

- Blacktown City Council Engineering Guide for Development
- Blacktown Council Works Specification – Civil.
- Hornsby Development Control Plan 2013.

Annexure D Construction Sites






LEGEND
COORDINATE IDENTIFIER
AREA BOUNDARY
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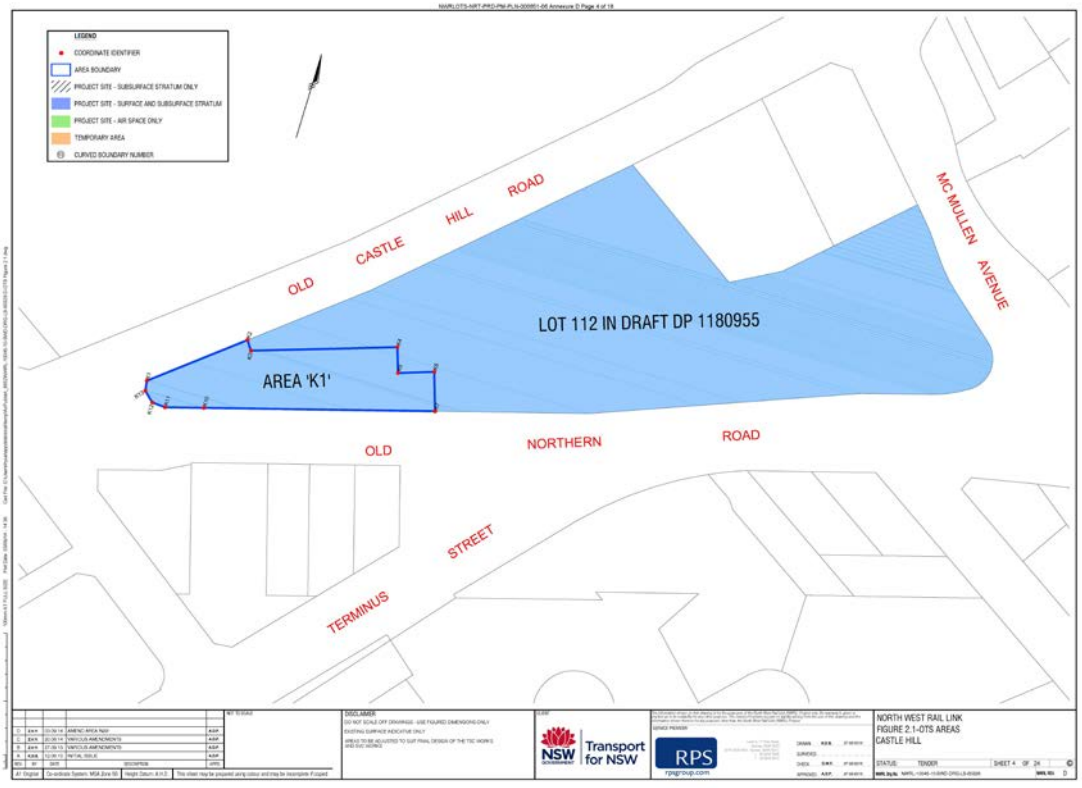
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
AREA 'J7'
AREA 'J2'
AREA 'J10'
AREA 'J5'
AREA 'J4'
AREA 'J9'
AREA 'J6'
AREA 'J8'
AREA 'J1'
AREA 'J3'
ROBERT
CASTLE
HILL
ROAD
FRANKLIN
AREA 'J6'
FRANKLIN RD
EXISTING
SURFACE
APPROX
AREA 'J1'
RL 171.5
AREA 'J3'
SECTION 'A' - 'A'
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
CHERRYBROOK
Transport for NSW
RPS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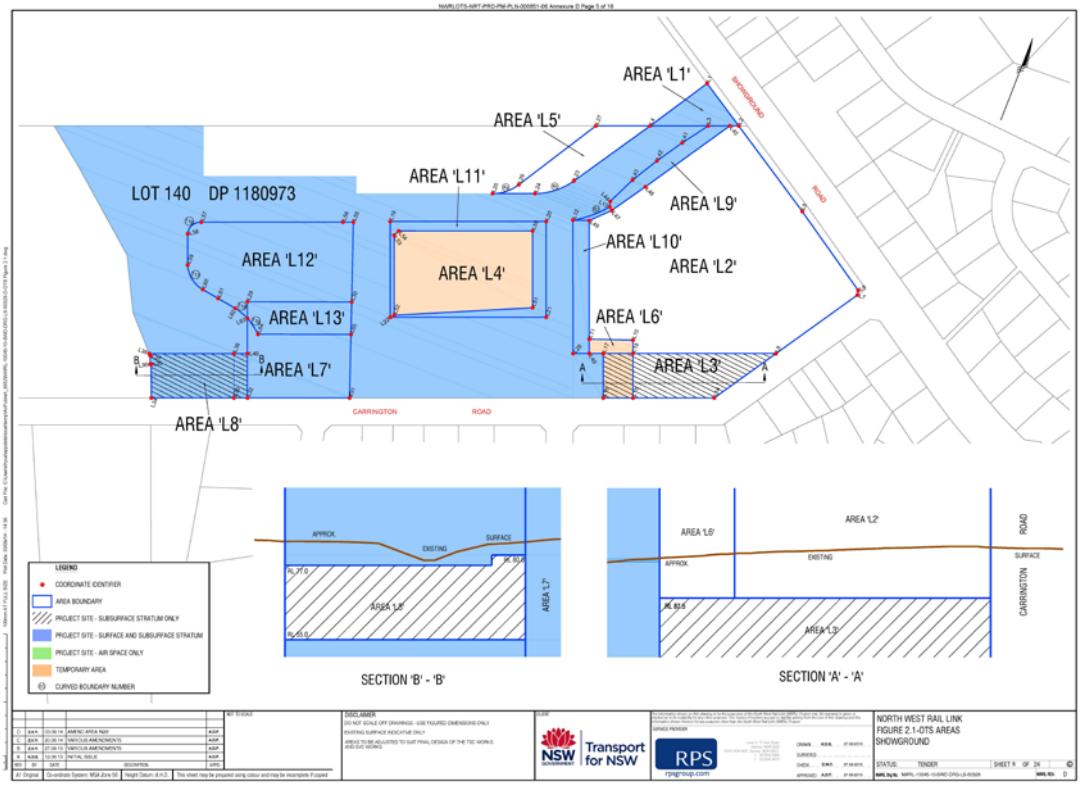
COORDINATE IDENTIFIER
AREA BOUNDARY
PROJECT SITE - SUBSURFACE STRATUM ONLY
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
OLD CASTLE HILL ROAD
MC MULLEN AVENUE
LOT 112 IN DRAFT DP 1180955
AREA 'K1'
OLD NORTHERN ROAD
STREET
TERMINUS
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
CASTLE HILL
Transport for NSW
RPS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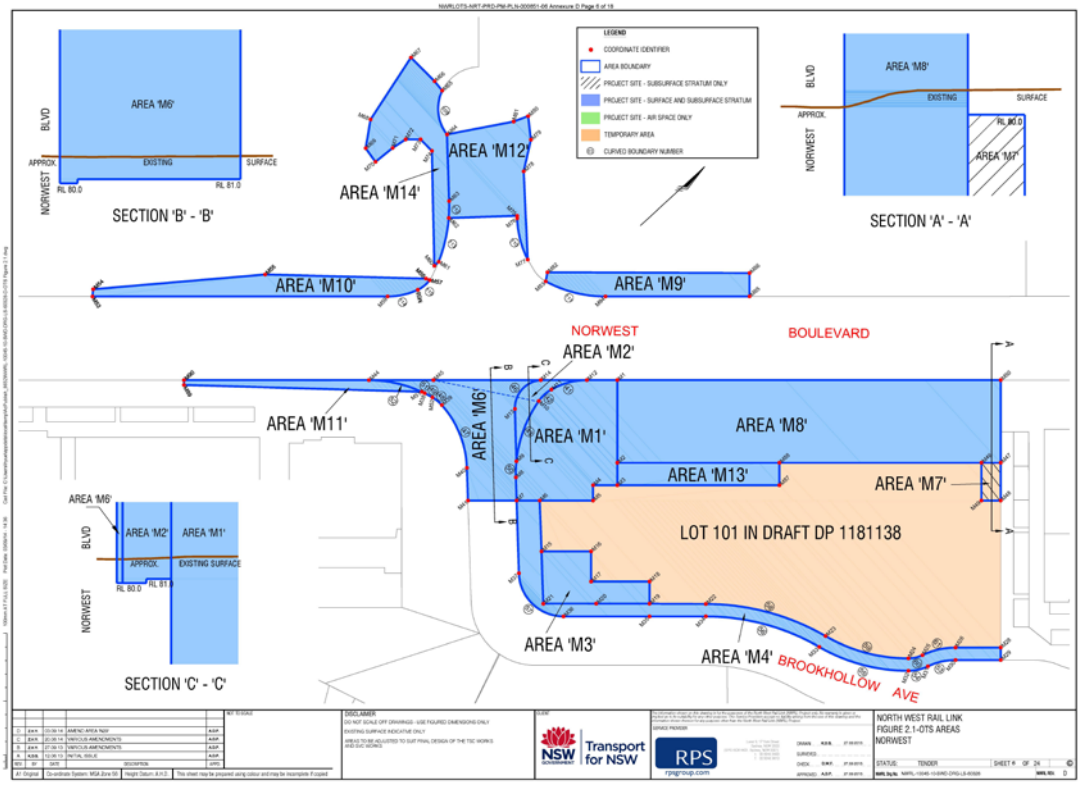
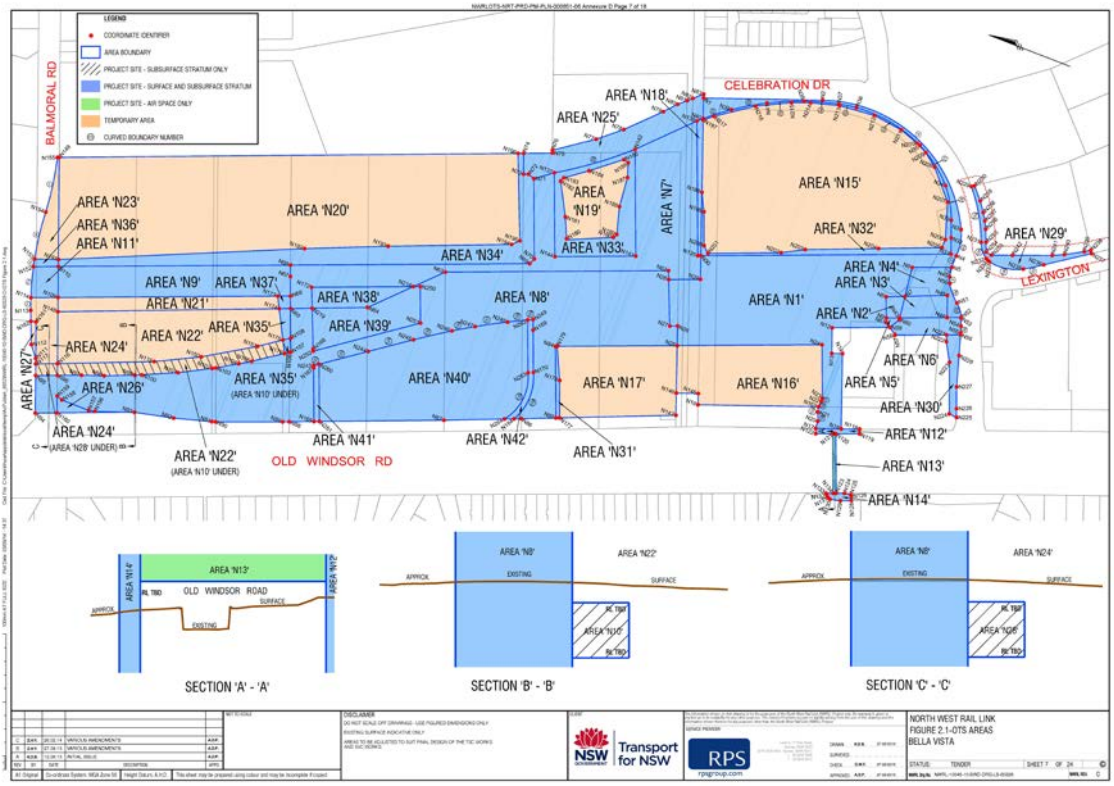
AREA 'L5'
AREA 'L11'
AREA 'L9'
LOT 140 DP 1180973
AREA 'L12'
AREA 'L4'
AREA 'L10'
AREA 'L2'
AREA 'L13'
AREA 'L6'
AREA 'L7'
AREA 'L3'
AREA 'L8'
CARRINGTON ROAD
SHOWGROUND ROAD
LEGEND
COORDINATE IDENTIFIER
AREA BOUNDARY
PROJECT SITE - SUBSURFACE STRATUM ONLY
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
SECTION 'B' - 'B'
SECTION 'A' - 'A'
Transport for NSW
RPS
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
SHOWGROUND


AREA 'M6'
BLVD
NORWEST
APPROX.
EXISTING
SURFACE
SECTION 'B' - 'B'
AREA 'M12'
AREA 'M14'
AREA 'M10'
AREA 'M9'
AREA 'M8'
SECTION 'A' - 'A'
NORWEST BOULEVARD
AREA 'M2'
AREA 'M11'
AREA 'M1'
AREA 'M13'
AREA 'M7'
LOT 101 IN DRAFT DP 1181138
AREA 'M3'
AREA 'M4'
BROOKHOLLOW AVE
SECTION 'C' - 'C'
Transport for NSW
RPS
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
NORWEST


LEGEND
COORDINATE IDENTIFIER
AREA BOUNDARY
PROJECT SITE - SUBSURFACE STRATUM ONLY
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
BALMORAL RD
CELEBRATION DR
LEXINGTON
OLD WINDSOR RD
AREA 'N1'
AREA 'N2'
AREA 'N3'
AREA 'N4'
AREA 'N5'
AREA 'N6'
AREA 'N7'
AREA 'N8'
AREA 'N9'
AREA 'N10'
AREA 'N11'
AREA 'N12'
AREA 'N13'
AREA 'N14'
AREA 'N15'
AREA 'N16'
AREA 'N17'
AREA 'N18'
AREA 'N19'
AREA 'N20'
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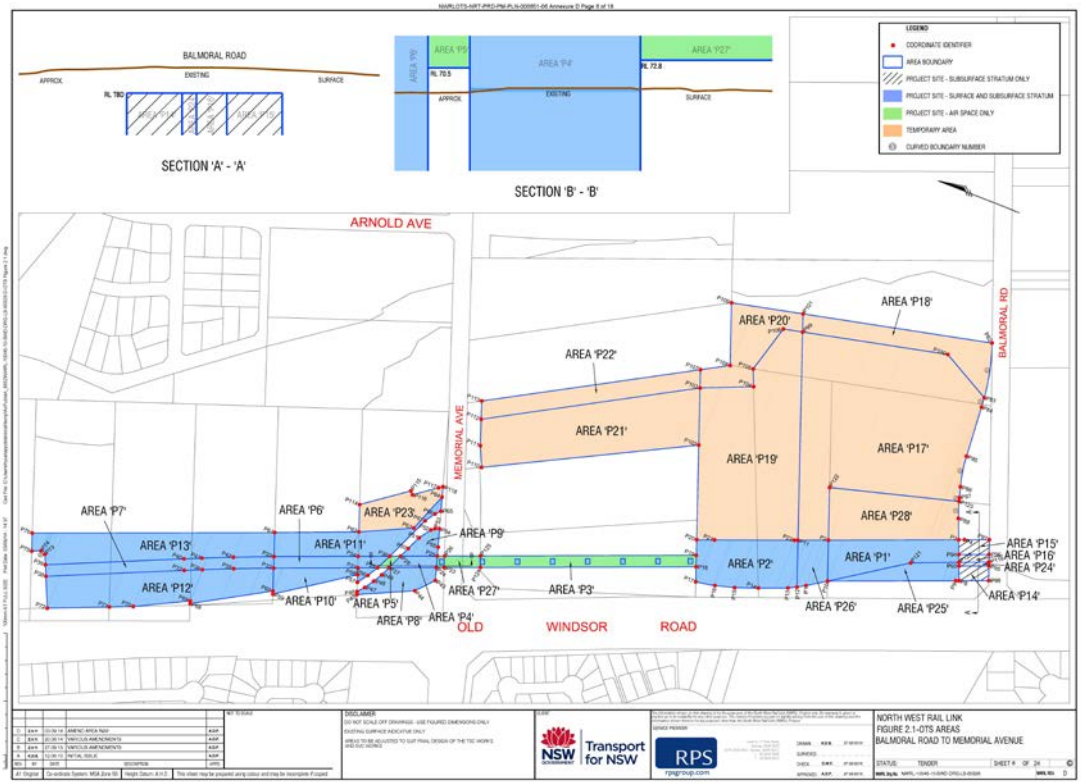
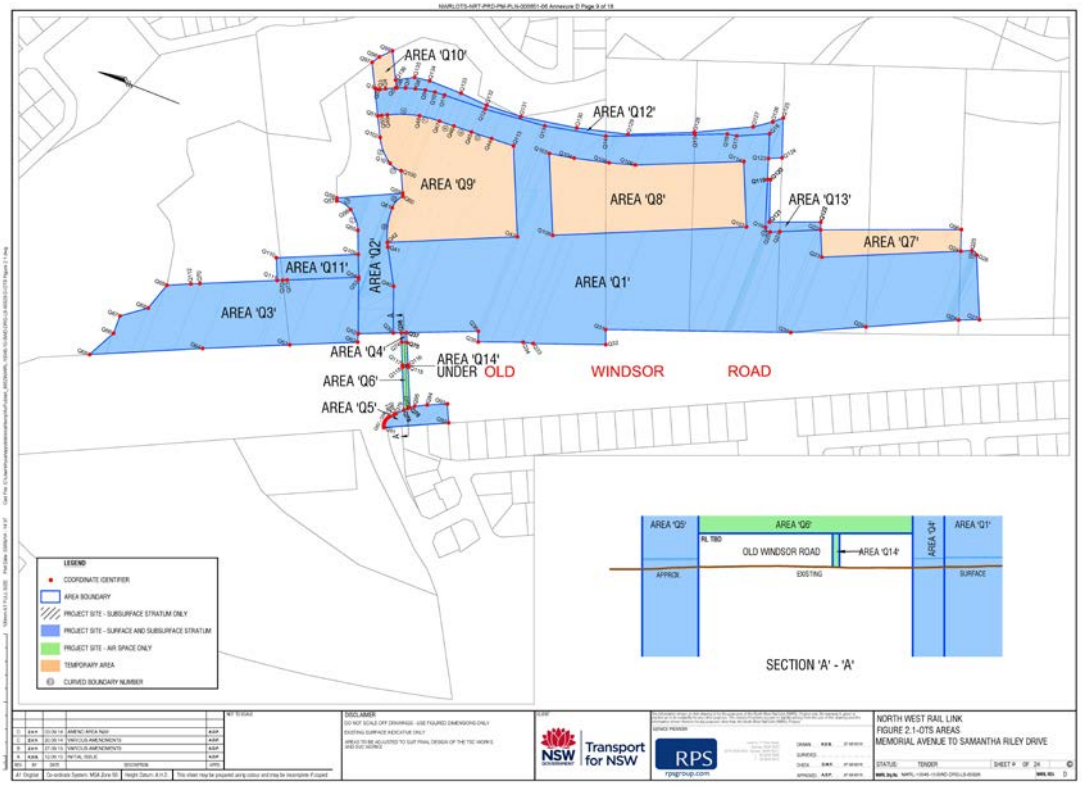
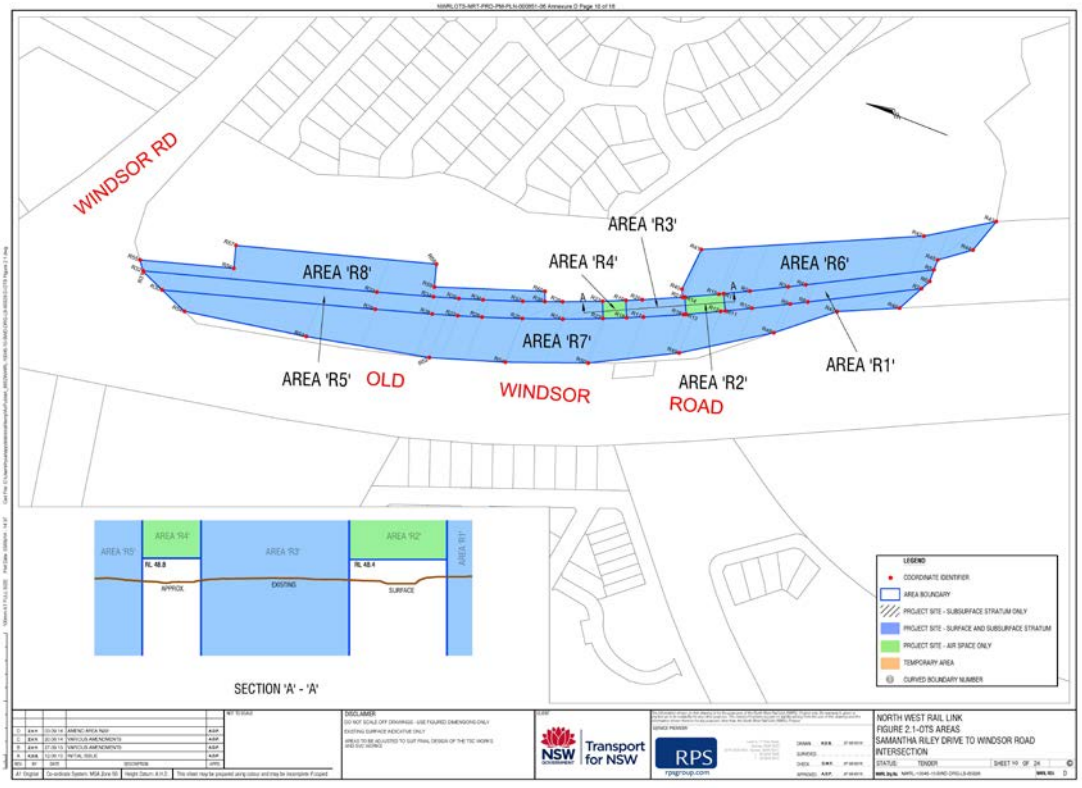
AREA 'N33'
AREA 'N34'
AREA 'N35'
AREA 'N36'
AREA 'N37'
AREA 'N38'
AREA 'N39'
AREA 'N40'
AREA 'N41'
AREA 'N42'
SECTION 'A' - 'A'
SECTION 'B' - 'B'
SECTION 'C' - 'C'
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
BELLA VISTA


BALMORAL ROAD
SECTION 'A' - 'A'
SECTION 'B' - 'B'
ARNOLD AVE
MEMORIAL AVE
BALMORAL RD
OLD WINDSOR ROAD
AREA 'P1'
AREA 'P2'
AREA 'P3'
AREA 'P4'
AREA 'P5'
AREA 'P6'
AREA 'P7'
AREA 'P8'
AREA 'P9'
AREA 'P10'
AREA 'P11'
AREA 'P12'
AREA 'P13'
AREA 'P14'
AREA 'P15'
AREA 'P16'
AREA 'P17'
AREA 'P18'
AREA 'P19'
AREA 'P20'
AREA 'P21'
AREA 'P22'
AREA 'P23'
AREA 'P24'
AREA 'P25'
AREA 'P26'
AREA 'P27'
AREA 'P28'
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
BALMORAL ROAD TO MEMORIAL AVENUE


AREA 'Q10'
AREA 'Q12'
AREA 'Q9'
AREA 'Q8'
AREA 'Q13'
AREA 'Q7'
AREA 'Q11'
AREA 'Q2'
AREA 'Q1'
AREA 'Q3'
AREA 'Q4'
AREA 'Q14'
UNDER OLD
WINDSOR
ROAD
AREA 'Q6'
AREA 'Q5'
LEGEND
COORDINATE IDENTIFIER
AREA BOUNDARY
PROJECT SITE - SUBSURFACE STRATUM ONLY
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
AREA 'Q5'
AREA 'Q6'
AREA 'Q14'
AREA 'Q1'
RL 780
OLD WINDSOR ROAD
APPROX.
EXISTING
SURFACE
SECTION 'A' - 'A'
DISCLAIMER
DO NOT SCALE OFF DRAWINGS - USE FIGURED DIMENSIONS ONLY
EXISTING SURFACE INDICATIVE ONLY
AREAS TO BE ADJUSTED TO SUIT FINAL DESIGN OF THE TSC WORKS AND SSJ WORKS
Transport for NSW
RPS
rpsgroup.com
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
MEMORIAL AVENUE TO SAMANTHA RILEY DRIVE


WINDSOR RD
AREA 'R3'
AREA 'R4'
AREA 'R8'
AREA 'R6'
AREA 'R7'
AREA 'R5'
OLD
WINDSOR
ROAD
AREA 'R2'
AREA 'R1'
AREA 'R5'
AREA 'R4'
AREA 'R3'
AREA 'R2'
AREA 'R1'
RL 48.8
RL 48.4
APPROX.
EXISTING
SURFACE
SECTION 'A' - 'A'
LEGEND
COORDINATE IDENTIFIER
AREA BOUNDARY
PROJECT SITE - SUBSURFACE STRATUM ONLY
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
DISCLAIMER
DO NOT SCALE OFF DRAWINGS - USE FIGURED DIMENSIONS ONLY
EXISTING SURFACE INDICATIVE ONLY
AREAS TO BE ADJUSTED TO SUIT FINAL DESIGN OF THE TSC WORKS AND SSJ WORKS
Transport for NSW
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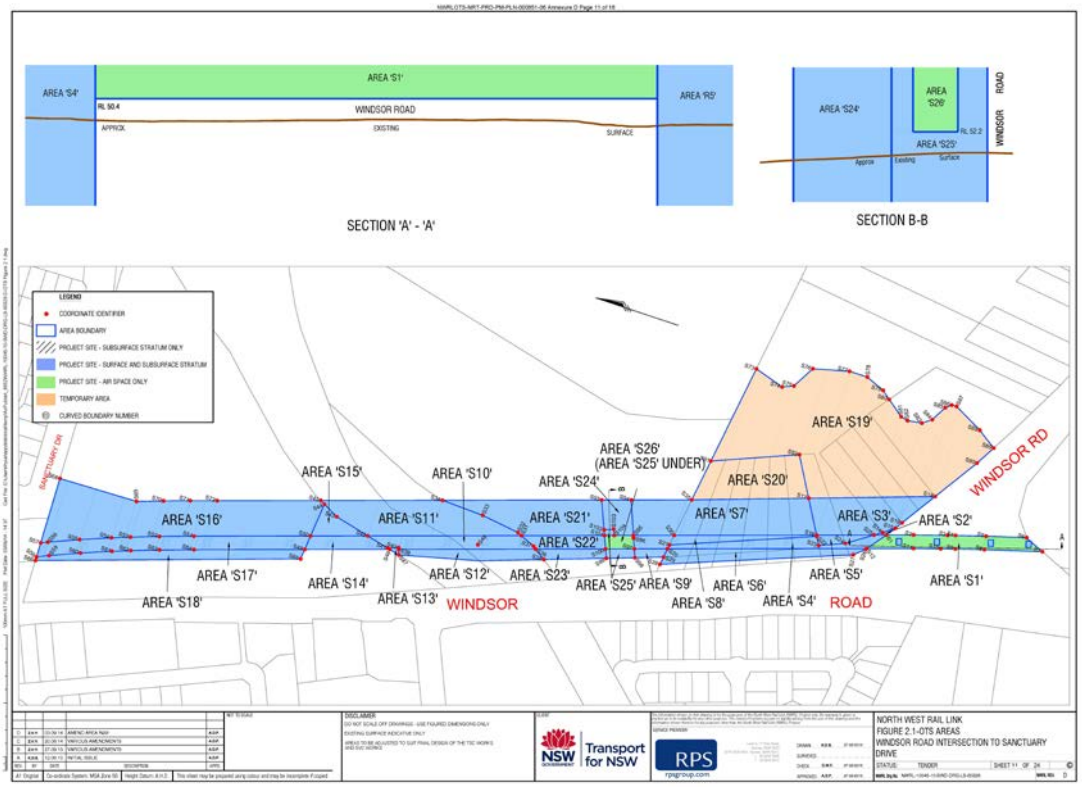
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
SAMANTHA RILEY DRIVE TO WINDSOR ROAD
INTERSECTION


AREA 'S4'
AREA 'S1'
AREA 'R5'
RL 50.4
WINDSOR ROAD
APPROX
EXISTING
SURFACE
SECTION 'A' - 'A'
AREA 'S24'
AREA 'S26'
AREA 'S25'
RL 52.2
ROAD
WINDSOR
Approx
Existing
Surface
SECTION B-B
LEGEND
COORDINATE IDENTIFIER
AREA BOUNDARY
PROJECT SITE - SUBSURFACE STRATUM ONLY
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
SANCTUARY DR
AREA 'S15'
AREA 'S10'
AREA 'S24'
AREA 'S26'
(AREA 'S25' UNDER)
AREA 'S19'
AREA 'S20'
WINDSOR RD
AREA 'S16'
AREA 'S11'
AREA 'S21'
AREA 'S7'
AREA 'S3'
AREA 'S2'
AREA 'S22'
AREA 'S17'
AREA 'S14'
AREA 'S12'
AREA 'S23'
AREA 'S25'
AREA 'S9'
AREA 'S6'
AREA 'S5'
AREA 'S1'
AREA 'S18'
AREA 'S13'
WINDSOR
AREA 'S8'
AREA 'S4'
ROAD
DISCLAIMER
DO NOT SCALE OFF DRAWINGS - USE FIGURED DIMENSIONS ONLY
EXISTING SURFACE INDICATIVE ONLY
AREAS TO BE ADJUSTED TO SUIT FINAL DESIGN OF THE TSC WORKS AND SUC WORKS
Transport for NSW
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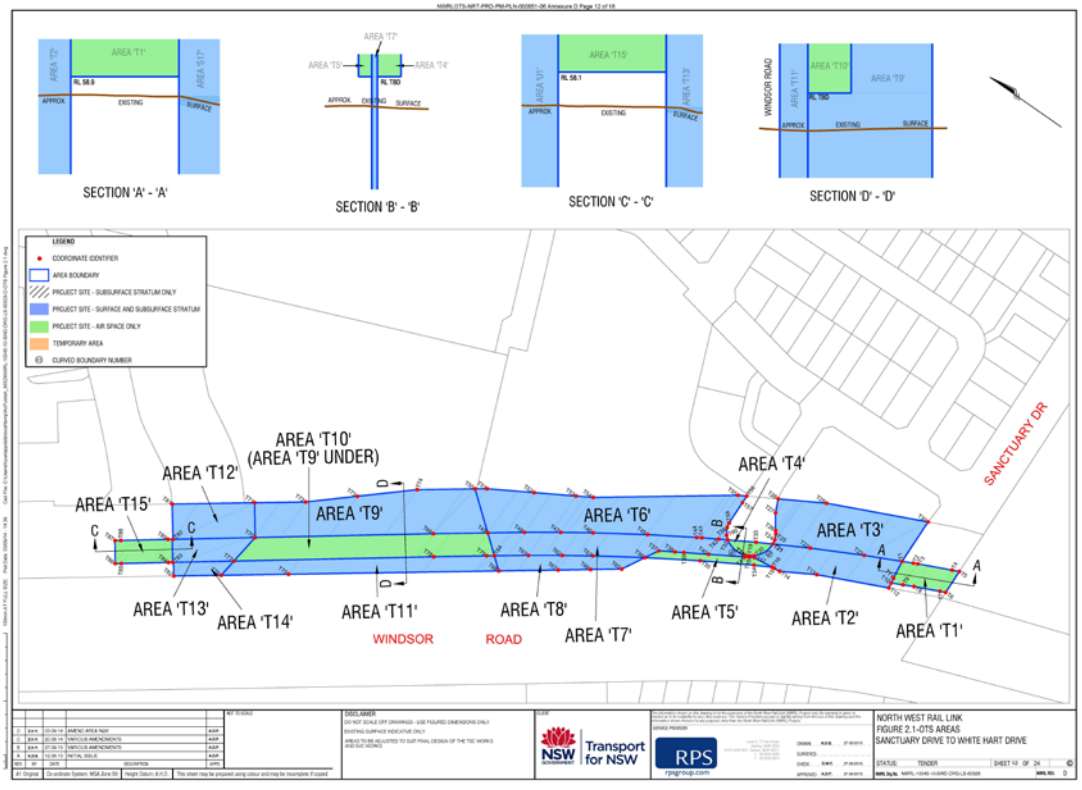
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
WINDSOR ROAD INTERSECTION TO SANCTUARY DRIVE
STATUS: TENDER


AREA 'T2'
AREA 'T1'
AREA 'S17'
RL 56.9
APPROX
EXISTING
SURFACE
SECTION 'A' - 'A'
AREA 'T7'
AREA 'T5'
AREA 'T4'
RL TBD
SECTION 'B' - 'B'
AREA 'T15'
AREA 'T13'
RL 58.1
SECTION 'C' - 'C'
WINDSOR ROAD
AREA 'T11'
AREA 'T10'
AREA 'T9'
RL TBD
SECTION 'D' - 'D'
LEGEND
COORDINATE IDENTIFIER
AREA BOUNDARY
PROJECT SITE - SUBSURFACE STRATUM ONLY
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
AREA 'T10'
(AREA 'T9' UNDER)
AREA 'T12'
AREA 'T4'
SANCTUARY DR
AREA 'T15'
AREA 'T9'
AREA 'T6'
AREA 'T3'
AREA 'T13'
AREA 'T14'
AREA 'T11'
AREA 'T8'
AREA 'T5'
AREA 'T2'
AREA 'T1'
AREA 'T7'
WINDSOR
ROAD
DISCLAIMER
DO NOT SCALE OFF DRAWINGS - USE FIGURED DIMENSIONS ONLY
EXISTING SURFACE INDICATIVE ONLY
AREAS TO BE ADJUSTED TO SUIT FINAL DESIGN OF THE TSC WORKS AND SUC WORKS
Transport for NSW
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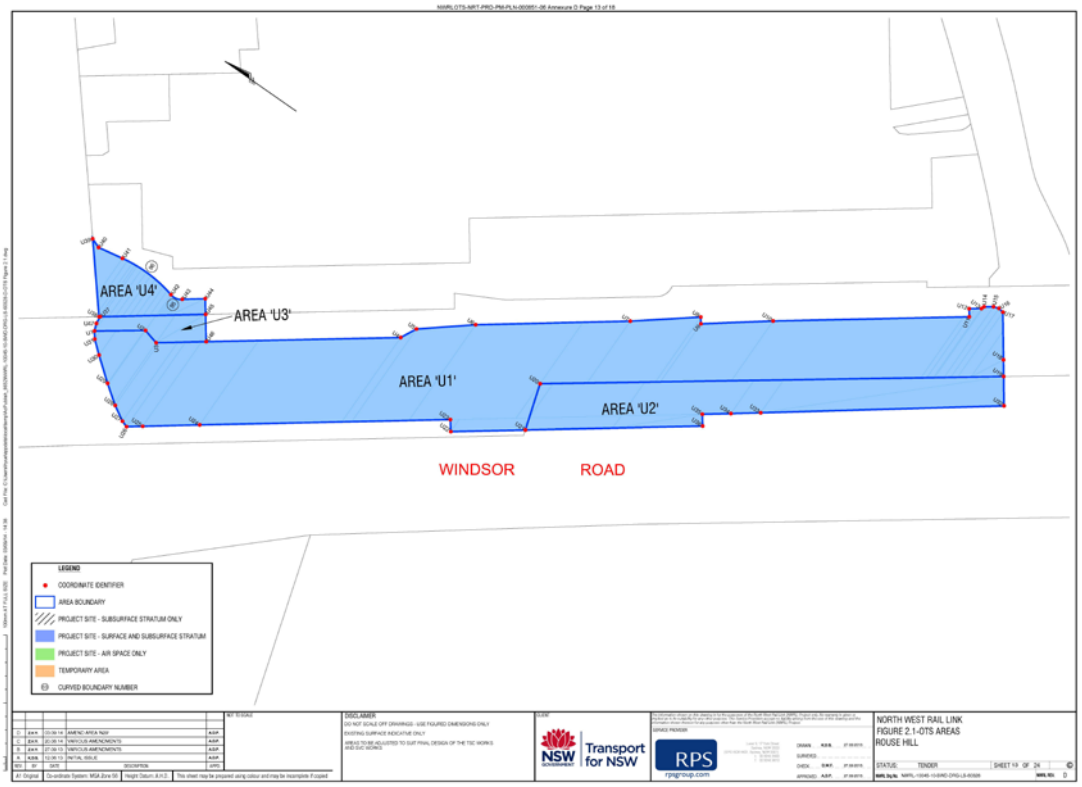
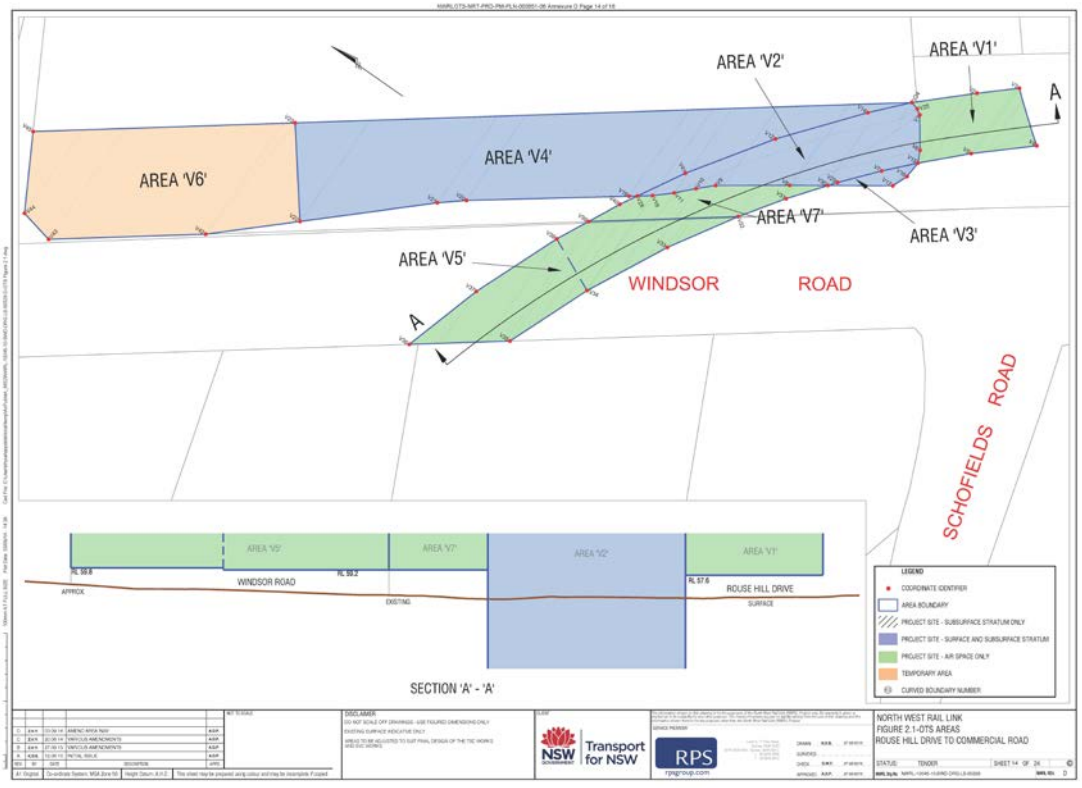
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
SANCTUARY DRIVE TO WHITE HART DRIVE
STATUS: TENDER


AREA 'U4'
AREA 'U3'
AREA 'U1'
AREA 'U2'
WINDSOR ROAD
LEGEND
COORDINATE IDENTIFIER
AREA BOUNDARY
PROJECT SITE - SUBSURFACE STRATUM ONLY
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
DISCLAIMER
DO NOT SCALE OFF DRAWINGS - USE FIGURED DIMENSIONS ONLY
EXISTING SURFACE INDICATIVE ONLY
AREAS TO BE ADJUSTED TO SUIT FINAL DESIGN OF THE TSC WORKS AND SUC WORKS
Transport for NSW
RPS
rpsgroup.com
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
ROUSE HILL


AREA 'V1'
AREA 'V2'
AREA 'V3'
AREA 'V4'
AREA 'V5'
AREA 'V6'
AREA 'V7'
A
A
WINDSOR ROAD
SCHOFIELDS ROAD
SECTION 'A' - 'A'
RL 59.8
RL 59.2
RL 57.6
WINDSOR ROAD
ROUSE HILL DRIVE
APPROX.
EXISTING
SURFACE
LEGEND
COORDINATE IDENTIFIER
AREA BOUNDARY
PROJECT SITE - SUBSURFACE STRATUM ONLY
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
DISCLAIMER
DO NOT SCALE OFF DRAWINGS - USE FIGURED DIMENSIONS ONLY
EXISTING SURFACE INDICATIVE ONLY
AREAS TO BE ADJUSTED TO SUIT FINAL DESIGN OF THE TSC WORKS AND SUC WORKS
Transport for NSW
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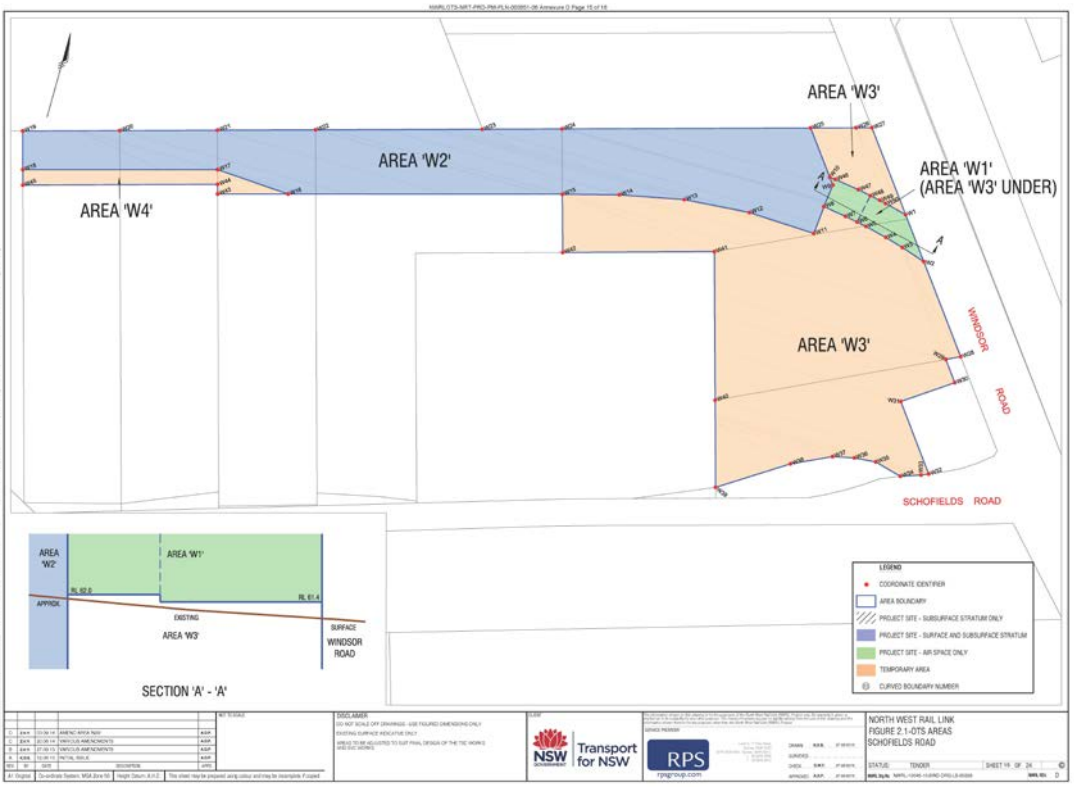
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
ROUSE HILL DRIVE TO COMMERCIAL ROAD


AREA 'W3'
AREA 'W2'
AREA 'W1'
(AREA 'W3' UNDER)
AREA 'W4'
AREA 'W3'
WINDSOR ROAD
SCHOFIELDS ROAD
AREA 'W2'
AREA 'W1'
RL 92.0
RL 61.4
APPROX.
EXISTING
AREA 'W3'
SURFACE
WINDSOR ROAD
SECTION 'A' - 'A'
LEGEND
COORDINATE IDENTIFIER
AREA BOUNDARY
PROJECT SITE - SUBSURFACE STRATUM ONLY
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
DISCLAIMER
DO NOT SCALE OFF DRAWINGS - USE FIGURED DIMENSIONS ONLY
EXISTING SURFACE INDICATIVE ONLY
AREAS TO BE ADJUSTED TO SUIT FINAL DESIGN OF THE TSC WORKS AND SSC WORKS
Transport for NSW
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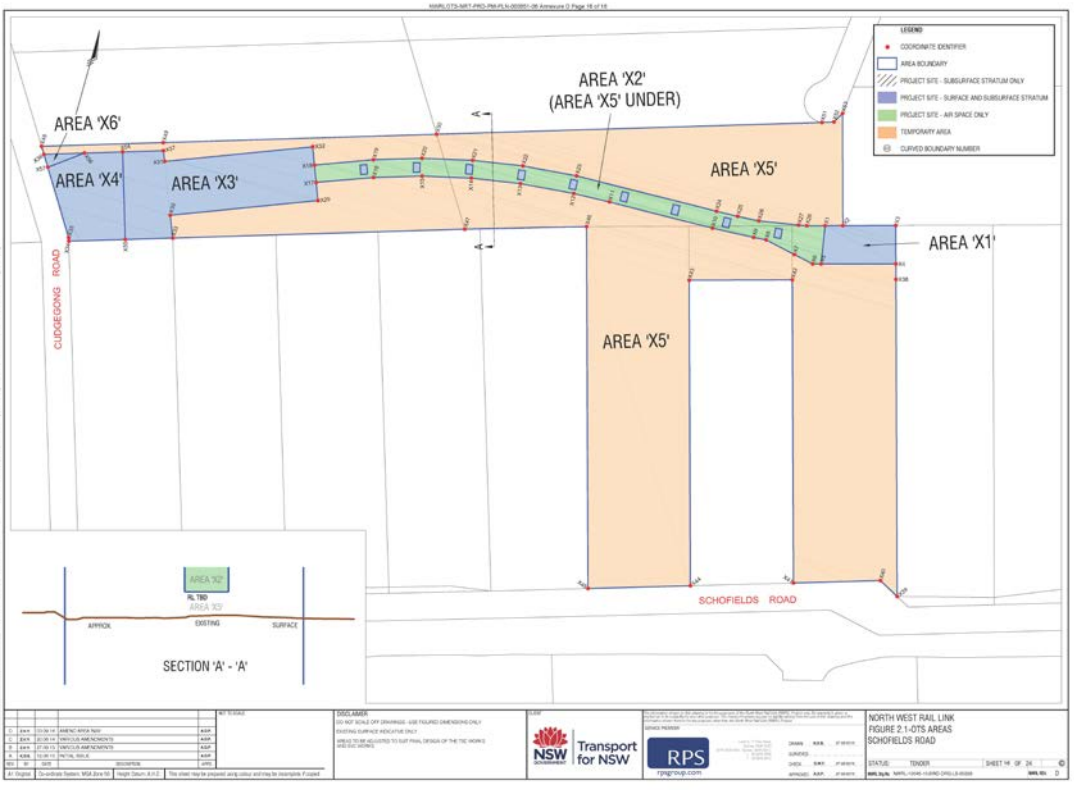
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
SCHOFIELDS ROAD
STATUS: TENDER


AREA 'X6'
AREA 'X4'
AREA 'X3'
AREA 'X2'
(AREA 'X5' UNDER)
AREA 'X5'
AREA 'X1'
AREA 'X5'
CUDGEGONG ROAD
SCHOFIELDS ROAD
AREA 'X2'
RL TBD
AREA 'X3'
APPROX.
EXISTING
SURFACE
SECTION 'A' - 'A'
LEGEND
COORDINATE IDENTIFIER
AREA BOUNDARY
PROJECT SITE - SUBSURFACE STRATUM ONLY
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
DISCLAIMER
DO NOT SCALE OFF DRAWINGS - USE FIGURED DIMENSIONS ONLY
EXISTING SURFACE INDICATIVE ONLY
AREAS TO BE ADJUSTED TO SUIT FINAL DESIGN OF THE TSC WORKS AND SSC WORKS
Transport for NSW
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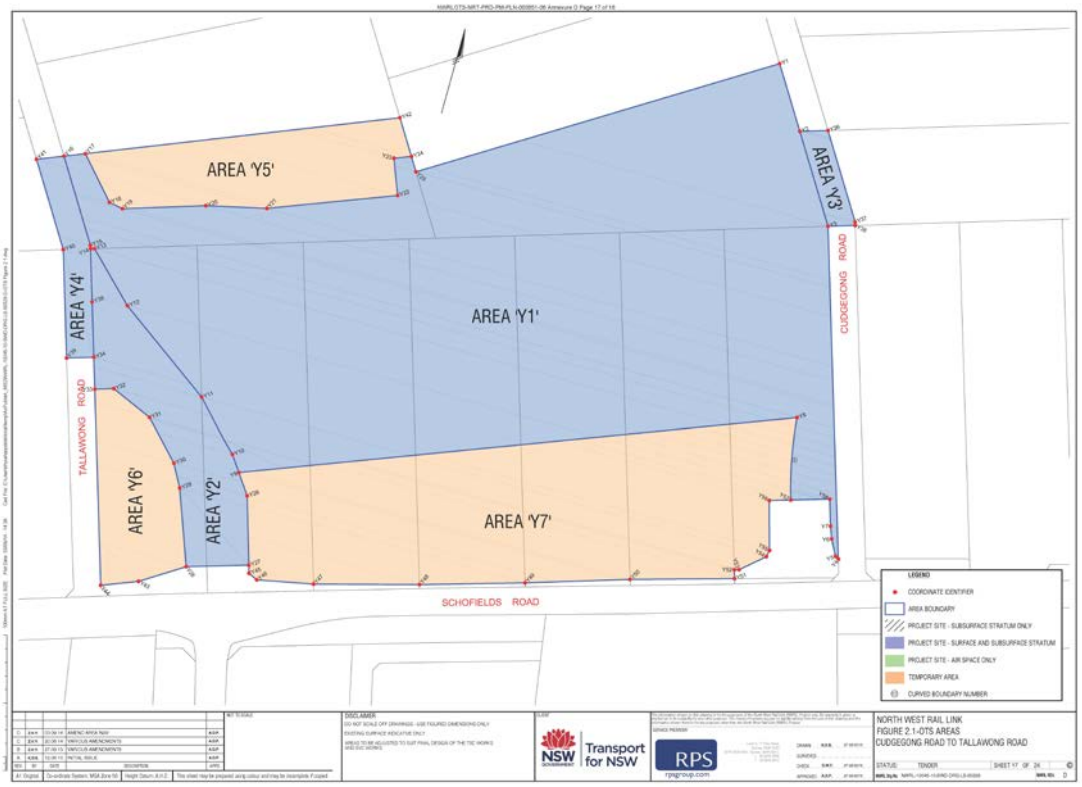
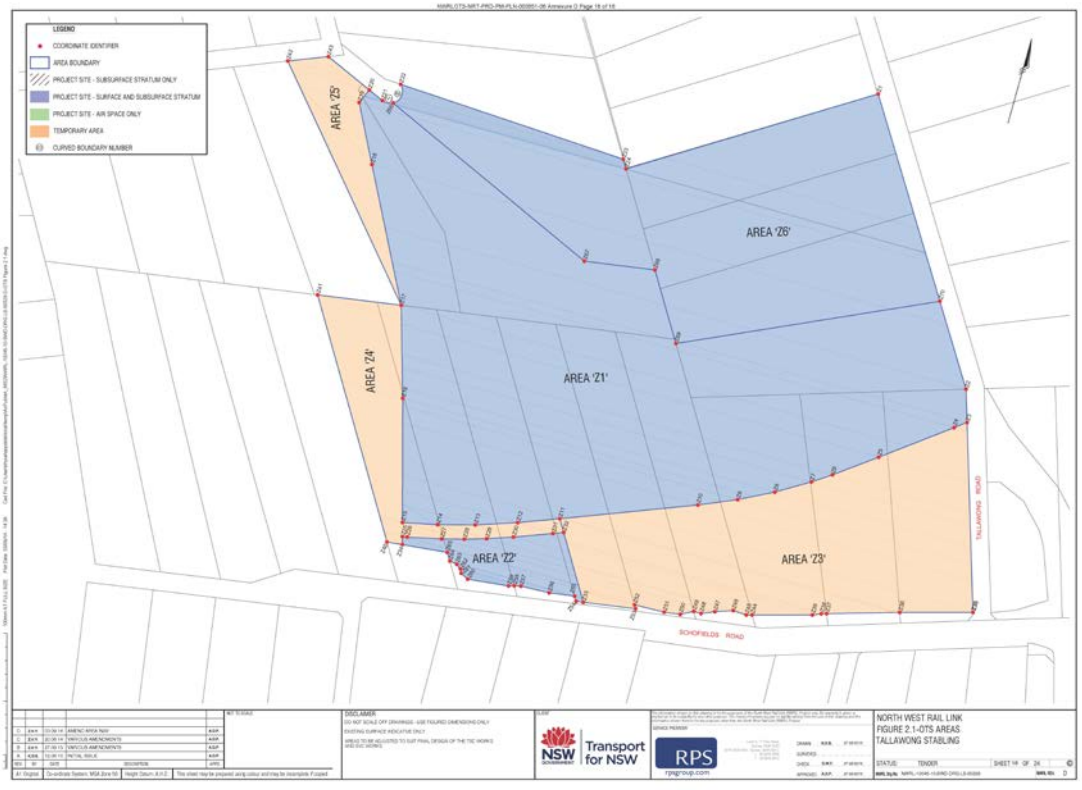
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
SCHOFIELDS ROAD
STATUS: TENDER


AREA 'Y5'
AREA 'Y3'
AREA 'Y4'
AREA 'Y1'
CUDGEGONG ROAD
TALLAWONG ROAD
AREA 'Y6'
AREA 'Y2'
AREA 'Y7'
SCHOFIELDS ROAD
LEGEND
COORDINATE IDENTIFIER
AREA BOUNDARY
PROJECT SITE - SUBSURFACE STRATUM ONLY
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
DISCLAIMER
DO NOT SCALE OFF DRAWINGS - USE FIGURED DIMENSIONS ONLY
EXISTING SURFACE INDICATIVE ONLY
AREAS TO BE ADJUSTED TO SUIT FINAL DESIGN OF THE TSC WORKS AND SSC WORKS
Transport for NSW
RPS
rpsgroup.com
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
CUDGEGONG ROAD TO TALLAWONG ROAD


LEGEND
COORDINATE IDENTIFIER
AREA BOUNDARY
PROJECT SITE - SUBSURFACE STRATUM ONLY
PROJECT SITE - SURFACE AND SUBSURFACE STRATUM
PROJECT SITE - AIR SPACE ONLY
TEMPORARY AREA
CURVED BOUNDARY NUMBER
AREA 'Z5'
AREA 'Z6'
AREA 'Z4'
AREA 'Z1'
AREA 'Z2'
AREA 'Z3'
SCHOFIELDS ROAD
TALLAWONG ROAD
DISCLAIMER
DO NOT SCALE OFF DRAWINGS - USE FIGURED DIMENSIONS ONLY
EXISTING SURFACE INDICATIVE ONLY
AREAS TO BE ADJUSTED TO SUIT FINAL DESIGN OF THE TSC WORKS AND SSC WORKS
Transport for NSW
RPS
rpsgroup.com
NORTH WEST RAIL LINK
FIGURE 2.1-OTS AREAS
TALLAWONG STABLING

Annexure E RMS WAD Works

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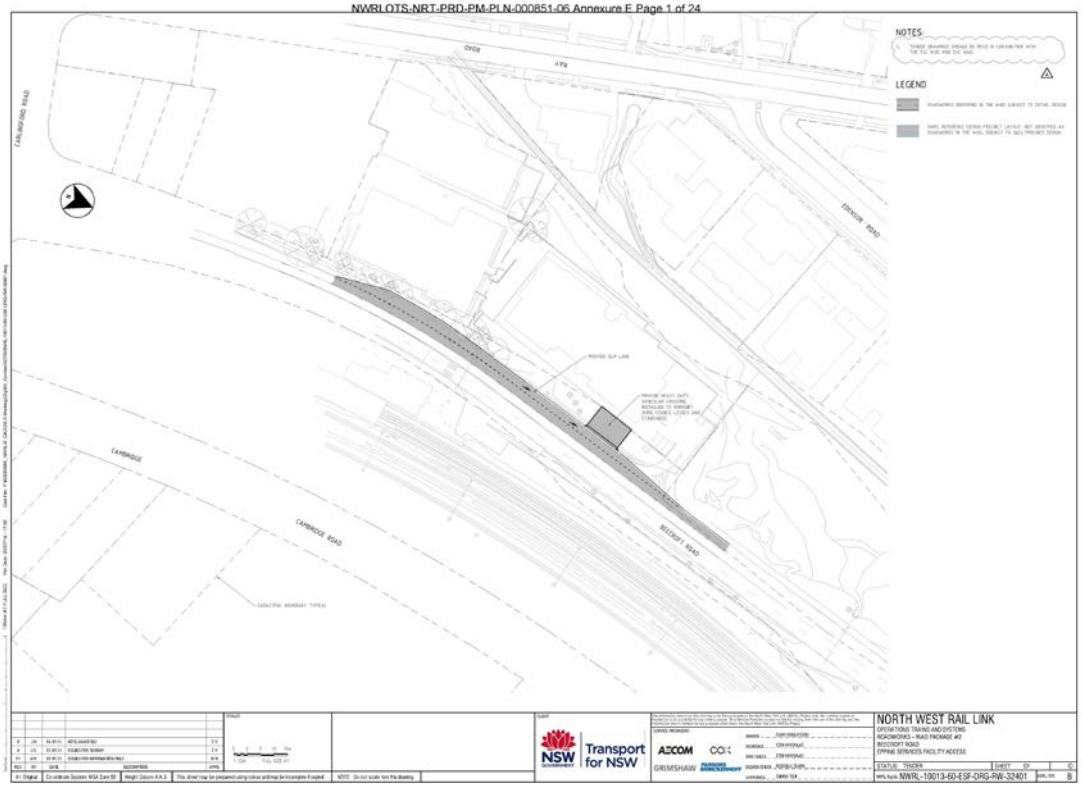

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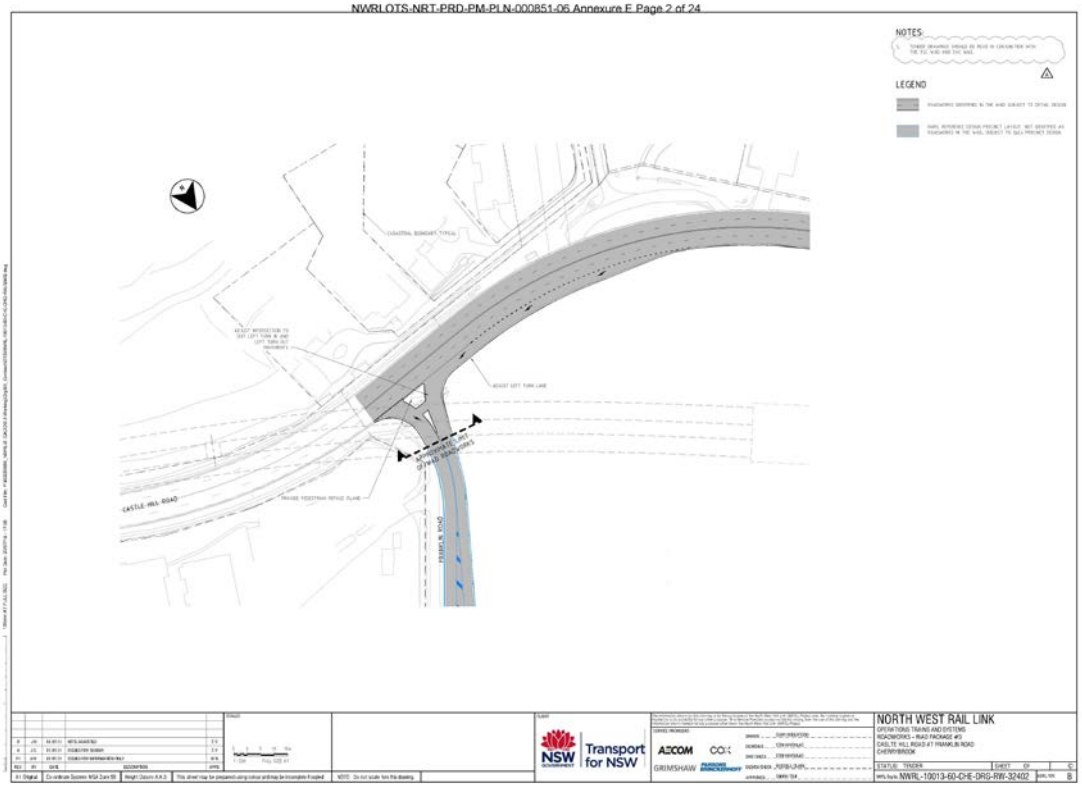

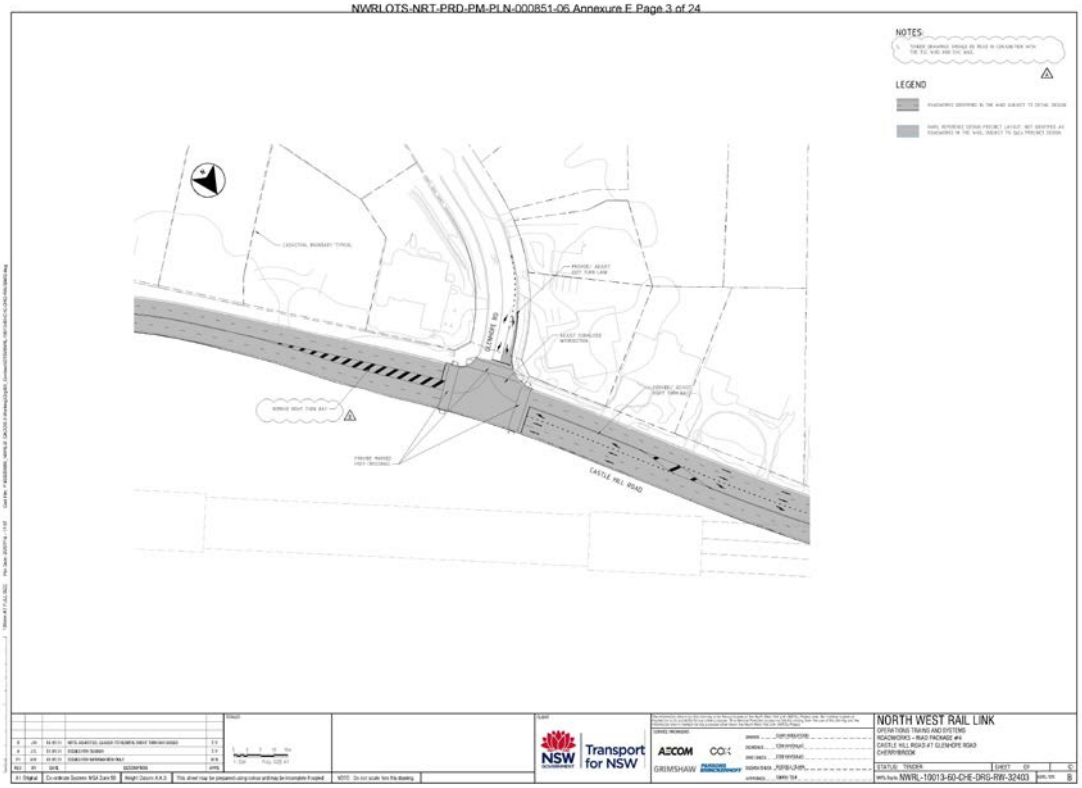
NOTES:
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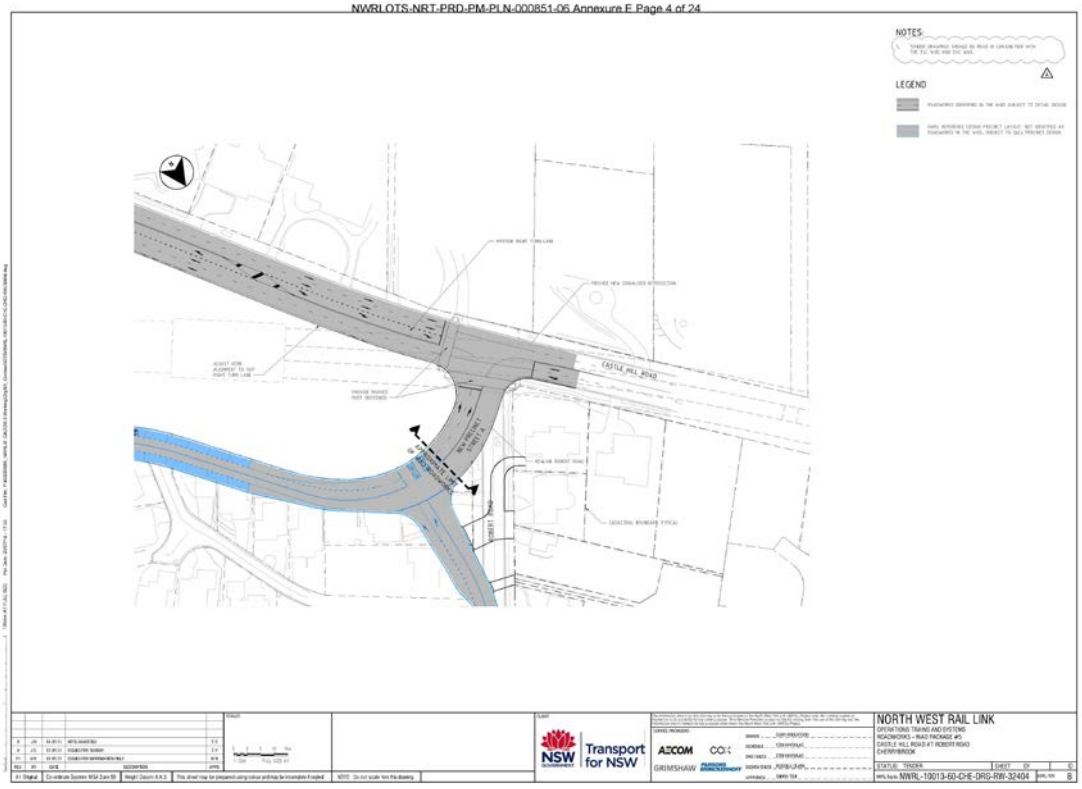
CASTLE HILL ROAD
NORTH WEST RAIL LINK
OPERATIONS TRAINS AND SYSTEMS
ROADWORKS – ROAD PACKAGE #4
CASTLE HILL ROAD AT GLENHOPE ROAD
CHERRYBROOK
NWRL-10013-60-CHE-DRG-RW-32403
Transport for NSW
AECOM
GRIMSHAW


NOTES:
LEGEND
CASTLE HILL ROAD
NORTH WEST RAIL LINK
OPERATIONS TRAINS AND SYSTEMS
ROADWORKS – ROAD PACKAGE #5
CASTLE HILL ROAD AT ROBERT ROAD
CHERRYBROOK
NWRL-10013-60-CHE-DRG-RW-32404
Transport for NSW
AECOM
GRIMSHAW

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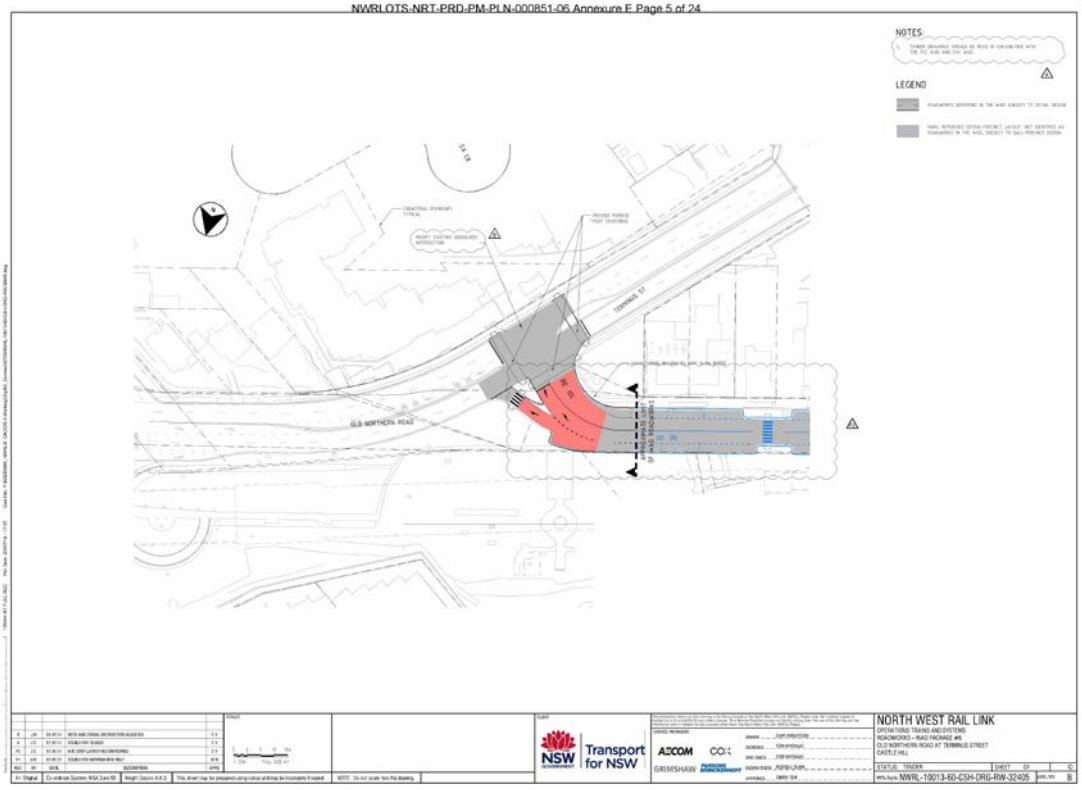

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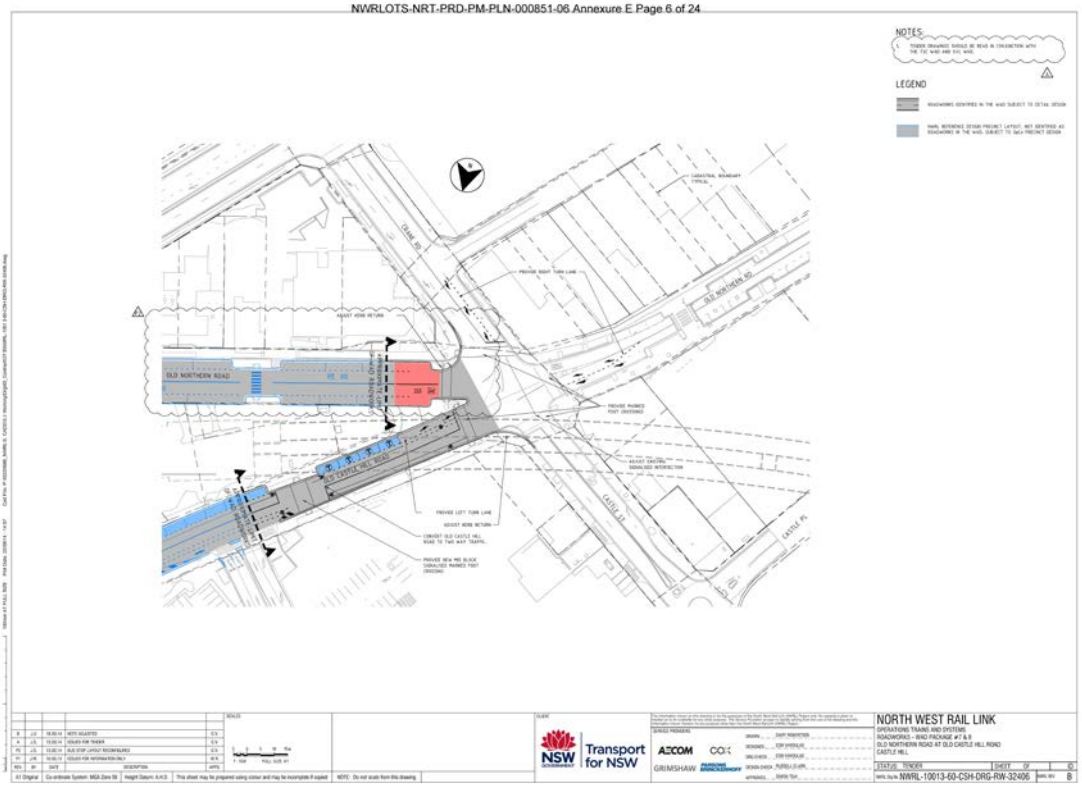
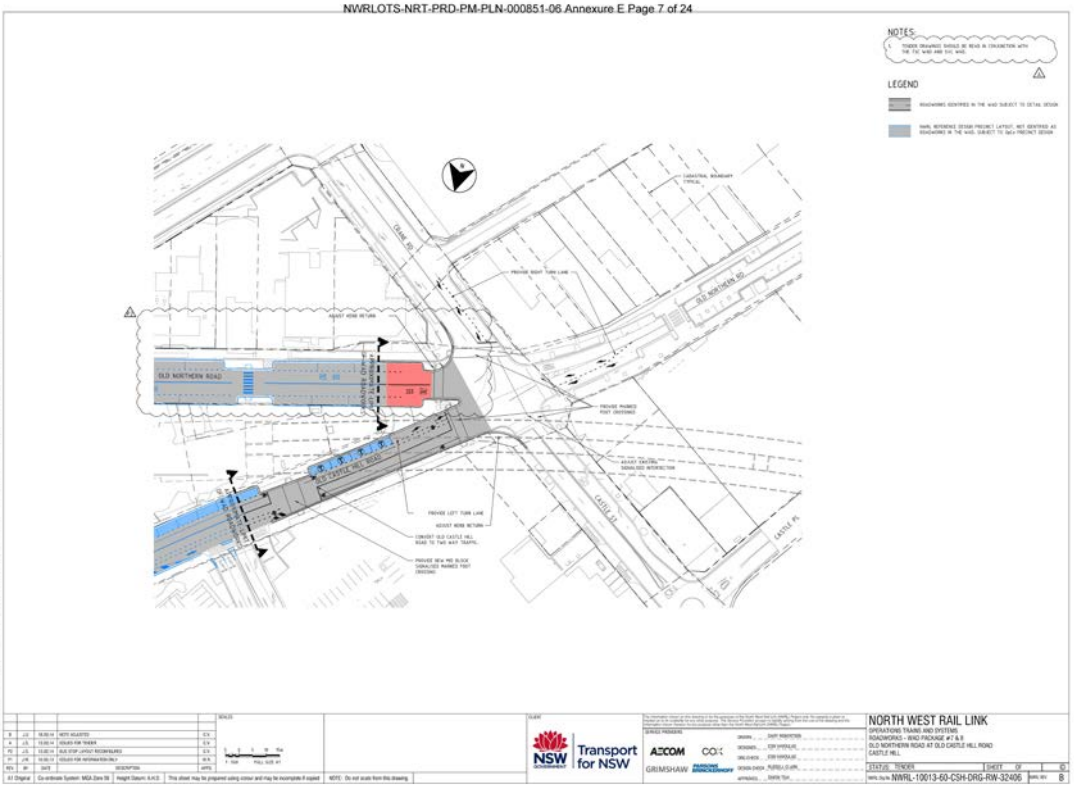
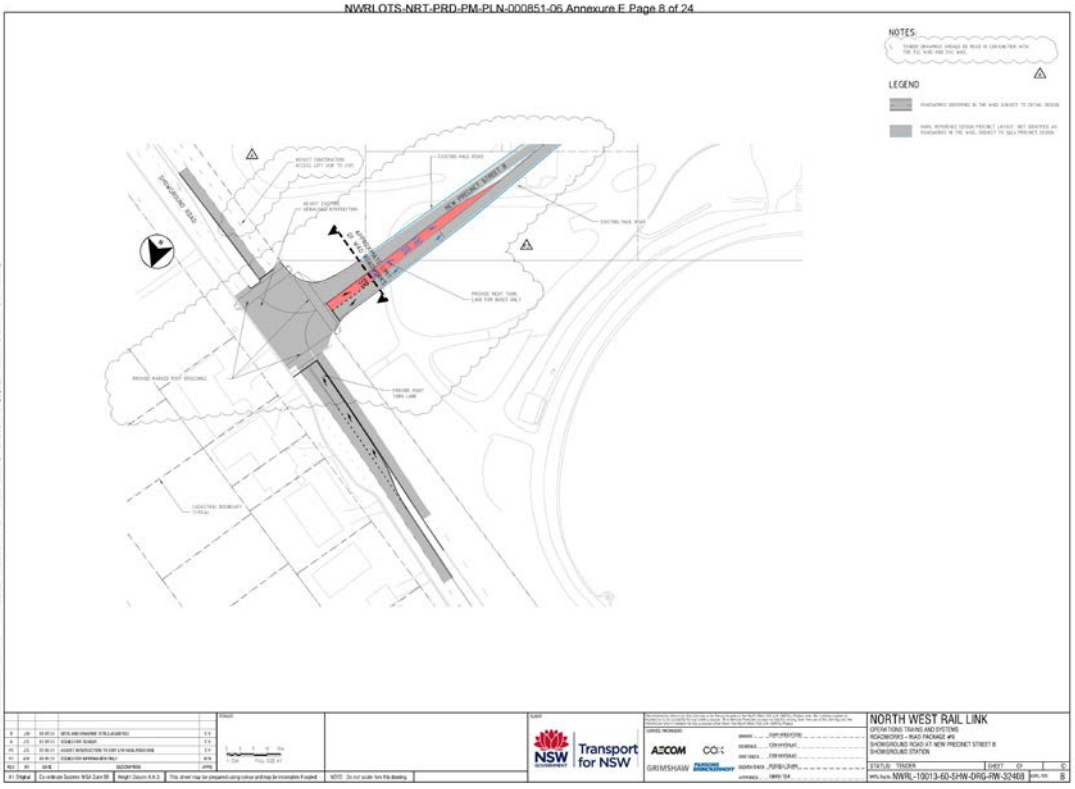
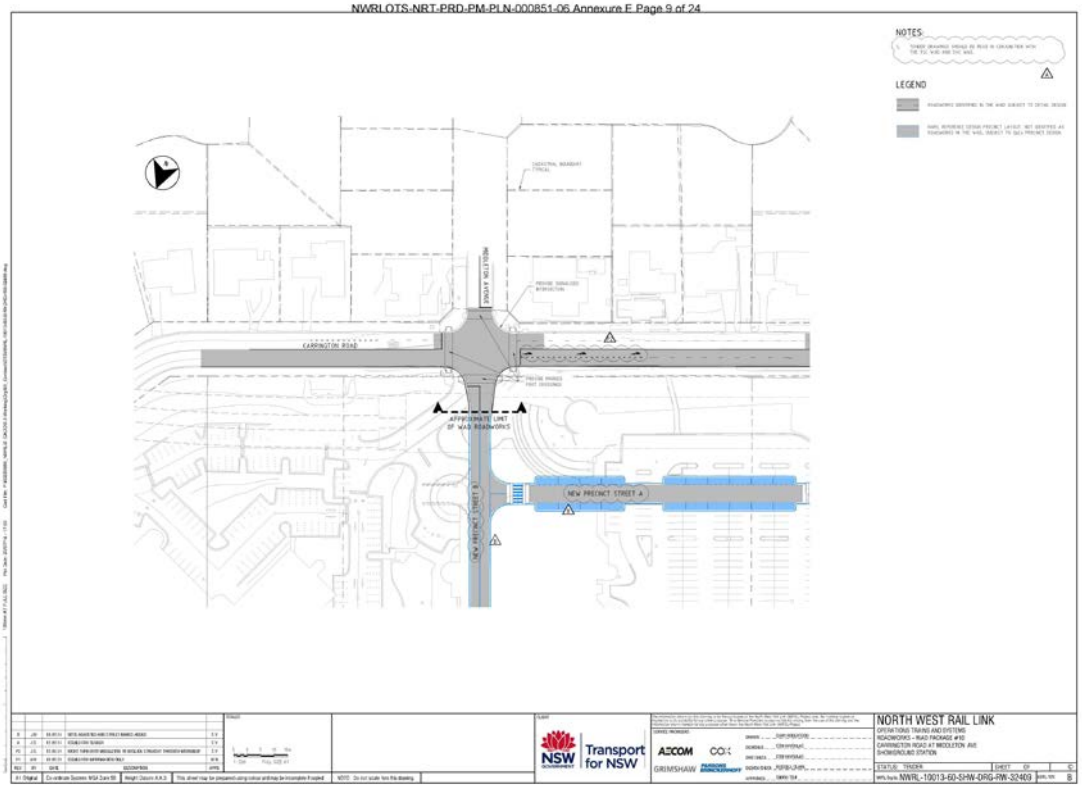
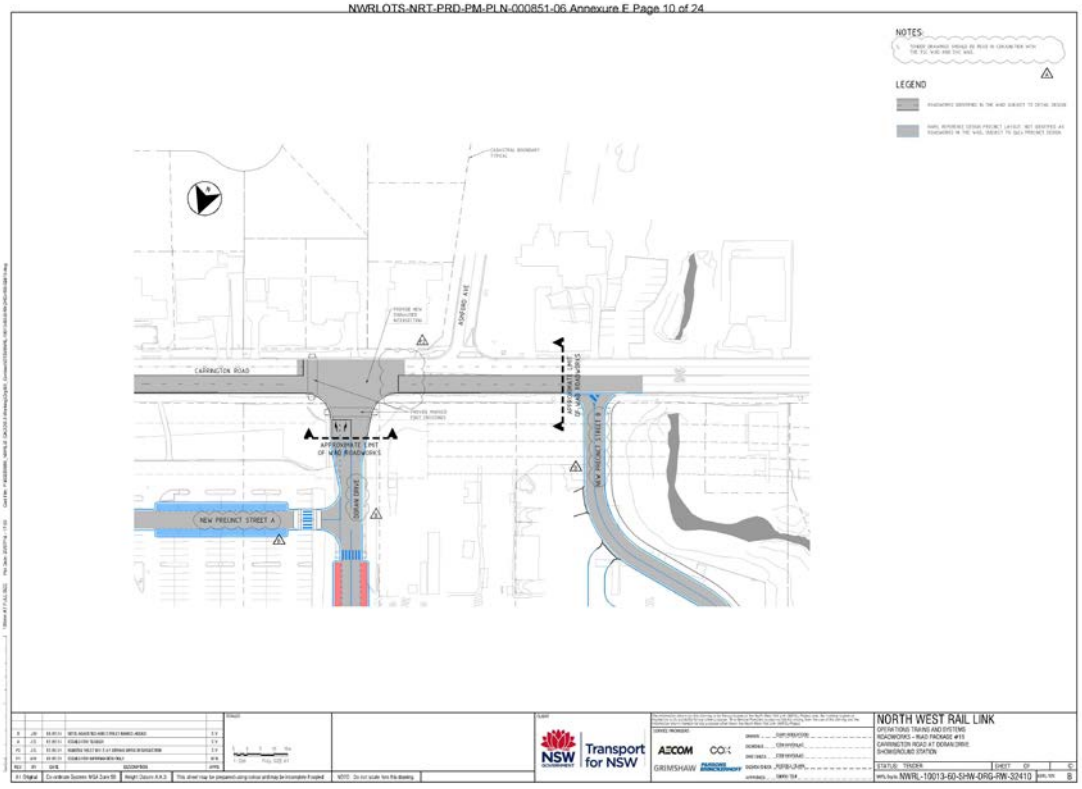
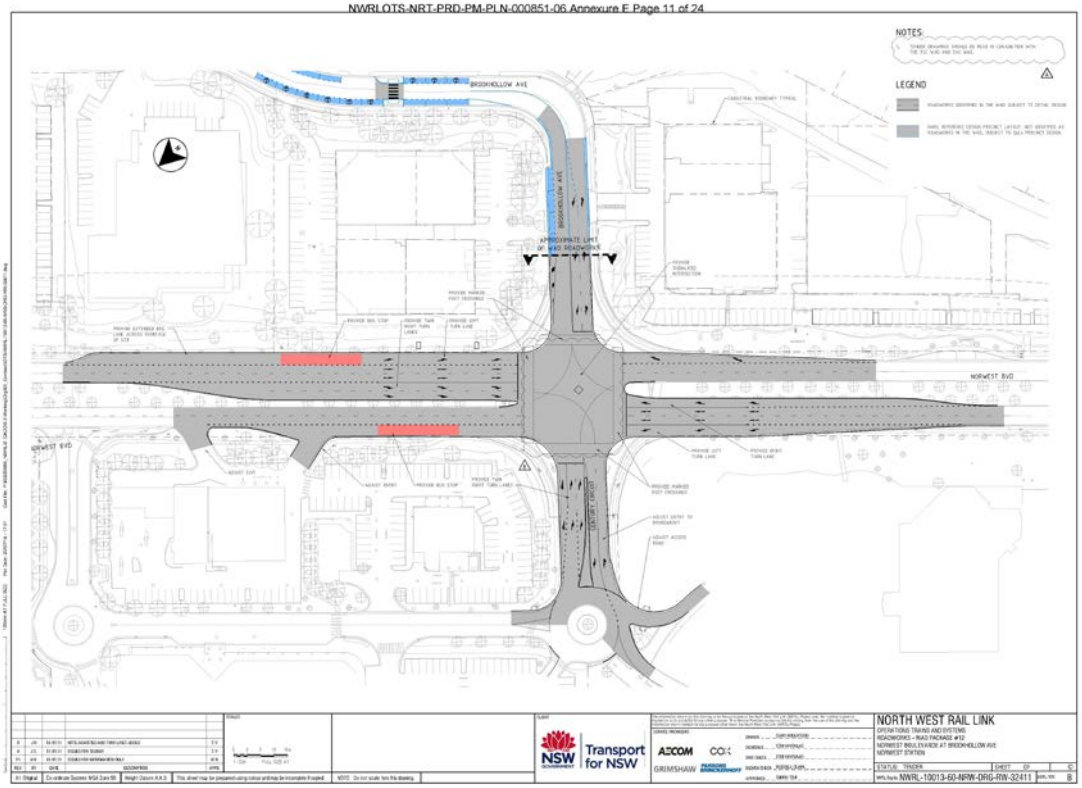


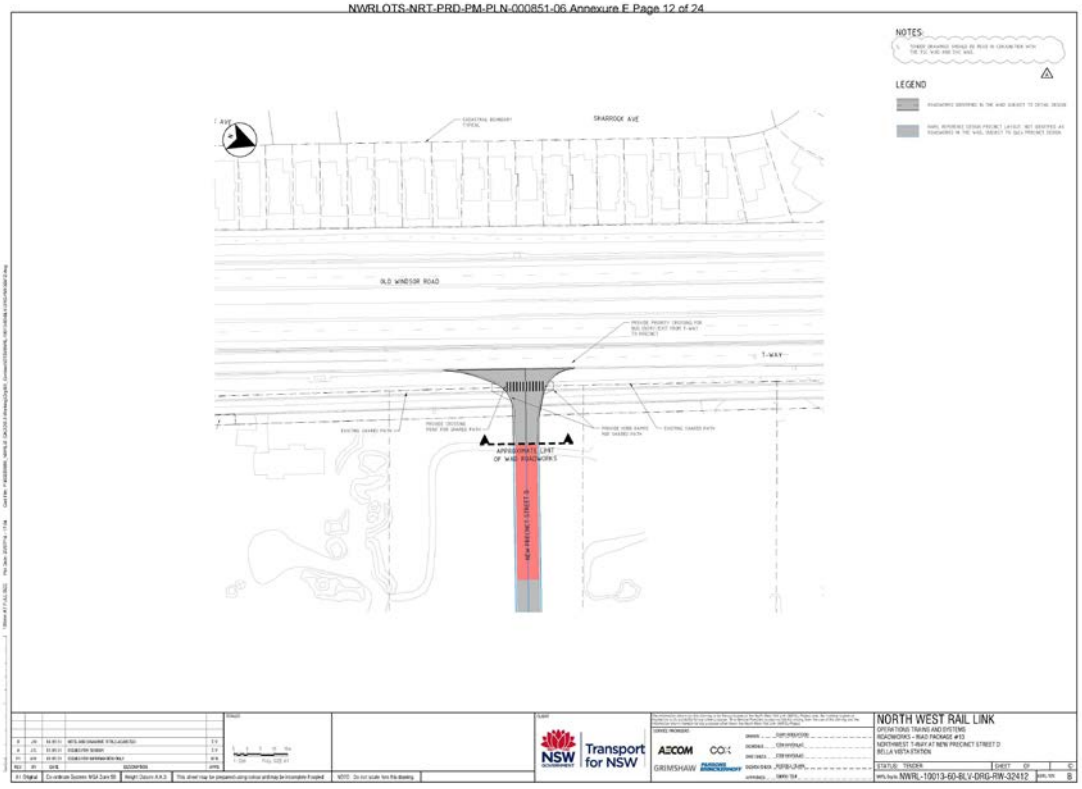

NOTES:
LEGEND
OLD NORTHERN ROAD
CASTLE HILL ROAD
NORTH WEST RAIL LINK
NWRL-10013-60-CSH-DRG-RW-32406


NOTES:
LEGEND
SHOWGROUND ROAD
NEW PRECINCT STREET B
NORTH WEST RAIL LINK
NWRL-10013-60-SHW-DRG-RW-32408


NOTES:
LEGEND
CARRINGTON ROAD
MIDDLETON AVENUE
APPROXIMATE LIMIT OF M4D ROADWORKS
NEW PRECINCT STREET A
NEW PRECINCT STREET B
NORTH WEST RAIL LINK
OPERATIONS TRAINS AND SYSTEMS
ROADWORKS – ROAD PACKAGE #10
CARRINGTON ROAD AT MIDDLETON AVE
SHOWGROUND STATION
Transport for NSW
AECOM
COX
GRIMSHAW
NWRL-10013-60-SHW-DRG-RW-32409


NOTES:
LEGEND
CARRINGTON ROAD
EDWARD AVE
SHOWGROUND DR
APPROXIMATE LIMIT OF M4D ROADWORKS
NEW PRECINCT STREET A
EDWARD DRIVE
NEW PRECINCT STREET C
NORTH WEST RAIL LINK
OPERATIONS TRAINS AND SYSTEMS
ROADWORKS – ROAD PACKAGE #10
CARRINGTON ROAD AT EDWARD DRIVE
SHOWGROUND STATION
Transport for NSW
AECOM
COX
GRIMSHAW
NWRL-10013-60-SHW-DRG-RW-32410


NOTES:
LEGEND
BROOKHOLLOW AVE
NORWEST BVD
NORTH WEST RAIL LINK
Transport for NSW
AECOM
GRIMSHAW


NOTES:
LEGEND
SHARROCK AVE
OLD WINDSOR ROAD
T-WAY
NORTH WEST RAIL LINK
Transport for NSW
AECOM
GRIMSHAW

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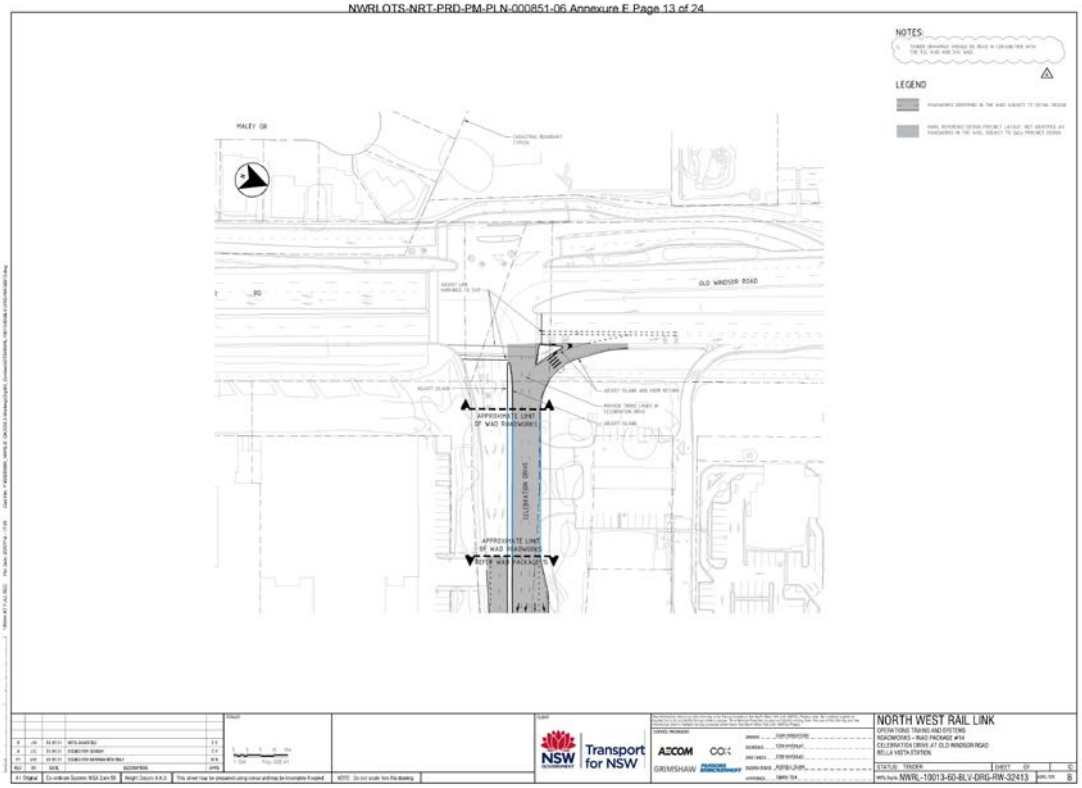
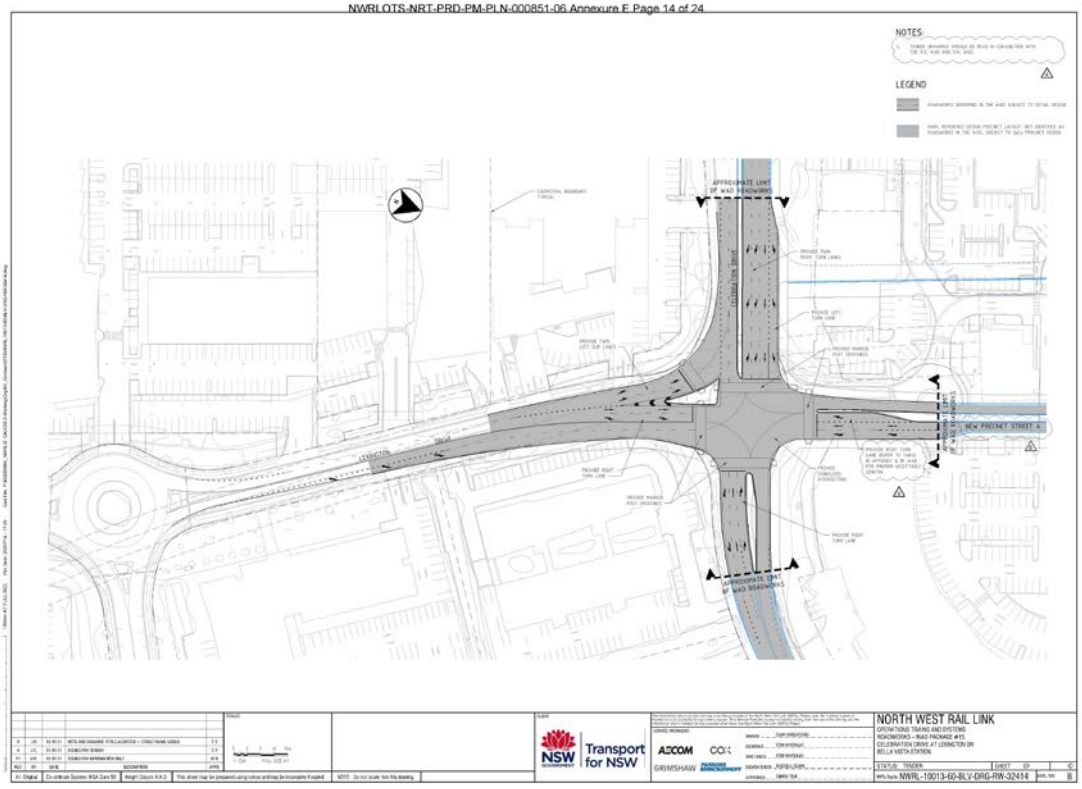
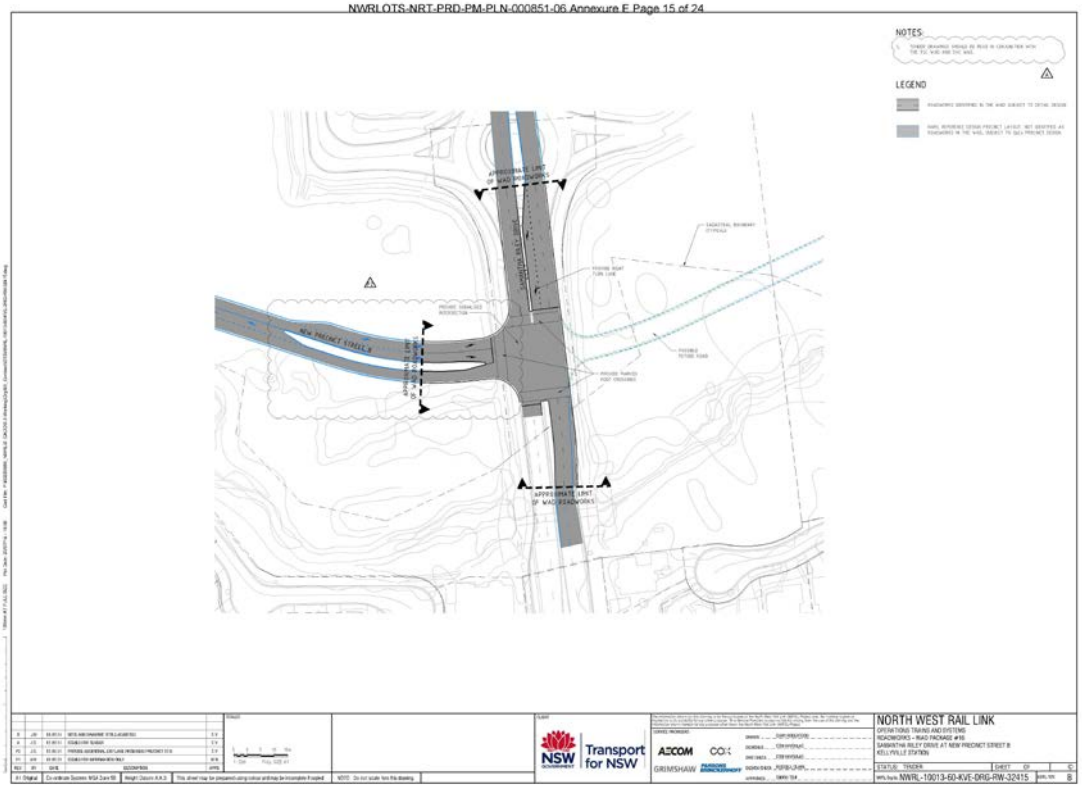
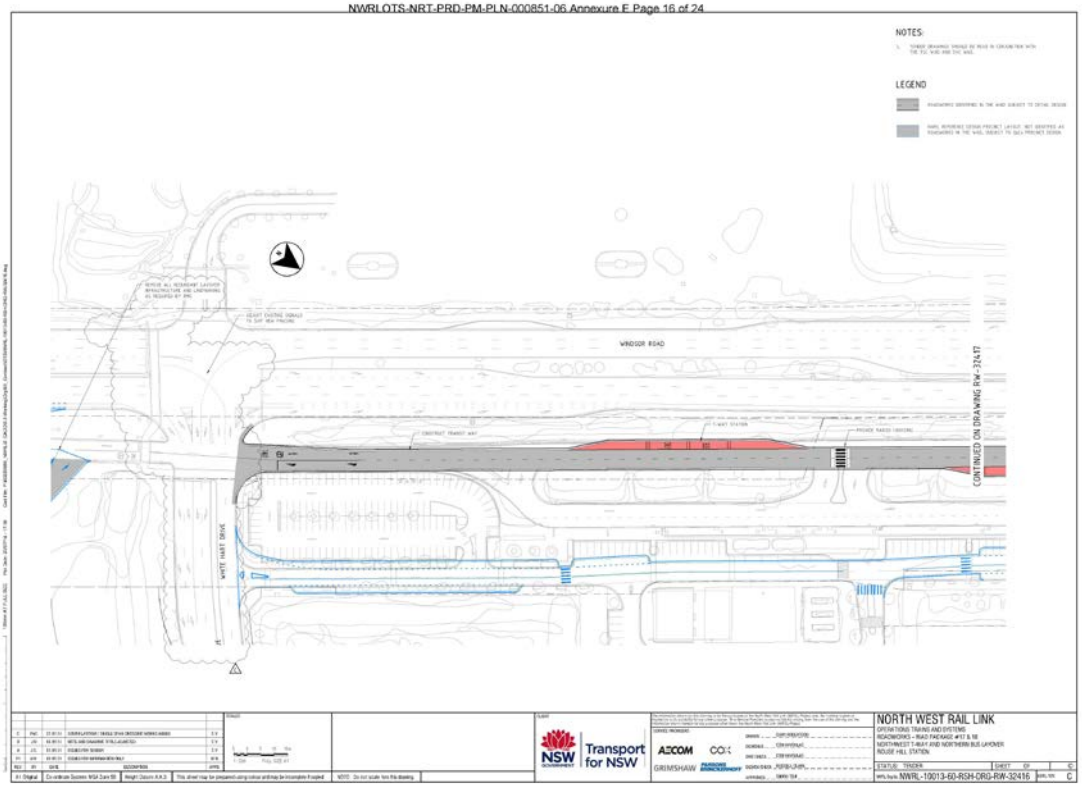


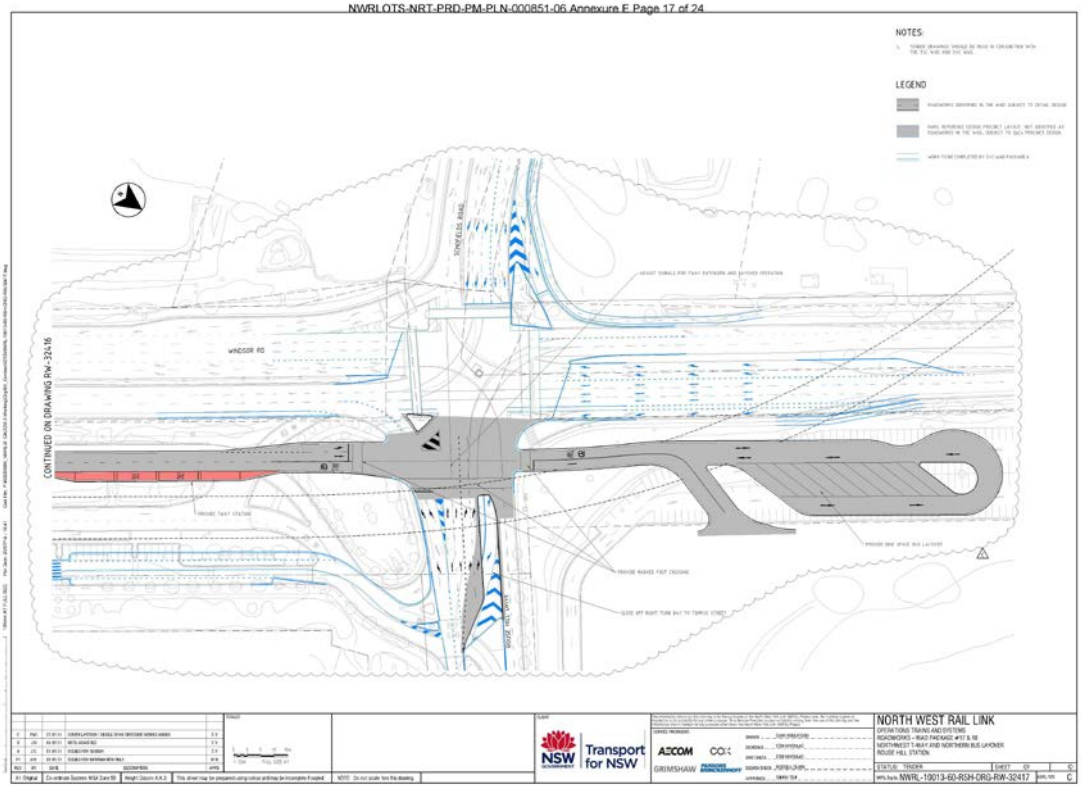
NWRLOTS-NRT-PRD-PM-PLN-000851-06 Annexure E Page 14 of 24



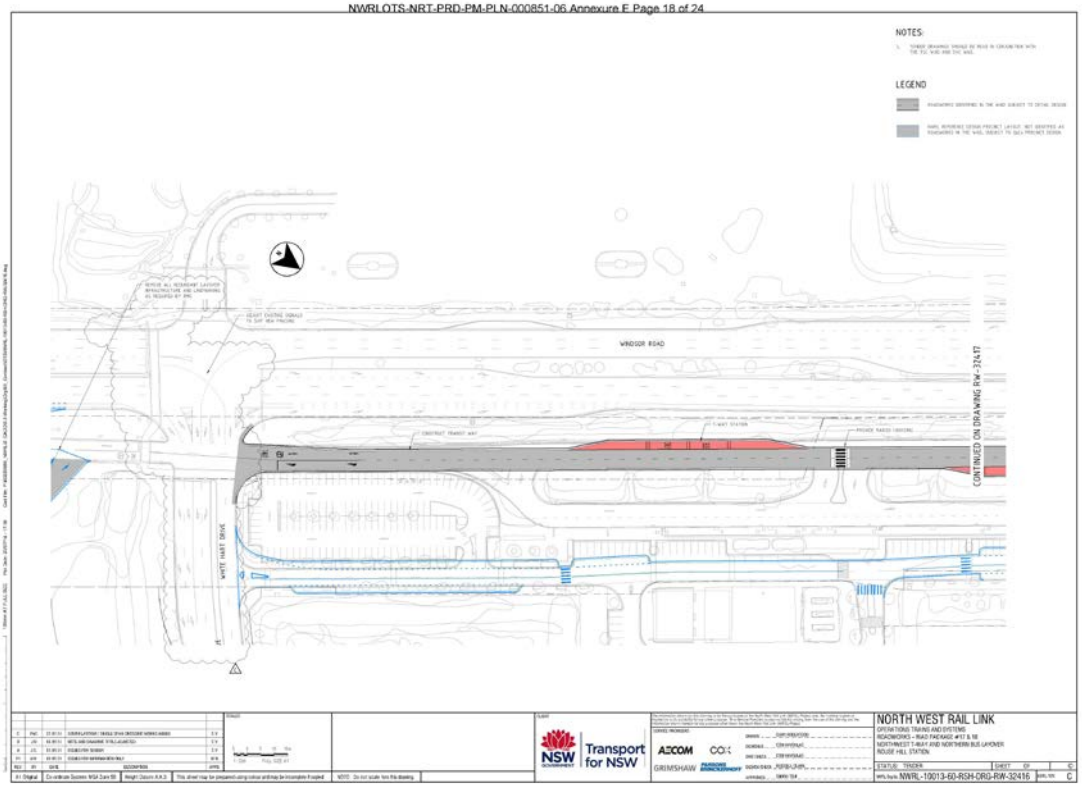

NOTES:
LEGEND
NEW PRECINCT STREET B
APPROXIMATE LIMIT OF ROAD WORKS
APPROXIMATE LIMIT OF ROAD WORKS
NORTH WEST RAIL LINK
OPERATIONS TRAINS AND SYSTEMS
ROADWORKS – ROAD PACKAGE #10
SABBATHA RILEY DRIVE AT NEW PRECINCT STREET B
KELLYVILLE STATION
Transport for NSW
AECOM
GRIMSHAW
NWRL-10013-60-KVE-DRG-RW-32415


NOTES:
LEGEND
WINDSOR ROAD
WHITE HART DRIVE
CONTINUED ON DRAWING RW-32417
NORTH WEST RAIL LINK
OPERATIONS TRAINS AND SYSTEMS
ROADWORKS – ROAD PACKAGE #10 & 11
NORTHWEST T-WAY AND NORTHERN BUS LAYOVER
ROUSE HILL STATION
Transport for NSW
AECOM
GRIMSHAW
NWRL-10013-60-RSH-DRG-RW-32416

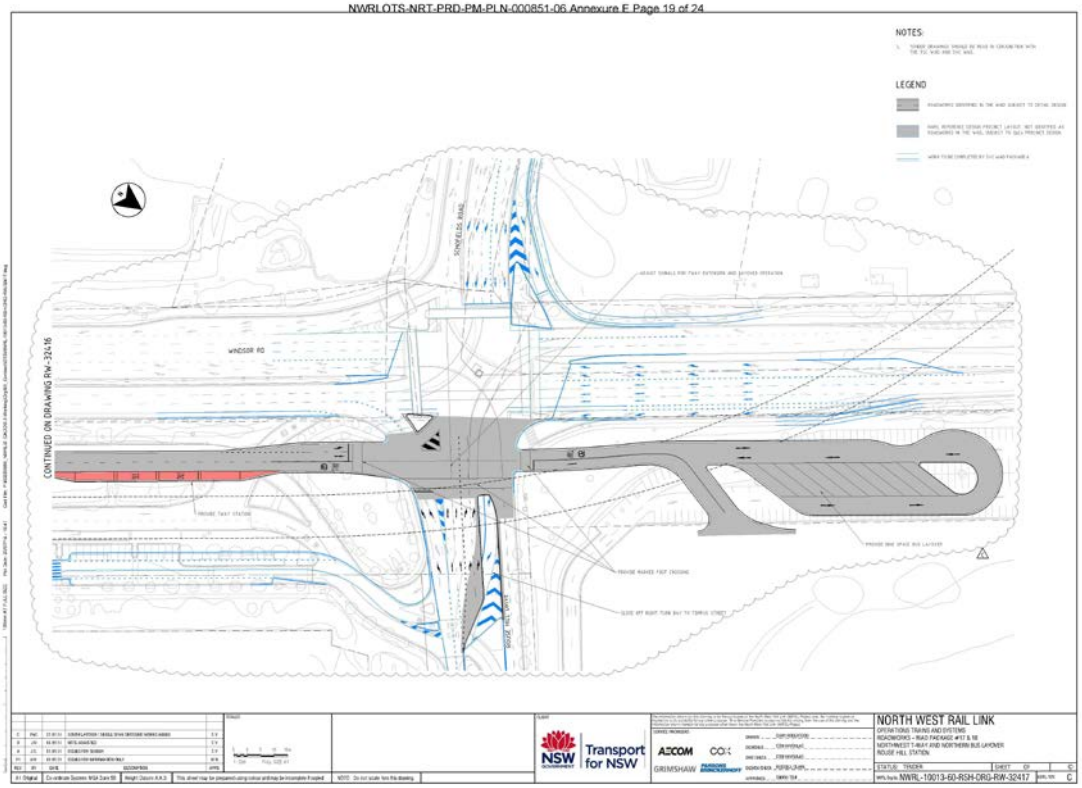
NWRLOTS-NRT-PRD-PM-PLN-000851-06 Annexure E Page 17 of 24



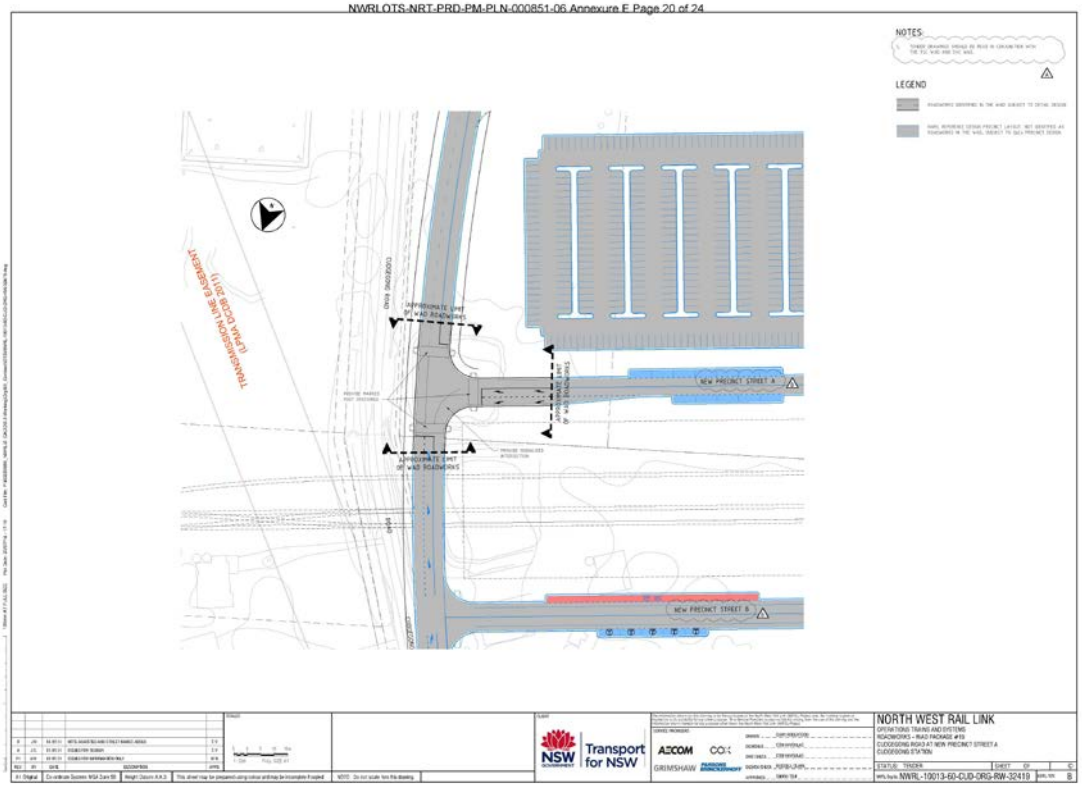
NWRLOTS-NRT-PRD-PM-PLN-000851-06 Annexure E Page 18 of 24

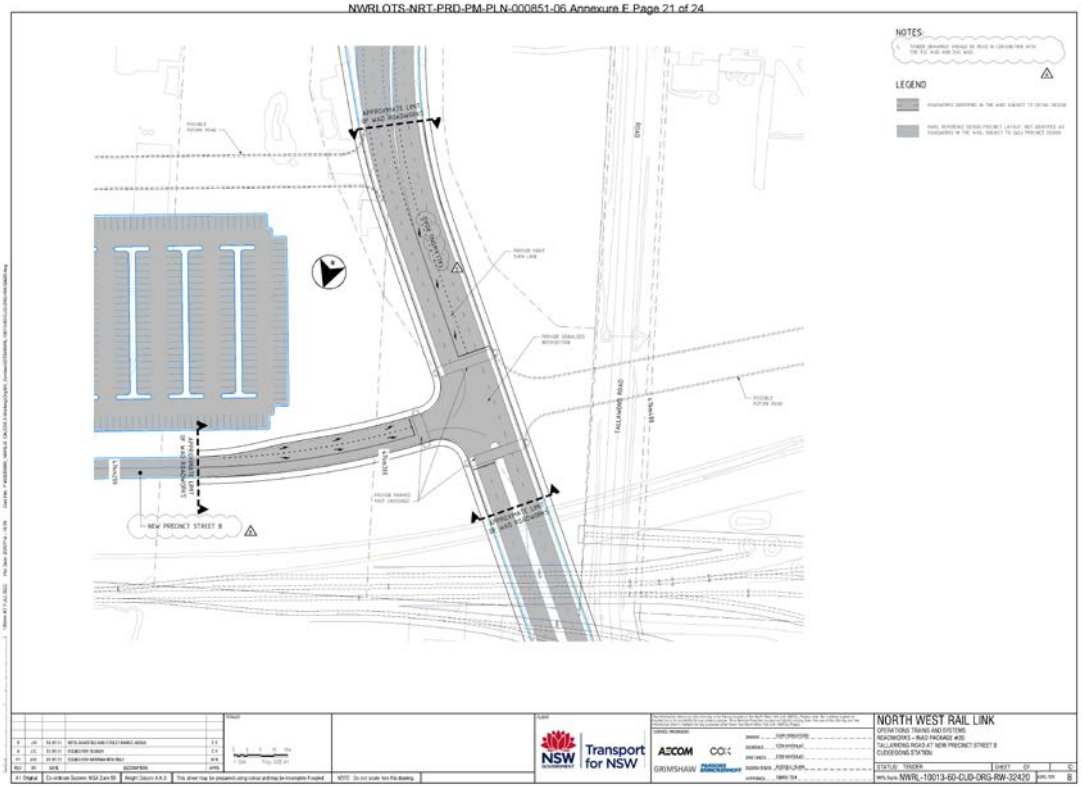


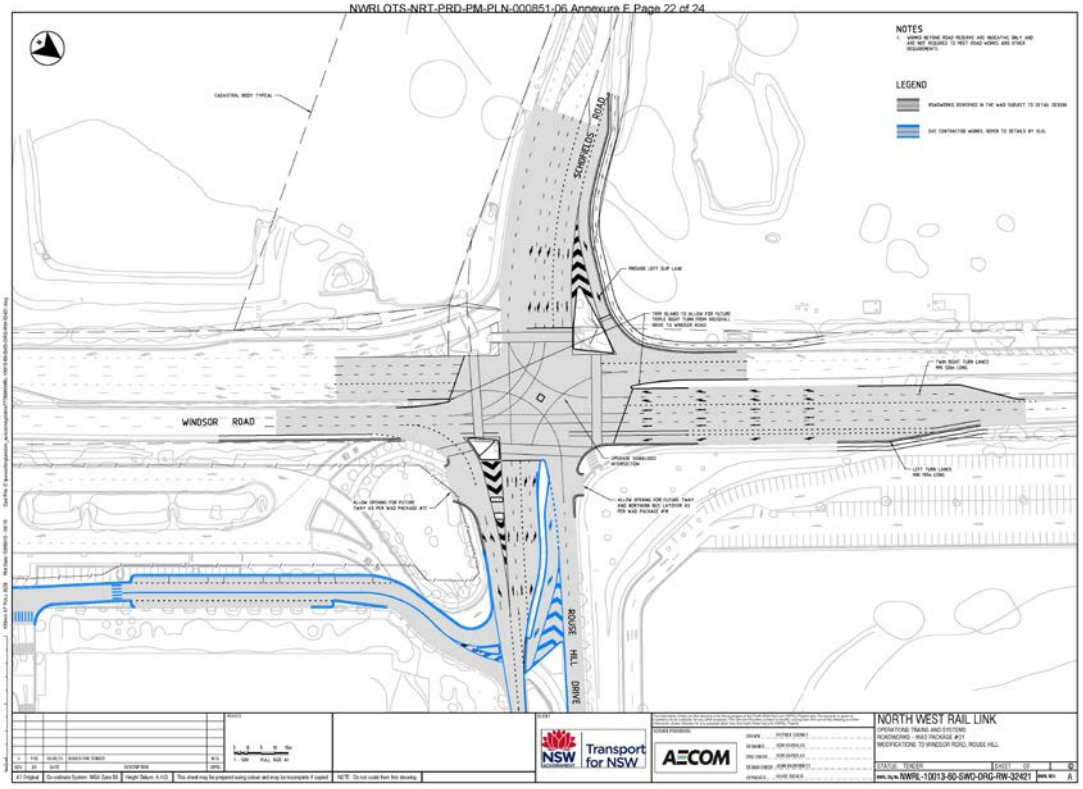
NWRLOTS-NRT-PRD-PM-PLN-000851-06 Annexure E Page 19 of 24

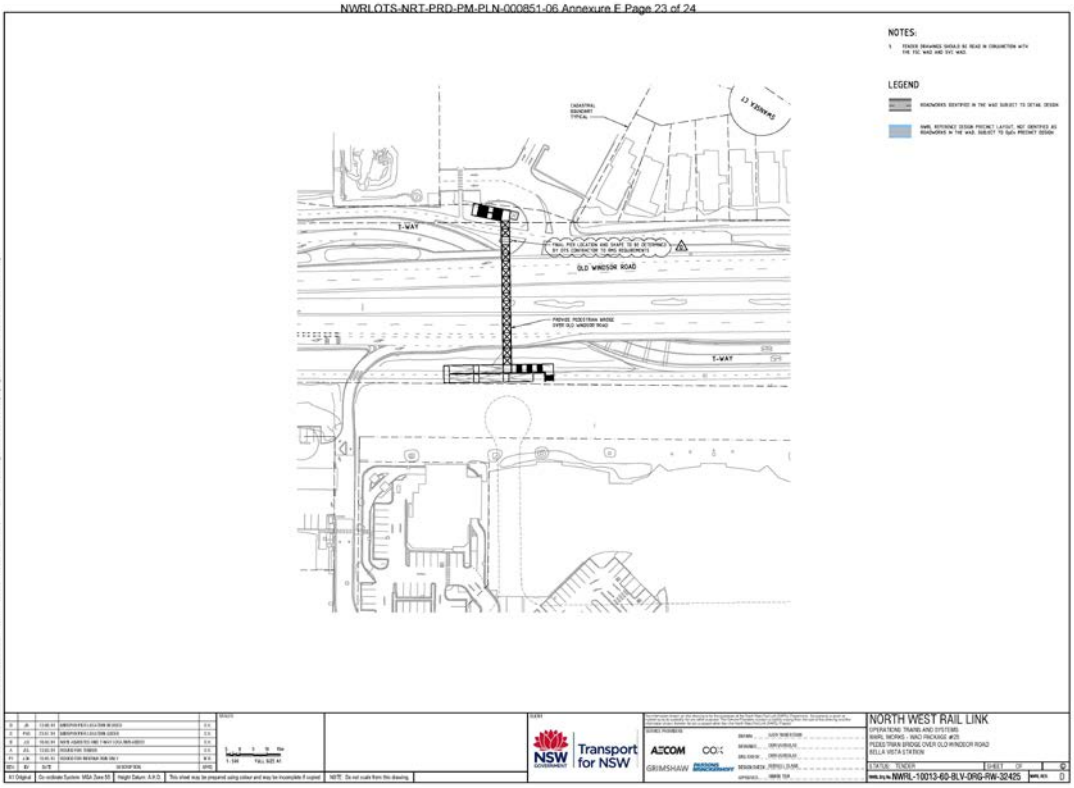


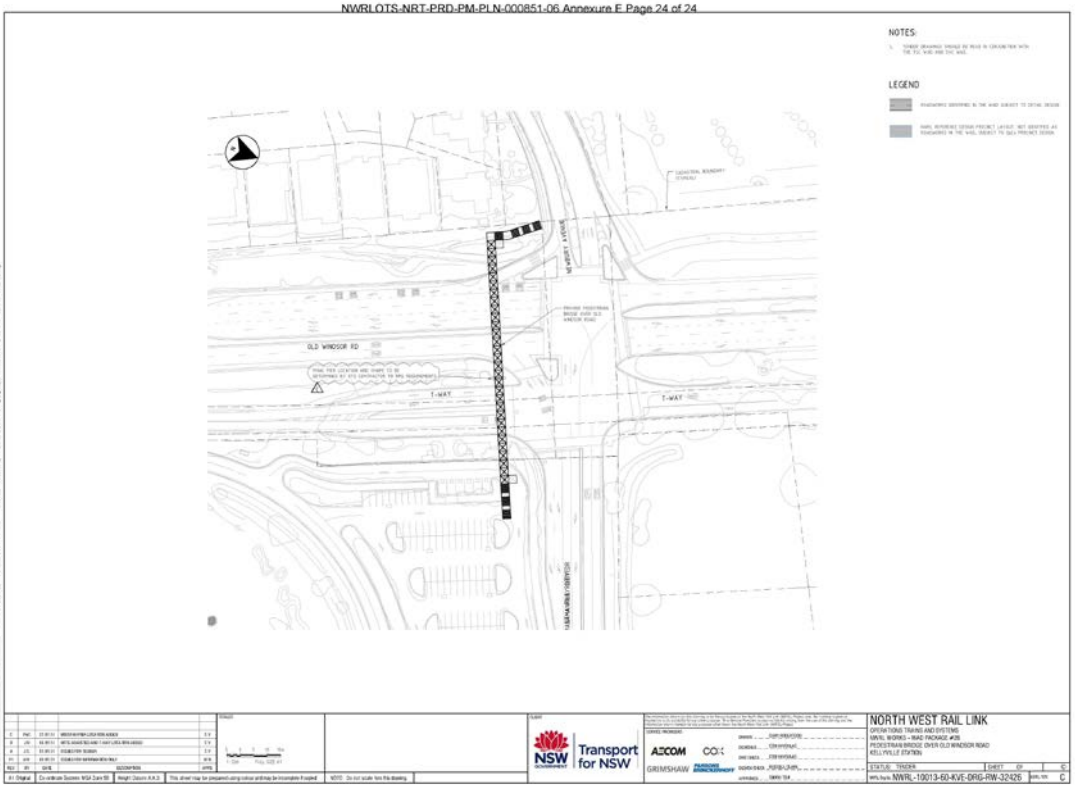
NWRLOTS-NRT-PRD-PM-PLN-000851-06 Annexure E Page 20 of 24



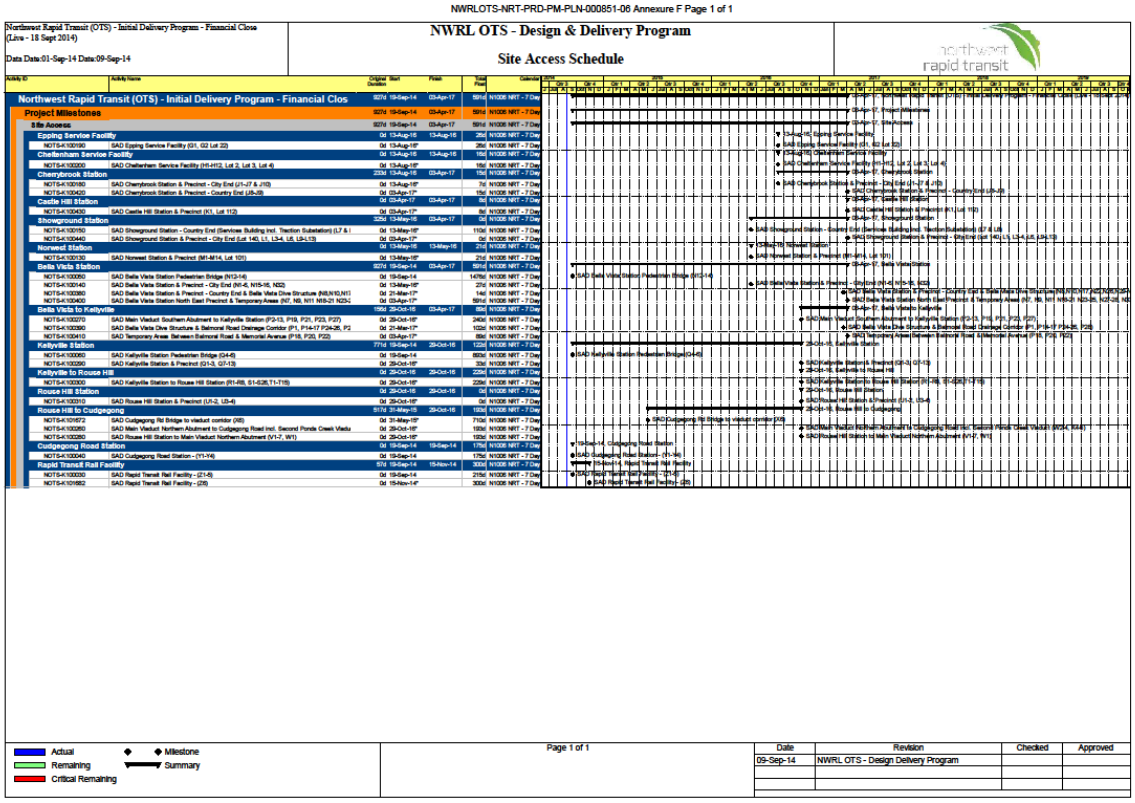

NOTES
LEGEND
NEW PRECINCT STREET B
TALLAWONG ROAD
NORTH WEST RAIL LINK
Transport for NSW
AECOM
GRIMSHAW


NOTES
LEGEND
WINDSOR ROAD
SCHOFIELDS ROAD
ROUSE HILL DRIVE
NORTH WEST RAIL LINK
Transport for NSW
AECOM

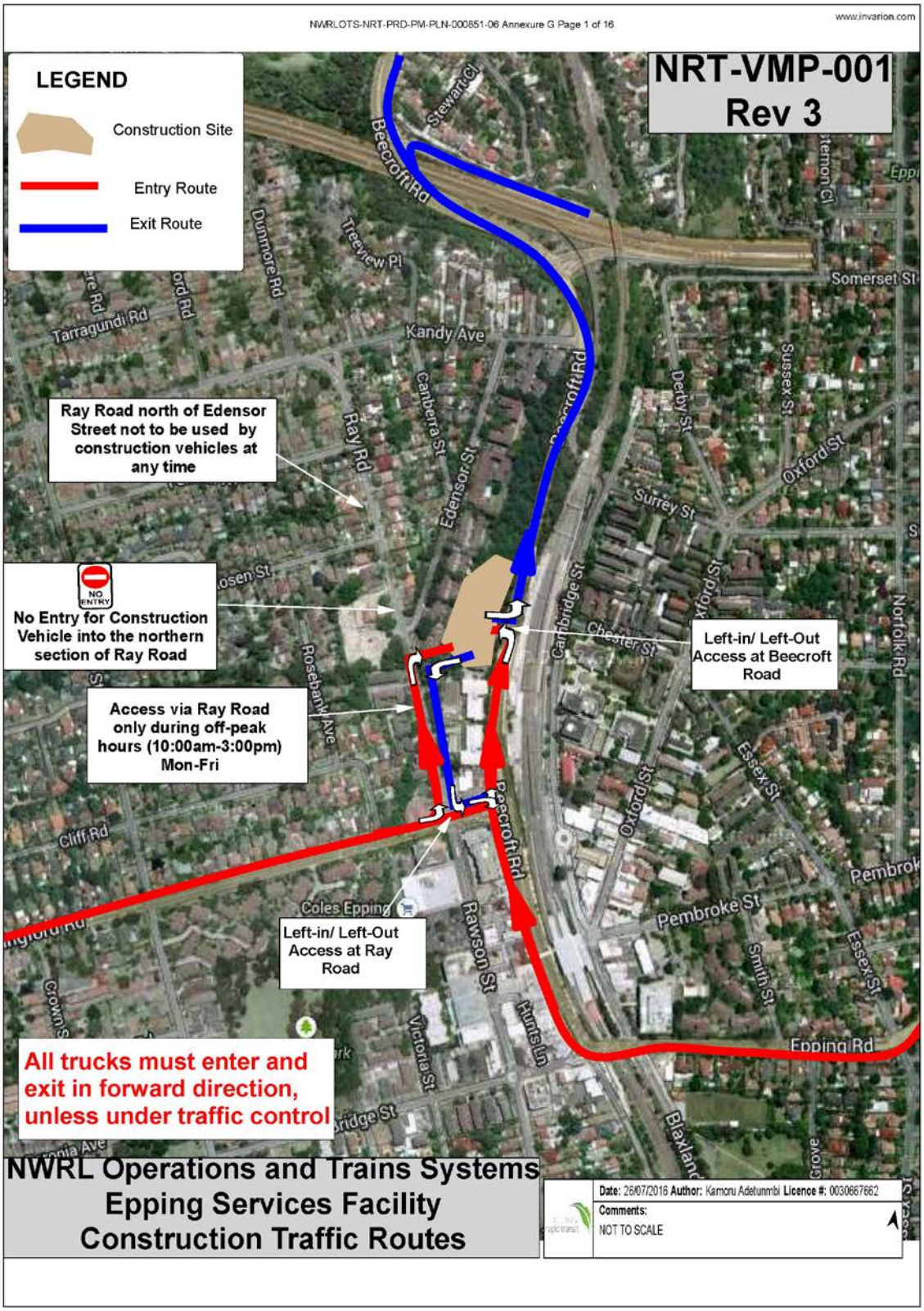

NOTES:
LEGEND
OLD WINDSOR ROAD
T-WAY
NORTH WEST RAIL LINK
NWRL-10013-60-BLV-DRG-RW-32425

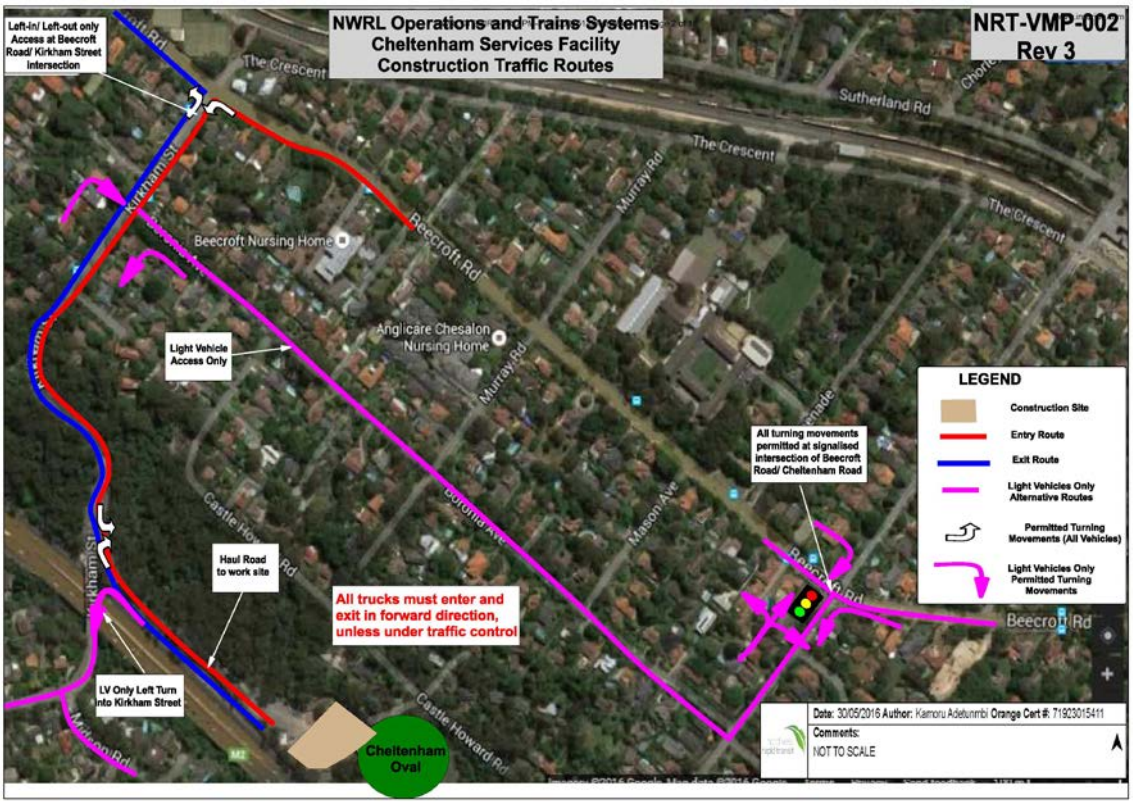

NOTES:
LEGEND
OLD WINDSOR RD
T-WAY
NORTH WEST RAIL LINK
NWRL-10013-60-KVE-DRG-RW-32426

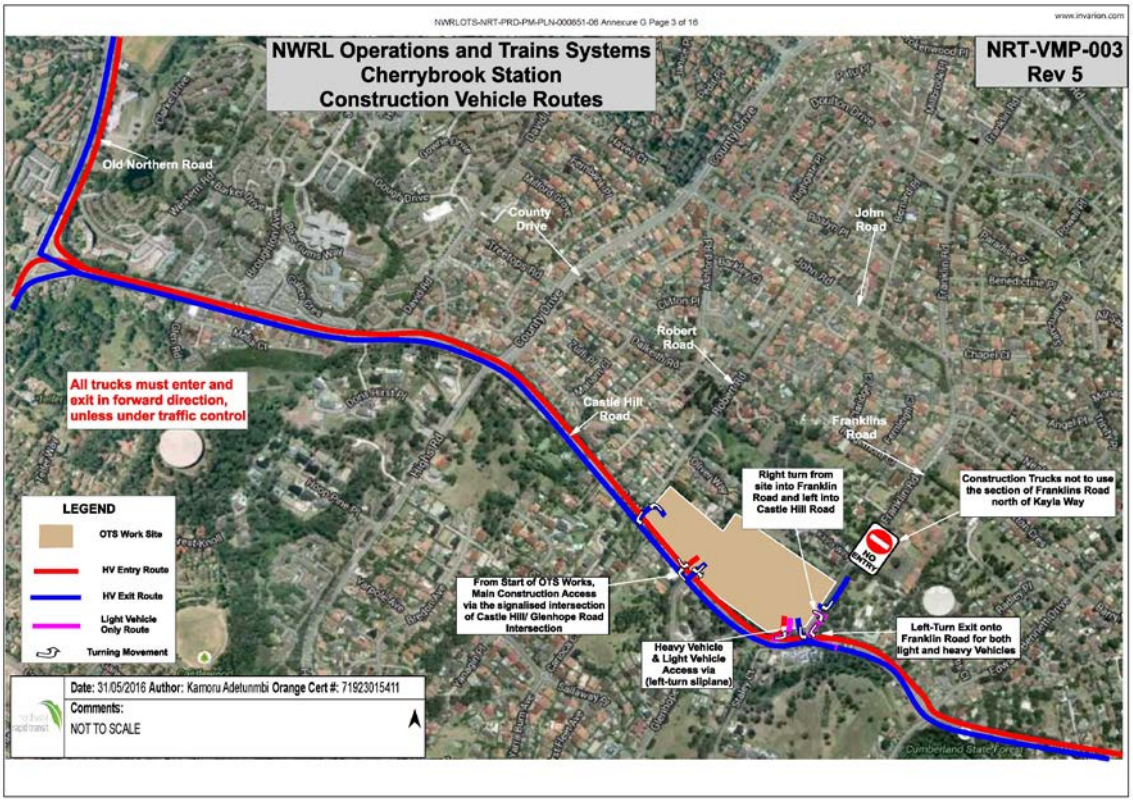
Annexure F Construction Site Access Schedule

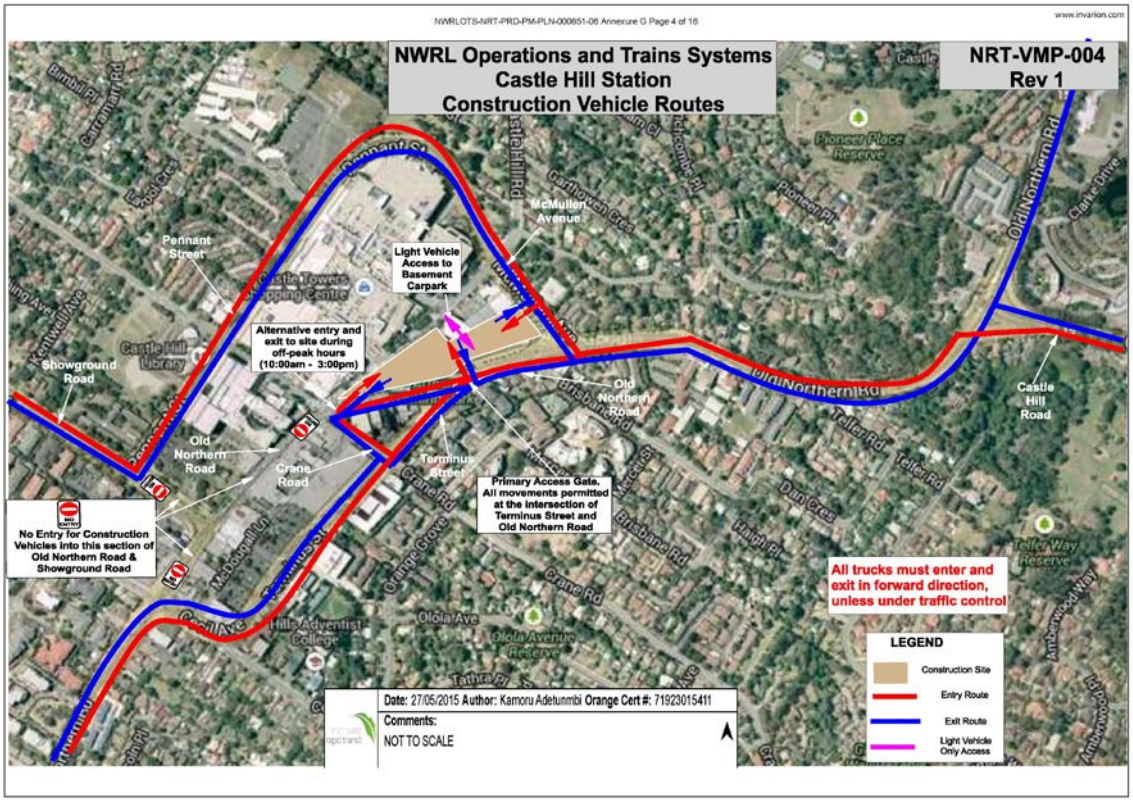


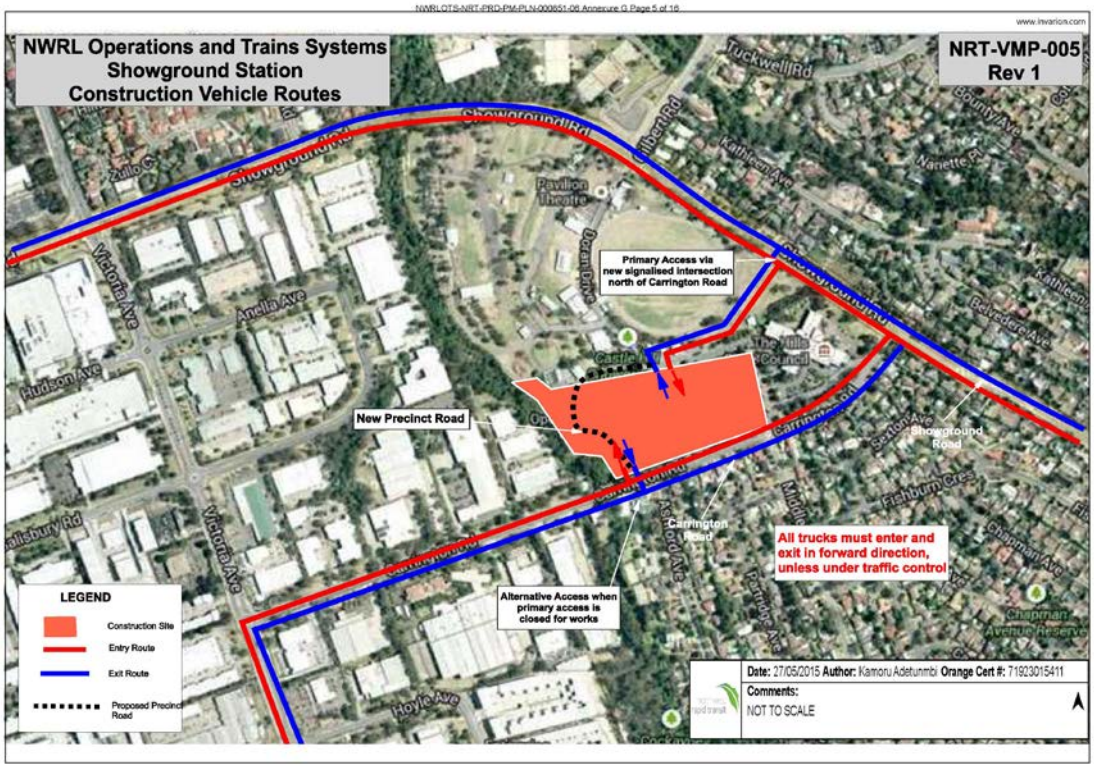
Annexure G Construction Vehicle Routes

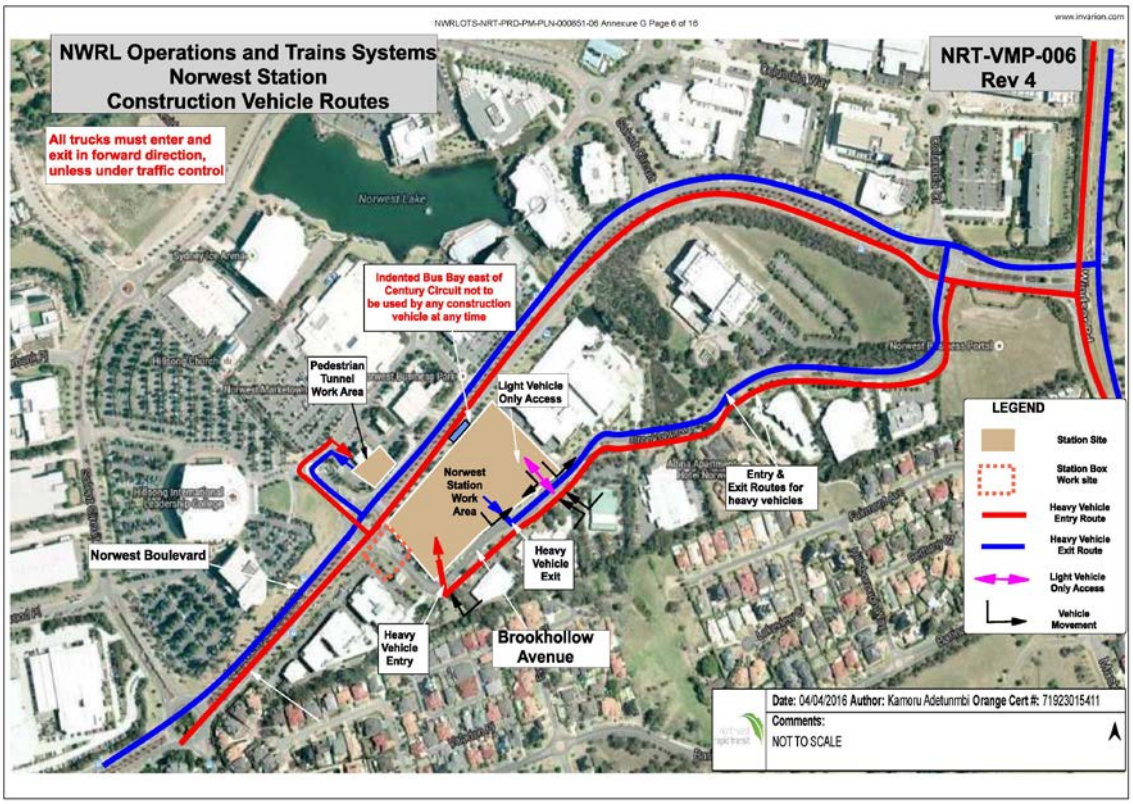

NWRLOTS-NRT-PRD-PM-PLN-000851-06 Annexure G Page 1 of 16
www.invarion.com
NRT-VMP-001
Rev 3
LEGEND
Construction Site
Entry Route
Exit Route
Ray Road north of Edensor Street not to be used by construction vehicles at any time
No Entry for Construction Vehicle into the northern section of Ray Road
Access via Ray Road only during off-peak hours (10:00am-3:00pm) Mon-Fri
Left-in/ Left-Out Access at Beecroft Road
Left-in/ Left-Out Access at Ray Road
All trucks must enter and exit in forward direction, unless under traffic control
Beecroft Rd
Stewart Cl
Dunmore Rd
Treeview Pl
Tarragindi Rd
Kandy Ave
Canberra St
Ray Rd
Edensor St
Somerset St
Sussex St
Derby St
Oxford St
Surrey St
Cambridge St
Chester St
Norfolk Rd
Rosebank Ave
Cliff Rd
Coles Epping
Rawson St
Victoria St
Hunts Ln
Pembroke St
Smith St
Essex St
Epping Rd
Blaxland
NWRL Operations and Trains Systems
Epping Services Facility
Construction Traffic Routes
Date: 26/07/2016 Author: Kamoru Adetunmbi Licence #: 0030667662
Comments:
NOT TO SCALE

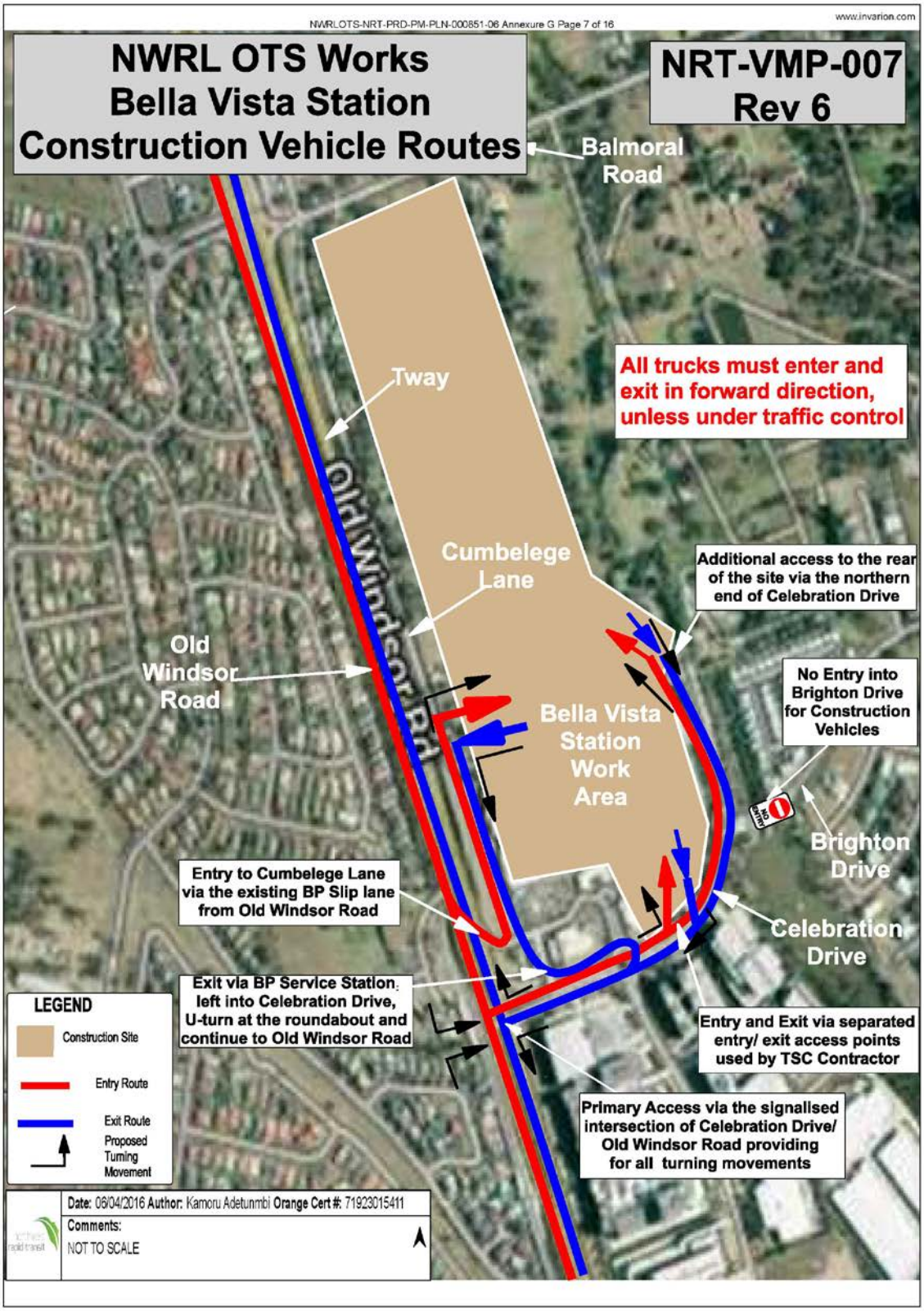

NWRL Operations and Trains Systems
Cheltenham Services Facility
Construction Traffic Routes
NRT-VMP-002
Rev 3
Left-in/ Left-out only Access at Beecroft Road/ Kirkham Street intersection
Light Vehicle Access Only
Haul Road to work site
All trucks must enter and exit in forward direction, unless under traffic control
LV Only Left Turn into Kirkham Street
All turning movements permitted at signalised intersection of Beecroft Road/ Cheltenham Road
Beecroft Nursing Home
Anglicare Chesalon Nursing Home
Cheltenham Oval
LEGEND
Construction Site
Entry Route
Exit Route
Light Vehicles Only Alternative Routes
Permitted Turning Movements (All Vehicles)
Light Vehicles Only Permitted Turning Movements
Date: 30/05/2016 Author: Kamoru Adetunmbi Orange Cert #: 71923015411
Comments:
NOT TO SCALE

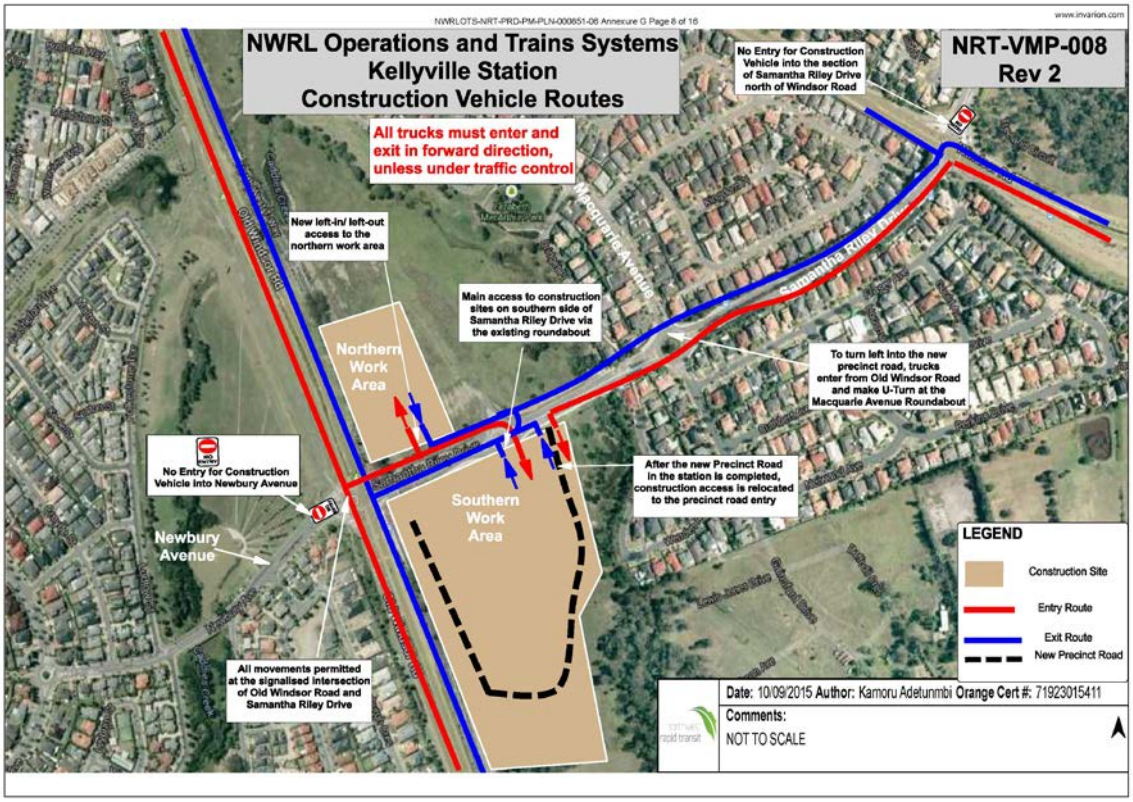

NWRLOTS-NRT-PRD-PM-PLN-000851-06 Annexure G Page 3 of 16
www.invarion.com
NWRL Operations and Trains Systems
Cherrybrook Station
Construction Vehicle Routes
NRT-VMP-003
Rev 5
Old Northern Road
County Drive
John Road
Robert Road
Castle Hill Road
Franklins Road
All trucks must enter and exit in forward direction, unless under traffic control
Right turn from site into Franklin Road and left into Castle Hill Road
Construction Trucks not to use the section of Franklins Road north of Kayla Way
From Start of OTS Works, Main Construction Access via the signalised intersection of Castle Hill/ Glenhope Road Intersection
Heavy Vehicle & Light Vehicle Access via (left-turn sliplane)
Left-Turn Exit onto Franklin Road for both light and heavy Vehicles
LEGEND
OTS Work Site
HV Entry Route
HV Exit Route
Light Vehicle Only Route
Turning Movement
Date: 31/05/2016 Author: Kamoru Adetunmbi Orange Cert #: 71923015411
Comments:
NOT TO SCALE

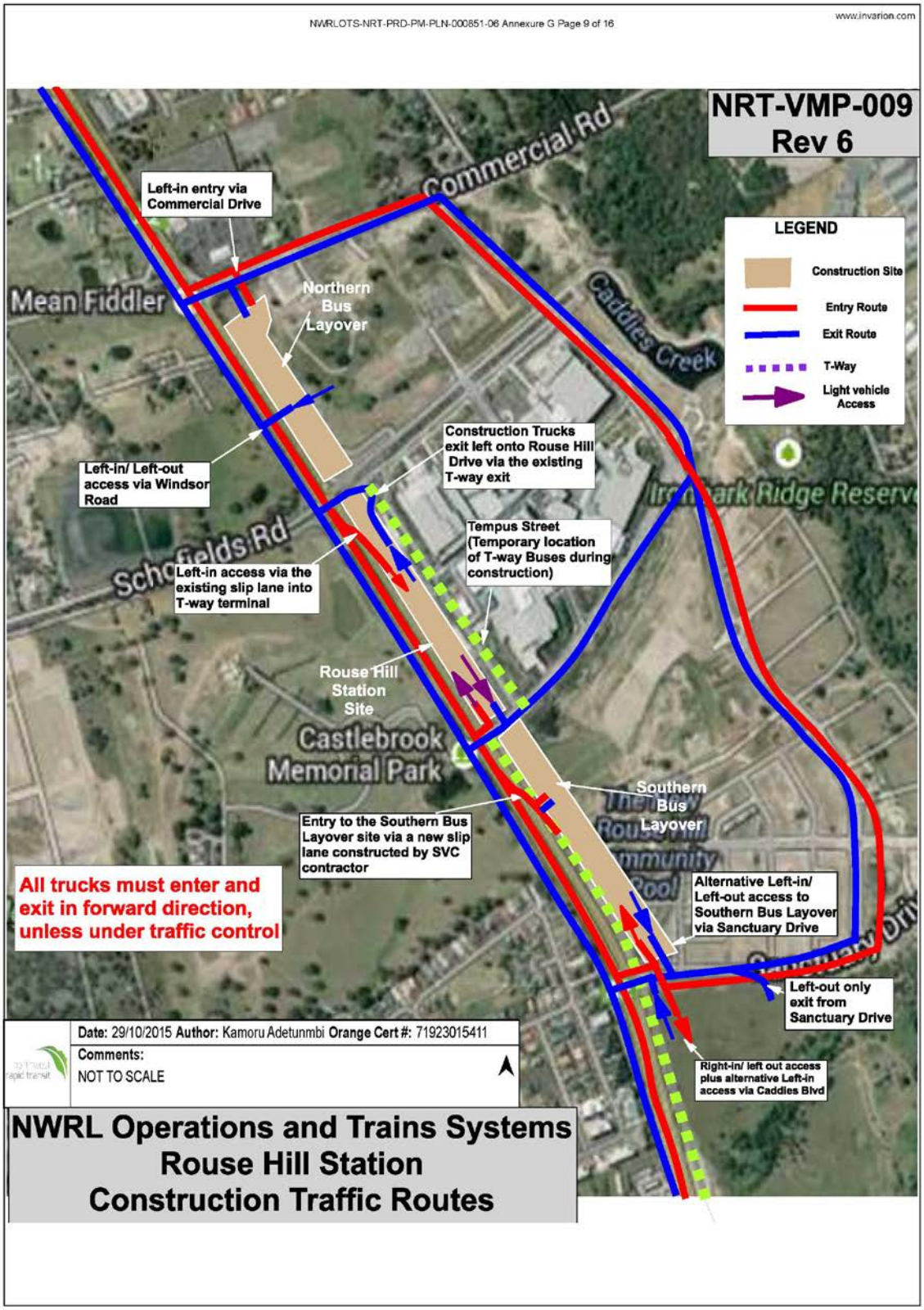

NWRLOTS-NRT-PRD-PM-PLN-000651-06 Annexure G Page 4 of 16
www.invarion.com
NWRL Operations and Trains Systems
Castle Hill Station
Construction Vehicle Routes
NRT-VMP-004
Rev 1
Light Vehicle Access to Basement Carpark
Alternative entry and exit to site during off-peak hours (10:00am - 3:00pm)
Primary Access Gate. All movements permitted at the intersection of Terminus Street and Old Northern Road
No Entry for Construction Vehicles into this section of Old Northern Road & Showground Road
All trucks must enter and exit in forward direction, unless under traffic control
LEGEND
Construction Site
Entry Route
Exit Route
Light Vehicle Only Access
Date: 27/05/2015 Author: Kamoru Adetunmbi Orange Cert #: 71923015411
Comments:
NOT TO SCALE
Pennant Street
Showground Road
Old Northern Road
Crane Road
Terminus Street
McMullen Avenue
Castle Hill Road
Telfer Way Reserve
Pioneer Place Reserve
Ololo Avenue Reserve
Hills Adventist College
Castle Hill Library

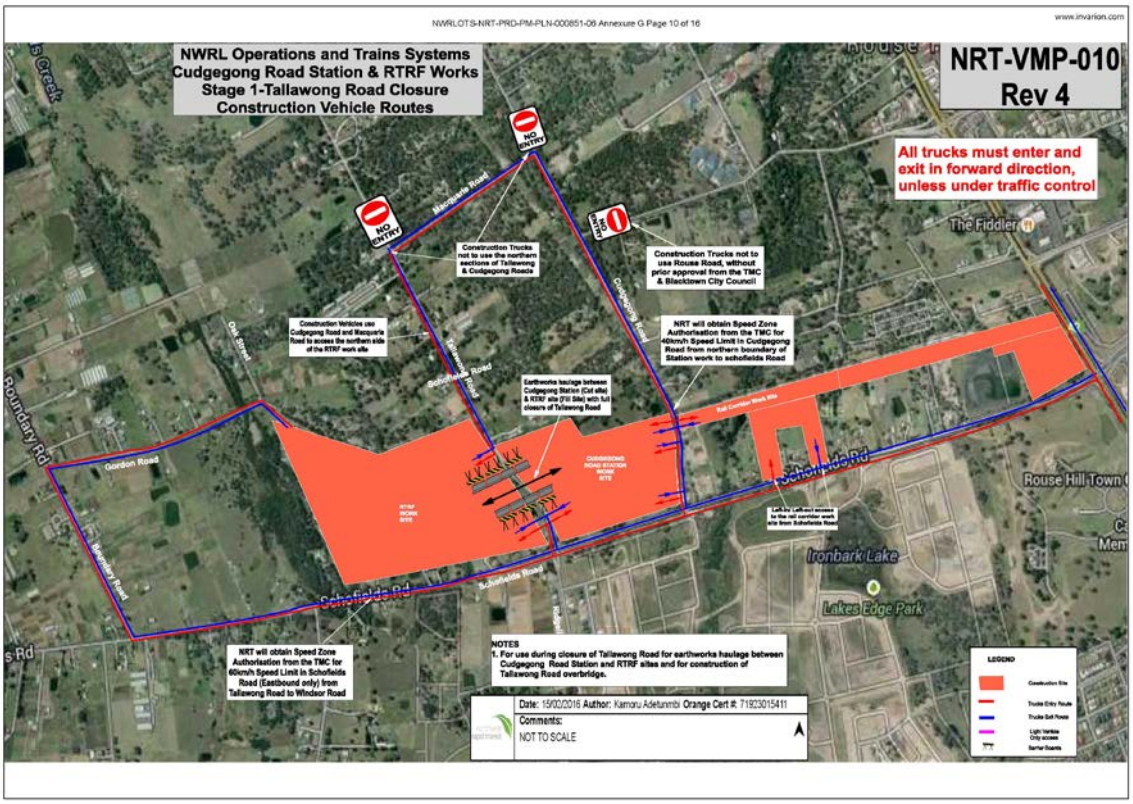

NWRLOTS-NRT-PRD-PM-PLN-000651-06 Annexure G Page 5 of 16
www.invarion.com
NWRL Operations and Trains Systems
Showground Station
Construction Vehicle Routes
NRT-VMP-005
Rev 1
Primary Access via new signalised intersection north of Carrington Road
New Precinct Road
Alternative Access when primary access is closed for works
All trucks must enter and exit in forward direction, unless under traffic control
LEGEND
Construction Site
Entry Route
Exit Route
Proposed Precinct Road
Date: 27/05/2015 Author: Kamoru Adetunmbi Orange Cert #: 71923015411
Comments:
NOT TO SCALE
Showground Road
Victoria Ave
Carrington Road
Hoyle Ave
Pavilion Theatre
The Hills Council

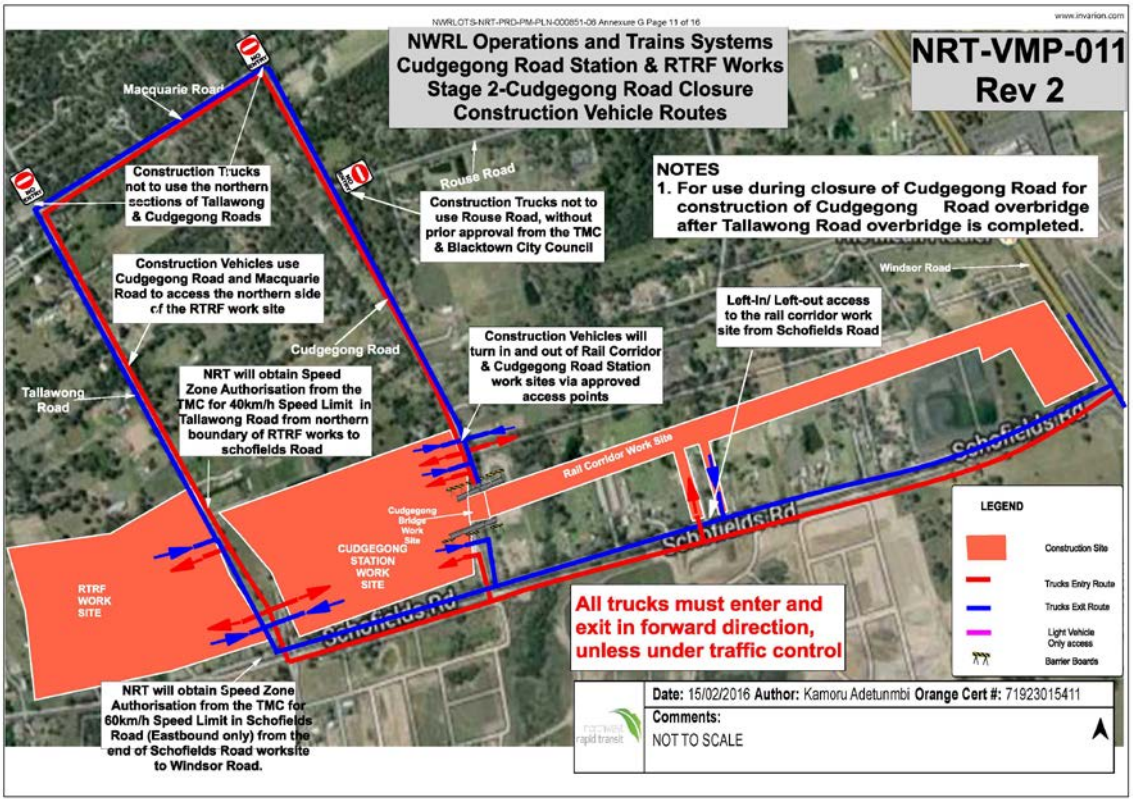

NWRLOTS-NRT-PRD-PM-PLN-000851-06 Annexure G Page 6 of 16
www.invarion.com
NWRL Operations and Trains Systems
Norwest Station
Construction Vehicle Routes
NRT-VMP-006
Rev 4
All trucks must enter and exit in forward direction, unless under traffic control
Norwest Lake
Indented Bus Bay east of Century Circuit not to be used by any construction vehicle at any time
Pedestrian Tunnel Work Area
Light Vehicle Only Access
Norwest Station Work Area
Entry & Exit Routes for heavy vehicles
Heavy Vehicle Exit
Heavy Vehicle Entry
Brookhollow Avenue
Norwest Boulevard
LEGEND
Station Site
Station Box Work site
Heavy Vehicle Entry Route
Heavy Vehicle Exit Route
Light Vehicle Only Access
Vehicle Movement
Date: 04/04/2016 Author: Kamoru Adetunmbi Orange Cert #: 71923015411
Comments:
NOT TO SCALE


NWRLOTS-NRT-PRD-PM-PLN-000851-06 Annexure G Page 7 of 16
www.invarion.com
NWRL OTS Works
Bella Vista Station
Construction Vehicle Routes
NRT-VMP-007
Rev 6
Balmoral Road
Tway
All trucks must enter and exit in forward direction, unless under traffic control
Old Windsor Rd
Cumbelege Lane
Additional access to the rear of the site via the northern end of Celebration Drive
Old Windsor Road
No Entry into Brighton Drive for Construction Vehicles
Bella Vista Station Work Area
Brighton Drive
Entry to Cumbelege Lane via the existing BP Slip lane from Old Windsor Road
Celebration Drive
Exit via BP Service Station, left into Celebration Drive, U-turn at the roundabout and continue to Old Windsor Road
Entry and Exit via separated entry/ exit access points used by TSC Contractor
Primary Access via the signalised intersection of Celebration Drive/ Old Windsor Road providing for all turning movements
LEGEND
Construction Site
Entry Route
Exit Route
Proposed Turning Movement
Date: 06/04/2016 Author: Kamoru Adetunmbi Orange Cert #: 71923015411
Comments:
NOT TO SCALE

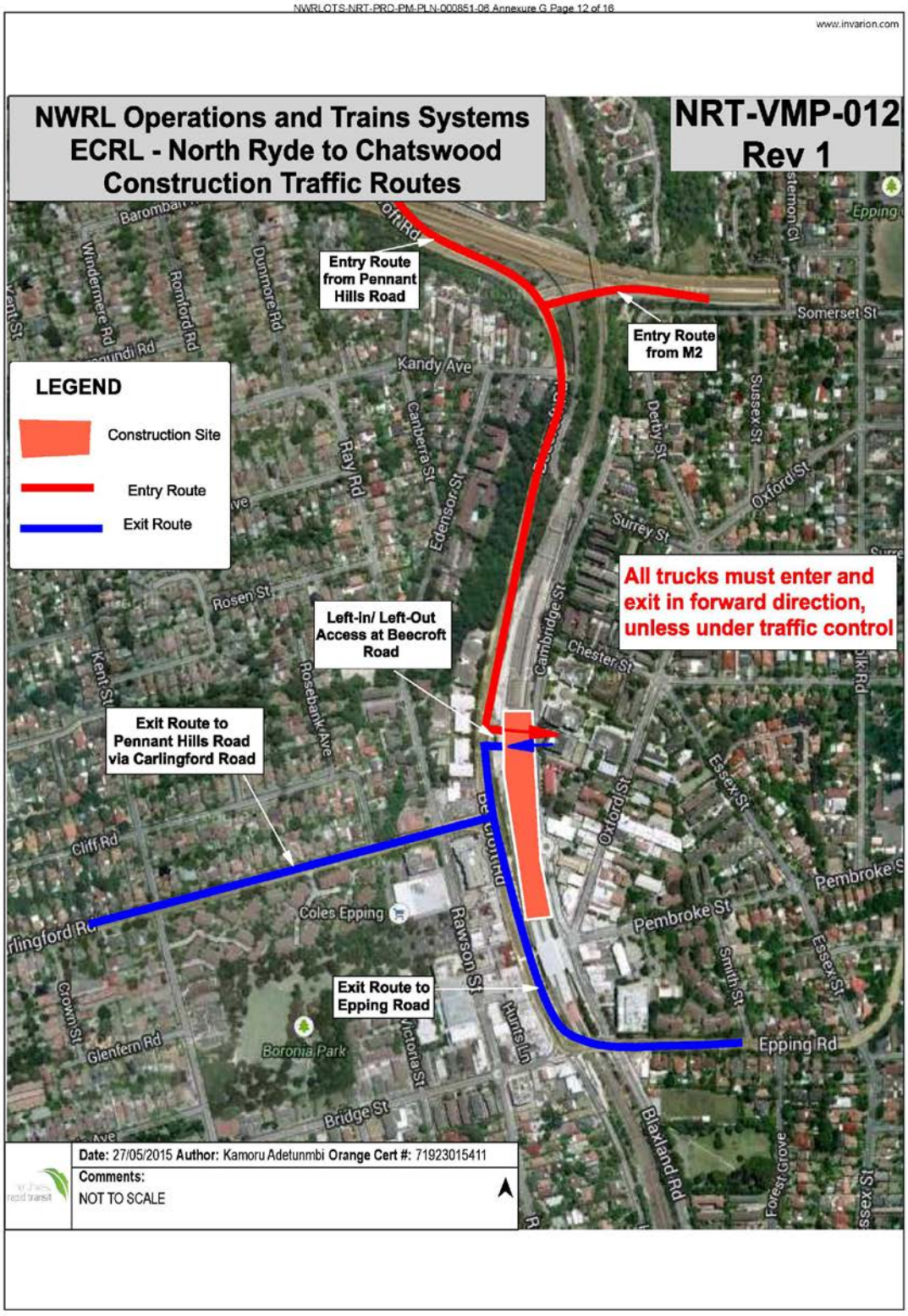

NWRLOTS-NRT-PRD-PM-PLN-000651-06 Annexure G Page 8 of 16
www.invarion.com
NWRL Operations and Trains Systems
Kellyville Station
Construction Vehicle Routes
NRT-VMP-008
Rev 2
All trucks must enter and exit in forward direction, unless under traffic control
No Entry for Construction Vehicle into the section of Samantha Riley Drive north of Windsor Road
New left-in/ left-out access to the northern work area
Main access to construction sites on southern side of Samantha Riley Drive via the existing roundabout
Northern Work Area
Southern Work Area
To turn left into the new precinct road, trucks enter from Old Windsor Road and make U-Turn at the Macquarie Avenue Roundabout
After the new Precinct Road in the station is completed, construction access is relocated to the precinct road entry
No Entry for Construction Vehicle into Newbury Avenue
Newbury Avenue
All movements permitted at the signalised intersection of Old Windsor Road and Samantha Riley Drive
Old Windsor Rd
Macquarie Avenue
Samantha Riley Drive
LEGEND
Construction Site
Entry Route
Exit Route
New Precinct Road
Date: 10/09/2015 Author: Kamoru Adetunmbi Orange Cert #: 71923015411
Comments:
NOT TO SCALE

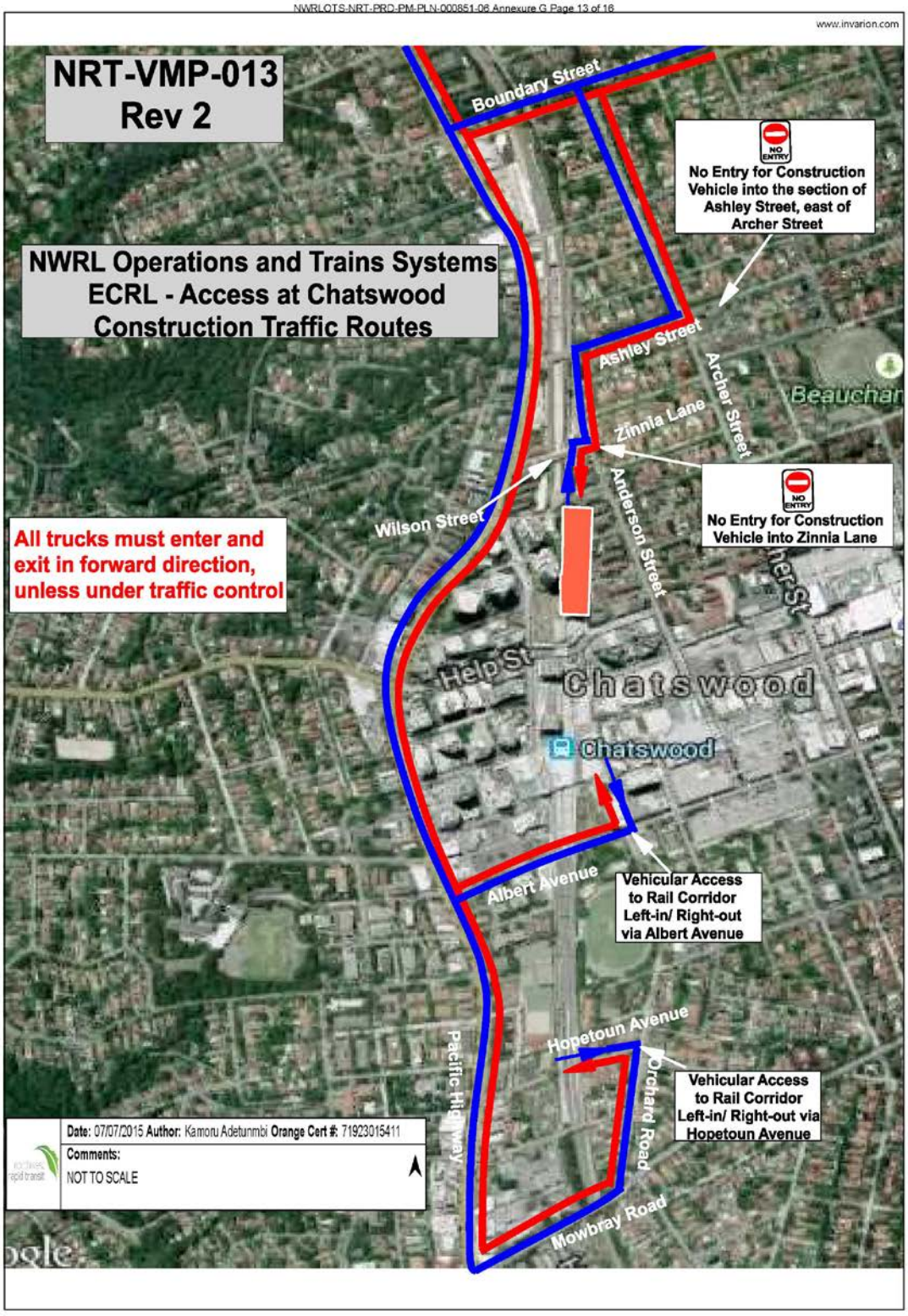

NRT-VMP-009
Rev 6
Commercial Rd
Left-in entry via Commercial Drive
Mean Fiddler
Northern Bus Layover
Caddies Creek
LEGEND
Construction Site
Entry Route
Exit Route
T-Way
Light vehicle Access
Construction Trucks exit left onto Rouse Hill Drive via the existing T-way exit
Left-in/ Left-out access via Windsor Road
Tempus Street (Temporary location of T-way Buses during construction)
Left-in access via the existing slip lane into T-way terminal
Rouse Hill Station Site
Castlebrook Memorial Park
Southern Bus Layover
Entry to the Southern Bus Layover site via a new slip lane constructed by SVC contractor
All trucks must enter and exit in forward direction, unless under traffic control
Alternative Left-in/ Left-out access to Southern Bus Layover via Sanctuary Drive
Left-out only exit from Sanctuary Drive
Right-in/ left out access plus alternative Left-in access via Caddies Blvd
Date: 29/10/2015 Author: Kamoru Adetunmbi Orange Cert #: 71923015411
Comments:
NOT TO SCALE
NWRL Operations and Trains Systems
Rouse Hill Station
Construction Traffic Routes


NWRLOTS-NRT-PRD-PM-PLN-000851-06 Annexure G Page 10 of 16
www.invarion.com
NWRL Operations and Trains Systems
Cudgegong Road Station & RTRF Works
Stage 1-Tallawong Road Closure
Construction Vehicle Routes
NRT-VMP-010
Rev 4
All trucks must enter and exit in forward direction, unless under traffic control
NO ENTRY
Macquarie Road
Construction Trucks not to use the northern sections of Tallawong & Cudgegong Roads
Construction Trucks not to use Rouse Road, without prior approval from the TMC & Blacktown City Council
Cudgegong Road
Construction Vehicles use Cudgegong Road and Macquarie Road to access the northern side of the RTRF work site
NRT will obtain Speed Zone Authorisation from the TMC for 40km/h Speed Limit in Cudgegong Road from northern boundary of Station work to schofields Road
Old Street
Tallawong Road
Earthworks haulage between Cudgegong Station (Cut site) & RTRF site (Fill Site) with full closure of Tallawong Road
Rail Corridor Work Site
Roundary Rd
Gordon Road
Boundary Road
Schofields Rd
Rouse Hill Town
Ironbark Lake
Lakes Edge Park
NRT will obtain Speed Zone Authorisation from the TMC for 60km/h Speed Limit in Schofields Road (Eastbound only) from Tallawong Road to Windsor Road
NOTES
1. For use during closure of Tallawong Road for earthworks haulage between Cudgegong Road Station and RTRF sites and for construction of Tallawong Road overbridge.
Date: 15/02/2016 Author: Kamoru Adetunmbi Orange Cert #: 71923015411
Comments:
NOT TO SCALE
LEGEND

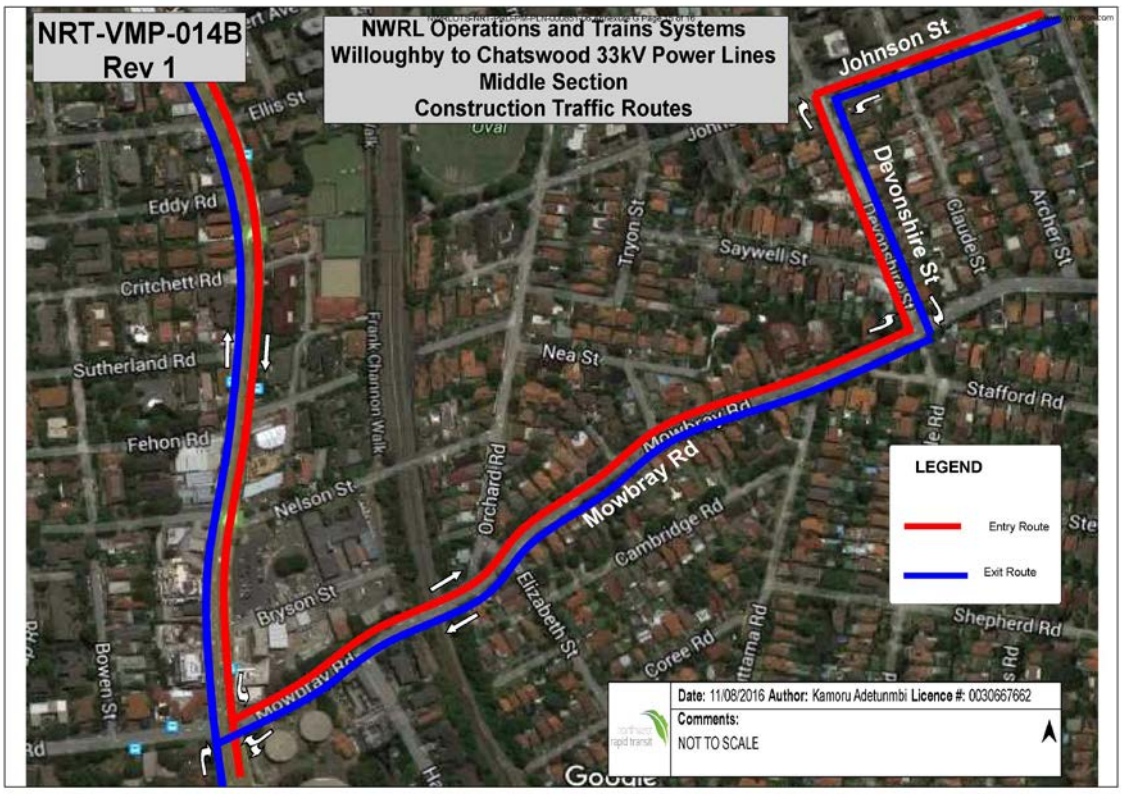

NWRLOTS-NRT-PRD-PM-PLN-000851-06 Annexure G Page 11 of 16
www.invarion.com
NWRL Operations and Trains Systems
Cudgegong Road Station & RTRF Works
Stage 2-Cudgegong Road Closure
Construction Vehicle Routes
NRT-VMP-011
Rev 2
NO ENTRY
Macquarie Road
Construction Trucks not to use the northern sections of Tallawong & Cudgegong Roads
Rouse Road
Construction Trucks not to use Rouse Road, without prior approval from the TMC & Blacktown City Council
NOTES
1. For use during closure of Cudgegong Road for construction of Cudgegong Road overbridge after Tallawong Road overbridge is completed.
Windsor Road
Construction Vehicles use Cudgegong Road and Macquarie Road to access the northern side of the RTRF work site
Left-In/ Left-out access to the rail corridor work site from Schofields Road
Cudgegong Road
Construction Vehicles will turn in and out of Rail Corridor & Cudgegong Road Station work sites via approved access points
Tallawong Road
NRT will obtain Speed Zone Authorisation from the TMC for 40km/h Speed Limit in Tallawong Road from northern boundary of RTRF works to schofields Road
Rail Corridor Work Site
Schofields Rd
Cudgegong Bridge Work Site
CUDGEGONG STATION WORK SITE
RTRF WORK SITE
All trucks must enter and exit in forward direction, unless under traffic control
NRT will obtain Speed Zone Authorisation from the TMC for 60km/h Speed Limit in Schofields Road (Eastbound only) from the end of Schofields Road worksite to Windsor Road.
Date: 15/02/2016 Author: Kamoru Adetunmbi Orange Cert #: 71923015411
Comments:
NOT TO SCALE
LEGEND
Construction Site
Trucks Entry Route
Trucks Exit Route
Light Vehicle Only access
Barrier Boards

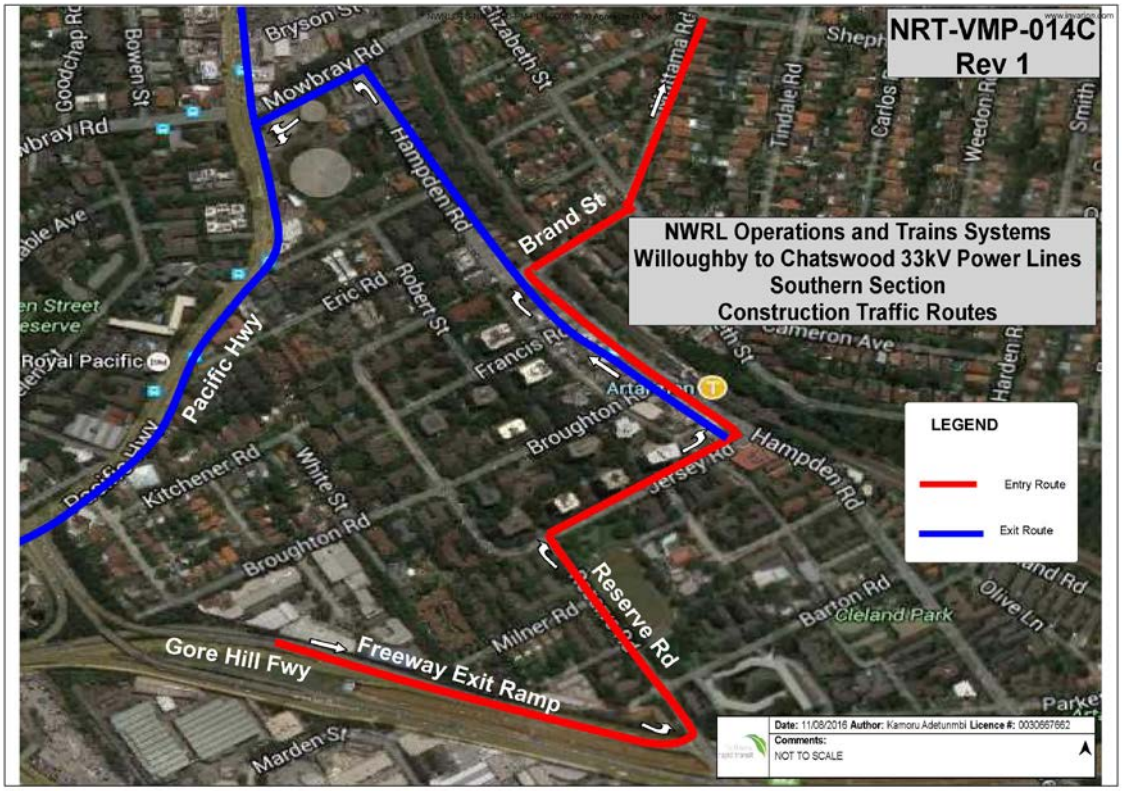
www.invarion.com




www.invarion.com
NRT-VMP-013
Rev 2
NWRL Operations and Trains Systems
ECRL - Access at Chatswood
Construction Traffic Routes
All trucks must enter and exit in forward direction, unless under traffic control
Boundary Street
No Entry for Construction Vehicle into the section of Ashley Street, east of Archer Street
Ashley Street
Archer Street
Zinnia Lane
No Entry for Construction Vehicle into Zinnia Lane
Wilson Street
Anderson Street
Help St
Chatswood
Chatswood
Albert Avenue
Vehicular Access to Rail Corridor Left-in/ Right-out via Albert Avenue
Hopetoun Avenue
Pacific Highway
Orchard Road
Vehicular Access to Rail Corridor Left-in/ Right-out via Hopetoun Avenue
Mowbray Road
Date: 07/07/2015 Author: Kamoru Adetunmbi Orange Cert #: 71923015411
Comments:
NOT TO SCALE


NWRL Operations and Trains Systems
Willoughby to Chatswood 33kV Power Lines
Northern Section
Construction Traffic Routes
NRT-VMP-014A
Rev 1
Date: 11/08/2016 Author: Kamoru Adetunmbi Licence #: 0030667662
Comments:
NOT TO SCALE
LEGEND
Entry Route
Exit Route
Boundary St
Archer St
Pacific Hwy
Ashley St
Anderson St
Waratah St
Currawong Ln
Koala Ln
Rose St
Nichols Ln
Violet St
Zinnia Ln
Tulip St
Iris Ln
Edmund St
Nicholson St
Beauchamp Park
View St
View Ln
Blakesley St
Baldry St
William St


NRT-VMP-014B
Rev 1
NWRL Operations and Trains Systems
Willoughby to Chatswood 33kV Power Lines
Middle Section
Construction Traffic Routes
Johnson St
Devonshire St
Archer St
Claude St
Saywell St
Tryon St
Nea St
Mowbray Rd
Stafford Rd
Cambridge Rd
Shepherd Rd
Coree Rd
Elizabeth St
Orchard Rd
Frank Channon Walk
Ellis St
Eddy Rd
Critchett Rd
Sutherland Rd
Fehon Rd
Nelson St
Bryson St
Bowen St
LEGEND
Entry Route
Exit Route
Date: 11/08/2016 Author: Kamoru Adetunmbi Licence #: 0030667662
Comments:
NOT TO SCALE


NRT-VMP-014C
Rev 1
NWRL Operations and Trains Systems
Willoughby to Chatswood 33kV Power Lines
Southern Section
Construction Traffic Routes
LEGEND
Entry Route
Exit Route
Mowbray Rd
Hampden Rd
Brand St
Pacific Hwy
Eric Rd
Robert St
Francis Rd
Broughton Rd
Kitchener Rd
White St
Hampden Rd
Reserve Rd
Milner Rd
Barton Rd
Cleland Park
Gore Hill Fwy
Freeway Exit Ramp
Marden St
Royal Pacific
Cameron Ave
Olive Ln
Date: 11/08/2016 Author: Kamoru Adetunmbi Licence #: 0030667662
Comments:
NOT TO SCALE

Annexure H – Glossary

Term/Acronym	Definition
AS	Australian Standard
CAR	Corrective Action Report
CEMF	Construction Environmental Management Framework (Appendix B of Submissions Report)
CEMP	Construction Environmental Management Plan
CNVIS	Construction Noise and Vibration Impact Statement
CNVMP	Construction Noise and Vibration Management Plan
CoA	Conditions of Approval
CTMP	Construction Traffic Management Plan
ECRL	Epping to Chatswood Rail Link
EIS	Environmental Impact Statement
EIS 1	EIS for NWRL Early Works and Major Civil Construction Works (Incorporating Staged Infrastructure Modification Assessment) (SSI 5100)
EIS 2	EIS for Construction works associated with SSI 5100 including construction and operation of stations and wider precincts, service facilities, rail infrastructure and systems (SSI 5414)
EIS 3	EIS for the Rapid Transit Rail Facility approval application (SSI 13_5931)
EMS	Environmental Management System developed within the framework of AS/NZS ISO 14001:2004
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPA	Environment Protection Authority
ER	Environmental Representative
GTA	GTA Consultants
IC	Independent Certifier
NCR	Non-conformance Report
NRT	Northwest Rapid Transit Consortium
NWRL	North West Rail Link (*now renamed as* 'Sydney Metro Northwest')
OTS PPP	Operations, Trains and Systems Public Private Partnership (the Project, including delivery and operation)

Term/Acronym	Definition
PIMS	Project Integrated Management System
PPA	Project Planning Approval
project	OTS PPP component of the NWRL project
Project Approval	Minister for Planning and Infrastructure's Approval for the North West Rail Link Stage 1: Major Civil Works dated 25 September 2012
REMM	Revised Environmental Mitigation Measures
RMS	Roads and Maritime Services
RMS WAD	RMS Works Authorisation Deed
ROL	Road Occupancy Licence
RTRF	Rapid Transit Rail Facility (*now renamed as* 'Sydney Metro Trains Facility')
SAP	Station Access Plan
SCIP	Stakeholders and Community Involvement Plan
SEP	Site Environment Plan
SEPP	State Environmental Planning Policy
Spoil	All material generated by excavation into the ground including the excavation of station boxes and tunnels
SPR	Scope and performance requirements
SSI	State Significant Infrastructure
SVC	Surface Viaduct and Civil Works for the North West Rail Link Project
SZA	Speed Zone Authorisation
TCP	Traffic Control Plan
TfNSW	Transport for New South Wales
The Project	The North West Rail Link Project
TCP	Traffic Control Plan
TSC Works	Tunnels and Station Civil Works for the North West Rail Link Project
TSMP	Traffic Management and Safety Plan
TTLG	Traffic and Transport Liaison Group
TTM	Traffic and Transport Manager
TTMT	Traffic and Transport Management Team
WAD	Works Authorisation Deed