APPENDIX B1

Construction Traffic and Access Management Sub Plan

Northern Beaches Hospital Connectivity and Network Enhancements project

ROADS AND MARITIME SERVICES – SEPTEMBER 2019

ferrovial YORK
Joint Venture

NSW GOVERNMENT

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Glossary / Abbreviations

AADT	Annual average daily traffic
CCAFMP	Construction Compound and Ancillary Facility Management Plan (CEMP Appendix B8)
CEMP	Construction Environmental Management Plan
CoA	Condition of Approval
Council	Warringah Council
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
ER	Environmental Representative as appointed under Stage 1 CoA Schedule 3 C1 and Stage 2 CoA D1
EWMS	Environmental Work Method Statements
FYJV	Ferrovial York Joint Venture
LGA	Local Government Area
LoS	Level of service
NPW Act	*National Parks and Wildlife Act 1974*
NVMP	Construction Noise and Vibration Management Sub Plan (CEMP Appendix B3)
OEH	Office of Environment and Heritage
Project, the	Northern Beaches Hospital – Connectivity and Network Enhancements: • Stage 1 – Hospital Connectivity Enhancement Works; and • Stage 2 – Network Enhancement Works.
RMS	Roads and Maritime Services
RSMM	Revised Safeguards and Management Measures
Secretary	Secretary of the NSW Department of Planning and Environment (or delegate) (formerly Director General of the NSW Department of Planning and Infrastructure)
SEARs	Secretary's Environmental Assessment Requirements
SPIR	Submissions and Preferred Infrastructure Report
SZA	Speed Zone Authorisation
TAMP	Construction Traffic and Access Management Sub Plan (this Plan)
TMSP	Traffic Management and Safety Plan

TCP	Traffic Control Plan
TTLG	Traffic and Transport Liaison Group
VMP	Vehicle Management Plan

1 Introduction

1.1 Context

This Construction Traffic and Access Management Sub Plan (TAMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the Northern Beaches Hospital – Connectivity and Network Enhancements Project (the Project).

This Plan has been prepared to address the requirements of:

- the Stage 1 Project Approval;
- the Stage 2 Project Approval;
- the environmental management measures listed in the Northern Beaches Hospital – Road Connectivity and Network Enhancements Stage 1 (SMEC, 2014);
- the revised safeguards and management measures listed in the Northern Beaches Hospital – Road Connectivity and Network Enhancements Stage 1 Submissions Report/Preferred Project Report (SPIR)(SMEC, 2015);
- the environmental management measures listed in the Northern Beaches Hospital – Road Connectivity and Network Enhancements Stage 2 EIS (SMEC, 2015);
- the revised safeguards and management measures listed in the Northern Beaches Hospital – Road Connectivity and Network Enhancements Project Stage 2 Submissions Report (SMEC, 2015); and
- all applicable legislation.

1.2 Background

Section 7 of the Northern Beaches Hospital – Connectivity and Network Enhancements Stage 1 EIS (SMEC, 2014) and Section 7 of the Northern Beaches Hospital – Connectivity and Network Enhancements Stage 2 EIS (SMEC, 2015) considered the potential traffic impacts during the construction of the Project.

These EISs further addressed the Director-General's requirements for Stage 1, and the Secretary's Requirements for Stage 2 of the Project issued by the Department of Planning and Environment.

The detailed traffic and transport assessments were included in the Stage 1 and the Stage 2 EISs as:

- Stage 1 EIS Volume 2 Appendix D: Traffic and Transport Assessment; and
- Stage 2 EIS Volume 2 Appendix D: Traffic and Transport Impact.

1.3 Environmental management document system

The Project Environmental Management document system is described in the CEMP.

The Plan is part of Ferrovial York Joint Venture's (FYJV) environmental management framework for the Project, as described in Section 4.1 of the CEMP. In accordance with the requirements of *Stage 1 CoA C28(c) and Stage 2 CoA D28(c)*, this Plan has been developed in consultation with Warringah Council, emergency services, road user groups, Health Infrastructure and the Forest High School Working Group (for details refer Chapter 4).

Management measures identified in this Plan will be incorporated into the Contractor's site or activity specific Environmental Work Method Statements (EWMS).

EWMSs will be developed for high risk activities and signed off by environment and management representatives prior to associated works and construction personnel will be required to undertake works in accordance with the identified safeguards.

The combination of the CEMP, sub-plans, strategies, procedures and EWMS form management guides that identify required environmental management actions for reference by FYJV's personnel and contractors.

The review and document control processes for this Plan are described in Chapters 9 and 10 of the CEMP.

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how FYJV proposes to manage traffic around the project, access to construction compounds and ancillary facilities during construction of the Project.

2.2 Objectives

The key objectives of the Plan is to ensure that traffic impacts during construction are minimised, managed and are within the scope permitted by the Planning Approvals. This includes minimising delays, ensuring consideration is given to the needs of all road users, including public transport and maintaining safety for both workers and the general public.

To achieve these objectives, FYJV will undertake the following:

- ensure appropriate controls and procedures are implemented during construction activities to address potential traffic impacts along the Project corridor;
- ensure appropriate measures are implemented to address the relevant Stage 1 and Stage 2 CoAs outlined in Table 3.1 and Table 3.2 respectively, and the mitigation measures detailed in the Stage 1 EIS and SPIR and the Stage 2 EIS and Submissions Report; and
- ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 3.1 of this Plan.

2.3 Targets

The following targets have been established for the management of traffic impacts during the Project:

- maximise safety of people at work sites by ensuring that traffic control at each work site consistently complies with best practice and to provide a safe road network for all road users, including FYJV's construction workforce;
- manage disruptions to pedestrians, cyclists, buses and motorists;
- manage construction vehicle movements during peak traffic periods; and
- manage access disruptions to adjoining properties.

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation and regulatory requirements

Legislation relevant to traffic management includes the *Environmental Planning and Assessment Act 1979* (EP&A Act), under which the Project Approval was granted.

Relevant provisions of the EP&A Act are explained in the register of legal and other requirements included in Appendix A1 of the CEMP.

Identified regulatory requirements relevant to traffic management include:

- an approved and valid Road Occupancy Licence (ROL);
- an approved relevant Speed Zone Authorisation (SZA); and
- Australian Road Rules.

3.1.2 Guidelines

The main guidelines, specifications and policy documents relevant to this Plan include:

- RMS QA Specification G10 – Traffic Management;
- RMS Traffic Control at Worksites Manual (2010);
- Traffic Signal Design Guide;
- RMS Technical Directions and Supplements;
- Austroads guide to road safety part 6;
- Road safety audit 2009;
- Austroads guide to traffic management 2009;
- Austroads standards;
- RMS NSW Bicycle Guidelines;
- Guide: Signposting (RTA, July 2007); and
- Tourist Signposting guide (RMS and Destination NSW, 2012).

3.2 Minister's Conditions of Approval

3.2.1 Stage 1 Conditions of Approval

The Stage 1 CoAs relevant to this Plan are listed in Table 3-1 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-1: Stage 1 Conditions of Approval relevant to the TAMP

Stage 1 CoA No.	Stage 1 Condition Requirements	Document Reference
C15	The SSI shall be constructed, where feasible and reasonable, to avoid the use of local roads outside of the SSI footprint (through residential streets) by heavy vehicles to gain access to ancillary facilities.	Section 7.2.4 Table 7.2 TAMP19, 24
C16	Access to construction compounds via local roads shall be limited to standard construction hours, where practicable, unless otherwise detailed within the Construction Traffic and Access Management Plan as required in condition.	Section 6.4 and 7.2.2 Table 7.2 TAMP23
C17	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.	Section 7.10 Table 7.2 TAMP35 - 45
C18	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) adhere to the nominated haulage routes identified in the Construction Traffic and Access Management Plan.	Section 6.3, 6.8 and 7.2.4 Table 7.2 TAMP4
C19	Upon determining the haulage route(s) for construction vehicles associated with the SSI, and prior to construction, a suitably qualified and experienced expert shall prepare a Road Dilapidation Report for all local roads used. The Report shall assess the current condition of the road and describe mechanisms to restore any damage that may result due to its use by traffic and transport related to the construction of the SSI. The Report shall be submitted to the Council for review prior to the commencement of haulage. Following completion of construction, a subsequent Report shall be prepared to assess any damage to the road that may have resulted from the construction of the SSI. The Reports shall be compatible with Council's existing pavement management system and collect data on roughness, rutting, cracking and patching before and after works. *Note: Nothing in this condition restricts the Proponent commencing adjustments and minor upgrades to the existing road network to cater for construction traffic and installation of temporary project signage prior to the commencement of construction.*	Road Dilapidation Report – Local Roads (provided separately) Table 7.2 TAMP18
C27(e)	The CEMP shall include, but not necessarily be limited to:	Section 6.11

Stage 1 CoA No.	Stage 1 Condition Requirements	Document Reference
	(e) details of how environmental performance would be managed and monitored to meet acceptable outcomes, including what actions will be taken to address identified potential adverse environmental impacts (including any impacts arising from the staging of the construction of the SSI). These should include consideration of cumulative impacts in relation to staging of other major potential construction activities in the project area (including the NBH project and Stage 2 Project of the Concept Proposal).	
C28(c)	As part of the CEMP for the SSI, the Proponent shall prepare and implement: a Construction Traffic and Access Management Plan to ensure traffic and access controls are implemented to avoid or minimise impacts on traffic, pedestrian and cyclist access, and the amenity of the surrounding environment. The Plan shall be developed in consultation with the Council, emergency services, road user groups, Health Infrastructure, The Forest High School Working Group, and include, but not necessarily be limited to:	This Plan Table 7.2 TAMP1
	(i) identification of construction traffic routes and construction traffic volumes (including heavy vehicle/ spoil haulage) on these routes;	Section 7.2, Table 7.2 TAMP4
	(ii) details of vehicle movements for construction sites and site compounds including parking, dedicated vehicle turning areas, and ingress and egress points;	Section 7.2, Table 7.2 TAMP4
	(iii) discussion of construction impacts that could result in disruption of traffic, public transport, pedestrian and cycle access, access to public land, property access, rat runs, including details of oversize load movements, and the nature and duration of those impacts;	Chapter 6, Table 7.2 TAMP11 NVMP – Appendix A
	(iv) details of management measures to minimise traffic impacts and maintain road capacity during morning and afternoon peaks, 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;	Chapter 7 Traffic Control Plans Table 7.2 TAMP4
	(v) details of measures to maintain or provide alternative safe and accessible routes for pedestrians throughout the duration of construction, including provision of replacement kiss and ride, bus stops, pedestrian and cyclist access and paths where necessary;	Chapter 7 Table 7.2 TAMP16, 32
	(vi) details of measures to maintain connectivity for cyclists, with particular emphasis on providing adequate access between key existing cycle routes;	Section 7.8, Table 7.2 TAMP35, 36
	(vii) details of measures to manage traffic movements, rat runs, parking, loading and unloading at ancillary facilities during out-of-hours work;	Section 7.2.2, Table 7.2 TAMP4
	(viii) details of methods to be used to communicate proposed future traffic changes to affected road users, pedestrians and cyclists, consistent with the Community Communication Strategy required under condition of Schedule 2;	Section 8.3, Table 7.2 TAMP4
	(ix) an adaptive response plan which sets out a process for response to any traffic, construction or other incident; and	Section 7.13 Appendix G
	(x) mechanisms for the monitoring, review and amendment of this plan.	Chapter 9

3.2.2 Stage 2 Conditions of Approval

The Stage 2 CoAs relevant to this Plan are listed in Table 3-2 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-2: Stage 2 Conditions of Approval relevant to the TAMP

Stage 2 CoA No.	Stage 2 Condition Requirements	Document Reference
B10	Access to all properties must be maintained during construction and operation, where feasible and reasonable, unless otherwise agreed by the relevant property owner or occupier. Any access physically affected by the SSI must be reinstated to at least an equivalent standard, unless agreed with by the property owner.	Section 6.9 and 7.12 Table 7.2 TAMP84, 85
D14	The SSI must be constructed, where feasible and reasonable, to avoid the use of local roads outside of the SSI footprint (through residential streets) by heavy vehicles to gain access to ancillary facilities.	Section 7.2.4 Table 7.2 TAMP81, 83
D15	Access to construction compounds via local roads must be limited to standard construction hours, where practicable, unless otherwise detailed within the Construction Traffic and Access Management Plan required by condition D28(c).	Section 6.4 and 7.2.2 Table 7.2 TAMP82
D16	Safe pedestrian and cyclist access through or around worksites must be maintained during construction. In circumstances where pedestrian and cyclist access is restricted due to construction activities, a satisfactory alternate route must be provided and signposted.	Section 7.10 Table 7.2 TAMP89 to 96
D17	Construction vehicles (including staff vehicles) associated with the SSI must be managed to: a) minimise parking or queuing on public roads; b) minimise idling and queuing in local residential streets where practicable; and c) adhere to the nominated haulage routes identified in the Construction Traffic and Access Management Plan required under condition D28(c).	Section 6.3, 6.8 and 7.2.4 Table 7.2 TAMP67
D18	Upon determining the haulage route(s) for construction vehicles associated with the SSI, and prior to construction, a suitably qualified and experienced independent expert must prepare a Road Dilapidation Report for all local roads utilised. The Report must assess the current condition of the road and describe mechanisms to restore any damage that may result due to its use by traffic and transport related to the construction of the SSI. The Report must be submitted to the Council for review prior to the commencement of haulage. Following completion of construction, a subsequent Report must be prepared to assess any damage to the road that may have resulted from the construction of the SSI. The Reports must be compatible with Council's existing pavement management system and collect data on roughness, rutting, cracking and patching before and after works. Measures undertaken to restore or reinstate roads affected by the SSI must be undertaken in a timely manner, in accordance with the reasonable requirements of the Council, and at the full expense of the Proponent. *Note: Nothing in this condition restricts the Proponent commencing adjustments and minor upgrades to the existing road network to cater for construction traffic and installation of temporary project signage prior to the commencement of construction.*	Road Dilapidation Report – Local Roads (provided separately) Table 7.2 TAMP80

Stage 2 CoA No.	Stage 2 Condition Requirements	Document Reference
D27(e)	The CEMP must include, but not necessarily be limited to: (e) details of how environmental performance would be managed and monitored to meet acceptable outcomes, including what actions will be taken to address identified potential adverse environmental impacts (including any impacts arising from the staging of the construction of the SSI). These should include consideration of cumulative impacts in relation to staging of other major potential construction activities in the project area (including the NBH project and Stage 1 Project).	Section 6.11 Table 7.2 TAMP97, 98
D28(c)	As part of the CEMP for the SSI, the Proponent must prepare and implement (following approval): a Construction Traffic and Access Management Plan to ensure traffic and access controls are implemented to avoid or minimise impacts on traffic, pedestrian and cyclist access, and the amenity of the surrounding environment. The Plan must be developed in consultation with the Transport Management Centre, Council, emergency services, road user groups, Health Infrastructure, The Forest High School Working Group, and include, but not necessarily be limited to:	This plan Table 7.2 TAMP64
	(i) identification of construction traffic routes and construction traffic volumes (including heavy vehicle/ spoil haulage) on these routes;	Section 7.2, Table 7.2 TAMP67
	(ii) details of vehicle movements between construction sites and site compounds including parking, dedicated vehicle turning areas, and ingress and egress points;	Section 7.2, Table 7.2 TAMP67
	(iii) discussion of construction impacts that could result in disruption of traffic, public transport, pedestrian and cycle access, access to public land, property access, rat runs, including details of oversize load movements, and the nature and duration of those impacts;	Chapter 6, Table 7.2 TAMP73 NVMP – Appendix A
	(iv) details of management measures to minimise traffic impacts and maintain road capacity during morning and afternoon peaks, including the proposed schedule of works, 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;	Chapter 7 Traffic Control Plans Table 7.2 TAMP67
	(v) details of measures to maintain or provide alternative safe and accessible routes for pedestrians throughout the duration of construction, including provision of replacement kiss and ride, bus stops, pedestrian and cyclist access and paths where necessary;	Chapter 7 Table 7.2 TAMP78, 86
	(vi) details of measures to maintain connectivity for cyclists, with particular emphasis on providing adequate access between key existing cycle routes;	Section 7.8, Table 7.2 TAMP89, 90
	(vii) details of measures to manage traffic movements, rat runs, parking, loading and unloading at ancillary facilities during out-of-hours work;	Section 7.2.2, Table 7.2 TAMP67
	(viii) details of methods to be used to communicate proposed future traffic changes to affected road users, pedestrians and cyclists, consistent with the Community Communication Strategy required under condition C1;	Section 8.3, Table 7.2 TAMP67
	(ix) an adaptive response plan which sets out a process for response to any traffic, construction or other incident; and	Section 7.13 Appendix G
	(x) mechanisms for the monitoring, review and amendment of this plan.	Chapter 9

3.3 Revised Safeguards and Management Measures

3.3.1 Stage 1 RSMM

The revised safeguards and management measures (RSMM) from the Stage 1 SPIR relevant to this Plan are listed in Table 3-3 below. A cross reference is also included to indicate where the RSMM is addressed in this Plan. Where RSMMs are not specifically addressed in this Plan, justification is provided. The timing of when the commitment applies has also been included.

Table 3-3: Stage 1 Revised Safeguards and Management Measures relevant to this TAMP

Stage 1 RSMM.	Impact	Stage 1 Requirements	Document Reference
TA 1	Construction Traffic Impacts	A construction traffic management plan would be developed and implemented as part of the Stage 1 Project. The construction traffic management plan would focus on maintaining general traffic flow and specifying appropriate site accesses and construction traffic routes. It would include: • Traffic Control Plans showing the access arrangements and the details of required signs and devices. • Pedestrian and Cyclist Management Plans. • Consultation strategy for access requirements to adjacent properties including The Forest High School and Frenchs Forest Police Station. • Hours of operation, including prohibitions on queuing outside sites prior to commencement of work. • Road safety audit requirements. • Any localised improvements/adjustments to existing traffic management arrangements. Preparation of the plan would include consultation with Health Infrastructure to accommodate, where reasonable and feasible, construction traffic issues associated with hospital construction.	This Plan Table 7.1 TAMP1
TA 2		Subject to safety reasons and other environmental impacts (e.g. noise), construction traffic movements would be limited to off-peak periods, with peak period construction staggered to minimise construction traffic during these periods.	Section 6.3, Table 7.1 TAMP2
TA 3		Priority would be given to the use of the arterial road network for construction vehicle access routes	Section 6.3, Table 7.1 TAMP19
TA 4		Consultation would be undertaken with Health Infrastructure to coordinate scheduling of construction activities and deliveries.	Chapter 4, Table 7.1 TAMP11

Stage 1 RSMM.	Impact	Stage 1 Requirements	Document Reference
TA 5	Cumulative Traffic Impacts	Consultation would be undertaken with Health Infrastructure regarding the need for construction access to the hospital site to focus on the Warringah Road/Bantry Bay Road intersection	Chapter 4, Table 7.1 TAMP11
TA 6	Property Access	Access to properties along affected roads would be maintained during construction. The need for any alternative and/or temporary access arrangements would be agreed with affected property managers/owners.	Section 6.9 and 7.12 Table 7.1 TAMP 25, 26
TA 7	Construction compound	Use of the additional compound site would be subject to a site-specific traffic control plan under the proposed construction traffic management plan.	Section 6.4 and 7.2.2 Table 7.1 TAMP20
TA 8	Business and Economic Impacts	Access to businesses along affected roads would be maintained during construction. The need for any alternative and/or temporary access arrangements would be agreed with affected property managers/owners and a signage strategy would be implemented to explain new access arrangements where required.	Section 7.12 Table 7.2 TAMP 13, 40
		Undertake consultation with local land owners and businesses impacted by project about the duration, location and timing of construction and the potential impacts on business operations.	Community Consultation Strategy

3.3.2 Stage 2 RSMM

The revised safeguards and management measures (RSMM) from the Stage 2 Submissions Report relevant to this Plan are listed in Table 3-4 below. A cross reference is also included to indicate where the RSMM is addressed in this Plan. Where RSMMs are not specifically addressed in this Plan, justification is provided. The timing of when the commitment applies has also been included.

Table 3-4: Stage 2 Revised Safeguards and Management Measures relevant to this TAMP

Stage 2 RSMM.	Impact	Stage 2 Requirements	Document Reference
TA 1	Construction Traffic Impacts	A construction traffic management plan would be developed and implemented as part of the Stage 2 Project. The construction traffic management plan would focus on maintaining general traffic flow and specifying appropriate site accesses and construction traffic routes. It would include: • Traffic Control Plans showing the access arrangements and the detail of required signs and devices. • Pedestrian and cyclist management plans. • Consultation strategy for access requirements to adjacent properties including The Forest High School and Frenchs Forest Police Station.	This Plan Table 7.2 TAMP64 Traffic Control plans

Stage 2 RSMM.	Impact	Stage 2 Requirements	Document Reference
		• Hours of operation, including prohibitions on queuing outside sites prior to commencement of work. • Road safety audit requirements. • Any localised improvements/adjustments to existing traffic management arrangements.	
TA 2		Subject to safety reasons and other environmental impacts (e.g. noise), construction traffic movements would be limited to off-peak periods, with peak period construction staggered to minimise construction traffic during these periods.	Section 6.3, Table 7.2 TAMP65
TA 3		Priority would be given to the use of the arterial road network for construction vehicle access routes.	Section 6.3, Table 7.2 TAMP81
TA 4	Cumulative Construction Traffic Impacts	Consultation would be carried out with Health Infrastructure to coordinate scheduling of construction activities and deliveries.	Chapter 4, Table 7.2 TAMP97
TA 5		Consultation would be carried out with Health Infrastructure regarding the need for construction access to the hospital site to focus on the Warringah Road/Bantry Bay Road intersection.	Chapter 4, Table 7.2 TAMP98
TA 6	Property Access	Access to properties along affected roads would be maintained during construction. The need for any alternative and/or temporary access arrangements would be agreed with affected property managers/owners.	Section 6.9 and 7.12 Table 7.2 TAMP 84, 85
TA 7	Impact on Sensitive Receivers	Heavy vehicle drivers would be advised of designated vehicle routes, parking locations, acceptable delivery hours and other relevant practices (i.e., minimising the use of engine brakes, and no extended periods of engine idling).	Table 7.2 TAMP 67, 81
TA 8	Business and Economic Impacts	The Construction Traffic Management Plan would include a signage strategy (consistent with Roads and Maritime policy) to allow the public, including local and passing patrons, to access shops, services and businesses during construction.	Section 7.12 Table 7.2 TAMP 75, 94
TA 9	Community Services	Ensure safe and secure access is maintained to community facilities and open space throughout construction. The need for any alternative and/or temporary access arrangements would be agreed with affected property managers/owners and a signage strategy would be implemented to explain new access arrangements where required.	Traffic Control Plans Table 7.2 TAMP 67
TA 10	Traffic and Access	Develop, implement and communicate the Construction Traffic Management Plan with the aim of minimising traffic impacts and disruptions (refer to Section 7.5 of the Stage 2 Project EIS).	Table 7.2 TAMP 73
TA 11	Community Severance and Cohesion	Ensure existing pedestrian and cyclist networks are maintained or provide alternate arrangements where needed.	Table 7.2 TAMP 89, 90

4 Consultation

4.1 Consultation requirements under the Project Approval

Details of consultation undertaken during the development of the Stage 1 CEMP were provided in Appendix A2 of the CEMP. The Appendix A2 of the CEMP has been revised to detail the receipt and response to comments on the development of the TAMP in the incorporation of Stage 2 Project.

Ongoing involvement with stakeholders and the community would occur in accordance with the Community Consultation Strategy and the Traffic and Transport Liaison Group required for the Project.

The Plan would be updated annually or as required. The new revision would be uploaded to the Project website for stakeholder and community information.

4.2 Consultation requirements under the EIS

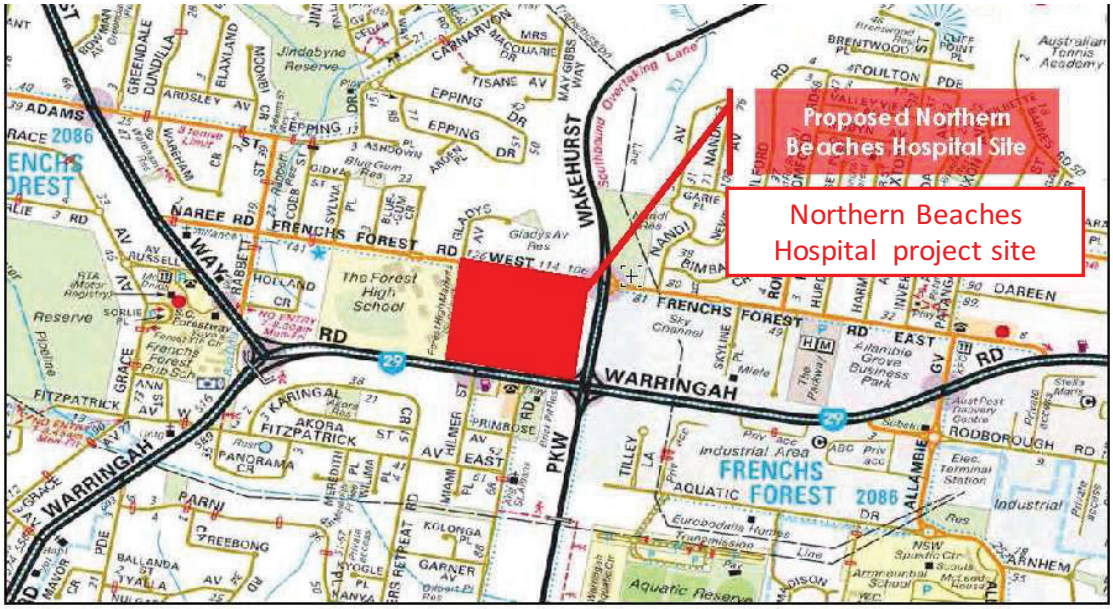
As defined in Table 3-3 and 3-4, Revised Safeguards and Management Measures were identified in the Stage 1 and Stage 2 EISs and reflected in the Stage 1 SPIR and Stage 2 Submissions Report specifying the following consultation requirements that will be undertaken as a minimum:

- consultation with Council in regards to:
  - maintaining safe vehicle passage along Frenchs Forest Road during construction; and
  - outcomes of traffic monitoring of local streets that exhibit increases and temporary measures that could be implemented to manage safety and related issues;
- consultation with Health Infrastructure in regards to:
  - preparation of the Plan to accommodate, where reasonable and feasible, construction traffic issues associated with the construction of the Northern Beaches Hospital project (NBH project);
  - coordinating the scheduling of construction activities and deliveries (to mitigate cumulative traffic impacts from the NBH project); and
  - the need for construction access to the NBH project site to focus on the Warringah Road/Bantry Bay Road intersection (to mitigate cumulative traffic impacts from the NBH project);
- a consultation strategy for access requirements to adjacent properties including The Forest High School and Frenchs Forest Police Station; and
- arrangements with affected property managers/owners for alternative and/or temporary access arrangements where required during construction.

5 Existing environment

5.1 Existing road network

The existing road network in the Project area comprises the roads surrounding the NBH project site, as shown in Figure 5.1 and described below.



Map Source: Sydways

Warringah Road

Warringah Road is a major State Road that runs from Dee Why in the east to Roseville Chase in

Figure 5-1 Road network in the project area

5.1.1 Warringah Road

Warringah Road is a major State Road under the care and control of Roads and Maritime. It is the main east–west route through the Project area, providing access to Brookvale, Dee Why, Chatswood and the Sydney CBD. Warringah Road carries 70,000-80,000 total vehicles west of Wakehurst Parkway and 40,000-50,000 total vehicles daily east of Wakehurst Parkway. The posted speed limit along the section of Warringah Road through the Project area is 70 km/h.

Warringah Road has a six lane carriageway configuration with a central median. It has eight sets of signalised intersections (at an average spacing of 500m) between Woodlands Road/ Arthur Street and Allambie Road to accommodate pedestrian crossings and traffic accessing Warringah Road.

5.1.2 Wakehurst Parkway

The Wakehurst Parkway is a State Road under the care and control of Roads and Maritime. It runs between Narrabeen in the north–east and Seaforth in the south providing further connections to the Sydney CBD via the Spit Bridge and Cremorne.

The majority of the Wakehurst Parkway is two lanes undivided but it widens to four lanes on the southbound approach to Frenchs Forest Road. Between Frenchs Forest Road and Warringah Road there are four southbound and three northbound lanes and one southbound dedicated bus lane. The road converges back to two lanes undivided on the southern side of Warringah Road.

The posted speed limit along the section of the Wakehurst Parkway between Frenchs Forest Road and Aquatic Drive is 70 km/h.

The only access onto the Wakehurst Parkway in the Project area is through the signalised intersections with Frenchs Forest Road to the north and Warringah Road to the south. The Wakehurst Parkway cannot be accessed from Aquatic Drive and Fitzpatrick Avenue East. In the vicinity of the NBH project site, the Wakehurst Parkway carries 20,000-30,000 vehicles daily. It is a significant component of the road network as it functions as a key north–south route through the precinct.

5.1.3 Forest Way

Forest Way is a State Road under the care and control of the Roads and Maritime and consists of six lanes linking Frenchs Forest and Belrose to the north, continuing onto Mona Vale Road. The area north of the intersection of Forest Way and Warringah Road has a mid-block signalised pedestrian crossing and bus interchange facility fronting the Forestway Shopping Centre.

The posted speed along most of this section of Forest Way is generally 70 km/h.

Although Forest Way consists of six lanes there are no auxiliary turn lanes, which limits its capacity. It carries about 45,000 vehicles daily north of Warringah Road. Forest Way operates as a key north–south route through the precinct.

5.1.4 Naree Road/Frenchs Forest Road

Naree Road/ Frenchs Forest Road are local roads that carry approximately 20,000 vehicles daily, much higher than typical volumes for the collector functions that they were meant to perform. These roads act as a ‘rat run’ for traffic avoiding congestion on Warringah Road.

Frenchs Forest Road West is located west of the Wakehurst Parkway, and Frenchs Forest Road East is located east of the Wakehurst Parkway. Naree Road is a short section of road extending west of Frenchs Forest Road connecting to Forest Way.

Frenchs Forest Road is generally a two lane undivided road, with parking allowed on both sides. Buses travel in the westbound direction only on Frenchs Forest Road West. The road is not accessible for vehicles with more than a three tonne load, buses excepted.

The posted speed limit on Naree Road, Frenchs Forest Road West and Frenchs Forest Road East is 50 km/h. There are several traffic calming devices to enforce low traffic speeds. A roundabout exists at the intersection with Rabbett St / Naree Rd. Traffic signals exist at the intersection with Wakehurst Parkway.

Only left turns are permitted eastbound from Frenchs Forest Rd East onto Warringah Rd. Only bus movements are permitted turning right turns from Warringah Rd (westbound) into Frenchs Forest Rd East. A school zone operates on Frenchs Forest Road West outside The Forest High School adjacent to the hospital site.

5.1.5 Allambie Road

Allambie Road south of Warringah Road is a Regional Road while the section of the road north of Warringah Road is a Local Road. Allambie Road consists of two lanes and runs between Manly Vale in the south and Frenchs Forest in the north. It carries about 20,000 vehicles daily and has a posted speed limit of 60 km/h.

5.2 Heavy vehicles and freight

Forest Way, the Wakehurst Parkway north of Warringah Road and Warringah Road west of Allambie Road are all designated as Higher Mass Limit (HML) roads that can take up to 68 tonne semi-trailers and B-Doubles, while the remaining sections of the Wakehurst Parkway (south of Warringah Road) and Warringah Road (east of Allambie Road) can accommodate 4.6 m high vehicles.

Rodborough Road also allows B-doubles up to 25 m long, but only for vehicles exiting to the Warringah Road designated route. The restricted access vehicle routes in the vicinity of the Project are shown in Figure 5-2.

Figure 5-2: Restricted access vehicle routes

Warringah Road and Forest Way are also designated as tertiary freight routes (refer to Figure 5-3) in the Metropolitan Road Freight Hierarchy on the *State Road Network – Practice Note* (TfNSW, 2011), with the proportions of heavy freight vehicles representing between 3 to 5% of all vehicles. The freight routes serve end destinations in the industrial and commercial areas of Frenchs Forest, Brookvale, Manly Vale, Dee Why and Warriewood.

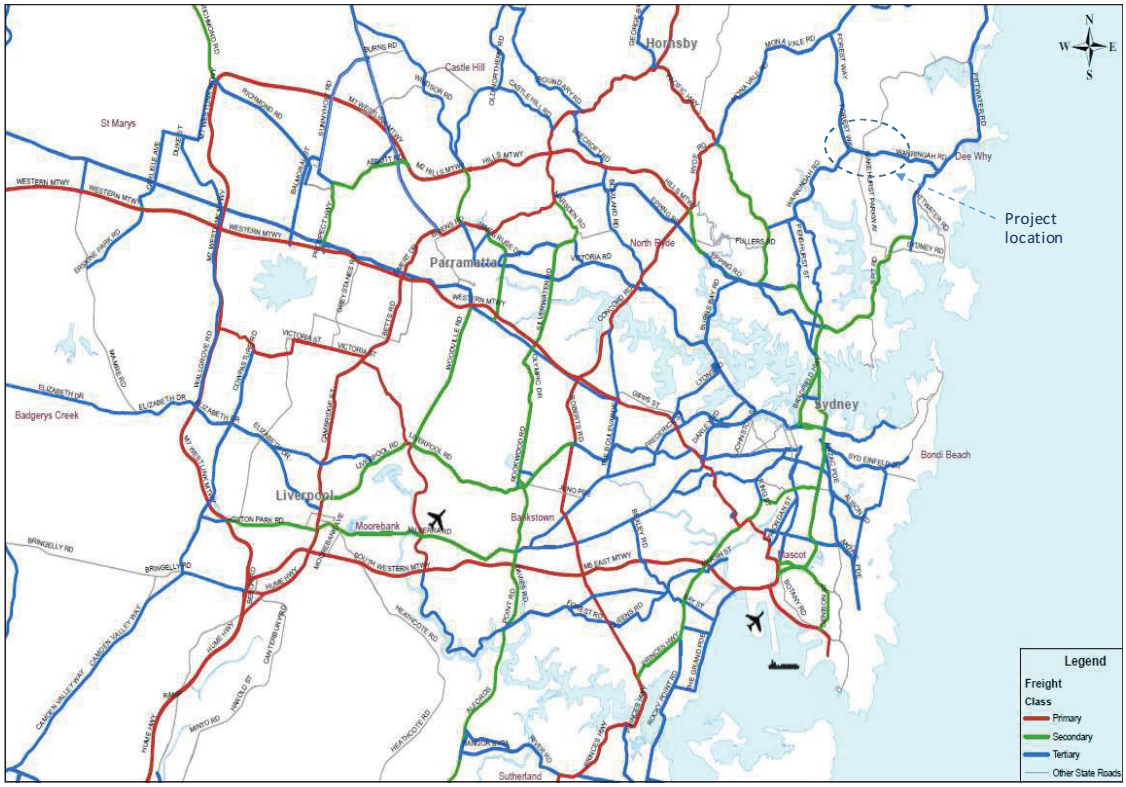


Figure 5-3: Sydney freight route hierarchy

(Source: Transport for NSW, Sydney Road Freight Hierarchy Map.)

5.3 Crash Statistics

Crash data provided by TfNSW indicates that the 270 crashes recorded in the Project area during the period January 2010 to June 2013, 50% were rear-end collisions. No fatal crashes were recorded. During the period there were 24 crashes recorded on Frenchs Forest Road East and 8 on Naree Road/ Frenchs Forest Road West, 4 of which were rear-end crashes.

The crash data indicates that crashes in the area are generally concentrated at the arterial road intersections. The majority of crash clusters occurred along the Warringah Road corridor, particularly west of Wakehurst Parkway, and to a lesser degree on Forest Way.

Approximately 50% of all crashes were rear-end collisions, which may be due to the existing traffic congestion during the peak periods. The crash data also indicates that three out of four pedestrian crashes recorded occurred adjacent to retail areas – two on Forest Way outside the Forestway Shopping Centre and one on Frenchs Forest Road East near the Skyline Shops.

5.4 Car Parking

Kerbside car parking occupancy surveys were undertaken by RMS in May 2014 to determine current kerbside car parking demand levels that would potentially be impacted by the Stage 1 project delivery. Key findings from these car parking surveys include:

- Significant levels of weekday daytime parking were observed on the southern side of Naree Road between Forest Way and Rabbett Street, as well as on Rabbett Street between Naree Road and Forest Way. From site observations, the parking demand

generally relates to park and ride (bus) commuters commuting to Chatswood and the City.

- There is generally a low level of kerbside parking demand on Frenchs Forest Road West.
- Generally, there is about 50% average occupancy on the kerbside parking spaces along Frenchs Forest Road East (likely due to off-street parking provision in the business parks), except closer to the Skyline Shops. During the weekend morning survey, the spaces are almost fully occupied.

On-street parking is generally not permitted in the Stage 2 Project area, including:

- Warringah Road between Fitzpatrick Avenue East and Allambie Road;
- Wakehurst Parkway between Warringah Road and Aquatic Drive;
- Allambie Road between Warringah Road and Rodborough Road; and
- Forest Way between Warringah Road and the Stage 1 Project area.

Observations of parking within the Stage 2 Project area as part of the Stage 2 EIS identified the following parking conditions:

- Bantry Bay Road provides a combination of 2P spaces (at the northern end) and unrestricted spaces. Demand was high for these spaces during peak periods generated by Bantry Bay Road shops and Brick Pit Reserve.
- Hilmer Street provides unrestricted car parking spaces on both sides of the road. Demand is generally low and associated with immediate residential uses.
- Fitzpatrick Avenue East provides unrestricted car parking spaces on both sides of the road. Demand is generally low and associated with immediate residential uses.
- Aquatic Drive provides unrestricted car parking spaces on both sides of the road with occupancy considered moderate to high associated with commercial activities along the road.

5.5 Existing road network performance

The arterial road network within the precinct experiences high levels of traffic congestion and volatility, with several of the major intersections operating at, or over capacity. During the weekday morning peak period, the network has capacity limitations that makes it particularly vulnerable to congestion and subsequent 'rat running' along local streets. The network frequently experiences gridlock conditions despite being managed through access and turning restrictions, and closely monitored signal coordination.

The intersection of Warringah Road and Wakehurst Parkway, directly adjacent to the hospital site, has very high levels of delays and queuing. The daily of traffic flow pattern on Warringah Road is fairly constant in terms of traffic volume. Morning peak periods are much the same throughout the working week generally between 7:00am to 9:00am, while the evening peak indicates to be between 4:30pm and 6:30pm. The Saturday peak is of a similar magnitude to the week day peaks, although the peak hour is between 12:00pm to 1:00pm. Sunday traffic is lower than the weekday volumes and the peak being between 12:00pm to 1:00pm.

Travel time surveys undertaken in 2013 along Warringah Road indicate the average speed in the westbound direction during the morning peak period (7:00am to 9:00am) is 20 km/h and in the eastbound direction during the evening peak period (4:00pm to 6:00pm) is 30 km/h. The travel speed surveys reflected the variability of peak period average travel speeds along sections of Warringah Road. Travel speeds as low as 6 km/h between Wakehurst Parkway and Allambie Road between 7:00am and 8:00am in the westbound direction were observed and as fast as 64 km/h between 4:00pm and 5:00pm in the westbound direction.

5.6 Public Transport Network

Buses are the main form of public transport on the Northern Beaches. Figure 5-4 shows the existing bus network in the surrounding area.

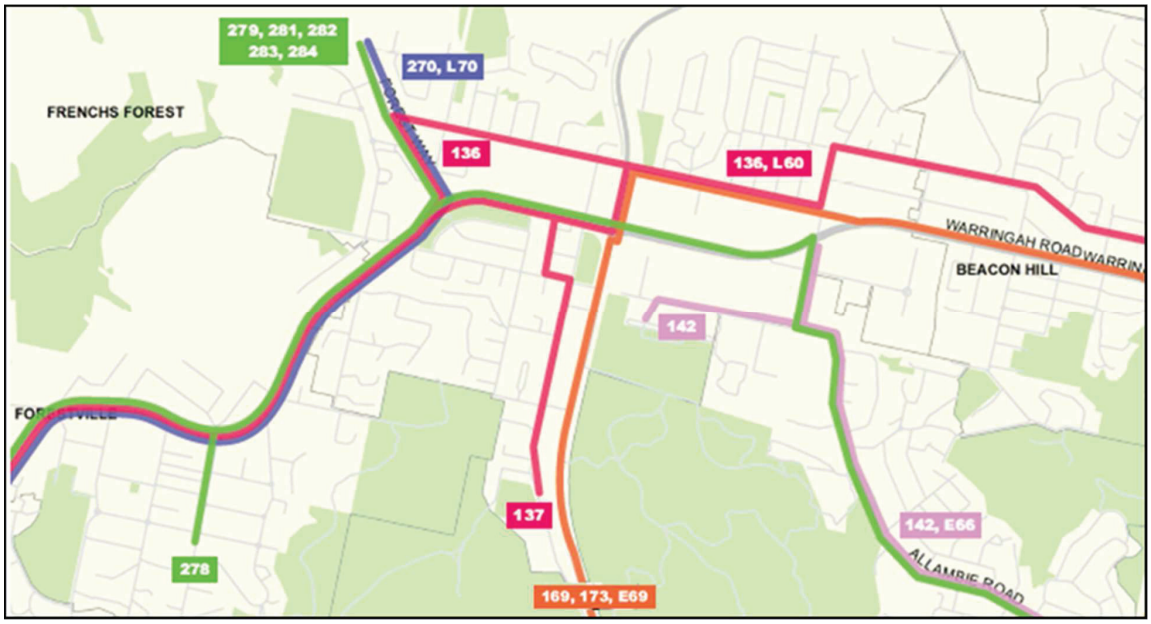


Figure 5-4: Public Bus Network in the Project Area

(Source: GTA Consultants, 2012)

Sydney Buses and Forest Coaches operate school bus routes in the area in addition to the standard scheduled services. In addition, a number of school buses stop at the Forestway Shopping Centre (either on Forest Way or at the southbound bus stop on Rabbett Street), which operates as an interchange point between school bus services and the standard bus services operated by Sydney Buses and Forest Coaches.

Note: Bus routes along Frenchs Forest Road East would only be travelling in a westerly direction due to a one way switch imposed to expedite construction between October 2017 and July 2018.

5.7 Pedestrian Infrastructure

The key pedestrian destinations in the area are focused on the Skyline Shops towards the eastern end of Frenchs Forest Road, as well as in the vicinity of Forestway Shopping Centre and the Rabbett Street bus stops. A significant volume of bus interchange activity occurs at the Rabbett Street bus stop and on the bus stops on either side of Forest Way. These activities include walk access, “kiss-and-ride” and pedestrians crossing Forest Way at the signalised pedestrian crossing. A high number of pedestrians use the Forest Way pedestrian crossing to transfer between bus stops on opposite sides of the road during morning and evening peak periods.

Pedestrian infrastructure such as refuges and pedestrian crossings are also provided along Frenchs Forest Road West/Naree Road in the vicinity of Forest High School.

Footpaths are provided on Warringah Road, with the path on the south side generally following an alignment further away from the road carriageway west of Hilmer Street, connecting with

the existing footbridge across Warringah Road west of the Forest Way intersection, as well as on Forest Way, Frenchs Forest Road and the Wakehurst Parkway south of Frenchs Forest Road up to about 100 m south of Warringah Road.

5.8 Bicycle Infrastructure

Figure 5-5, based on the Warringah Bike Plan (Warringah Council, 2010), shows the existing and proposed bicycle network in the Frenchs Forest area. In the vicinity of the project there is one existing route on-road route along Dareen Street between Inverness Avenue and Ellis Road, continuing on to Oxford Falls Road and Tristram Road to the east.

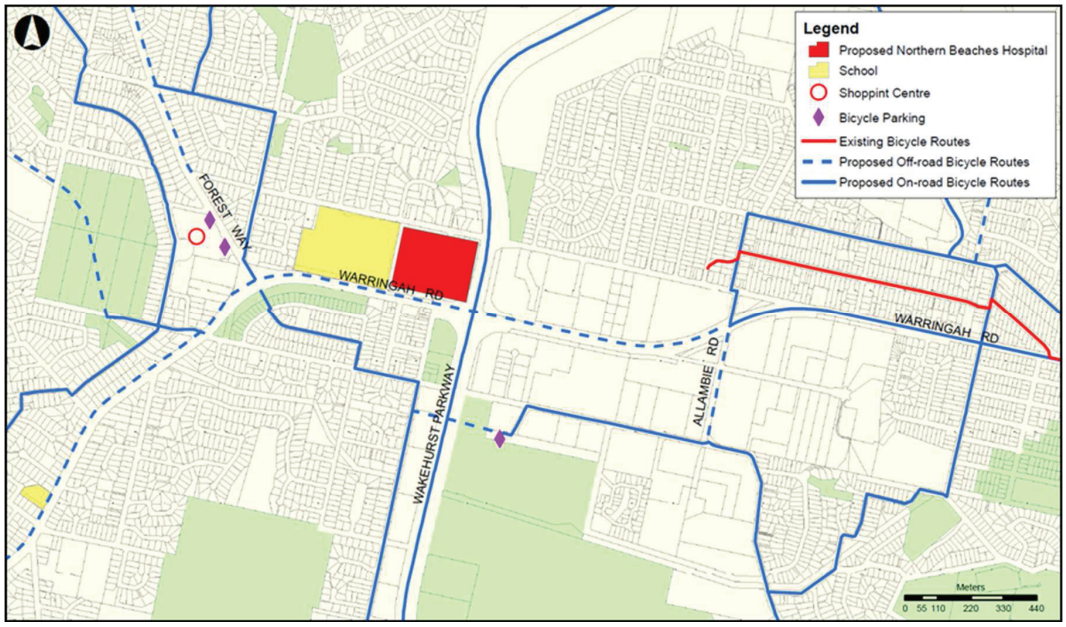


Figure 5-5: Existing and Proposed Bicycle Network

(Source: Warringah Bike Plan, Warringah Council, 2010)

Source: Roads and Maritime Cycleway Finder v3.0 (last updated 08/12/2017)

Existing cycle network surrounding project boundary

6 Construction traffic impacts

Potential impacts on traffic due to the construction of the Project were identified and assessed in the Stage 1 and Stage 2 EISs and the Stage 1 SPIR and Stage 2 Submissions report. Potential traffic generation and impacts arising from construction will vary throughout the Project as a consequence of Stage 1 and Stage 2 works being undertaken in isolation and during periods of overlap.

In accordance with Stage 1 CoA C27(e) and Stage 2 CoA D27(e) and the RSMM in the Stage 1 SPIR and Stage 2 Submissions Report, consideration is also given to the potential for cumulative construction traffic impacts. Other major developments identified in the Stage 1 and Stage 2 EISs in the surrounding area which have the potential to cause additional cumulative traffic impact during the Stage 1 and Stage 2 construction periods include the NBH project and the staged Mona Vale Road Upgrade project. Cumulative impacts are further addressed in section 6.11.

6.1 Traffic Generating Activities

6.1.1 Stage 1 construction traffic generation

The main traffic generating construction activities during Stage 1 comprise:

- spoil haulage by heavy vehicles;
- delivery of civil, concrete and paving materials;
- movements of construction equipment; and
- light vehicle movements (vans, utility pick-ups) associated with construction staff and contractors.

The following would be required to support these construction activities:

- temporary road closures;
- traffic diversions for general traffic and for buses;
- footpath and shared path diversions; and
- temporary restrictions to property access.

Daily construction traffic volume estimates up to 230 daily vehicle movements for Stage 1 based on the following vehicle movements split:

- up to 100 heavy vehicle movements (i.e. 50 heavy vehicles in and out);
- up to 30 light vehicle movements (external to the site construction compound); and
- up to 100 light vehicle movements (between the compound and work zone).

6.1.2 Stage 2 construction traffic generation

The main traffic generating construction activities during Stage 2 comprise:

- spoil haulage by heavy vehicles;
- delivery of civil, concrete and paving materials;
- movements of construction equipment;
- light vehicle movements (vans, utility pick-ups) associated with construction staff and contractors; and
- deliveries of large structures such as those required for structural beam installation works, which may involve oversize and/or slow moving vehicles.

The following would be required to support these construction activities:

- temporary road closures;

- traffic diversions for general traffic and for buses;
- footpath and shared path diversions; and
- temporary restrictions to property access.

Daily construction traffic volume estimates up to 750 daily vehicle movements for Stage 2 based on the following vehicle movements split:

- up to 490 heavy vehicle movements (i.e. 245 heavy vehicles in and out);
- up to 160 light vehicle movements (external to the site construction compound); and
- up to 100 light vehicle movements (between the compound and work zone).

6.2 Construction Traffic Impacts

In general, the Project activities during Stage 1 and Stage 2 construction works may potentially result in the following types of impacts:

- increased travel times due to road works restrictions and reduced speed limits around construction sites;
- increased travel times due to increased truck and construction machinery movements;
- construction traffic will have an impact during the construction stages of the project, approximately two years from the date of commencement;
- increased travel times due to potential rerouting/diversion to alternative routes;
- temporary partial or complete closure of roads and altered property access during construction;
- temporary changes to bus access arrangements, including stop relocation, resulting in increased walk distance for certain customers;
- temporary or permanent decrease in kerbside parking availability; and
- potential safety issues relating to increased heavy vehicle movements, as well as to higher traffic flows temporarily traversing lower-capacity road sections.

Although these impacts are likely to be temporary in nature, they could be significant. Key intersections in the road network already operate at or beyond capacity and the Project will be constructed while maintaining traffic flows, as there are limited opportunities for diverting through traffic to other routes. In addition, construction routes will utilise the existing road network. The impacts would be substantial if left unmitigated.

6.2.1 Stage 1 impacts

Substantial completion of construction for Stage 1 was achieved on 30 October 2018, and the roads in Stage 1 are open to the public and in operation. There are some defect repair works being undertaken, as well as maintenance activities ongoing in accordance with the contract requirements.

Temporary local impacts on key roads anticipated during construction include:

- **Naree Road/Frenchs Forest Road (Nov 2015 – October 2018)**
  - temporary disruption to private property access and The Forest High School, including vehicular access to driveways during road widening and pedestrian access on footpaths;
  - removal of kerbside parking;
  - changes to bus stop access;

- potential relocation of school bus operations servicing The Forest High School to Warringah Road;
- temporary traffic diversion from intersecting local roads to other local roads resulting in increased travel times, increased volumes on local roads, amenity, noise and access impacts;
- access restriction to properties on Gladys Avenue which do not have alternative ingress/egress opportunities, particularly during road widening works on Frenchs Forest Road; and
- potential increase in traffic delays and longer travel times as a result of capacity reduction due to partial road occupancy for construction activities.

- **Forest Way (Feb 2016 – December 2018)**
  - disruption to pedestrian access due to footpath closure, and potentially longer walk routes to pedestrian crossings; and
  - potential increases in traffic delays and longer travel times as a result of capacity reduction due to partial road occupancy for construction activities.
- **Warringah Road (between Government Road and west of Allambie Road) (Apr 2016 – December 2018)**
  - increased traffic delays due to reduction in capacity due to partial road occupancy for construction activities; and
  - temporary disruptions to property access during road widening activities.
- **Wakehurst Parkway (November 2015- October 2018)**
  - increased traffic delays due to reduction in capacity due to partial road occupancy for construction activities; and
  - disruption to pedestrian and cyclist access due to traffic diversions and footpath closure, and potentially longer walk and cycling routes.

6.2.2 Stage 2 impacts

During construction of Stage 2 there would be up to 490 heavy vehicle movements particularly during peak periods of construction such as during pavement, spoil movement and asphalt works. In addition, there would be approximately up to 260 light vehicle movements associated with onsite light vehicle movements and construction personnel travelling to and from the project site during construction.

Temporary local impacts on key roads anticipated during construction include:

- **Warringah Road (between Government Road and Fitzpatrick Avenue East) (Apr 2016 – project completion 2020)**
  - increased traffic delays due to reduction in capacity and temporary traffic diversion due to partial road occupancy for construction activities;
  - temporary traffic diversion, access restrictions or complete closure from intersecting local roads (Bantry Bay Road, Hilmer Street) resulting in increased travel times, increased volumes on local roads, amenity, noise and access impacts;
  - potential relocation of school bus operations servicing The Forest High School to Warringah Road;
  - temporary disruption to The Forest High School, including vehicular access during road widening and pedestrian and cyclist access on footpaths/footbridge;
  - temporary disruptions to property access during construction activities;

- temporary disruption to pedestrian and cyclist access over Warringah Road at Forest Way due to replacement of pedestrian bridge;
- temporary changes to bus stop locations and access arrangements potentially impacting pedestrian walking distance; and
- potential safety issues relating to increased heavy vehicle movements traversing lower capacity road sections.

- **Wakehurst Parkway (Apr 2016 – project completion 2020)**
  - increased traffic delays due to reduction in capacity, traffic diversions and access restrictions due to partial road occupancy for construction activities and access arrangements to the Aquatic Drive compound site.
- **Allambie Road/Rodborough Road (Apr 2016 – project completion 2020)**
  - potential safety issues relating to increased traffic volumes and heavy vehicle movements traversing lower capacity road sections;
  - temporary disruption to pedestrian and cyclist access at intersecting points with Warringah Road due to diversion of pedestrian and cyclist movements; and
  - temporary changes to bus stop locations and access arrangements potentially impacting pedestrian walking distance.
- **Forest Way (Apr 2016 – project completion 2020)**
  - disruption to pedestrian and cyclist access due to footpath closure, and potentially longer walk and cycling routes; and
  - potential increases in traffic delays and longer travel times as a result of capacity reduction due to partial road occupancy for construction activities.

6.3 Construction Traffic Routes

The effect of construction traffic on arterial road traffic flow is not anticipated to be substantial given that Warringah Road currently carries up to 80,000 vehicles per day. However, localised impacts may occur in proximity to site access points for construction vehicles.

Designated access and haulage routes for construction vehicles are, where practical, the arterial road network (Warringah Road west of Allambie Road, Wakehurst Parkway and Forest Way). Localised construction traffic movements will occur primarily on all roads being upgraded for Stage 1 (see figure 6-1). Access to individual properties along the construction area and adjacent connecting roads may be affected by construction activities.

6.3.1 Additional Roads Proposed for use

FYJV has investigated the surrounding road network and alternatives to further limit heavy and light vehicles on residential streets if possible and ancillary facilities to support Stage 1 and Stage 2 activities. Four new streets (Rodborough Road, Aquatic Drive, Bantry Bay Road and Dreadnought Road) have been identified.

- Rodborough Road: A local road which provides access to Warringah Road (east) from Allambie Road. Land use in the immediate surrounds is office/light industrial uses. No residential or sensitive uses front the area. By using this road (including out of hours), some vehicles would be directed away from Frenchs Forest Road East which contains both Skyline Shops and Residential Properties.
- Aquatic Drive: A local road which provides access to commercial/light industrial uses which front Warringah Road and Council's Aquatic Centre. A school is set back from the street and a small residential unit complex in this area. Aquatic Drive currently carries both light and heavy vehicle traffic for the commercial and light industrial uses. The project intends to utilise this road for heavy vehicles using the site compound at Aquatic Drive and allocated parking within the site compound.

- Dreadnought Rd: A local road which provides an egress to the Dreadnought South Compound from Wakehurst Parkway. The compound which is accessed via Dreadnought Rd falls within a road reserve owned by RMS although leased to council. Land use in the immediate surrounds includes a local school and church. Accordingly, the compound is utilised through the day period or during OOH with relevant notification and approvals.

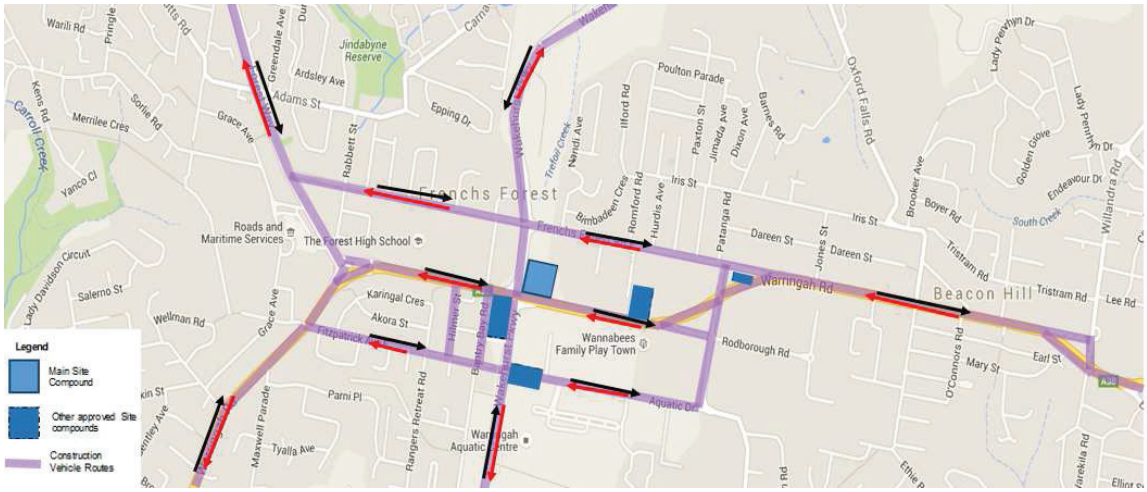


Figure 6-1: Construction vehicle routes July 2018 until project completion 2010

6.3.2 Proposed out of hours access (via local roads)

In accordance with Stage 1 CoA C16 and Stage 2 CoA D16, the Project proposes to use the following local roads out of hours during Stage 1 and Stage 2 construction works as detailed in Table 6-1. Justification for the purpose of use is also described.

Table 6-1: Local Roads to be used during Stage 1 and Stage 2

Local Road	Justification	Road Dilapidation Report Conducted?
Frenchs Forest Road (east)	Used by eastbound traffic on Warringah Road to access the Wakehurst Parkway/Warringah Road Compound. Between October 2017 and July 2018, Frenchs Forest Road east will be one way west bound.	Yes
Frenchs Forest Road (west)	Occasional use only for traffic directly related to approved out of hours works. Between October 2017 and July 2018, Frenchs Forest Road west will be one way west bound.	Yes
Naree Road	Occasional use only for traffic directly related to approved out of hours works.	Yes
Rodborough Road	To avoid use of Frenchs Forest Road (east) for vehicles leaving the Wakehurst Parkway/Warringah Road Compound and wanting to head Westbound along Warringah Road.	Yes

Local Road	Justification	Road Dilapidation Report Conducted?
Aquatic Drive	In connection with works related approved out of hours activities and use of the construction compound.	Yes
Bantry Bay Road	In connection with access into the planned Wakehurst Parkway (south) compound	Yes
Dreadnought Rd	In connection with works related approved out of hours activities and use of the construction compound.	Yes

6.4 Compound site access

The Construction Compounds and Ancillary Facilities Management Plan (CCAFMP) is provided as Appendix B8 of the CEMP, details the approved compounds for Stage 1 and Stage 2 works. Table 6-2 provides a summary of location and site use for the approved compound and ancillary facilities. These compounds were approved by DP&E as part of the Stage 1 CCAFMP approval. The location of these compounds are shown in Figure 6-1 above and described further in the CCAFMP.

Table 6-2 Approved construction compounds and ancillary facilities

Location	Use of Site	Access	Period of Use
Warringah Road/Wakehurst (intersection) Compound – north-east corner at the intersection of Warringah Road and Wakehurst Parkway	Used as main compound site to support construction of the Project including offices, amenities, parking, laydown and storage.	Warringah Road	September 2015 until six months following completion of the Project (2019)
Aquatic Drive compound – located off Wakehurst Parkway at west end of Aquatic Drive.	Minor ancillary facility, initially for storage, then adjusted for a temporary water treatment plant.	Aquatic Drive and Wakehurst Parkway	May 2016 to completion of the Project
Warringah Road/ Frenchs Forest Rd East (intersection) Compound – Eastern side of Frenchs Forest Rd East	Minor ancillary facility for parking, lay down areas, temporary stockpile management.	Warringah Rd and Frenchs Forest Rd East	June 2016 to early 2019
49 Frenchs Forest Road (East)	Minor ancillary facility, initially for storage and laydown area	Warringah Road	December 2016 to completion of Project
39 Frenchs Forest Road (East)	Use of existing DA approved Carpark on premises.	Forest Road East	July 2016 to completion of Project
500 Warringah Road	Minor ancillary facility for parking, lay down areas, temporary stockpile management.	Warringah Rd and Rabbett St	May 2017 to completion of the Project
Dreadnought Road	Minor ancillary facility for parking, lay down areas, temporary stockpile management.	Dreadnought Road	February 2017 to completion of the Project

6.4.1 Main Site Compound - Warringah Road/Wakehurst (intersection) Compound

The main site compound is located on RMS land on the north western corner of Warringah Rd and Wakehurst Parkway. The onsite layout of the site is shown in Figure 6-2.

Access to the site is from Warringah Road with left in/left out arrangement as indicated in the Stage 1 SPIR. The site will be utilised for the duration of construction of Stage 1 and Stage 2 of the Project. There will be no access off Wakehurst Parkway to the site compound.

The main site compound site has ready access to the main arterial road network via Warringah Road. Figure 6-1 shows the haulage routes for Stage 1 and Stage 2. The compound site is ideally located within the context of the proposed routes and would not require an additional haulage route during construction.

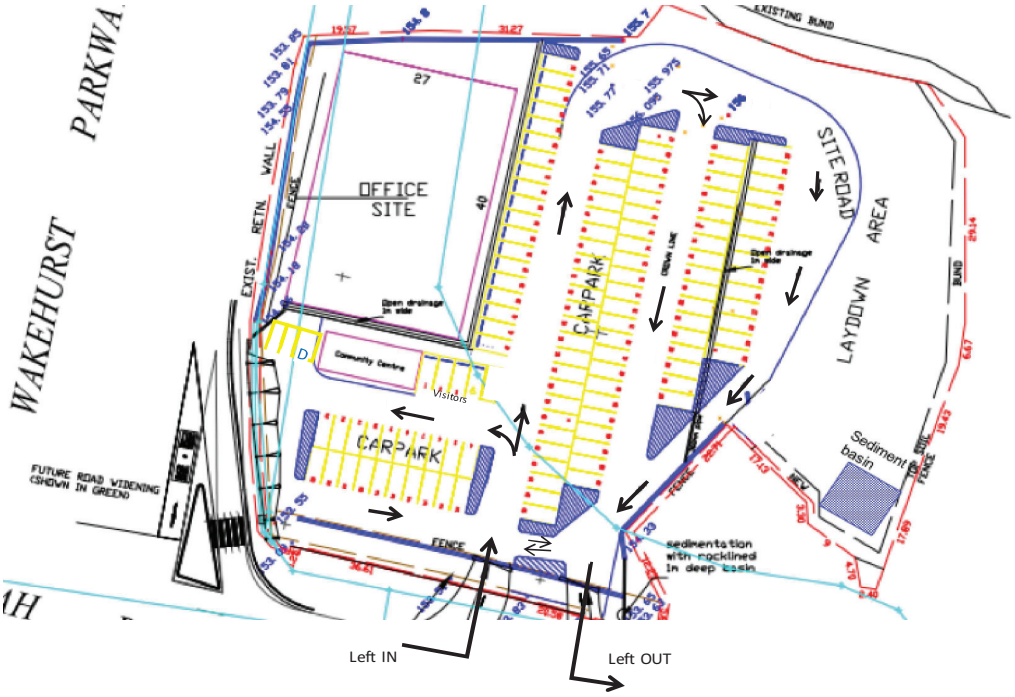


Figure 6-2 Warringah Road / Wakehurst Parkway Compound Layout

As detailed in Section 7.3.2 of the EIS, the estimated construction traffic movements during the Stage 1 Project are expected to reach 100 heavy and 100 light vehicle movements per day, or up to 15 heavy and 15 light vehicle movements per hour during the morning and evening peak hours, on the assumption that 15 per cent of total daily movements occur during the peak hours. The proposed estimated vehicle movements to the site compound would be approximately 100 light vehicles (staff and contractors) and approximately 2 heavy vehicles per day, 15 light vehicle movements per hour during the morning and evening peak hours, on the assumption that 15 per cent of total daily movements occur during the peak hours.

To supplement the main construction compound at Warringah Road/Wakehurst Parkway, two smaller approved ancillary facilities are located at Aquatic Drive and Wakehurst Parkway (south) as additional site compounds. These sites previously served as ancillary facilities (used by others) and will provide laydown and parking facilities away from residential properties to areas of commercial/industrial use. These sites are assessed further in the CCAFMP (Appendix B8 to the CEMP).

The effect of construction compound traffic on arterial road traffic flow is not anticipated to be substantial given that Warringah Road currently carries up to 80,000 vehicles per day while Wakehurst Parkway carries 20,000-30,000 vehicles daily. The proposed heavy and light vehicle movements have already been assessed within Section 7.3.2 of the EIS.

The main site compound layout and heavy movement turning paths, in and out of the compound is illustrated in Figure 6-2. The staff and visitors car park layout, including a disabled parking space (D) is also shown in Figure 6.2.

Heavy vehicle movement in access and egress of the compound will be off and into lane number one on Warringah Rd. This will minimise the traffic flow impact on Warringah Rd. All vehicle movements in and out of the compound will be in a forward direction as shown in Figures 6-3 and 6-4.

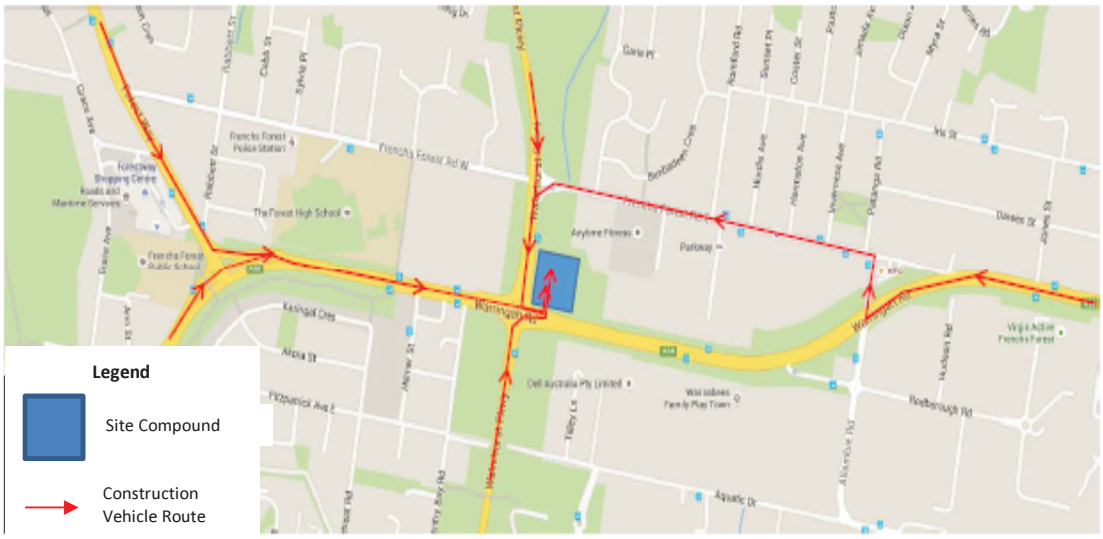


Figure 6-3: Wakehurst Parkway/Warringah Road site compound vehicle access - to the compound (left in only)

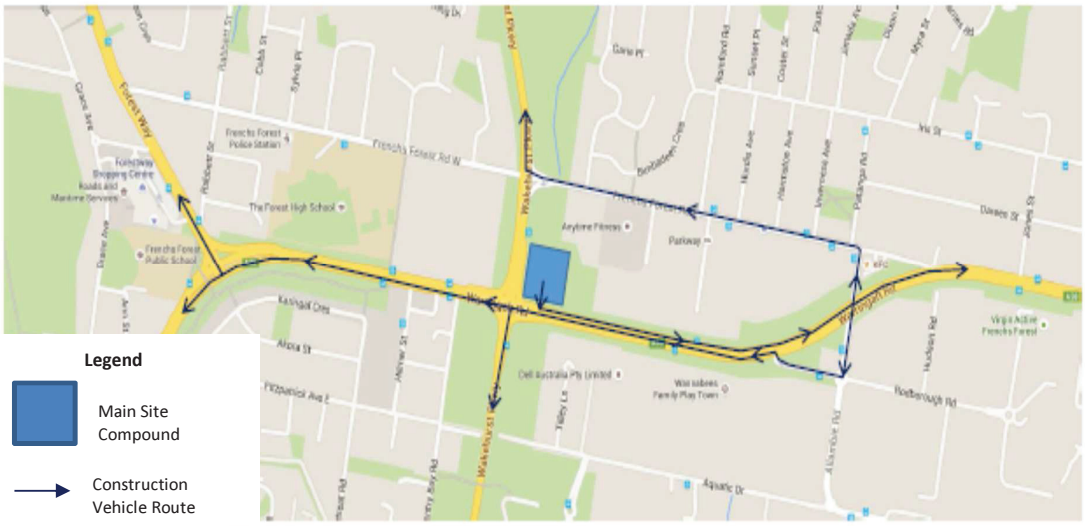


Figure 6-4: Warringah Road/Wakehurst Parkway site compound vehicle access - from the compound (left out only)

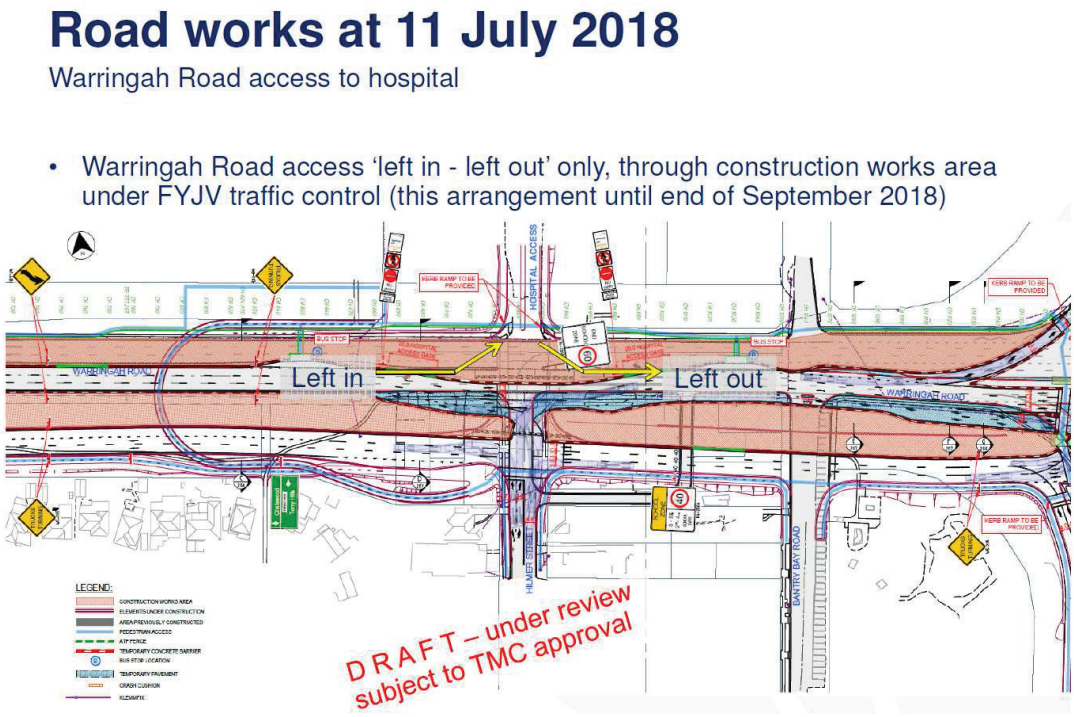


Figure 6-5: Wakehurst Parkway (south) site compound vehicle access

The site and access road has been selected to provide efficient and safe movement of plant and equipment, minimising the need to travel through residential areas and maximise use of the arterial road network as shown in Figure 6-1. Access for the site will be from Bantry Bay Road. The route currently permits heavy vehicles and is suitable for out of hours deliveries.

The site will require the preparation of a Traffic Control Plan which will detail the measures to manage the interaction between construction traffic and resident vehicles, pedestrian and cyclists.

A site specific Traffic Control Plan (TCP) in consultation with the Project Traffic and Transport Liaison Group (TTLG) will be prepared and will mandate traffic circulation to ensure safety and traffic requirements are met.

There would be no impacts to existing pedestrian, cyclist and private property access arrangements in the vicinity of the ancillary facility. Where changes are required, equivalent temporary facilities will be provided.

6.4.2 Aquatic Drive Compound

The compound is within the project footprint. As such, construction works in the area comprise of two fauna culverts under Aquatic Drive (north south direction), under Wakehurst Parkway (east west direction) see Figure 6-7 below, and a gross pollutant and storm water detention tank. The area would be restored with pavement, curb and gutter. The area is also used for a temporary water treatment plant. Aquatic Drive is accessible from Wakehurst Parkway right in north approach, left in south approach and left out south bound. Right out north bound from Aquatic would not be permitted.

The site is located on the edge of the light industrial/commercial area of Frenchs Forest. The nearest residential property is located approximately 95m west of the closest point, separated by Wakehurst Parkway. The site has been selected as it avoids the need for heavy vehicles travelling through residential areas. Access for the site would be from Allambie Road and into Aquatic Drive. This route currently permits heavy vehicles and is suitable for out of hours deliveries.

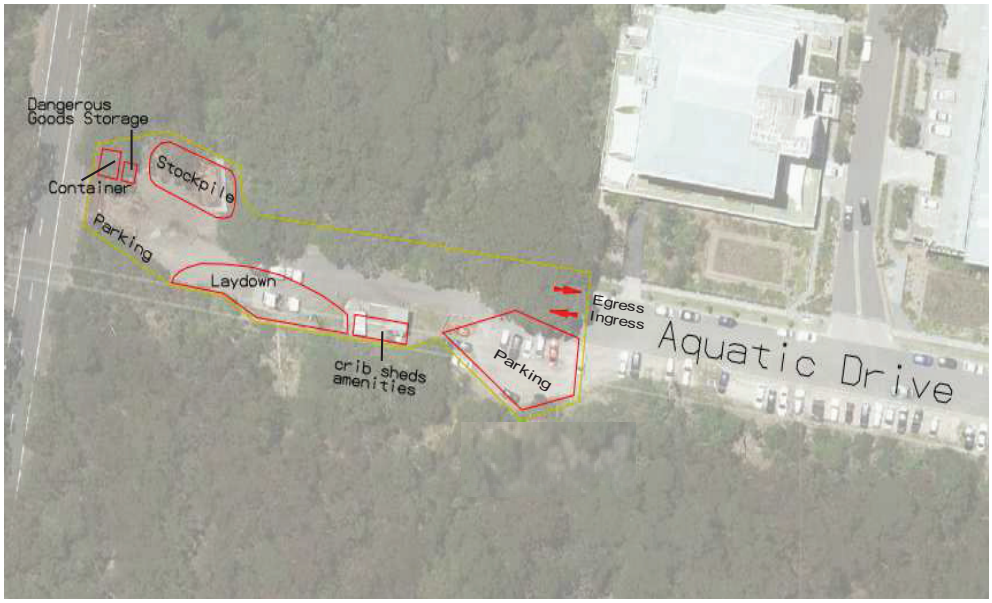


Figure 6-6: Aquatic Drive compound initial layout (this site is now amended to incorporate a temporary water treatment plant within the project footprint)

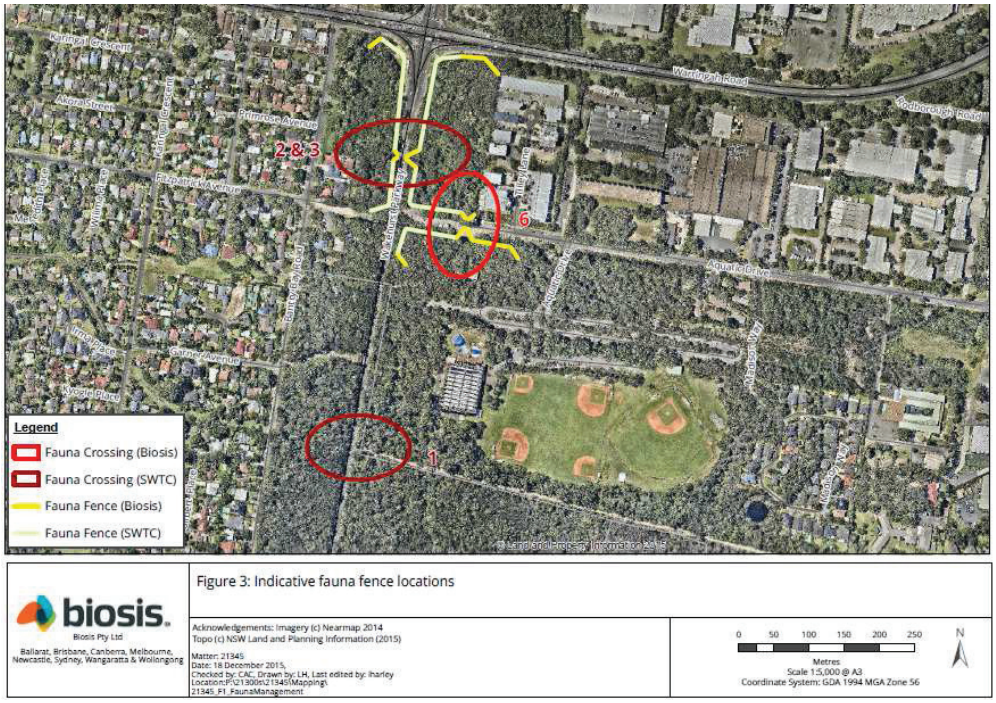


Figure 6-7: Aquatic Drive Fauna Crossings (2&3, 6)

6.4.3 Warringah Road/Frenchs Forest Rd East (intersection) Compound – Eastern side of Frenchs Forest Rd East

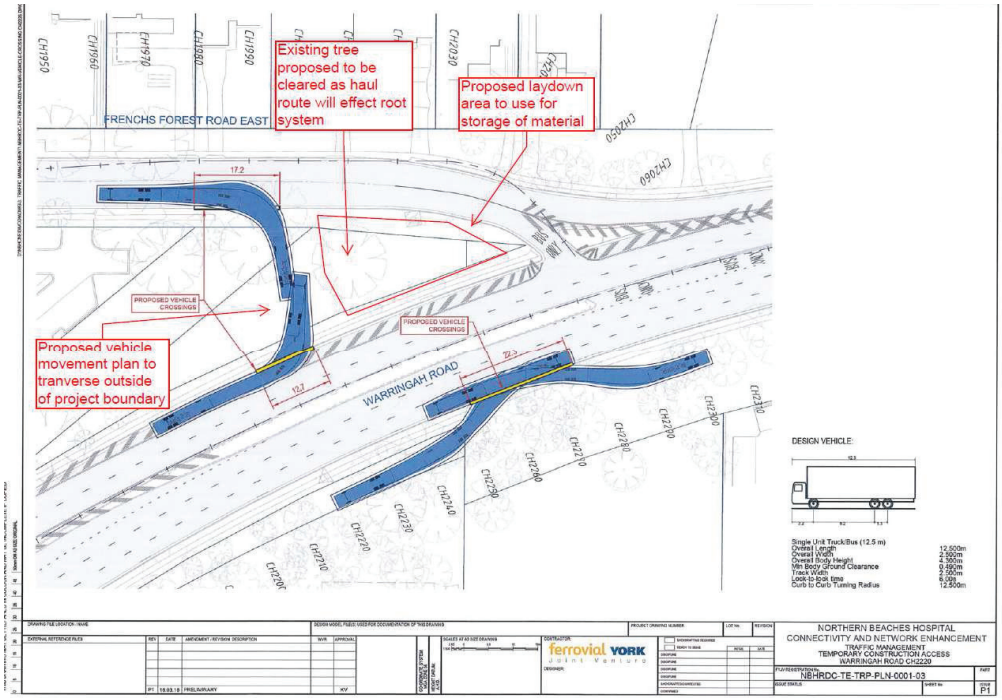


Figure 6-7: Warringah Road/Frenchs Forest Rd East (intersection) Compound – Eastern side of Frenchs Forest Rd East compound vehicle access and indicative layout

The ancillary facility was used in the early period of construction, and was closed and rehabilitated when stage 1 construction works were completed.

6.4.4 39 Frenchs Forest Road (East)

Due to the competition for car parking within the area, the Project has selected 39 Frenchs Forest Road East to consolidate parking without impacting on existing commuter/resident arrangements. The Project utilises the car park at the rear of the property, adjacent to Warringah Road for light vehicles until completion of construction. No other facilities are proposed.

The site has been selected as it is considered the closest possible location to the Project meeting all CoA requirements where all-day parking is available without unreasonably impacting the community.

The Project has entered into an agreement to utilise this area during the week and vacate the area on weekends to facilitate ongoing landuse over the weekend (such as markets on Sundays).

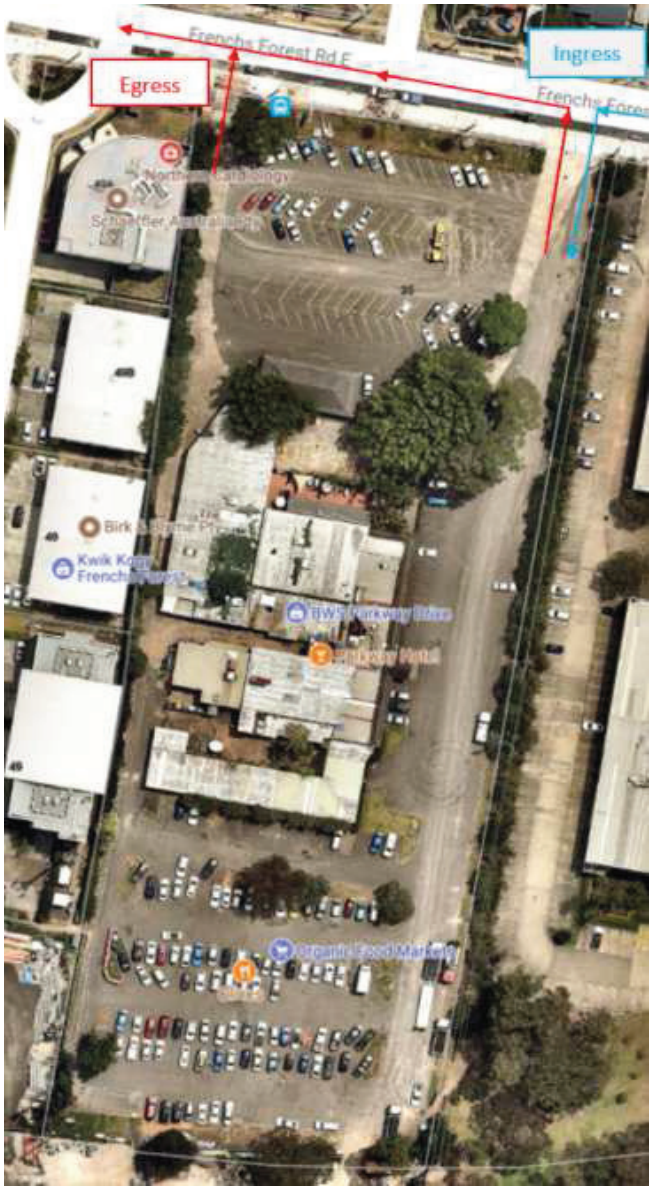


Figure 6-7: Aerial of car park

Access is via Frenchs Forest Road East, which feeds into the arterial road network.

There would be no impacts to existing pedestrian, cyclist and private property access arrangements as parking would be in areas where low parking demand exists during the week.

6.4.5 500 Warringah Rd

This ancillary facility is located at the intersection of Forest Way, Warringah Road and Rabbett Street. Forest Way and Warringah Road are major road used by light vehicles and heavy vehicles to access the northern beaches and beyond with heavy volumes experienced during daytime and weekends.

In addition, Forest Way and Rabbett Street forms a component of the local bus network with the last bus leaving Forest Way around 2am in the morning. Pedestrian facilities surround the site and are heavily utilised by the community with a mid-block signalised crossing on Forest Way. Key intersections are also signalised in the area to manage flows.

Access points currently exist on Forest Way and the eastbound slip lane onto Warringah Road.

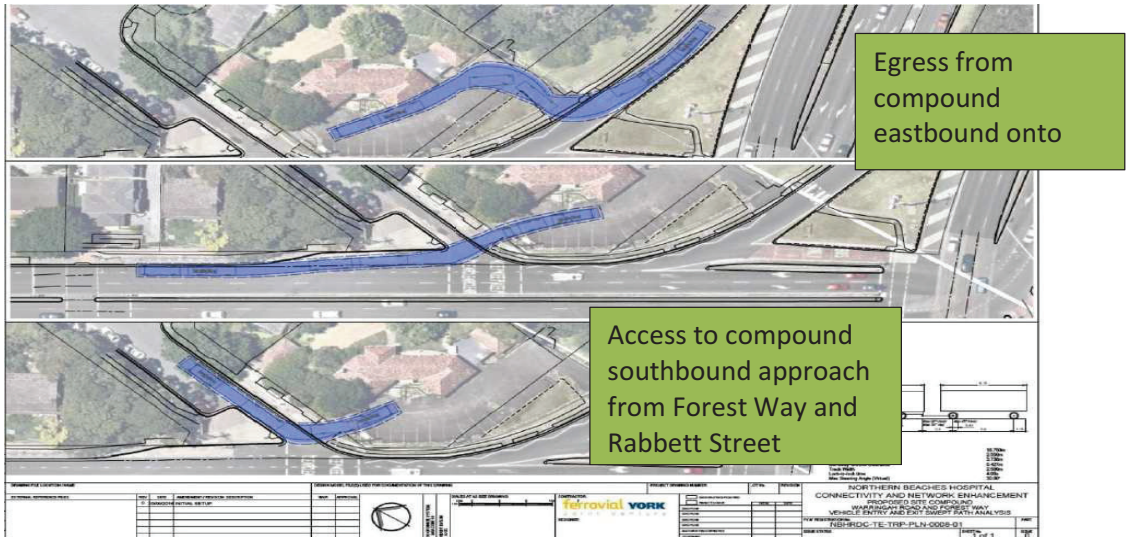


Figure 6-8: 500 Warringah Rd compound vehicle access and indicative layout

Ingress and egress for the site will be via a one-way circulation system to avoid internal conflicts and minimise congestion. A swept path analysis identified that a truck and dog would be able to access either driveway in a safe manner. Most trucks entering the ancillary facility will be approximately 10 meters in length with the occasional truck measuring approximately 20 meters. Should truck measuring over 10 meters enter the site, Traffic Control will be implemented.

A site specific traffic control plan is implemented to manage the vehicle movements and driver behaviour in and around the site. The Traffic Control Plan (TCP) mandates traffic circulation to ensure safety and traffic requirements are met. The Traffic Control Plan (TCP) objective is to provide a safe work area for both its workers and general public while maintaining the road network operational capacity by minimising lane closures and traffic stoppage during peak traffic periods. To manage impacts, the following specific traffic controls will be implemented:

- Heavy vehicles enter site off Forest Way.
- Light vehicles will enter the site off Rabbett Street.
- All vehicles will exit via the Warringah Road slip lane as there is sufficient sight distance to allow for movements.
- Truck turning and other warning signs will be erected.
- Using the existing speed reductions when using the site.

6.4.6 Dreadnought Road

The ancillary facility is located at the intersection of Wakehurst Parkway and Dreadnought Road. Wakehurst Parkway is a major road used by light vehicles and heavy vehicles to access the northern beaches, with peak traffic flows occurring between 8am to 10am and 4pm to 6pm weekdays.

The intersection is signalised with pedestrian access east/west on the north of the intersection. There is an existing pedestrian walkway on the southern side of Dreadnought Road which stops at the school boundary which services the roadside parking. The proposed laydowns will not affect this pedestrian movement. The site has been selected to provide efficient and safe movement of plant and equipment, minimising the need to travel through residential areas and maximise use of the arterial road network, specifically Wakehurst Parkway.

The two surrounding schools cause localised peaks around school opening and closing times being between 8am to 9am and 2pm to 3pm weekdays. The Oxford Falls Grammar School is access from Meatworks Road (off Dreadnought Road) and the St Pius X College uses the southern side of Dreadnought Road as a drop-off/pick up area. The C3 church increases local traffic when services and major functions are scheduled however that is mainly Sundays and out of hours. The site falls south to north and is positioned on a large sweeping bend which restricts the site distance for traffic entering Wakehurst Parkway from side roads or tracks. The Wakehurst Parkway speed limit is 80km/hr, Dreadnought Road is 50km/hr.

Ingress and egress for the northern site is via Wakehurst Parkway. The existing shoulder is be used as a deceleration lane while entering the site. The site traffic control plan is implemented to manage the vehicle movements to cross Wakehurst Parkway. For the southern area ingress will be via Wakehurst Parkway, egress is via Dreadnought Road to enable use of the existing signalised intersection to enter Wakehurst Parkway.

The Traffic Control Plans (TCP) for these location will mandate traffic circulation to ensure safety and traffic requirements are met. The Traffic Control Plan (TCP) objective is to provide a safe work area for both its workers and general public while maintaining the road network operational capacity by minimising lane closures and traffic stoppage during peak traffic periods.

The following specific traffic controls will be implemented for the south laydown and are detailed below:

- A concrete barrier placed at the end of the southern pedestrian walkway and Dreadnought Road to separate pedestrians and construction vehicles to ensure pedestrians do not cross the exit driveway to access Wakehurst Parkway. Signage to divert pedestrians would be employed to divert pedestrians to an existing footpath on the north side of the road to pass the area safely.
- The Wakehurst Parkway left turn lane will be used as a deceleration lane by entering vehicles.
- All vehicles will exit via Dreadnought Road and use the signalised intersection to re-enter Wakehurst Parkway.
- The deceleration lane and exit onto Dreadnought negate any requirement for speed restrictions.
- Truck turning and other warning signs will be erected.

The northern laydown has been assessed as unsuitable for general use because of the restricted access onto/off Wakehurst Parkway. This area is used short term under a specific TCP to haul and stockpile topsoil and mulch for later mixing and reuse on

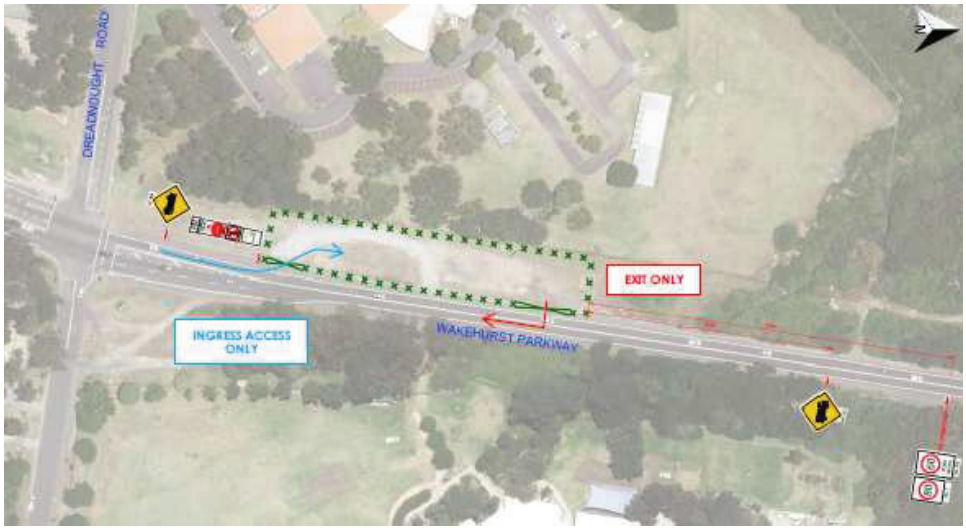
site. This method enables FYJV to implement specific traffic controls for these activities without disrupting the traffic flow for long periods of time.

Figure 6-9 Proposed access and egress for Dreadnought South compound

The specific controls to be implemented include:

- Minimising the duration of area use, estimated to be several weeks to fill and empty the stockpile.
- Temporary daytime speed reductions when transporting material to/from the stockpile.
- Ongoing review of controls and operation of the site to confirm effectiveness of site egress onto Wakehurst Parkway and need to restrict movements to a left-in and left-out arrangement.
- One-way traffic through the laydown area, with the exit positioned to maximise the site distance and using the signalised intersection to safely turn onto Wakehurst Parkway.

Figure 6-10 Proposed access and egress for Dreadnought North compound



6.5 Pedestrian and cyclist access

6.5.1 Stage 1 pedestrian and cyclist access impacts

Disruption to pedestrian movements on footpaths is anticipated, particularly along Frenchs Forest Road, requiring pedestrians to walk longer distances to access facilities or crossing locations, as well as potential increases in risk levels associated with footpath and crossing diversions. These impacts are further exacerbated for more vulnerable pedestrians including elderly and persons with disabilities.

Impacts on the existing Warringah Council designated cycle route along Iris Street could include increased vehicular traffic volumes that would be diverted from Warringah Road during construction the Stage 1 Project component between Allambie Road and Government Road. While there are no other existing designated cycle routes in the precinct that would be impacted by the Stage 1 Project construction, local (short-distance) cycling demand in the precinct could be affected in terms of increased general (diverted) and construction traffic volumes, as well as lane and shared path restrictions.

6.5.2 Stage 2 pedestrian and cyclist access impacts

Disruption to pedestrian movements on footpaths is anticipated along Warringah Road, particularly during replacement works of the pedestrian footbridge over Warringah Road at Forest Way, requiring pedestrians to walk longer distances to access facilities or crossing locations at times. These impacts are further exacerbated for more vulnerable pedestrians including elderly and persons with disabilities. Construction activities would also potentially lead to increases in risk levels associated with footpath and crossing diversions.

While there are no existing designated cycle routes in the study area that would be impacted by construction of the Stage 2 Project, local (short-distance) cycling demand in the precinct could be affected in terms of increased general (diverted) and construction traffic volumes, as well as lane and shared path restrictions.

6.6 Public transport

6.6.1 Stage 1 impact on public transport

Construction of the Stage 1 Project would have the following impacts to public transport operations:

- potential bus timetable delays due to road work speed restrictions and increased traffic congestion through key affected intersections;
- potential temporary removal of existing bus priority arrangements, particularly at the Wakehurst Parkway/Frenchs Forest Road intersection and on Wakehurst Parkway between Warringah Road and Frenchs Forest Road. This would mean that during limited periods of construction activity, buses would not have any priority at the intersection, and would have to mix with general traffic;
- alterations to bus stop arrangements, locations and access, including potentially decreased bus passenger waiting areas; and
- bus manoeuvres on the Forest Way/Naree Road intersection.

Impacts would be primarily to Frenchs Forest Road (Routes 136 and L60), Warringah Road (east of Allambie Road for Routes 169, 173 and E69), buses running along Forest Way (Routes L70, 270, 279, 281, 282, 283 and 284), and buses along the section of Allambie Road north of Aquatic Avenue (Routes 142, E66 and 280).

6.6.2 Stage 2 impact on public transport

Construction of the Stage 2 Project would have the following impacts to public transport operations:

- potential bus timetable delays due to road work speed restrictions and increased traffic congestion through key affected intersections;
- potential temporary removal of existing bus priority arrangements meaning buses would not have priority at some intersections during some periods of construction (buses would mix with general traffic); and
- alterations to bus stop arrangements, locations and access, including potentially decreased bus passenger waiting areas.

Stage 2 construction will primarily impact on buses that operate along Warringah Road and Wakehurst Parkway including Bus Routes 137, 169, 280 and L60. 'Knock on' effects for buses may also be experienced to routes that travel across the work area along Warringah Road.

6.7 Impacts to traffic operations of The Forest High School

6.7.1 Stage 1 impacts to traffic operations of The Forest High School

The following impacts to The Forest High School are anticipated:

- restricted vehicular access for school staff to access the off-street car parking areas;
- altered school bus stop arrangements, including kerbside use east of the Gladys Avenue intersection and school bus manoeuvres on Frenchs Forest Road West;
- restrictions to on-street parking and "kiss-and-ride" activity on Frenchs Forest Road West, particularly on the northern side;
- temporary diversions to pedestrian footpaths and crossings; and

6.7.2 potential increased safety risks to school students and staff associated with increased construction traffic movements, including heavy vehicles and equipment.Stage 2 impacts to traffic operations of The Forest High School

Construction related impacts to the school would be predominantly related to the Stage 1 Project, albeit the following impacts to The Forest High School are anticipated from the Stage 2 Project:

- reduced travel speeds and increased travel times for staff, parents and students accessing the school;
- temporary diversions to pedestrian footpaths and crossings; and
- potential increased safety risks to school students and staff associated with increased construction traffic movements, including heavy vehicles and equipment.

Construction-related impacts on Frenchs Forest Public School would be similar to those for The Forest High School related generally to reduced travel speeds, inconvenience due to temporary diversions for pedestrians and cyclists, and increased exposure to risk due to construction traffic.

6.8 Impacts to kerbside parking

6.8.1 Stage 1 impacts to parking

Alterations to kerbside parking arrangements would be required for construction, particularly along Frenchs Forest Road. This would potentially shift current kerbside parking demand along the Stage 1 Project construction zones to side streets.

The demand for kerbside parking is currently at a level that could be temporarily accommodated along side streets, except for:

- Naree Road, where a high demand for commuter car parking has been observed. Construction of the Stage 1 Project would potentially shift commuter parking demand around the Naree Road/Rabbett Street area further to the north. Parking surveys indicate that there would be sufficient capacity on unrestricted parking spaces along Rabbett Street north of Naree Road to accommodate displaced kerbside parking on Naree Road.
- Frenches Forest Road between Wakehurst Parkway and Allambie Road which is in demand for parking during Sunday markets (adjacent to the Parkway hotel). Most construction work would be limited from Monday to Saturday, thereby avoiding Sunday market parking impacts. Limited parking is available within the market area, however a shift to local side streets are likely to increase during any periods of construction work that is required out of hours. Strategies to minimise disruption to parking would be considered as part of traffic management planning during these occasions.

6.8.2 Stage 2 impacts to parking

On-street car parking is currently prohibited on Warringah Road, Forest Way, Wakehurst Parkway and Allambie Road within the study area. Whilst it is anticipated that some on-street car parking will be permanently lost as part of the Stage 2 Project, it is not anticipated that any additional on-street car parking will be lost as part of any temporary work associated with the Stage 2 Project.

6.9 Property access

6.9.1 Stage 1 impacts to property access

There is potential for access to individual properties along the Stage 1 Project construction area and adjacent connecting roads to be affected by construction activities. However, property access would need to be maintained throughout construction of the Stage 1 Project, unless otherwise agreed with property owners and businesses, to limit the duration of any impacts, in accordance with the Stage 1 SPIR management measures.

6.9.2 Stage 2 impacts to property access

A small number of properties (residential and businesses including Bantry Bay shops) have direct vehicle access to Warringah Road within the Stage 2 Project area, and most of these properties will be acquired. However, in circumstances where vehicular access restrictions are necessary, alternative temporary access arrangements would need to be agreed with affected properties in compliance with the Stage 2 Submissions Report management measures.

Stage 2 also has the potential to impact access to the NBH project site from Warringah Road. An interface agreement has been established with Health Infrastructure which identifies requirements related to traffic management and access during construction of the projects, including access to respective construction sites.

6.10 Emergency services

There is potential for delays to response times for emergency services due to construction of the Project. Delays due to construction activities, queuing traffic and reduced speed limits may disrupt emergency services.

6.11 Cumulative construction traffic

Cumulative traffic impacts may occur as a result of overlapping of construction activities for Stage 1 and Stage 2 of the Project and the construction of the NBH and the Mona Vale Road Upgrade. Cumulative impacts would be substantial if left unmitigated.

The Stage 1, Stage 2 and NBH construction works will all use the arterial road network (i.e. Warringah Road, the Wakehurst Parkway and Forest Way) for construction access routes, with a portion of the Mona Vale Road traffic potentially diverted to Warringah Road. These additional construction traffic movements could further use up limited capacity on the network, particularly if undertaken during peak commute periods.

The cumulative transport impacts of construction of the Stage 1 Project, the Stage 2 Project and the NBH project is expected to be significant, and need to be carefully considered to inform integrated scheduling of construction activities for each Stage. The construction of the Mona Vale Road upgrade would potentially overlap during the latter phases of construction of these projects by six to twelve months.

During the Stage 1 Project construction along Frenchs Forest Road, through traffic currently using Frenchs Forest Road as a preferred through route would divert to Warringah Road. However, when Warringah Road capacity becomes restricted during the Stage 2 Project construction, a portion of through traffic would be expected to divert to Frenchs Forest Road, particularly when that project's construction is staged in a manner that the additional traffic capacity on Frenchs Forest Road as part of the Stage 1 Project could be utilised to accommodate diverted traffic from Warringah Road during the Stage 2 Project construction. If both Frenchs Forest Road and Warringah Road traffic capacities are restricted as a result of construction staging, the cumulative transport impacts of such a scenario would create significant traffic delays.

These delays from these cumulative impacts would also significantly affect bus travel times in the precinct, for both regularly-scheduled buses as well as school buses.

The road network in the precinct is constrained in both east-west and north-south movements. The key east–west routes are limited to Warringah Road and Frenchs Forest Road, while the key north south routes are limited to Wakehurst Parkway and the Forest Way–Allambie Road route.

In the 2012 Base Conditions traffic modelling, the Allambie Road/Warringah Road intersection and the Naree Road/Frenchs Forest Road West/Rabbett Street intersection were already operating at Level of Service (LoS) E during peak periods, and additional construction traffic generated during peaks would further worsen its operating condition. This could be expected to result in LoS F at these locations.

It is also likely that the operation of the four intersections already operating at LoS F during the peak periods:

- Forest Way/Adams Street intersection;
- Forest Way/Warringah Road intersection;
- Wakehurst Parkway/Frenchs Forest Road intersection; and
- Wakehurst Parkway/Warringah Road intersection.

Other potential cumulative impacts due to construction activities of the Stage 1 Project, Stage 2 Project and the NBH project will be considered during detailed design and construction planning to address potential impacts on access to properties on Frenchs Forest Road West and access to The Forest High School and to resolve potential traffic and transport related impacts and to assist coordination of construction activities.

7 Traffic management

7.1 Traffic management measures

A range of environmental requirements and control measures are identified in the Stage 1 and Stage 2 EISs, Stage 1 SPIR and Stage 2 Submissions Report, Project Approvals and other RMS documents. Mitigation and management measures will be implemented to avoid, minimise or manage impacts to traffic. Further details on the key issues relating to traffic management are provided in this chapter.

The measures have been prepared in accordance with RMS *QA Specification G10 - Control of Traffic and Traffic Control at Work Sites Manual (2010).*

Construction activities will be staged to allow traffic movements along alternative roads where possible. Where road closures would be required, construction activities will be undertaken in a manner that minimises reduction in traffic capacity, particularly by limiting peak periods.

Road closures will be staged to allow priority for traffic movements in the peak direction, and alternative diversion routes provided. These diversions may include roads in the wider area beyond the immediate precinct.

Property access will be maintained throughout construction of the project, unless otherwise agreed with property owners and businesses, to limit the duration of any impacts.

Management measures and requirements to address the Stage 1 impacts on traffic are outlined in Table 7-1.

Management measures and requirements to address the Stage 2 impacts on traffic are outlined in Table 7-2.

Table 7-1: Stage 1 traffic management and mitigation measures (including management of cumulative impacts)

Stage 1 ID	Stage 1 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
GENERAL TRAFFIC IMPACTS					
TAMP1	A Construction Traffic and Access Management Plan would be developed as part of the CEMP to ensure traffic and access controls are implemented to avoid or minimise impacts on traffic, pedestrian and cyclist access, and the amenity of the surrounding environment. The Plan shall be developed in consultation with the Council, emergency services, road user groups, Health infrastructure, The Forest High School Working Group, and include, but not necessarily be limited to: (i) identification of construction traffic routes and construction traffic volumes (including heavy vehicle/spoil haulage) on these routes; (ii) details of vehicle movements for construction sites and site compounds including parking, dedicated vehicle turning areas, and ingress and egress points; (iii) discussion of construction impacts that could result in disruption of traffic, public transport, pedestrian and cycle access, access to public land, property access, rat runs, including details of oversize load movements, and the nature and duration of those impacts; (iv) details of management measures to minimise traffic impacts and maintain road capacity measures, onsite vehicle queuing and parking areas and management measures to minimise peak time congestion and measures to ensure safe pedestrian and cycle access; (v) details of measures to maintain or provide alternative safe and accessible routes for pedestrians throughout the duration of construction, including provision of replacement kiss and ride, bus stops, pedestrian and cyclist access and paths where necessary;	SPIR CoA C28(c)	Pre-construction	Traffic Manager	This Plan
	(vi) details of measures to maintain connectivity for cyclists, with particular emphasis on providing adequate access between key existing cycle routes; (vii) details of measures to manage traffic movements, rat runs, parking, loading and unloading at ancillary facilities during out-of-hours work;				

Stage 1 ID	Stage 1 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
	(viii) details of methods to be used to communicate proposed future traffic changes to affected road users, pedestrians and cyclists, consistent with the Community Communication Strategy required under condition C1; (ix) an adaptive response plan which sets out a process for response to any traffic, construction or other incident; and (x) mechanisms for the monitoring, review and amendment of this plan.				
TAMP2	Subject to safety reasons and other environmental impacts (e.g. noise), construction traffic movements would be limited to off-peak periods, with peak period construction staggered to minimise construction traffic during these periods.	SPIR	Pre-construction Construction	Supervisor Construction Manger	Construction Sequencing VMP
TAMP3	A Road Occupancy Licence (ROL) will be obtained from the Transport Management Centre prior to undertaking changes to the road network and traffic systems for the staged construction of the Project Works.	SPIR *Roads Act 1993*	Construction	Traffic Manager	ROL
TAMP4	Individual Traffic Control Plans (TCP's) will be prepared for each construction zone in consultation with relevant authorities, Councils and other agencies, prior to commencement of substantial construction on each site.	SPIR	Construction	Traffic Manager Engineer	TCP
TAMP5	Traffic Control Plans shall be incorporated within the Construction Method Statements.	G10	Construction	Engineer	CMS
TAMP6	Sufficient capacity would be provided within site compound boundaries to avoid the need for on-street queuing.	CoA C18(a) CoA C18(b)	Construction	Construction Manager	CCAFMP
TAMP7	Idling and heavy vehicle queuing in local residential streets outside the Project boundaries would be discouraged with scheduling undertaken to stagger movements and a need to park in the side streets which are off Frenchs Forest Road (east and west). Should parking be required on-street, it would be undertaken within the project or in areas where residential properties do not directly adjoin.	SPIR CoA C18(b)	Construction	Supervisor Foreman	Toolboxes
TAMP8	When approval is granted to work out of hours the relevant VMP shall be updated to include the changed conditions and include items typically included in the VMP's such as parking, signs, days and hours of operation, etc.;	R10	Construction	Traffic Manager	Out of Hours Permit

Stage 1 ID	Stage 1 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
TAMP9	Delivery or pick-up of items of plant that are not able to utilise the off-road facility may be able to use the road/public space subject to a TCP and ROL approval and the associated controls for supervision, record keeping, etc. defined in this plan; and	R10	Construction	Supervisor	Out of Hours Permit
TAMP10	All access points will be designed to accommodate the expected design vehicles for which it is intended (generally Austroads design principals) which will be key for VMP's.	R10	Construction	Supervisor	VMP
TAMP11	A Traffic and Transport Liaison Group (TTLG) would be established for the Project.	SWTC	Pre-construction	Traffic Manger	Minutes of TTLG
TAMP12	Temporary reduction in speed limits may be implemented to comply with Work Safety requirements and enhance road safety through temporary construction zones that impact on traffic flows. Prior to implementation, consultation with RMS/Transport Management Centre and NSW Police Service would occur to determine the limits and protocols of the proposed speed limit restrictions and strategies to enforce these speed restrictions through work sites. In addition, the Local Councils will be consulted prior to installation of any speed limit changes on local roads.	R10	Construction	Traffic Manger	Minutes of TTLG
TAMP13	The early implementation of directional signposting, driver information signposting and variable message signs to provide advance warning of changes to traffic conditions, is a key element in the project strategy to minimise disruption to traffic.	SPIR G10	Construction	Traffic Manager	TCP
TAMP14	Should a significant change be detected in LoS, two options would be considered in consultation with the TTLG: Change to phasing or restriction of movements. Whilst changes may be endorsed by the TTLG, Transport Management Centre would be final determining authority based on overall network considerations.	Good Practice	Construction	Traffic Manger	Minutes of TTLG
TAMP15	Prompt removal of redundant signage from the area would be undertaken to avoid confusion.	Good Practice	Construction	Traffic Manger	Records
TAMP16	The traffic conditions and constraints on road occupancy identified that require to be maintained during the works shall be controlled in accordance with the requirements of the RMS QA Specification G10.	SPIR G10	Construction	Traffic Manager Engineer	ROL
TAMP17	Staging of works shall be undertaken consistent with the principles for internal staging detailed in section 7.2.3. These details would be incorporated in future staging drawings which would also include traffic flow arrangements, internal vehicle movement, turning and parking.	G10	Construction	Traffic Manager Engineer	Staging Plans

Stage 1 ID	Stage 1 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
DILAPIDATION ASSESSMENTS					
TAMP18	Prior to construction, a suitably qualified and experienced independent expert shall prepare a Road Dilapidation Report for all local roads utilised as Haulage route(s) for construction vehicles associated with the SSI. The Report shall assess the current condition of the road and describe mechanisms to restore any damage that may result due to its use by traffic and transport related to the construction of the SSI. The Report shall be submitted to the Council for review prior to the commencement of haulage. Following completion of construction, a subsequent Report shall be prepared to assess any damage to the road that may have resulted from the construction of the SSI. The Reports shall be compatible with Council's existing pavement management system and collect data on roughness, rutting, cracking and patching before and after works. 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 Council, and at the full expense of the Proponent.	CoA C19	Pre-construction	Construction Manager	Dilapidation Report
TRAFFIC ROUTES					
TAMP19	Priority would be given to the use of the arterial road network for construction vehicle access routes.	SPIR	Construction	Traffic Manager	VMP TCP
TAMP20	Access to the proposed construction compound at the north eastern corner of Warringah Road and Wakehurst Parkway would need to be designed to RMS standards. While it is expected that there would be construction traffic along various sections of Frenchs Forest Road as part of the construction activity, use as a through route for construction vehicles during the Stage 1 Project construction would be minimised.	C15 C16	Pre-construction Construction	Construction Manager	TCP
TAMP21	Local roads, including Rodborough Road and Aquatic Drive would also occur as part of the Stage 1 Project to minimise heavy vehicles travelling through residential areas and facilitate access to construction compounds	C15 C16	Pre-construction Construction	Construction Manager	TCP
TAMP22	Key construction tasks requiring heavy vehicle movements would need to be undertaken as much as possible outside the peak commute periods between 7–9am and 4–6pm.	SPIR	Construction	Traffic Manager Foreman	Toolbox

Stage 1 ID	Stage 1 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
TAMP23	Use of compound sites would be subject to a site-specific traffic control plan under the proposed construction traffic management plan	SPIR G10	Pre-construction Construction	Traffic Manager	TCP
TAMP24	Regular monitoring of local streets that exhibit increases in traffic and would be carried out and would include consultation with Council with regard to temporary measures that could be implemented to manage safety and related issues.	SPIR	Construction	Traffic Manager	Inspections, Audits
PROPERTY ACCESS					
TAMP25	Access to properties along affected roads would be maintained during construction. The need for any alternative and/or temporary access arrangements would be agreed with affected property managers/owners.	CoA B12	Construction	Community Manager Engineer	TCP
TAMP26	Where there will be minor impacts on access during the installation of traffic signals and other works diversions or alternative arrangements will be put in place to control access. The details of controls for maintaining access will be provided on individual TCPs.	CoA B12	Construction	Community Manager Engineer	TCP
SKYLINE SHOPS AND FOREST HIGH					
TAMP27	Replacement parking for the Skyline Shops and The Forest High School shall be provided prior to the loss of associated parking, unless otherwise agreed by the Secretary.	CoA B15	Pre-construction	Design Manager	Detail Design
TAMP28	Signage would be provided to inform drivers of the access restrictions on Patanga Road.	R10	Construction	Traffic Manager	TCP
TAMP29	For vehicles wishing to access the Skyline Shops, compensatory parking would be provided along Frenchs Forest Road East	CoA B15	Construction	Design Manager	Detail Design
TAMP30	A plan for maintaining vehicle access to The Forest High School, in particular service and emergency vehicle access, would need to be incorporated into any construction traffic management plan that would be prepared for construction activities along Frenchs Forest Road West. The designated access location to The Forest High School should be clearly signposted, with directional guide signs installed at appropriate locations.	CoA B15	Pre-construction	Design Manager	Detail Design
PUBLIC TRANSPORT					
TAMP31	All existing bus stops on Frenchs Forest Road would be relocated during road widening works, most within the same general local area. Relocations would occur as part of specific road widening construction activities and be progressively transferred to a nearby temporary location	SPIR	Construction	Traffic Manager	TCP

Stage 1 ID	Stage 1 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
TAMP32	Relocation of bus stops, where required would occur following discussion with Forest Coach lines and Sydney Buses. Appropriate notifications will be provided to all bus patrons in advance. The same capacity as existing will be maintained if bus stops are to be temporarily relocated.	SPIR	Construction	Traffic Manager	TCP
TAMP33	Kiss and ride zones and existing bus stops will be either maintained or provided at an alternative location if required. Prior to any facilities being relocated, appropriate consultation with all relevant companies, authorities will be carried out.	SPIR	Construction	Traffic Manager	TCP
TAMP34	The Traffic Manager will identify and implement measures to facilitate public transport operational efficiency and usage and shall maintain regular critique with representatives of RMS, TfNSW, Councils, NSW Police, Sydney Buses, Local Bus companies, Bus & Coach Association, and the NSW Taxi Council.	SPIR	Construction	Traffic Manager	Minutes of TTLG
PEDESTRIAN AND CYCLIST ACCESS					
TAMP35	Temporary traffic infrastructure and temporary works shall include provision for cyclist access, ensuring all temporary works are “cycle safe” and road pavement surfaces are maintained during the construction period to an acceptable standard.	C17	Construction	Traffic Manager Traffic Controller	TCP
TAMP36	The importance of pedestrian and cyclist safety during the construction stage will be impressed upon field personnel through induction and ongoing training programs.	SPIR	Construction	Traffic Manager Traffic Controller	Toolbox, VMP
TAMP37	Provisions for pedestrians and cyclists will ensure that safe, DDA compliant and efficient routes and appropriate road crossings are provided for all significant pedestrian demands (including more vulnerable pedestrians including elderly, persons with disabilities and persons with prams).	B16	Construction	Traffic Manager Engineer	TCP
TAMP38	Construction staging for the project will require works to be carried out on and adjacent to public footpaths. Staging will also require some sections of footpath to be temporarily narrowed or diverted to provide road space for traffic diversions.	B16	Construction	Traffic Manager Engineer	TCP
TAMP39	All of the work sites and staging activities that affect pedestrian control and management will be identified and shown in the TCPs, when and where is require.	B16	Construction	Traffic Manager	TCP
TAMP40	In areas where footpaths are temporarily narrowed adjacent to traffic, a physical barrier will be provided to ensure separation of pedestrians and vehicles.	B16	Construction	Traffic Manager	TCP

Stage 1 ID	Stage 1 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
TAMP41	Pedestrian sidetracks shall be designed to be as direct as possible and to avoid unnecessary crossing of streets. Sidetracks and diversions shall be signposted where required to improve direction.	B16	Construction	Traffic Manager Engineer	TCP
TAMP42	Pedestrians will be separated from construction areas by perimeter hoardings, para-web fencing, NJ barriers or other physical barriers.	B16	Construction	Construction Manager	TCP
TAMP43	The surface of temporary footpaths shall be maintained even, free draining and non-skid, typically using temporary asphalt.	B16	Construction	Construction Manager	Temporary works design
TAMP44	FYJV will fence the whole of the Construction Site as necessary to prevent unauthorised pedestrian access and to enhance pedestrian safety.	B16	Construction	Construction Manager	Temporary works design
TAMP45	Where necessary, a traffic controller will assist safe pedestrian movements around the construction site.	C17	Construction	Traffic Manager Traffic Controller	TCP, VMP
DETAIL DESIGN					
TAMP46	Roads and Maritime would continue to consult with the Department of Education and Communities, The Forest High School and other stakeholders during detailed design to ensure appropriate consideration of all relevant issues relating to safe access to the school.	B16	Detailed Design	Design Manager Community Manager	Consultation Records
TAMP47	Council's requirements would be included as design parameters/ objectives for detailed design of Road and footpath cross falls.	SPIR	Detailed Design	Design Manager	Design lots
TAMP48	Construction of new and relocated permanent bus shelters would be carried out in accordance with Council's design requirements and applicable disability access standards. This would include appropriate consultation with Council. Reconfiguration of the waiting facilities associated with the northbound bus bay in Forest Way at the Forestway Shopping Centre would be further considered during detailed design.	SPIR	Construction	Design Manager	Detail Design lots
TAMP49	Development and finalisation of the wayfinding strategy would include consultation with Council. Development of the strategy would address all relevant issues including number of signs, and types and locations of directional signage for all road users.	SPIR	Construction	Design Manager	Detail Design lots
TAMP50	Continue to work with Council to determine if further parking can be implemented on local roads adjacent to Frenchs Forest Road and Naree Road.	SPIR	Construction	Design Manager	Detail Design lots
TAMP51	Shared paths would generally conform to a three metre width as a desirable minimum and a 2.5 meter width as an absolute minimum to avoid impacting on utilities and trees, etc.	SPIR	Detail Design	Design Manager	Design Lots

Stage 1 ID	Stage 1 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
TAMP54	Where reasonable and feasible, the Project shall Investigate of the delivery of cycle facilities along Wakehurst Parkway (north) of Frenchs Forest Road to the extent of the Project.	CoA B14	Detail Design	Design Manager	Design Report
TAMP55	Where reasonable and feasible, the Project shall Investigate facilitating left turn movements from Patanga Road to Frenchs Forest Road East. Where movements cannot occur, a suitable alternative shall be available and managed as per CoA B15.	CoA B15	Detail Design	Design Manager	Design Report
CUMULATIVE IMPACTS					
TAMP56	Consultation would be undertaken with Health Infrastructure to coordinate scheduling of construction activities and deliveries.	Roads and Maritime	Pre-construction Construction	Construction Manager	Minutes of Meetings
TAMP57	Consultation would be undertaken with Health Infrastructure regarding the need for construction access to the hospital site to focus on the Warringah Road and Bantry Bay Road intersection.	Roads and Maritime	Pre-construction	Construction Manager	Minutes of Meetings
QUEUE MANAGEMENT					
TAMP58	Queue Management for the Stage 1 Project would utilise the following: • Site superintendent, supervisor, and Traffic Controllers, will monitor oncoming traffic queuing distances and release traffic if queue exceeds allowed limits in accordance with ROL, • All TCPs will be appropriately designed to accommodate all queue lengths, up to the maximum design queue length plus 10% to allow for greater demand. • At all times during the course of the works, traffic queues will be monitored to ensure that queue lengths do not extend back beyond the limits of the advance warning signs. Where this occurs, appropriate procedures will take place as outlined in the RMS's TCAWS manual. If queue length extend beyond reasonable length, if physically possible, the lane closure will be lifted to allow traffic to clear.	SPIR	Contractor	Construction	Audits, Inspections
SPECIAL EVENTS					
TAMP59	The Traffic Manager will liaise with the Traffic Management Centre, RMS Major Events Co-ordination Unit, and Councils during the pre-construction phase of the works to identify all Special Events coinciding with works and shall decide appropriate constraints to be incorporated within construction staging and planning, including restrictions on Road Occupation License availability.	SPIR	Construction	Traffic Manager TTLG	ROL

Stage 1 ID	Stage 1 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
INCIDENT RESPONSE					
TAMP60	During the construction phase of works, incidents will be identified or detected from a network of reports, monitoring or communication links: • Traffic Management Controller's Close Circuit Television (CCTV) system; • Commuter reports (through a public telephone communications link); • Close and constant communication with the Transport Management Centre; • RMS, TfNSW field staff, traffic commanders etc; • NSW Police Service – Traffic; and • Site observations.	SPIR	Construction	Traffic Manager Construction Manager	Appendix G Incident Response Plan
TAMP61	Communications protocols shall be established with all of the relevant authorities for working in the area of the project activities. The Project Communications staff together with the construction site Traffic Manager shall be solely responsible for all direct communications and coordination with authorities. Project personnel monitoring the network and attending the construction sites will keep communication open with senior site management through 2-way radio communications or mobile phones as appropriate.	SPIR	Construction	Traffic Manager	Appendix G Incident Response Plan
TAMP62	FYJV will develop and formalise comprehensive suite of Incident Response Plans (IRPs) to safely and effectively deal with potentially disruptive road incidents, including: • Vehicle breakdowns; • Traffic accidents; • Construction incidents and emergencies; • Loose debris hazards on roadways (from either public or construction vehicles); • Upstream and downstream traffic incidents. The IRPs will include processes to mitigate the effect of the incident through: • The identification of alternative traffic routes; • The use of VMSs, lane use controls, driver advisory signs and any other devices to advise motorists of actions to be taken; • Procedures to clear the incident.	SPIR	Construction	Traffic Manager	Appendix G Incident Response Plan

Stage 1 ID	Stage 1 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
	The IRPs will be developed in collaboration with RMS and Transport Management Centre and will cover anticipated planned and unplanned minor incidents that may occur. Recognition will be given to the type and nature of the incident, the time of day and the location on the road network. Actions in the IRPs will be linked to the Transport Management Centre to further mitigate the impacts of incidents over the remainder of the road network. The effectiveness of responses will be reviewed after each incident and improvements made to the relevant IRP as required				
TAMP63	All emergency services will have priority throughout the worksites. Upcoming works, lane closures etc., will be regularly discussed and distributed to all TTLG members, which includes all emergency services and authorities.	R10	Construction	Traffic Manager Construction Manager	TTLG

Table 7-2: Stage 2 traffic management and mitigation measures (including management of cumulative impacts)

Stage 2 ID	Stage 2 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
GENERAL TRAFFIC IMPACTS					
TAMP64	A Construction Traffic and Access Management Plan would be developed as part of the CEMP to ensure traffic and access controls are implemented to avoid or minimise impacts on traffic, pedestrian and cyclist access, and the amenity of the surrounding environment. The Plan must be developed in consultation with the Transport Management Centre, Council, emergency services, road user groups, Health Infrastructure, The Forest High School Working Group, and include, but not necessarily be limited to: (i) identification of construction traffic routes and construction traffic volumes (including heavy vehicle/spoil haulage) on these routes; (ii) details of vehicle movements between construction sites and site compounds including parking, dedicated vehicle turning areas, and ingress and egress points;	CoA D28(c) Submissions Report	Pre-construction	Traffic Manager	This Plan

Stage 2 ID	Stage 2 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
	(iii) discussion of construction impacts that could result in disruption of traffic, public transport, pedestrian and cycle access, access to public land, property access, rat runs, including details of oversize load movements, and the nature and duration of those impacts; (iv) details of management measures to minimise traffic impacts and maintain road capacity during morning and afternoon peaks, including the proposed schedule of works, 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; (v) details of measures to maintain or provide alternative safe and accessible routes for pedestrians throughout the duration of construction, including provision of replacement kiss and ride, bus stops, pedestrian and cyclist access and paths where necessary; (vi) details of measures to maintain connectivity for cyclists, with particular emphasis on providing adequate access between key existing cycle routes; (vii) details of measures to manage traffic movements, rat runs, parking, loading and unloading at ancillary facilities during out-of-hours work; (viii) details of methods to be used to communicate proposed future traffic changes to affected road users, pedestrians and cyclists, consistent with the Community Communication Strategy required under condition C1; (ix) an adaptive response plan which sets out a process for response to any traffic, construction or other incident; and (x) mechanisms tor the monitoring, review and amendment of this plan.				
TAMP65	Subject to safety reasons and other environmental impacts (e.g. noise), construction traffic movements would be limited to off-peak periods, with peak period construction staggered to minimise construction traffic during these periods.	Submissions Report	Pre-construction Construction	Supervisor Construction Manager	Construction Sequencing VMPs

Stage 2 ID	Stage 2 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
TAMP66	A Road Occupancy Licence (ROL) will be obtained from the Transport Management Centre prior to undertaking changes to the road network and traffic systems for the staged construction of the Project Works.	G10	Construction	Traffic Manager	ROL
TAMP67	Individual Traffic Control Plans (TCP's) will be prepared for each construction zone in consultation with relevant authorities, Councils and other agencies, prior to commencement of substantial construction on each site.	CoA D28(c)(iv) Submissions Report	Construction	Traffic Manager Engineer	TCP
TAMP68	Traffic Control Plans shall be incorporated within the Construction Method Statements.	G10	Construction	Engineer	CMS
TAMP69	Sufficient capacity would be provided within site compound boundaries to avoid the need for on-street queuing.	CoA D17	Construction	Construction Manager	CCAFMP
TAMP70	When approval is granted to work out of hours the relevant VMP shall be updated to include the changed conditions and include items typically included in the VMP's such as parking, signs, days and hours of operation, etc.	R10	Construction	Traffic Manager	Out of Hours Permit
TAMP71	Delivery or pick-up of items of plant that are not able to utilise the off-road facility may be able to use the road/public space subject to a TCP and ROL approval and the associated controls for supervision, record keeping, etc. defined in this plan.	R10	Construction	Supervisor	Out of Hours Permit
TAMP72	All access points will be designed to accommodate the expected design vehicles for which it is intended (generally Austroads design principals) which will be key for VMP's.	R10	Construction	Supervisor	VMP
TAMP73	A Traffic and Transport Liaison Group (TTLG) would be established for the Project.	SWTC Submissions Report	Pre-construction	Traffic Manger	Minutes of TTLG
TAMP74	Temporary reduction in speed limits may be implemented to comply with Work Safety requirements and enhance road safety through temporary construction zones that impact on traffic flows. Prior to implementation, consultation with RMS/Transport Management Centre and NSW Police Service would occur to determine the limits and protocols of the proposed speed limit restrictions and strategies to enforce these speed restrictions through work sites. In addition, the Local Councils will be consulted prior to installation of any speed limit changes on local roads.	R10	Construction	Traffic Manger	Minutes of TTLG
TAMP75	The early implementation of directional signposting, driver information signposting and variable message signs to provide advance warning of	Submissions Report	Construction	Traffic Manager	TCP

Stage 2 ID	Stage 2 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
	changes to traffic conditions, is a key element in the project strategy to minimise disruption to traffic.	G10			
TAMP76	Should a significant change be detected in LoS, two options would be considered in consultation with the TTLG: Change to phasing or restriction of movements. Whilst changes may be endorsed by the TTLG, the Transport Management Centre would be the final determining authority based on overall network considerations.	Good Practice	Construction	Traffic Manger	Minutes of TTLG
TAMP77	Prompt removal of redundant signage from the area would be undertaken to avoid confusion.	Good Practice	Construction	Traffic Manger	Records
TAMP78	The traffic conditions and constraints on road occupancy identified that require to be maintained during the works shall be controlled in accordance with the requirements of the RMS QA Specification G10.	Submissions Report G10	Construction	Traffic Manager Engineer	ROL
TAMP79	Staging of works shall be undertaken consistent with the principles for internal staging detailed in section 7.2.3. These details would be incorporated in future staging drawings which would also include traffic flow arrangements, internal vehicle movement, turning and parking.	G10	Construction	Traffic Manager Engineer	Staging Plans
DILAPIDATION ASSESSMENTS					

Stage 2 ID	Stage 2 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
TAMP80	Prior to construction, a suitably qualified and experienced independent expert shall prepare a Road Dilapidation Report for all local roads utilised as Haulage route(s) for construction vehicles associated with the SSI. The Report shall assess the current condition of the road and describe mechanisms to restore any damage that may result due to its use by traffic and transport related to the construction of the SSI. The Report shall be submitted to the Council for review prior to the commencement of haulage. Following completion of construction, a subsequent Report shall be prepared to assess any damage to the road that may have resulted from the construction of the SSI. The Reports shall be compatible with Council's existing pavement management system and collect data on roughness, rutting, cracking and patching before and after works. 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 Council, and at the full expense of the Proponent.	CoA D18	Pre-construction	Construction Manager	Dilapidation Report
TRAFFIC ROUTES					
TAMP81	Priority would be given to the use of the arterial road network for construction vehicle access routes.	Submissions Report	Construction	Traffic Manager	VMP TCP
TAMP82	Use of compound sites would be subject to a site-specific traffic control plan under the proposed construction traffic management plan	Submissions Report G10	Pre-construction Construction	Traffic Manager	TCP
TAMP83	Regular monitoring of local streets that exhibit increases in traffic and would be carried out and would include consultation with Council with regard to temporary measures that could be implemented to manage safety and related issues.	Submissions Report CoA D16	Construction	Traffic Manager	Inspections, Audits
PROPERTY ACCESS					
TAMP84	Access to properties along affected roads would be maintained during construction where feasible and reasonable, unless otherwise agreed by the relevant property owner. The need for any alternative and/or temporary access arrangements would be agreed with affected property managers/owners.	CoA B10 Submissions Report	Construction	Community Manager Engineer	TCP

Stage 2 ID	Stage 2 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
TAMP85	Where there will be minor impacts on access during the installation of traffic signals and other works diversions or alternative arrangements will be put in place to control access. The details of controls for maintaining access will be provided on individual TCPs.	CoA B10	Construction	Community Manager Engineer	TCP
PUBLIC TRANSPORT					
TAMP86	Relocation of bus stops, where required would occur following discussion with Forest Coach lines and Sydney Buses. Appropriate notifications will be provided to all bus patrons in advance. The same capacity as existing will be maintained if bus stops are to be temporarily relocated.	CoA D28(c)(v) Submissions Report	Construction	Traffic Manager	TCP
TAMP87	Kiss and ride zones and existing bus stops will be either maintained or provided at an alternative location if required. Prior to any facilities being relocated, appropriate consultation with all relevant companies, authorities will be carried out.	CoA D28(c)(v) Submissions Report	Construction	Traffic Manager	TCP
TAMP88	The Traffic Manager will identify and implement measures to facilitate public transport operational efficiency and usage and shall maintain regular critique with representatives of RMS, TfNSW, Councils, NSW Police, Sydney Buses, Local Bus companies, Bus & Coach Association, and the NSW Taxi Council.	Submissions Report	Construction	Traffic Manager	Minutes of TTLG
PEDESTRIAN AND CYCLIST ACCESS					
TAMP89	Temporary traffic infrastructure and temporary works shall include provision for cyclist access, ensuring all temporary works are “cycle safe” and road pavement surfaces are maintained during the construction period to an acceptable standard.	CoA D28(c)(vi) Submissions Report	Construction	Traffic Manager Traffic Controller	TCP
TAMP90	The importance of pedestrian and cyclist safety during the construction stage will be impressed upon field personnel through induction and ongoing training programs.	CoA D28(c)(vi) Submissions Report	Construction	Traffic Manager Traffic Controller	Toolbox, VMP
TAMP91	Provisions for pedestrians and cyclists will ensure that safe, DDA compliant and efficient routes and appropriate road crossings are provided for all significant pedestrian demands (including more vulnerable pedestrians including elderly, persons with disabilities and persons with prams).	D16	Construction	Traffic Manager Engineer	TCP
TAMP92	All of the work sites and staging activities that affect pedestrian control and management will be identified and shown in the TCPs, when and where is require.	D16	Construction	Traffic Manager	TCP

Stage 2 ID	Stage 2 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
TAMP93	In areas where footpaths are temporarily narrowed adjacent to traffic, a physical barrier will be provided to ensure separation of pedestrians and vehicles.	D16	Construction	Traffic Manager	TCP
TAMP94	Pedestrian side-tracks shall be designed to be as direct as possible and to avoid unnecessary crossing of streets. Side-tracks and diversions shall be signposted where required to improve direction.	D16	Construction	Traffic Manager Engineer	TCP
TAMP95	Pedestrians will be separated from construction areas by perimeter hoardings, para-web fencing, NJ barriers or other physical barriers.	D16	Construction	Construction Manager	TCP
TAMP96	Where necessary, a traffic controller will assist safe pedestrian movements around the construction site.	D16	Construction	Traffic Manager Traffic Controller	TCP, VMP
CUMULATIVE IMPACTS					
TAMP97	Consultation would be undertaken with Health Infrastructure to coordinate scheduling of construction activities and deliveries.	Roads and Maritime	Pre-construction Construction	Construction Manager Traffic Manager	Section 6.11 Minutes of Meetings
TAMP98	Consultation would be undertaken with Health Infrastructure regarding the need for construction access to the NBH project site to focus on the Warringah Road and Bantry Bay Road intersection.	Roads and Maritime	Pre-construction	Construction Manager	Minutes of Meetings
TAMP99	Consultation would be undertaken with RMS and the Mona Vale Road Upgrade project contractor to coordinate traffic arrangements to minimise traffic impacts.	Roads and Maritime	Construction	Construction Manager Traffic Manager	Section 6.11 Minutes of Meetings
QUEUE MANAGEMENT					
TAMP100	Queue Management for the Stage 1 Project would utilise the following: • Site superintendent, supervisor, and Traffic Controllers, will monitor oncoming traffic queuing distances and release traffic if queue exceeds allowed limits in accordance with ROL, • All TCPs will be appropriately designed to accommodate all queue lengths, up to the maximum design queue length plus 10% to allow for greater demand. • At all times during the course of the works, traffic queues will be monitored to ensure that queue lengths do not extend back beyond the limits of the advance warning signs. Where this	CoA D17	Construction	Construction	Audits, Inspections

Stage 2 ID	Stage 2 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
	occurs, appropriate procedures will take place as outlined in the RMS's TCAWS manual. If queue length extend beyond reasonable length, if physically possible, the lane closure will be lifted to allow traffic to clear.				
INCIDENT RESPONSE					
TAMP101	During the construction phase of works, incidents will be identified or detected from a network of reports, monitoring or communication links: • Traffic Management Controller's Close Circuit Television (CCTV) system; • Commuter reports (through a public telephone communications link); • Close and constant communication with the Transport Management Centre; • RMS, TfNSW field staff, traffic commanders etc.; • NSW Police Service – Traffic; and • Site observations.	CoA D28(c)(xi) Submissions Report	Construction	Traffic Manager Construction Manager	Appendix G Incident Response Plan
TAMP102	Communications protocols shall be established with all of the relevant authorities for working in the area of the project activities. The Project Communications staff together with the construction site Traffic Manager shall be solely responsible for all direct communications and coordination with authorities. Project personnel monitoring the network and attending the construction sites will keep communication open with senior site management through 2-way radio communications or mobile phones as appropriate.	CoA D28(c)(xi) Submissions Report	Construction	Traffic Manager	Appendix G Incident Response Plan
TAMP103	FYJV will develop and formalise comprehensive suite of Incident Response Plans (IRPs) to safely and effectively deal with potentially disruptive road incidents, including: • Vehicle breakdowns; • Traffic accidents; • Construction incidents and emergencies; • Loose debris hazards on roadways (from either public or construction vehicles); and • Upstream and downstream traffic incidents. The IRPs will include processes to mitigate the effect of the incident through: • The identification of alternative traffic routes;	CoA D28(c)(xi) Submissions Report	Construction	Traffic Manager	Appendix G Incident Response Plan

Stage 2 ID	Stage 2 Measure / Requirement	Reference	When to implement	Responsibility	Where addressed
	• The use of VMSs, lane use controls, driver advisory signs and any other devices to advise motorists of actions to be taken; and • Procedures to clear the incident. The IRPs will be developed in collaboration with RMS and the Transport Management Centre, and will cover anticipated planned and unplanned minor incidents that may occur. Recognition will be given to the type and nature of the incident, the time of day and the location on the road network. Actions in the IRPs will be linked to the Transport Management Centre to further mitigate the impacts of incidents over the remainder of the road network. The effectiveness of responses will be reviewed after each incident and improvements made to the relevant IRP as required				
TAMP104	All emergency services will have priority throughout the worksites. Upcoming works, lane closures etc., will be regularly discussed and distributed to all TTLG members, which includes all emergency services and authorities.	R10	Construction	Traffic Manager Construction Manager	TTLG

7.2 Construction traffic management

7.2.1 Construction staging

Construction staging plans covering the Stage 1 Project and the Stage 2 Project construction program are developed as required for the project. Indicative plans are provided in Appendix A and Appendix B respectively.

For each staged construction package, site specific traffic management plans would be prepared which consist of:

- Traffic Staging drawings
- Traffic Control Plans
- Vehicle Movement Plans
- Pedestrian Management Plan

Traffic staging procedures are documented within section 14.1 of the Project Traffic Management and Safety Plan (TMSP) providing the traffic staging to be implemented for each stage of the construction program.

Traffic staging drawings (maps) for Stage 1 and Stage 2 construction are provided in Appendix 6 and Appendix 7 of the TMSP respectively. An example of Traffic Staging drawings is provided as Appendix C to this Plan.

In general for each stage, traffic staging drawings detail:

- Lane configurations on existing and new (temporary and permanent) pavements, indicating any departures from existing traffic lanes
- Intersection layouts and temporary traffic signals arrangements
- Working areas, and pedestrian and cyclist paths
- Access to residential properties, local businesses, the site and community facilities
- Pavement markings and signage including advance warning signs
- Location of any required temporary structures such as retaining walls or the like
- Bus stopping requirements
- Details of the proposed methods for pavement marking removals, the estimated durations to carry out the removal and any proposed measures to restore the road surface.

7.2.2 Risk Assessment and Staging

Risk assessment for traffic management plans shall be prepared in accordance with RMS risk assessment procedure – Traffic Control at Work Sites, Manual.

Table 7-3 details the principles for internal staging of the Project. These details would be incorporated in future staging drawings which would also include traffic flow arrangements, internal vehicle movement, turning and parking. This process would be followed for all staging required to deliver the Project.

The staging will be further refined in consultation with the project team, and consultation where it is considered required.

Table 7-3: Principals for internal staging

Project Stage	Parking	Dedicated turning areas (within and outside work zone)	Ingress and Egress Point
Stage 1a (Wakehurst Parkway and Frenchs Forest Road intersection)	Some parking along Frenchs Forest Rd will be impacted at times during the works. This parking and potential idling and queuing on public roads and local residential streets will be minimised where practicable. No construction heavy vehicles will be parked on public streets. Work zones will allow construction vehicles to operate and work from the site.	Work zones will be developed in a way to alleviate internal vehicle turnings. If necessary, sufficient area will be developed within the construction site to allow vehicle turning manoeuvrability. All construction vehicles will enter and leave the work sites in a forward direction.	All construction vehicles will enter and leave the works zones in a forward direction. Where necessary, a traffic controller / spotter will be in attendance to assist vehicle entry / exit and pedestrian movements. Access points to work zones will be developed to suite the work site and to meet all relevant safety standards.
Stage 1b	Some parking along Frenchs Forest Rd will be impacted at times during the works. This parking and potential idling and queuing on public roads and local residential streets will be minimised where practicable. No construction heavy vehicles will be parked on public streets. Work zones will allow construction vehicles to operate and work from the site.	Work zones will be developed in a way to alleviate internal vehicle turnings. If necessary, sufficient area will be developed within the construction site to allow vehicle turning manoeuvrability. All construction vehicles will enter and leave the work sites in a forward direction	All construction vehicles will enter and leave the works zones in a forward direction. Where necessary, a traffic controller / spotter will be in attendance to assist vehicle entry / exit and pedestrian movements. Access points to work zones will be developed to suite the work site and to meet all relevant safety standards.
Stage 2	Some parking along Frenchs Forest Rd will be impacted at times during the works. This parking and potential idling and queuing on public roads and local residential streets will be minimised where practicable. No construction heavy vehicles will be parked on public streets. Work zones will allow construction vehicles to operate and work from the site.	Work zones will be developed in a way to alleviate internal vehicle turnings. If necessary, sufficient area will be developed within the construction site to allow vehicle turning manoeuvrability. All construction vehicles will enter and leave the work sites in a forward direction	Some parking along Frenchs Forest Rd will be impacted at times during the works. No construction heavy vehicles will be parked on public streets. Work zones will allow construction vehicles to operate and work from the site.
Stage 2	Some parking within northern end of Bantry Bay Road within the Project footprint will be removed to allow for construction. No construction heavy vehicles will be parked on this road.	Work zones will allow construction vehicles to operate and work from within the site and access the Wakehurst Parkway (south) compound from Bantry Bay Road.	Work zones will allow construction vehicles to operate and work from within the site with direct access to arterial road network. Ingress and egress for the Wakehurst Parkway (south) compound will be from Bantry Bay Road intersection with Warringah Road and the arterial road network.

7.2.3 Traffic Control Plans

Traffic Control Plans (TCPs) 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 worksite. These plans will address the specific measures stipulated within Road Occupancy Licences and Speed Zone Authorisations and will comply with the requirements of the Traffic Control and Work Sites Manual.

Individual TCPs will be prepared for each construction zone in consultation with relevant authorities, Council and other agencies, prior to commencement of substantial construction on each site.

TCPs will be incorporated within Construction Method Statements and will be approved for use before being implemented.

Communication will be undertaken by FYJV to notify changes to traffic conditions to road users and the local community in accordance with the Community Communications Strategy.

An example of a TCP is provided as Appendix D to this Plan.

Development and recording of TCPs will be undertaken in accordance with the procedures of the Project TMSP.

7.2.4 Vehicle Movement Plans

Vehicle Movement Plans (VMPs) will be developed for traffic associated with the construction works, such as trucks delivering materials and equipment and work supervisors' vehicles, to:

- Safely manoeuvre into and out of traffic streams
- Turn at work areas, depots, stockpile sites, etc.
- Turn around

The VMPs will show the vehicle entry and exit points to the worksite and indicate clearly that these are the only points where manned interface with the road traffic is permitted. A VMP may be combined with or superimposed on a TCP.

An example of a VMP is provided as Appendix E to this Plan.

7.2.5 Working Hours

All out of hours works are to be managed in accordance with the Out of Hours Works Protocol detailed in the Construction Noise and Vibration Management Sub Plan (CNVMP) in Appendix B3 of the CEMP.

This process will ensure relevant assessments, mitigation and community notifications are conducted. The process will also ensure that the following are considered:

- If and when approval is granted to work out of hours the relevant VMP shall be updated to include the changed conditions and include items typically included in the VMP's such as parking, signs, days and hours of operation, etc.;
- Delivery or pick-up of items of plant that are not able to utilise the off-road facility may be able to use the road/public space subject to a TCP and ROL approval and the associated controls for supervision, record keeping, etc. defined in this plan; and
- All access points will be designed to accommodate the expected design vehicles for which it is intended (generally Austroads design principals) which will be key for VMP's.

This approach aims to maximise:

- Road user safety;
- Amenity for local residents; and

- Efficiency of truck movements - thereby minimising program risks and logistical disruptions.

Due to the proximity of arterial roads within and around the Project, vehicles would be encouraged to use this network unless direct access to the work areas require unavoidable use of local roads.

7.2.6 Construction traffic routes

The wider construction vehicle access routes for Stage 1 and Stage 2 would be limited to the arterial road network as far as practicable, i.e. Warringah Road, Wakehurst Parkway and Forest Way. Use of Rodborough Road, Aquatic Drive and Bantry Bay Road (at intersection with Warringah Road) would also occur as part of the Project.

Temporary local impacts on key roads anticipated during construction are explained in sections 6.2 and 6.3.

7.2.7 Construction site traffic management

The Project would need to be constructed while maintaining traffic flows. There are very limited opportunities to locate construction compounds within the road corridor, with no prolonged road closures anticipated.

The Aquatic Drive compound is largely located over the detention basin to be constructed as part of the upgraded drainage network for the project.

These sites will predominantly be used for laydown, storage and parking.

The main compound established on the north-east corner of the Warringah Road and Wakehurst Parkway intersection accommodates the site office/amenities, community centre, storage of materials, equipment and vehicles for the Project.

All compound areas will be securely fenced with temporary fencing. All necessary signage advising the general public of access restrictions would be provided. Access arrangements for these sites are explained in section 6.4.

Routes to access these sites currently permit heavy vehicles and are suitable for out of hours deliveries. There would be no impacts to existing pedestrian, cyclist and private property access arrangements in the vicinity of the ancillary facility. Where changes are required, equivalent temporary facilities will be provided.

7.3 Road occupancy

7.3.1 Road Occupancy Constraints

When a planned activity requires an existing road to be used in such a way as to affect traffic flow, FYJV must obtain a Road Occupancy Licence (ROL). The licence applies to the occupation of the road space only and does not grant permission for or approval to the actual/physical work being undertaken. Manage the work activities to comply at all times with the lane occupancy hours granted in the ROLs. The lane occupancy hours granted in the ROL may be less than, and will override, the working hours stated in the Contract, for any work that requires lane occupancy. ROL procedures are outlined in the RMS's QA Specification G10.

7.3.2 Road Occupancy Licenses

A Road Occupancy Licence (ROL) will be obtained from the Transport Management Centre prior to undertaking changes to the road network and traffic systems for the staged construction of the Project Works.

Road Occupancy Licence applications shall:-

- Be submitted for renew, and subsequently managed by the project Traffic Manager;

- Consider changes to the road network to be generally undertaken outside weekday AM and PM peak hour periods;
- Be prepared, managed and audited by the project Systems Manager in accordance with the guidelines in RMS QA Specification G10; and
- Shall include traffic control plans at each stage of the construction.

The Traffic Manager will liaise with the Traffic Management Centre, RMS Major Events Co-ordination Unit, and Councils during the pre-construction phase of the works to identify all Special Events coinciding with works and shall decide appropriate constraints to be incorporated within construction staging and planning, including restrictions on Road Occupation Licence availability.

7.4 Speed management

It may be necessary to temporarily reduce posted speed limits on the road network to comply with Work Safety requirements and enhance road safety through temporary construction zones that impact on traffic flows.

Initially it will be necessary to consult with the RMS/Transport Management Centre and NSW Police Service to determine the limits and protocols of the proposed speed limit restrictions and strategies to enforce these speed restrictions through work sites. In addition, the Local Councils will be consulted prior to installation of any speed limit changes on local roads.

Once altered speed limits (as required) have been agreed, application for "Speed Zoning Authorisation" will be submitted to the Transport Management Centre together with the zone Traffic Management Plan and Road Occupancy Licence application, for approval.

7.5 Signposting and delineation

The early implementation of directional signposting, driver information signposting and variable message signs to provide advance warning of changes to traffic conditions, is a key element in the project strategy to minimise disruption to traffic.

Prompt removal from the area of redundant signage is a key to maintaining public confidence in the information process.

Other signposting and delineation will be implemented as per the RMS's specification D&C G10 document and individual relevant TCPs.

7.6 Performance Indicators

The following will be used as key performance indicators.

- Compliance checks;
- Quality audits to TTLG as required;
- Accidents to be monitored, registered and logged; and
- Delays travel times report to TTLG.

7.7 Queue Length Management Strategy

Site superintendent, supervisor, and Traffic Controllers, will monitor oncoming traffic queuing distances and release traffic if queue exceeds allowed limits in accordance with ROL,

All TCPs will be appropriately designed to accommodate all queue lengths, up to the maximum design queue length plus 10% to allow for greater demand.

At all times during the course of the works, traffic queues will be monitored to ensure that queue lengths do not extend back beyond the limits of the advance warning signs. Where this occurs, appropriate procedures will take place as outlined in the RMS's TCAWS manual.

If queue length extends beyond reasonable length, if physically possible, the lane closure will be lifted to allow traffic to clear.

7.8 Onsite Queuing

The Warringah Road/Wakehurst Parkway site compound is developed with a separate ingress and egress driveways to allow a free flow entry into the compound from Warringah Rd. Vehicles will travel some 40m into the site before stopping / parking. By training, site inductions, and tool boxing, all staff and contractors will be advised and instructed that no queuing is permitted on Warringah Rd at any time. The site compound will accommodate some 100 vehicle parking spaces. The site compound internal road can accommodate HV and vehicle queuing if circumstances arise without impacting on the road network.

A speed hump and signposting will be provided on the egress driveway to control safe vehicle movements at the footpath crossing, thereby providing a safe pedestrian crossing at the driveway.

The remaining compounds proposed (Aquatic Drive and Wakehurst Parkway south) have been developed to allow for use of areas with direct access from the Arterial Road network or are current, approved heavy vehicle routes. In addition, a number of heavy vehicles park on Aquatic Drive.

Idling and heavy vehicle queuing in local residential streets outside the Project boundaries would be discouraged with scheduling undertaken to stagger movements through a “call up “system. This would reduce the need to park in the side streets which are off Frenchs Forest Road (east and west). Should parking be required on-street, it would be undertaken within the project boundaries or in areas where residential properties do not directly adjoin.

Site supervisor/superintendent will be responsible for vehicle movements on all construction sites.

7.9 Intersection level of service

Some intersections within the Project area are predicted to operate with lower average vehicle delays, and therefore, some of these intersections may no longer be predicted to operate at LOS F in 2018 during the AM or PM peak periods (or both) without the proposed improvements. These intersections include:

- Warringah Road/ Hilmer Street;
- Warringah Road/ Allambie Road;
- Warringah Road/ Ellis Road/ Government Road;
- Frenchs Forest Road West/ Rabbett Street; and
- Frenchs Forest Road/ Rumford Road.

The following intersections are still predicted to operate at LOS F after the completion of the Project in 2018 during the AM or PM peak periods (or both):

- Warringah Road/ Forest Way;
- Warringah Road/ Wakehurst Parkway;
- Forest Way/ Adams Street;
- Forest Way/ Naree Road; and
- Frenchs Forest Road/ Wakehurst Parkway.

7.9.1 Intersection Performance Statistics

The commonly used measure of intersection performance, as defined by Roads and Maritime is vehicle delay. The intersection modelling used determines the average delay that vehicles encounter and provides a measure of the level of service.

As identified in Table 7.4 below, LoS is F throughout the project area, irrespective of the movements at each intersection. Due to the integrated nature the wider network, changes at one location (e.g. Frenchs Forest/Wakehurst Parkway) would impact on intersections such as Forest Way/Warringah Road. Therefore, any implications would need to be carefully considered.

Should a significant change be detected in LoS, two options would be considered in consultation with the TTLG: Change to phasing or restriction of movements. Whilst changes may be endorsed by the TTLG, the Transport Management Centre would be the final determining authority based on overall network considerations.

Table 7.4: Level of Service Criteria for Intersections

Level of Service (LOS)	Average Delay per vehicle (seconds/vehicle)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity, accident study required
E	70	At capacity, at signals incidents will cause	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

Source: *Guide to Traffic Generating Developments*, Roads and Maritime Services, 2002

7.10 Pedestrians and cyclists

As part of Stage 1 works, a 1.5 m-wide concrete footpath would be provided along the northern side of Naree Road and Frenchs Forest Road between Forest Way and Warringah Road, and along the southern side of Frenchs Forest Road between Wakehurst Parkway and Warringah Road. In addition, there would be a 3.5 m-wide concrete footpath along the southern side of Naree Road and Frenchs Forest Road between Forest Way and Wakehurst Parkway. The Stage 1 Connectivity Works also includes the provision of pedestrian crossings as part of the upgrading and signalisation of intersections within the study area.

Pedestrian and cycle access shall be maintained at all times during the Project, as per existing conditions. Pedestrian access will be provided via existing pedestrian footpaths and facilities, including pedestrian footpaths on the north and south side of Warringah Road and newly constructed shared cyclist and pedestrian footbridges across Warringah Road at Forest Way and Hilmer Street and along Frenchs Forest Road.

Pedestrian management plan would be provided as part of the staging plans.

These facilities will improve connectivity between the key activity nodes within the study area including the residential catchment on the northern side of Naree Road/Frenchs Forest Road,

Forestway Shopping Centre, The Forest High School, the NBH, the various businesses along Frenchs Forest Road East and the Skyline shops.

While there are no specific cycling provisions as part of the Stage 1 Connectivity Works, Roads and Maritime would consider modifying the traffic signals at the proposed Frenchs Forest Road/ Patanga Road/Allambie Road intersection to incorporate bicycle signals due to the proximity of the existing cycle path. This would provide a safe crossing for cyclists who use the existing cycle path and would improve connectivity to the various businesses along the southern side of Frenchs Forest Road.

As part of detailed design process for the Stage 1 Project, Roads and Maritime would investigate options to provide shared paths (being off-road cycleway and pedestrian footpath) aiming to connect with the existing or proposed cycleways indicated on the Warringah Bike Plan. The provision of the shared paths (including off-road cycleways) proposed to be investigated would provide a safe route and improved connectivity between the key nodes including various residential areas across the study area, Forestway Shopping Centre, The Forest High School, NBH and various businesses along theses corridors.

During Stage 2 works, disruption to pedestrian activity on footpaths is anticipated along Warringah Road, particularly during replacement works of the pedestrian footbridge over Warringah Road at Forest Way, requiring pedestrians to walk longer distances to access facilities or crossing locations at times. The new pedestrian bridge was constructed prior to the pre-existing one being removed. Pedestrian access across Warringah Rd will be available at all times during the transition stages.

While there are no existing designated cycle routes in the study area that would be impacted by construction of the Stage 2 Project, local (short-distance) cycling demand in the precinct could be affected in terms of increased general (diverted) and construction traffic volumes, as well as lane and shared path restrictions.

During the construction of the Project, diversions will be required at times along the project corridor, with appropriate measures to mitigate any potential increases in risk levels associated with footpath and crossing diversions. Temporary traffic infrastructure and temporary works shall include provision for cyclist access, ensuring all temporary works are “cycle safe” and and road pavement surfaces are maintained during the construction period to an acceptable standard.

The importance of pedestrian safety (including more vulnerable persons, such as elderly, persons with disabilities, and persons with prams), and cyclist safety during the construction stage will be impressed upon field personnel through induction and ongoing training programs. Provisions for pedestrians and cyclists will ensure that safe and efficient routes and appropriate road crossings are provided for all significant pedestrian demands. All routes and crossings will be DDA compliant.

Construction staging for the Project will require works to be carried out on and adjacent to public footpaths. Staging will also require some sections of footpath to be temporarily narrowed or diverted to provide road space for traffic diversions. All of the work sites and staging activities that affect pedestrian control and management will be identified and shown in the TCPs, and supplemented with a Pedestrian Movement Plan when and where is required. An example of a Pedestrian Movement Plan is provided in Appendix F.

In areas where footpaths are temporarily narrowed adjacent to traffic, a physical barrier will be provided to ensure separation of pedestrians and vehicles. Pedestrians will be separated from construction areas by perimeter hoardings, para-web fencing, NJ barriers or other physical barriers. The surface of temporary footpaths shall be maintained even, free draining and non-skid, typically using temporary asphalt. Pedestrian sidetracks shall be designed to be as direct as possible and to avoid unnecessary crossing of streets. Sidetracks and diversions shall be signposted where required to improve direction. FYJV will fence the Construction Site as necessary to prevent unauthorised pedestrian access and to enhance pedestrian safety.

Where necessary, a traffic controller will assist safe pedestrian movements around the construction site.

7.11 Public transport

The construction of the Project would require changes to public transport operations in the precinct, particularly along Frenchs Forest Road and Warringah Road.

All existing bus stops along these roads would be relocated during road widening works, most within the same general local area. However, during specific road widening construction activities, bus stop access would progressively be transferred to a nearby temporary location which could result in increased walk distances for some bus customers.

The construction activities could also require existing bus waiting areas to be reduced, which could have impacts to safety, by way of increasing risk for waiting bus passengers to be more vulnerable to moving general and construction traffic.

Impacts of the Project construction to bus operations in the precinct are focused on Frenchs Forest Road (Routes 136 and L60), Warringah Road (east of Allambie Road for Routes 169, 173 and E69), buses running along Forest Way (Routes L70, 270, 279, 281, 282, 283 and 284), and buses along Warringah Road and the section of Allambie Road north of Aquatic Avenue (Routes 280, 142 and E66). Impacts by construction to bus operations include:

- Potential bus timetable delays due to roadwork speed restrictions and increased traffic congestion through key affected intersections.
- Potential temporary removal of existing bus priority arrangements, particularly at the Wakehurst Parkway/Frenchs Forest Road intersection and on Wakehurst Parkway between Warringah Road and Frenchs Forest Road. This would mean that during limited periods of construction activity, buses would not have any priority at the intersection, and would have to mix with general traffic.
- Alterations to bus stop arrangements, locations and access, and routes, including potentially decreased bus passenger waiting areas.
- Temporary relocation of the school bus stop will be required on Frenchs Forest Rd (West) during construction works on this road. It will be relocated within a short distance to minimise the impact on school students. Engagement is planned with the relevant bus operators and The Forest High School to establish appropriate arrangements prior to shifting existing bus zone arrangements.
- Bus manoeuvres on the Forest Way/Naree Road intersection.

Kiss and ride zones and existing bus stops will be either maintained or provided at an alternative location if required. Prior to any facilities being relocated, appropriate consultation with all relevant companies, authorities will be carried out.

Relocation of bus stops, where required following discussion with Forest Coach lines and Sydney Buses will be included within the construction Traffic Management Sub-plans. Appropriate notifications will be provided to all bus patrons in advance. The same capacity as existing will be maintained if bus stops are to be temporarily relocated.

The Traffic Manager will identify and implement measures to facilitate public transport operational efficiency and usage and shall maintain regular critique with representatives of RMS, TfNSW, Councils, NSW Police, Sydney Buses, Local Bus companies, Bus & Coach Association, and the NSW Taxi Council.

7.12 Property access

Access to properties along affected roads, particularly along Frenchs Forest Road, would need to be maintained during construction. Where temporary vehicular access is required to be cut-

off, alternative access arrangements would need to be agreed with affected property managers/owners. This will be undertaken during the detailed design stage and as part of construction traffic management planning. Where possible, alternative access driveways to private developments would need to be further investigated. This could potentially include temporary driveway access off Warringah Road (e.g. for The Forest High School and a number of business parks along Frenchs Forest Road East).

Existing legal property access, and pedestrian and cycle access, will be maintained or alternative arrangements made following consultation with the affected community. The impact on access to properties is expected to be minimal. The majority of roadworks will not affect driveway access. Where there will be minor impacts on access during the installation of traffic signals and other works diversions or alternative arrangements will be put in place to control access. The details of controls for maintaining access will be provided on individual TCPs.

It is not anticipated that retaining walls along Naree Rd and Forest Way will impact waste collection from properties, provided there is adequate space for waste receptacles to be placed. Should this potentially become an issue for any residents, FYJV will work with the respective households to alleviate the issue.

7.13 Emergency services

All emergency services will have priority throughout the worksites. Upcoming works, lane closures etc., will be regularly discussed and distributed to all TTLG members, which includes all emergency services and authorities.

7.14 Special events

The Traffic Manager will liaise with the Traffic Management Centre, RMS Major Events Co-ordination Unit, and Councils during the pre-construction phase of the works to identify all Special Events coinciding with works and shall decide appropriate constraints to be incorporated within construction staging and planning, including restrictions on Road Occupation Licence availability.

7.15 Incident Management and response

During the construction phase of works, incidents will be identified or detected from a network of reports, monitoring or communication links;

- Traffic Management Controller's Close Circuit Television (CCTV) system;
- Commuter reports (through a public telephone communications link);
- Close and constant communication with the Transport Management Centre;
- RMS, TfNSW field staff, traffic commanders etc;
- NSW Police Service – Traffic; and
- Site observations.

Communications protocols shall be established with all of the relevant authorities for working in the area of the project activities.

The Project Communications staff together with the construction site Traffic Manager shall be solely responsible for all direct communications and coordination with authorities.

Project personnel monitoring the network and attending the construction sites will keep communication open with senior site management through 2-way radio communications or mobile phones as appropriate.

The occurrence of unplanned incidents in the Project area will potentially have negative impacts on traffic flow on surrounding roads. Similarly, incidents along other sections of the surrounding road network can temporarily restrict construction activities and lead to

congestion in the Project area. FYJV will safely and effectively minimise any impacts to the traffic network that are due to incidents either resulting from Project activities or occurring in the road network adjacent to or within the Project area.

FYJV will develop and formalise comprehensive suite of Incident Response Plans (IRPs) to safely and effectively deal with potentially disruptive road incidents, including:

- Vehicle breakdowns;
- Traffic accidents;
- Construction incidents and emergencies;
- Loose debris hazards on roadways (from either public or construction vehicles); and
- Upstream and downstream traffic incidents.

The IRPs will include processes to mitigate the effect of the incident through:

- The identification of alternative traffic routes;
- The use of VMSs, lane use controls, driver advisory signs and any other devices to advise motorists of actions to be taken; and
- Procedures to clear the incident.

The IRPs will be developed in collaboration with RMS and the Transport Management Centre, and will cover anticipated planned and unplanned minor incidents that may occur. Recognition will be given to the type and nature of the incident, the time of day and the location on the road network.

Actions in the IRPs will be linked to the Transport Management Centre to further mitigate the impacts of incidents over the remainder of the road network. The effectiveness of responses will be reviewed after each incident and improvements made to the relevant IRP as required.

8 Compliance management

8.1 Roles and responsibilities

FYJV's Project Team organisational structure and overall roles and responsibilities are outlined in Section 4.2 of the CEMP. Specific responsibilities for the implementation of construction traffic management are detailed below.

8.1.1 Traffic Manager

An experienced Traffic Manager has been appointed to advise on key traffic planning, traffic implementation issues and amendments and as a key contact for the relevant local councils, state government stakeholders and traffic authorities.

The Traffic Manager's responsibilities are as follows:

- Report to the Project Director;
- Ensure the policy and objectives of this Plan, RMS D&C Specification G10, and SWTC are met;
- Review and update this Plan as required;
- Ensure that the performance of the plan is reviewed and suitable corrective and preventative action is carried out as required;
- Familiarise with the requirements of this Plan, the Incident Response Plan (which the Traffic Manager will help to develop), and the emergency response procedure. The Traffic Manager is the interface with all emergency services;
- Maintain an updated listing of personnel, both on and off site who are suitably trained to provide an incident callout service;

- Maintain an updated listing of equipment available both on and off site which would be available and appropriate for varying incidents;
- Ensure the relevant agencies and stakeholders are continually advised as to the progress of the work and any changes to this Plan;
- Meet regularly with the construction team to obtain road occupancy licence forecasts and ensure the requirements of this Plan and the TMSP are implemented;
- Establish a program for suitable training of personnel in traffic management procedures as well as ensuring key issues are addressed at Site inductions and toolbox meetings;
- Establish and manage the team charged with implementation of this Plan with respect to incident management and response;
- Respond to all complaints received, recording action taken to address each. A similar register will be maintained outlining requests for information from the public;
- Coordinate all reporting functions relating to traffic management required by this Plan;
- Develop and maintain positive communication links with the RMS Project Representative, Transport Management Centre and RMS traffic impacts coordinator;
- Coordinate the provision of all project maintenance requirements and resources required for the field crews for performance of their duties;
- Accountable for the effectiveness of all traffic control devices in undertaking works;
- Undertake traffic management quality audits and road occupancy licence compliance investigations for all the activities undertaken in the delivery of the project;
- Monitor, measure and record traffic queue lengths and total stoppage times;
- Maintain and adjust traffic control measures to assist prevailing traffic flows;
- Monitor over-dimensional heavy vehicle movements; and
- Develop solutions to traffic management arrangements to avoid interruptions to traffic flow, lane/shoulder closures and alternating traffic flow conditions.

8.1.2 Traffic Engineers

The Traffic Engineer's responsibilities during construction are as follows:

- Assist the Traffic Manager with TCP development, implementation and review within their work areas;
- Be fully qualified and experienced in this role including holding the required licences for TCP design and approval;
- Prepare TCPs, VMPs, ROLs, SZAs and associated Hold Points for approval;
- Direct and assist the field staff in the application of the TMSP;
- Ensure that only adequately trained and qualified personnel are engaged or are available to undertake operations and maintenance duties;
- Be familiar with and have access to the lists prepared by the Traffic Manager of personnel, equipment and emergency service representatives;
- Be familiar with and undertake the instruction of personnel in the operational aspects of the plan and the Incident Response Plan;
- Ensure all traffic management personnel, plant and equipment are available in a timely manner to meet the requirements of the construction program;
- Develop work procedures to ensure utmost consideration is given to providing a safe working environment for employees as well as addressing the safety of road users and the general public;
- Undertake briefing of field staff responsible for the carrying out of traffic management and emergency response activities;

- Investigate with the Traffic Manager, all traffic incidents and community concerns which relate to traffic matters; and
- Prepare reports for the Traffic Manager as required.

8.1.3 Traffic Foreman

The Traffic Foreman will also provide the resource requirements relating to the routine management of traffic control facilities and maintenance of Temporary Works. The Traffic Foreman's responsibilities during construction are as follows:

- Report to the Traffic Manager and liaise with the traffic engineer and be responsible for operational and traffic maintenance field resources and crews;
- Undertake training appropriate to the duties described in Section 6 of RMS Traffic Control at Worksites – Record Keeping and Reporting;
- Ensure that traffic control facilities are maintained and monitored throughout the Works;
- Provide after-hours contact details to local police for the duration of the Works;
- Work cooperatively with other incident response or emergency services when required;
- Ensure all appropriate procedures are implemented during a planned traffic switch;
- Hold appropriate certification to undertake traffic management duties;
- Be available to receive regular briefings on the implementation of this Plan and conduct inductions and toolbox meetings;
- Participate in the development of work procedures relating to Traffic Management and Incident Response Plans;
- Respond to incidents on the road network affected by the construction Works taking advice from the traffic management and construction team and RMS;
- Implement traffic facility maintenance procedures in the field, always respecting the issue of road user safety;
- In conjunction with Site Foremen, ensure adequate resources are available and used to carry out Temporary Works in accordance with the program; and
- Provide traffic management support services to the construction Project Managers where required.

8.1.4 Traffic Field Crews

A crew will be established to provide the following functions during the construction period:

- Project-wide traffic control duties (not related to a specific area or zone);
- Periodic relief breaks for all Traffic Controllers under contract as required by RMS Traffic Control at Worksites;
- Assist the Traffic Foreman to undertake their duties to the satisfaction of this Plan;
- Utilise resources provided by the Traffic Foreman to undertake routine and periodic maintenance of traffic management and control facilities;
- Undertake the reporting and auditing requirements of Section 6 of RMS Traffic Control at Worksites manual; and
- Respond and attend to unplanned incidents across the project.

8.1.5 Traffic Management Resources

A list of the personnel and equipment available to respond to an incident will be established as part of the Incident Response Plan. The field crews will have specific

traffic management and control facilities to ensure appropriate responses may be implemented without external assistance in most cases. Examples include:

- Dedicated traffic management vehicle;
- Dedicated compound area and container;
- Standard signage, traffic cones, flares, first aid equipment, fire extinguishers and personal protective equipment necessary to attend to unplanned traffic management issues and incidents;
- Brooms, containers and 'kitty litter' to clean up minor accident debris and oil spill kits;
- Trailer mounted VMSs and speed monitoring VMSs;
- Communications equipment between field response crews; and
- Procedures for incident escalation involving the request for emergency services intervention in consultation with RMS and the Transport Management Centre.

These resources will be held in a dedicated, clearly identifiable vehicle for traffic management. Items that cannot be readily carried in the course of a normal working day will be held in dedicated storage areas in close proximity to the Site, preferably the main office compound.

8.2 Training

All employees, contractors and utility staff working on site will undergo site induction training relating to traffic management issues. This induction training will address elements related to traffic management including:

- existence and requirements of this Plan;
- relevant legislation;
- roles and responsibilities for traffic management;
- temporary and interim traffic arrangements;
- response procedure for dealing with traffic incidents; and
- approved haulage and movement routes.

8.3 Communication

8.3.1 Road Users

Traffic management information will be communicated to the community as detailed in the Community Communications Strategy. Notwithstanding the specific requirements of the Community Communications Strategy at least 5 days' notice will be provided for notifications to the public.

The methods of communications will be in accordance with the Community Communications Strategy and may include such things as:

- Newspaper advertisements in newspapers;
- Letterbox distributions to potentially effected residents and businesses;
- Advance warning and where necessary guidance signage of the proposed works; and
- Variable message sign communications (where appropriate).

This method allows for the timely, accurate and comprehensive traffic and transport information to be provided to all potential and existing road users to optimise their travel options and to reduce negative impacts due to the works,

In addition, the Project will advertise any detours, traffic disruptions or controls and work outside the working hours contained in newspapers at least five (5) days before the detour, disruption or changes commence.

8.3.2 Traffic and Transport Liaison Group

Regular Traffic and Transport Liaison Group (TTLG) meetings will be held with senior members of the Project and relevant authorities and agencies to discuss proposed upcoming traffic management and changes. Topics broadly discussed could include:

- Construction staging, current and proposed;
- Traffic operations, including changes in traffic alignments, work area's and parking restrictions, if any;
- Community feedback and identified issues, comments;
- Impacts on public transport;
- Pedestrian and cyclists impacts; and
- Access to local facilities.

The following road user groups, councils, emergency services and groups are being consulted for input to relevant traffic management plans and forms the Transport & Traffic Liaison Group which meets monthly providing information to the group on proposed arrangements, seeking feedback and agreement:

- RMS;
- Transport Management Centre;
- Warringah Council;
- NSW Police Service;
- NSW Fire and Rescue Service;
- NSW Ambulance Service;
- Forest Coach lines;
- Sydney Buses;
- NSW Bus and Coach Association; and
- NSW Taxi Council.

8.4 Monitoring and Inspections

Project personnel monitoring the network and attending the construction sites will keep communication open with senior site management through 2-way radio communications or mobile phones as appropriate.

All relevant staff and contractors will be trained and informed on incident reporting procedures. During the construction phase of works, incidents will be identified or detected from a network of reports, monitoring or communication links:

- Close Circuit Television (CCTV) system;
- Commuter reports (through a public telephone communications link);
- Close and constant communication with the Transport Management Centre;
- RMS, TfNSW field staff, traffic commanders etc.;
- NSW Police Service – Traffic; and

Site observations by staff and Traffic Controllers.

Daily inspections on all traffic management set-outs will be carried out by a qualified Traffic Controller or by the project's site supervisor. Regular Safety Audits will be conducted throughout the project sites and reported accordingly.

Regular monitoring of local streets that exhibit increases in traffic and would be carried out and would include consultation with Council with regard to temporary measures that could be implemented to manage safety and related issues.

8.5 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of traffic management measures, compliance with this Plan, CoA and other relevant approvals, licenses and guidelines. Audit requirements are detailed in Section 8.4 of the CEMP.

The Traffic Manager will develop and implement a system and calendar for inspections of the infrastructure, assets and areas. These may be planned formal inspections or random periodic inspections. The following details will be recorded:

- Infrastructure, assets, facilities, amenities or areas inspected;
- Nature and extent of any defects present;
- Locations of any defects (segment, distance from start of segment, lane and offset from centreline);
- Recommended repair or maintenance activity (including estimated duration); and
- Timing for any required repair or maintenance activity.

All repairs and maintenance will be in accordance with the intervention levels and timings as defined in Appendix F3 of the SWTC.

FYJV will invite the RMS Representative for a final inspection prior to the anticipated date of Construction Completion to verify functional performance of the infrastructure, assets and areas has been maintained during the period since the pre-construction survey was undertaken.

8.6 Reporting

Reporting requirements and responsibilities are documented in Section 8.5 of the CEMP.

9 Review and improvement

9.1 Continuous improvement

Continuous improvement of this Plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- identify areas of opportunity for improvement of traffic management;
- determine the cause or causes of non-conformances and deficiencies;
- develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies;
- verify the effectiveness of the corrective and preventative actions;
- document any changes in procedures resulting from process improvement; and
- make comparisons with objectives and targets.

9.2 TAMP update and amendment

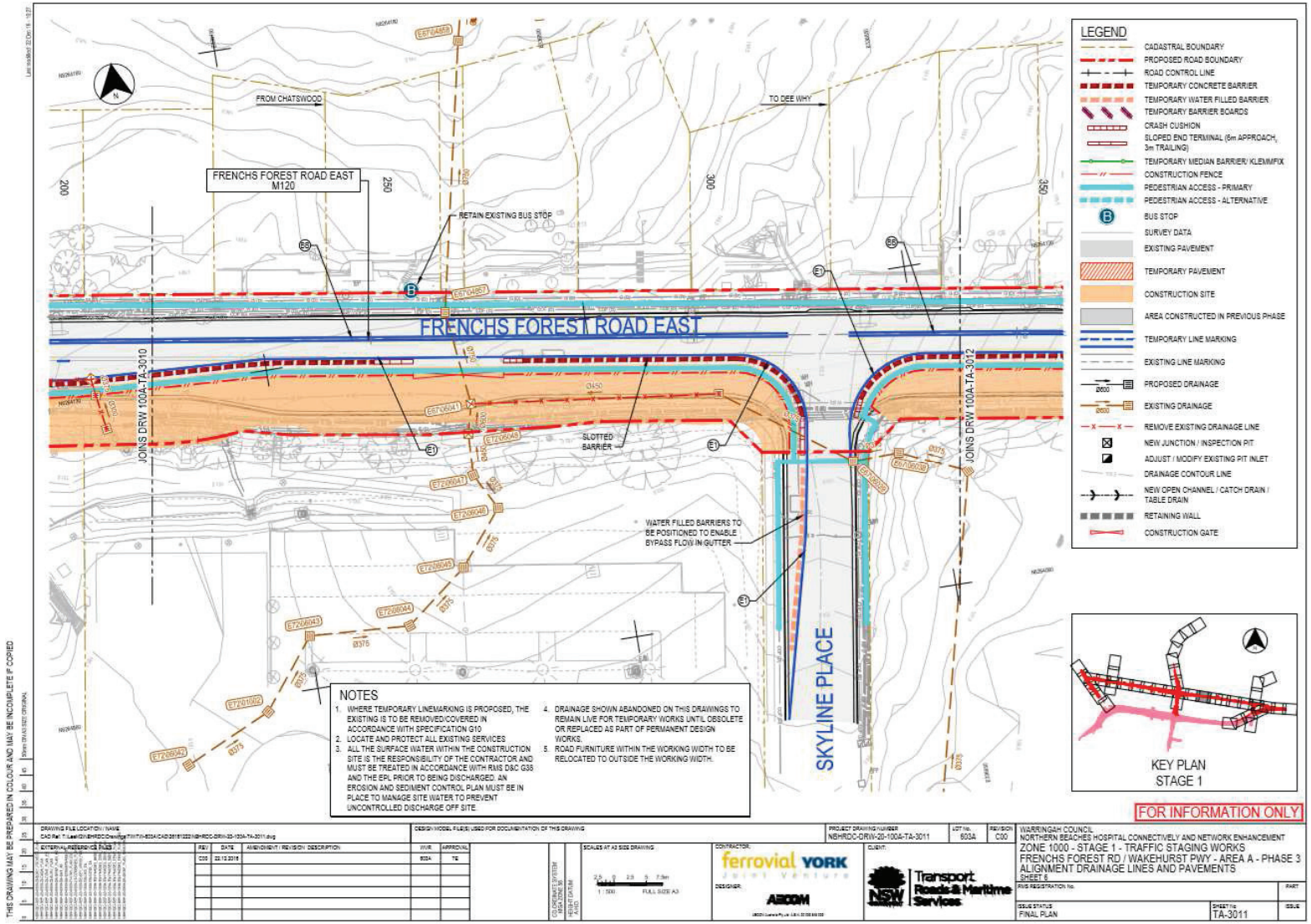
The processes described in Chapters 8 and 9 of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Only the Construction Traffic Manager (in consultation with the Environment Manager) can amend this Plan.

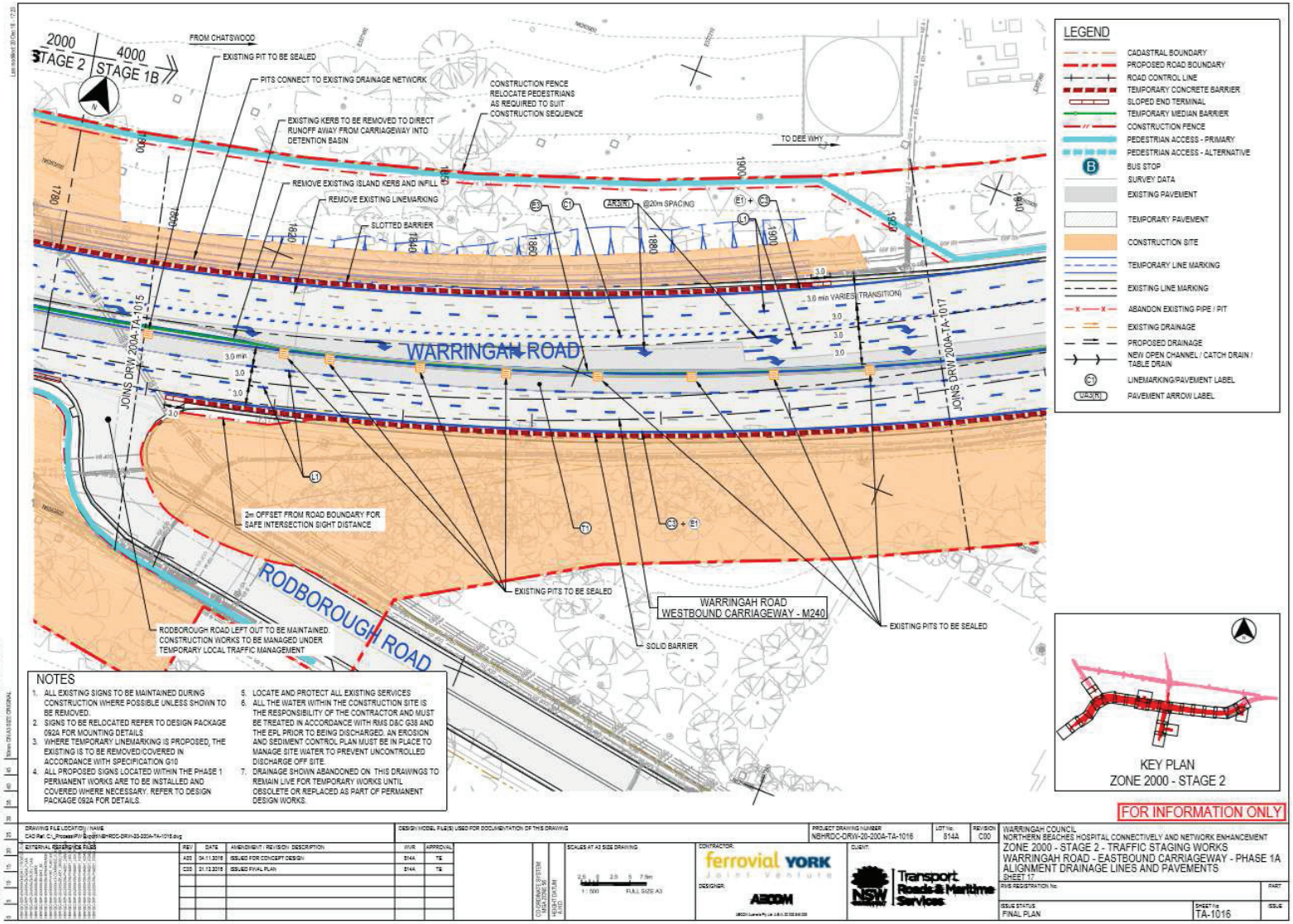
A copy of the updated Plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to Section 10.2 of the CEMP.

The Plan would be updated annually or as required. The new revision would be uploaded to the Project website for stakeholder and community information.

Appendix A: Indicative Construction Staging Plans – Stage 1


FRENCHS FOREST ROAD EAST
M120
FROM CHATSWOOD
TO DEE WHY
RETAIN EXISTING BUS STOP
FRENCHS FOREST ROAD EAST
SKYLINE PLACE
JOINS DRW 100A-TA-3010
JOINS DRW 100A-TA-3012
SLOTTED BARRIER
WATER FILLED BARRIERS TO BE POSITIONED TO ENABLE BYPASS FLOW IN GUTTER
LEGEND
CADASTRAL BOUNDARY
PROPOSED ROAD BOUNDARY
ROAD CONTROL LINE
TEMPORARY CONCRETE BARRIER
TEMPORARY WATER FILLED BARRIER
TEMPORARY BARRIER BOARDS
CRASH CUSHION
SLOPED END TERMINAL (6m APPROACH, 3m TRAILING)
TEMPORARY MEDIAN BARRIER/ KLEMMFIX
CONSTRUCTION FENCE
PEDESTRIAN ACCESS - PRIMARY
PEDESTRIAN ACCESS - ALTERNATIVE
BUS STOP
SURVEY DATA
EXISTING PAVEMENT
TEMPORARY PAVEMENT
CONSTRUCTION SITE
AREA CONSTRUCTED IN PREVIOUS PHASE
TEMPORARY LINE MARKING
EXISTING LINE MARKING
PROPOSED DRAINAGE
EXISTING DRAINAGE
REMOVE EXISTING DRAINAGE LINE
NEW JUNCTION / INSPECTION PIT
ADJUST / MODIFY EXISTING PIT INLET
DRAINAGE CONTOUR LINE
NEW OPEN CHANNEL / CATCH DRAIN / TABLE DRAIN
RETAINING WALL
CONSTRUCTION GATE
NOTES
1. WHERE TEMPORARY LINEMARKING IS PROPOSED, THE EXISTING IS TO BE REMOVED/COVERED IN ACCORDANCE WITH SPECIFICATION G10
2. LOCATE AND PROTECT ALL EXISTING SERVICES
3. ALL THE SURFACE WATER WITHIN THE CONSTRUCTION SITE IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE TREATED IN ACCORDANCE WITH RMS D&C G38 AND THE EPL PRIOR TO BEING DISCHARGED. AN EROSION AND SEDIMENT CONTROL PLAN MUST BE IN PLACE TO MANAGE SITE WATER TO PREVENT UNCONTROLLED DISCHARGE OFF SITE.
4. DRAINAGE SHOWN ABANDONED ON THIS DRAWINGS TO REMAIN LIVE FOR TEMPORARY WORKS UNTIL OBSOLETE OR REPLACED AS PART OF PERMANENT DESIGN WORKS.
5. ROAD FURNITURE WITHIN THE WORKING WIDTH TO BE RELOCATED TO OUTSIDE THE WORKING WIDTH.
KEY PLAN
STAGE 1
FOR INFORMATION ONLY
THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED
WARRINGAH COUNCIL
NORTHERN BEACHES HOSPITAL CONNECTIVELY AND NETWORK ENHANCEMENT
ZONE 1000 - STAGE 1 - TRAFFIC STAGING WORKS
FRENCHS FOREST RD / WAKEHURST PWY - AREA A - PHASE 3
ALIGNMENT DRAINAGE LINES AND PAVEMENTS
SHEET 6
PROJECT DRAWING NUMBER NBHRDC-DRW-20-100A-TA-3011
LOT No. 603A
REVISION C00
ISSUE STATUS FINAL PLAN
SHEET No TA-3011
CONTRACTOR: ferrovial YORK
DESIGNER: AECOM
CLIENT: NSW Transport Roads & Maritime Services

Appendix B: Indicative Construction Staging Plans – Stage 2



NOTES

1. ALL EXISTING SIGNS TO BE MAINTAINED DURING CONSTRUCTION WHERE POSSIBLE UNLESS SHOWN TO BE REMOVED.
2. SIGNS TO BE RELOCATED REFER TO DESIGN PACKAGE 092A FOR MOUNTING DETAILS.
3. WHERE TEMPORARY LINEMARKING IS PROPOSED, THE EXISTING IS TO BE REMOVED/COVERED IN ACCORDANCE WITH SPECIFICATION G10.
4. ALL PROPOSED SIGNS LOCATED WITHIN THE PHASE 1 PERMANENT WORKS ARE TO BE INSTALLED AND COVERED WHERE NECESSARY. REFER TO DESIGN PACKAGE 092A FOR DETAILS.
5. LOCATE AND PROTECT ALL EXISTING SERVICES
6. ALL THE WATER WITHIN THE CONSTRUCTION SITE IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE TREATED IN ACCORDANCE WITH RMS D&C G38 AND THE EPL PRIOR TO BEING DISCHARGED. AN EROSION AND SEDIMENT CONTROL PLAN MUST BE IN PLACE TO MANAGE SITE WATER TO PREVENT UNCONTROLLED DISCHARGE OFF SITE.
7. DRAINAGE SHOWN ABANDONED ON THIS DRAWINGS TO REMAIN LIVE FOR TEMPORARY WORKS UNTIL OBSOLETE OR REPLACED AS PART OF PERMANENT DESIGN WORKS.

FOR INFORMATION ONLY

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR	APPROVAL
A03	04.11.2016	ISSUED FOR CONCEPT DESIGN	514A	TE
C00	21.12.2016	ISSUED FINAL PLAN	514A	TE

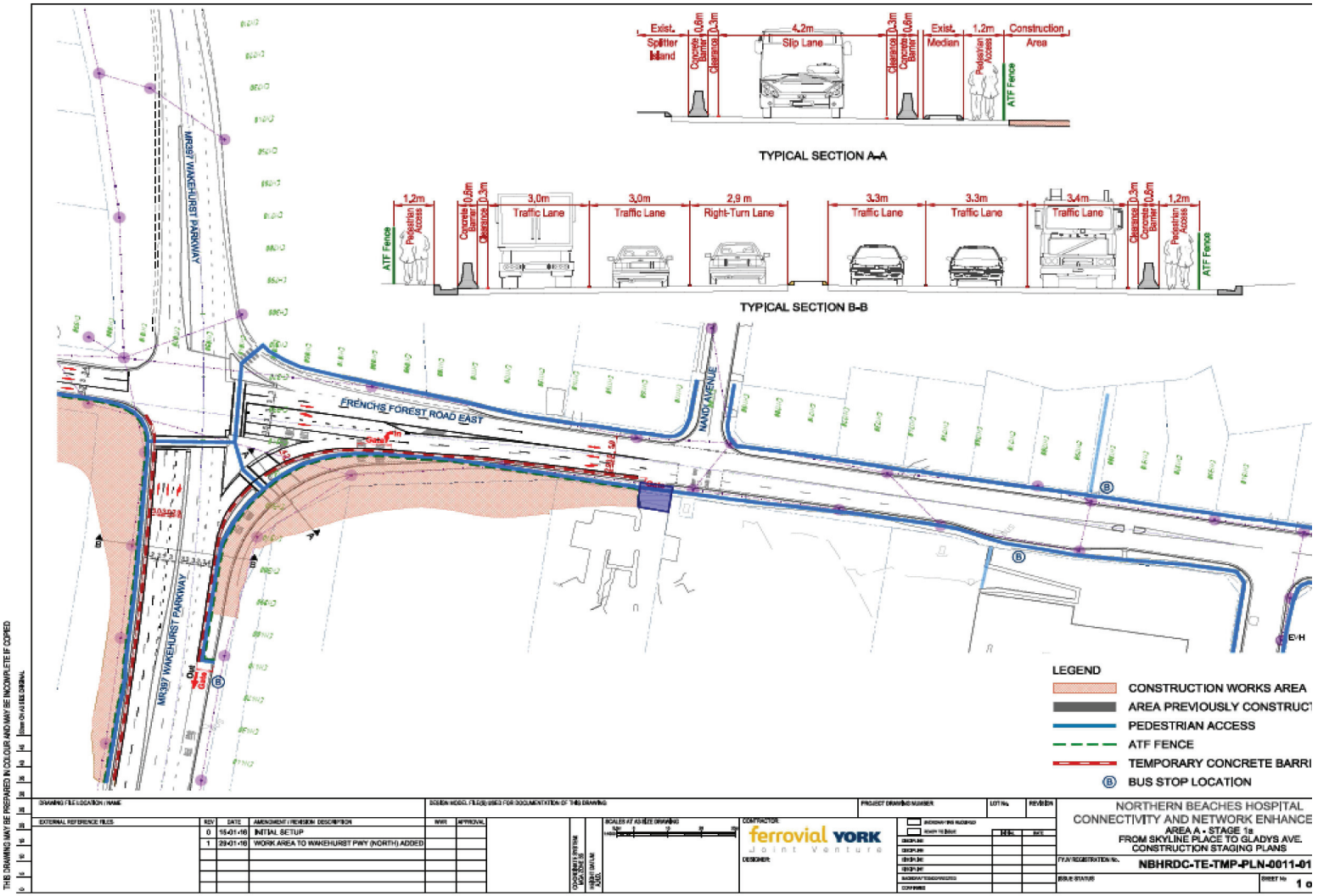
PROJECT DRAWING NUMBER: NBHRDC-DRW-20-200A-TA-1016
LOT No.: 514A
REVISION: C00

WARRINGAH COUNCIL
NORTHERN BEACHES HOSPITAL CONNECTIVELY AND NETWORK ENHANCEMENT
ZONE 2000 - STAGE 2 - TRAFFIC STAGING WORKS
WARRINGAH ROAD - EASTBOUND CARRIAGEWAY - PHASE 1A
ALIGNMENT DRAINAGE LINES AND PAVEMENTS
SHEET 17

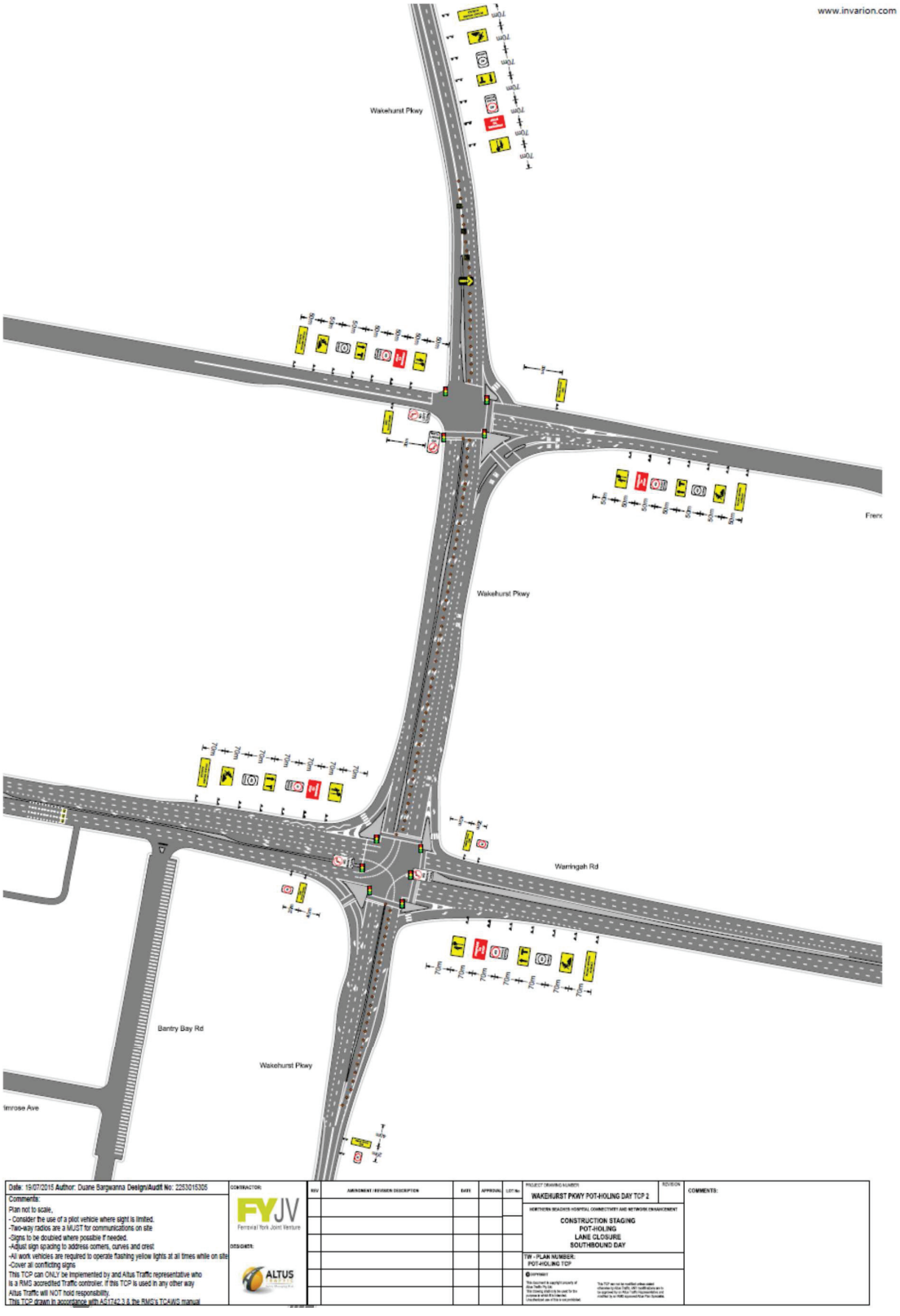
ISSUE STATUS: FINAL PLAN
SHEET No: TA-1016

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

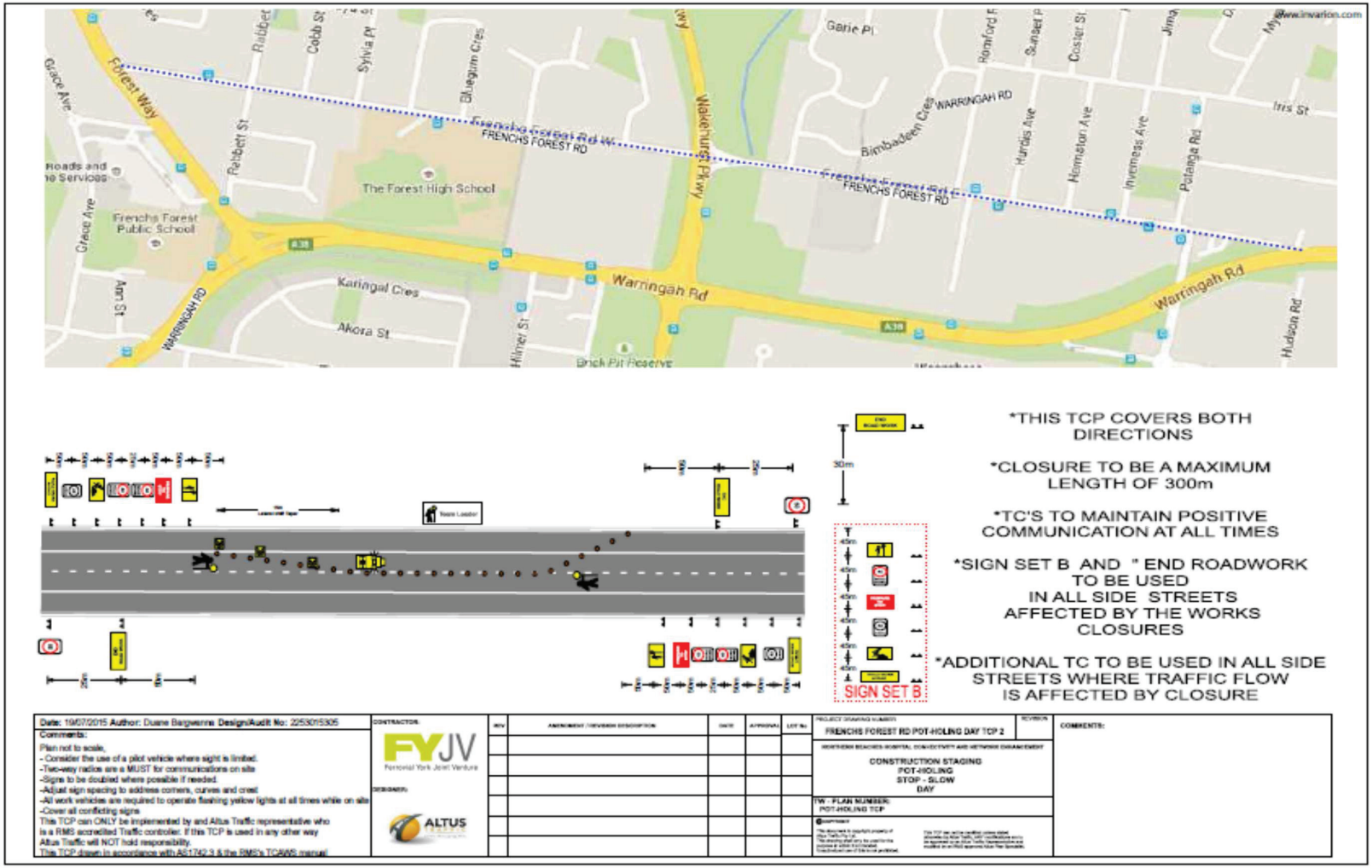
Appendix C: Example Traffic Staging Drawing


Exist. Splitter Island
Concrete Barrier
0.6m
Clearance
0.3m
4.2m
Slip Lane
Exist. Median
1.2m
Pedestrian Access
Construction Area
ATF Fence
TYPICAL SECTION A-A
1.2m
3.0m Traffic Lane
3.0m Traffic Lane
2.9 m Right-Turn Lane
3.3m Traffic Lane
3.3m Traffic Lane
3.4m Traffic Lane
TYPICAL SECTION B-B
MR387 WAKEHURST PARKWAY
FRENCHS FOREST ROAD EAST
MANDO AVENUE
LEGEND
CONSTRUCTION WORKS AREA
AREA PREVIOUSLY CONSTRUCT
PEDESTRIAN ACCESS
ATF FENCE
TEMPORARY CONCRETE BARRI
BUS STOP LOCATION
NORTHERN BEACHES HOSPITAL
CONNECTIVITY AND NETWORK ENHANCE
AREA A - STAGE 1a
FROM SKYLINE PLACE TO GLADYS AVE.
CONSTRUCTION STAGING PLANS
NBHRDC-TE-TMP-PLN-0011-01
ferrovial YORK
Joint Venture

Appendix D: Example Traffic Control Plan


www.invarion.com
Wakehurst Pkwy
Wakehurst Pkwy
Warringah Rd
Bantry Bay Rd
Wakehurst Pkwy
Imrose Ave
Date: 19/07/2015 Author: Duane Sargwanna Design/Audit No: 2263015305
Comments:
Plan not to scale,
- Consider the use of a pilot vehicle where sight is limited.
-Two-way radios are a MUST for communications on site
-Signs to be doubled where possible if needed.
-Adjust sign spacing to address corners, curves and crest
-All work vehicles are required to operate flashing yellow lights at all times while on site
-Cover all conflicting signs
This TCP can ONLY be implemented by and Altus Traffic representative who is a RMS accredited Traffic controller. If this TCP is used in any other way Altus Traffic will NOT hold responsibility.
This TCP drawn in accordance with AS1742.3 & the RMS's TCAWG manual
CONTRACTOR:
FYJV
Ferrovial York Joint Venture
DESIGNER:
ALTUS
REV
AMENDMENT / REVISION DESCRIPTION
DATE
APPROVAL
LOT No.
PROJECT DRAWING NUMBER:
WAKEHURST PKWY POT-HOLING DAY TCP 2
REVISION
NORTHERN BEACHES HOSPITAL CONNECTIVITY AND NETWORK ENHANCEMENT
CONSTRUCTION STAGING
POT-HOLING
LANE CLOSURE
SOUTHBOUND DAY
TW - PLAN NUMBER:
POT-HOLING TCP
COMMENTS:

Appendix E: Example Vehicle Management Plan


Forest Way
Rabbett St
Cobb St
Sylvia Pl
Bluegum Cres
Garie Pl
Romford Rd
Sunset Pl
Cosier St
Jimga
Myra
Iris St
Grace Ave
Roads and
Services
Frenchs Forest
Public School
The Forest High School
Frenchs Forest Rd W
FRENCHS FOREST RD
Frenchs Forest Rd E
FRENCHS FOREST RD
Wakehurst Pkwy
Bimbadeen Cres
WARRINGAH RD
Hurdis Ave
Homelton Ave
Inverness Ave
Potanga Rd
A38
Karingal Cres
Akora St
Warringah Rd
Hilmer St
Brick Pit Reserve
Hudson Rd
30m
SIGN SET B
*THIS TCP COVERS BOTH DIRECTIONS
*CLOSURE TO BE A MAXIMUM LENGTH OF 300m
*TC'S TO MAINTAIN POSITIVE COMMUNICATION AT ALL TIMES
*SIGN SET B AND " END ROADWORK TO BE USED IN ALL SIDE STREETS AFFECTED BY THE WORKS CLOSURES
*ADDITIONAL TC TO BE USED IN ALL SIDE STREETS WHERE TRAFFIC FLOW IS AFFECTED BY CLOSURE
Date: 19/07/2015 Author: Duane Baigwenne Design/Audit No: 2253015305
Comments:
Plan not to scale,
- Consider the use of a pilot vehicle where sight is limited.
-Two-way radios are a MUST for communications on site
-Signs to be doubled where possible if needed.
-Adjust sign spacing to address corners, curves and crest
-All work vehicles are required to operate flashing yellow lights at all times while on site
-Cover all conflicting signs
This TCP can ONLY be implemented by and Altus Traffic representative who is a RMS accredited Traffic controller. If this TCP is used in any other way Altus Traffic will NOT hold responsibility.
This TCP drawn in accordance with AS1742.3 & the RMS's TCAWS manual
CONTRACTOR:
FYJV
Fernhill York Joint Venture
DESIGNER:
ALTUS
FRENCHS FOREST RD POT-HOLING DAY TCP 2
CONSTRUCTION STAGING
POT-HOLING
STOP - SLOW
DAY
TW - PLAN NUMBER:
POT-HOLING TCP
COMMENTS:

Appendix F: Example Pedestrian Movement Plan

evolution
ferrovial YORK
PEDESTRIAN MOVEMENT PLAN
LEGEND:
DATE:
SET UP:
PACK UP:
NAME:
CARD NO:
NOTES:
FYJV-TCP-103
51 Heathcote Rd
Moorebank 2170
NSW

Appendix G: Traffic Incident Procedure

TRAFFIC INCIDENT PROCEDURE

1. Contact the Emergency Coordinator of the incident ASAP. If the Emergency Coordinator is not contactable, call Emergency Services on 000 or Fire and Rescue NSW (Reporting of Incidents) on 1300 729 579 for help.

2. The Emergency Coordinator will take control of the emergency as soon as possible and contact Emergency Services (if not contacted already) and Traffic Control Site Manager to assist.

3. The Traffic Control Site Manager will contact a towing service and advise them on towing services required (standard or heavy towing truck required).

4. The Traffic Control Site Manager shall notify and coordinate with the Transport Management Centre.

5. When directed by the Transport Management Centre or Police, utilise site emergency towing facilities to remove broken down or accident damaged vehicles from traffic lanes.

6. The Emergency Coordinator will instruct one of the site personnel to wait and direct the emergency service and response vehicles at the site access point.

7. The Emergency Coordinator will secure and make safe the affected area if this can be carried out with safety (including installation of early traffic control measures adjacent to incident location such as cones, signs, clearing debris).

8. The Emergency Coordinator will ensure all injured person(s) receive prompt medical attention. Do not attempt to move the injured person unless they are in DANGER.

9. The Police and other Emergency Services will take control as soon as they arrive on site.

10. The Project Manager must contact the Principal's Representatives (if they are not present onsite) and advise of the incident details including its location.