APPENDIX B1

Construction Traffic and Access Management Plan

Woolgoolga to Ballina Pacific Highway Upgrade

(Sections 3 to 11)

OCTOBER 2015

Document control

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1	20/07/15	Draft for Roads and Maritime comment	A Zambolt
2	20/08/15	Draft for Agency and Council comment	A Zambolt
3	8/10/15	Additional comment	A Zambolt
4	9/10/15	Final for approval	A Zambolt

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Glossary / Abbreviations

CEMP	Construction Environmental Management Plan
CoA	Condition of approval
CTAMP	Construction Traffic and Access Management Plan
DP&I	Former NSW Department of Planning and Infrastructure (now DP&E)
DP&E	NSW Department of Planning and Environment
EIS	Woolgoolga to Ballina Pacific Highway Upgrade Environmental Impact Statement (December, 2012)
EPA	NSW Environment Protection Authority
EP&A Act	*NSW Environmental Planning and Assessment Act 1979*
EWMS	Environmental Work Method Statement
MCoA	Minister for Planning's Conditions of Approval
Minister, the	NSW Minister for Planning
NPW Act	*NSW National Parks and Wildlife Act 1974*
OEH	NSW Office of Environment and Heritage
Pacific Complete	Pacific Complete Delivery Partner
PoEO Act	*NSW Protection of the Environment Operations Act 1997*
Project, the	Woolgoolga to Ballina Pacific Highway Upgrade project
Secretary	Secretary of the Department of Planning and Environment
SPIR	Woolgoolga to Ballina Pacific Highway Upgrade Submissions Preferred Infrastructure Report (November, 2013)
SSI	State Significant Infrastructure
SZA	Speed Zones Authorisations
SWMS	Safe Work Method Statement
ROL	Road Occupancy Licence
RMS	NSW Roads and Maritime Services
TMC	Traffic Management Centre
TCWS	Traffic Control at Work Sites Manual
TSP	Traffic Staging Plans
STMSP	Specific Traffic Management and Safety Plan
VMP	Vehicle Movement Plan
VMS	Variable Messages Sign

1 Minister's Conditions of Approval

The MCoAs relevant to this plan are listed in Table 1-1.

Table 1-1 Conditions of Approval relevant to the Construction Traffic and Access Management Plan

MCoA No.	Condition requirements	Document reference
B15	Construction activities associated with the SSI shall be undertaken during the following standard construction hours: (a) 7:00am to 6:00pm Monday to Friday, inclusive; and (b) 8:00am to 5:00pm Saturday; and (c) at no time on Sunday or public holidays	2.11
B16	Construction works outside the standard construction hours may be undertaken in the following circumstances: a) construction works that generate noise that is: (i) no more than 5 dB(A) above rating background level at any residence in accordance with the *Interim Construction Noise Guideline* (DECC, 2009); and (ii) no more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (DECC, 2009) at other sensitive receivers; or b) for the delivery of materials required outside the standard construction hours by the NSW Police Force or other authorities for safety reasons; or c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environment harm; or d) between 6:00am and 7:00am and 6:00pm and 7:00pm Monday to Friday (except public holidays) in sparsely populated areas (these construction hours may be reviewed and/or revoked by the Secretary in consultation with the EPA in the case of unresolved noise complaints); or e) low noise impact activities and work between: (iii) 6:00am and 7:00am Monday to Friday; and/or (iv) 6:00pm and 7:00pm Monday to Friday; or f) works approved through an EPL; or g) works approved by a Construction Environment Management Plan or Construction Noise and Vibration Management Plan for the SSI.	2.11
B18	Construction activities resulting in impulsive or tonal noise emission (such as rock breaking, rock hammering, pile driving) shall only be undertaken:	2.11

MCoA No.	Condition requirements	Document reference
	(a) between the hours of 8:00am to 5:00pm Monday to Friday; (b) between the hours of 8:00am to 1:00pm Saturday; and (c) In continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block. For the purposes of this condition 'continuous' includes any period during which there is less than one hour respite between ceasing and recommencing any of the work the subject of this condition. The works subject to this condition may be undertaken in sparsely populated areas within the standard construction hours.	
B21	Blasting associated with the SSI shall only be undertaken during the following hours: (a) 9:00am to 5:00pm, Monday to Friday, inclusive; (b) 9:00am to 1:00pm on Saturday; and (c) At no time on Sunday or public holidays. Blasting outside the above hours and in accordance with the standard construction hours where: (i) no sensitive receivers in sparsely populated areas would be impacted by blasting; or (ii) an agreement has been made with receivers within 200m of the blast zone to permit blasting in accordance with the standard construction hours. This condition does not apply in the event of a direction from the NSW Police Force or other relevant authority for the safety or emergency reasons to avoid loss of life, property loss and/or to prevent environmental harm.	2.11
B56	The SSI shall be designed with the objective of minimising adverse changes to existing access arrangements and services for other transport modes and, where feasible and reasonable, facilitate an improved level of access and service to other transport modes comparable to or better than the existing situation	4.7.3
B57	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.	5.4.1, 5.4.2
B58	Construction vehicles (including staff vehicles) associated with the SSI shall be managed to: (a) minimising parking or queuing on public roads; (b) minimise idling and queuing in local residential streets	4,4.3,4.4, 4.5, 5.5

MCoA No.	Condition requirements	Document reference
	where practicable; (c) minimise the use of local roads (through residential streets and town centres) to gain access to construction sites and compounds; and (d) adhere to the nominated haulage routes identified in the Construction Traffic Management Plan	
B59	In relation to new or modified local road, parking, pedestrian and cycle infrastructure, the SSI shall, where feasible and reasonable, be designed: (a) in consultation with the relevant council; (b) take into consideration existing and future demand, road safety and traffic network impacts; (c) to meet relevant design, engineering and safety guidelines, including Austroads Guide to Traffic Engineering Practice; and be certified by an appropriately qualified person that has considered the above matters.	4.7.5, 5.8
B62	Unencumbered access to private property shall be maintained during construction unless otherwise agreed with the landowner in advance. A landowner's access that is physically affected by the SSI shall be reinstated to at least an equivalent standard, in consultation with the landowner.	4.5.1, 4.6.1, 5.8.6
B63	The Applicant shall, in consultation with relevant landowners, construct the SSI in a manner that minimises intrusion and disruption to agricultural operations/activities in surrounding properties (e.g. stock access, access to farm dams etc.), unless otherwise agreed by the landowner.	4.6.1
B65	Where the SSI traverses a state forest, the Applicant shall, in consultation with the NSW Forestry Corporation, ensure that construction does not unduly disrupt existing forestry activities, access for firefighting and access for the other activities within the state forests, unless otherwise agreed by the NSW Forestry Corporation.	4.7.3
B66	The SSI shall be constructed in a manner that minimises dust emissions from the site, including wind-blown and traffic generated dust and tracking of material onto public roads. All activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site. Should such visible dust emissions occur at any time, the Applicant shall identify and implement all feasible and reasonable dust mitigation measures, including cessation of relevant works, as appropriate, such that emissions of visible dust cease.	5.5
C1	Issues that shall be addressed through the Community Communication Strategy include (but are not necessarily limited to): (i) traffic management (including property access, pedestrian	6

MCoA No.	Condition requirements	Document reference
	access)	
D19	Upon determining the haulage route(s) for construction vehicles associated with the SSI, and prior to construction, an independent and qualified expert shall prepare a **Road Dilapidation Report.** The Report shall access 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 relevant council for review prior to the commencement of haulage. Following completion of construction, a subsequent Report shall be prepared to access any damage to the road that may have resulted from the construction of the SSI. Measures undertaken to restore or reinstate roads affected by the SSI shall be undertaken in a timely manner, in accordance with the reasonable requirements of the relevant council, and at the full expense of the Applicant.	4.5.1, 4.6.1, 5.8.6
D25(d)(v)	The Applicant shall prepare and implement (following approval) a Construction Environmental Management Plan for the SSI, prior to the commencement of construction, or as otherwise agreed by the Secretary. The Plan shall be prepared in consultation with the EPA, OEH, DPI Fisheries), NOW and DoE and outline the environmental management practices and procedures that are to be followed during construction, and shall be prepared in consultation with the relevant government agencies and in accordance with the Guideline for the Preparation of environmental Management Plans (Department of Infrastructure, Planning and Natural Resources, 2004). The Plan shall include, but not necessarily be limited to: (d) an environmental risk analysis to identify the key environmental performance issues associated with the construction phase and 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). In particular, the following environmental performance issues shall be addressed in the Plan: (v) measures to monitor and manage dust emissions including dust from stockpiles, blasting, traffic on unsealed public roads and materials tracking from construction sites onto public roads;	This condition will be addressed in the Air Quality Plan
D26 (b)	a **Construction Traffic and Access Management Plan** to manage construction traffic and access impacts of the SSI. The Plan shall be developed in consultation with the	This plan

MCoA No.	Condition requirements	Document reference
	relevant council and shall 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;	4. 4, Appendix B
	(ii) details of vehicle movements for construction sites and site compounds including parking, dedicated vehicle turning areas, and ingress and egress points;	4.4
	(iii) identification of construction impacts that could result in disruption of traffic, public transport, pedestrian and cycle access, property access, including details of oversize load movements;	4.7.3 & 5.4
	(iv) details of management measures to minimise traffic impacts, including temporary road work traffic control measures, onsite vehicle queuing and parking areas and management measures to minimise peak time congestion and measures to ensure safe pedestrian and cycle access;	4.4, 4.5.2, 5.4
	(v) details of measures to manage traffic movements, parking, loading and unloading at ancillary facilities during out-of-hours work;	4.4, 4.5.2
	(vi) a response plan which sets out a proposed response to any traffic, construction or other incident; and	5.9.8
	(vii) mechanisms for the monitoring, review and amendment of this plan.	2.7

2 Introduction

The Woolgoolga to Ballina Pacific Highway Upgrade (Sections 3 to 11) project (the project) involves upgrading around 155 kilometres of highway to four-lane dual-carriageway road.

Laing O'Rourke Australia Construction Pty Limited and Parsons Brinckerhoff Australia Pty Limited (together Pacific Complete) have been appointed by Roads and Maritime Services (Roads and Maritime) as the delivery partner for the project.

The project has been divided into 11 sections as shown in Table 2-1 below and in Figure 2 on page 16.

Table 2-1 Project sections

Section	Location	Length (km)
1	Woolgoolga to Halfway Creek	17.0
2	Halfway Creek to Glenugie Upgrade	11.7
3	Glenugie Upgrade to Tyndale	35.0
4	Tyndale to Maclean	13.2
5	Maclean to Iluka Road	14.4
6	Iluka Road to Devils Pulpit upgrade	9.2
7	Devils Pulpit upgrade to Trustums Hill	15.3
8	Trustums Hill to Broadwater National Park	11.2
9	Broadwater National Park to Richmond River	7.5
10	Richmond River to Coolgardie Road	13.5
11	Coolgardie Road to Ballina Bypass	5.4

Section 3 (Glenugie Upgrade) to Section 11 (Ballina Bypass) of the project involves upgrading approximately 125 kilometres of highway. Starting from the southern end, the project would tie in with the northern extent of the Glenugie Upgrade project (about 12 kilometres south of Grafton), which is currently being upgraded to dual carriageway. At its northern end, the project would tie in with the southern extent of the Ballina Bypass (which is about six kilometres south-west of Ballina).

2.1 Purpose of this document (CTAMP)

This Construction Traffic and Access Management Plan (CTAMP) for sections 3 to 11 is a sub-plan of the Construction Environmental Plan (CEMP) for sections 3 to 11, which has been prepared to comply with the Minister for Planning's Conditions of Approval for the Woolgoolga to Ballina project. Sections 1 and 2 of the project have been covered by a separate CEMP and CTAMP for each section, as they will be delivered by two different contractors.

The purpose of this CTAMP is to demonstrate how Pacific Complete and the design and construction contractors will comply with the traffic management and safety objectives and contractual requirements for Section 3 to Section 11 of the Woolgoolga to Ballina Pacific Highway Upgrade project to the satisfaction of Roads and Maritime and all other relevant stakeholders and authorities.

This CTAMP provides a structured approach to the management of traffic and road safety issues during the construction of the project. Implementing this CTAMP effectively will ensure that the project team meets regulatory and policy requirements in a systematic manner and continually improves its performance.

Pacific Complete acknowledges the effective management of traffic and the safety of road users is paramount to the successful implementation of day-to-day activities during the construction of this project. This CTAMP seeks to ensure the certainty of the delivery of the prescribed road user requirements including the provision of a safe road environment, minimising impacts on the road network and maintaining access for all road users and the local community.

This CTAMP has been prepared as a requirement of, and in accordance with, the Minister's Conditions of Approval (CoA) D26 (b).

2.2 Plan objectives

The traffic management principles to be applied by Pacific Complete on this project will ensure:

- The provision of a safe environment for road users and workers.
- The overall impact on road users will be kept to a minimum.
- Access is maintained for the local community, transport operators and commercial developments.
- Road users and local communities are regularly informed in relation to changed traffic conditions.
- Compliance with the Environmental Impact Statement (EIS) and, Submissions Preferred Infrastructure Report (SPIR), legislation and other regulatory requirements.
- To minimise impacts from construction vehicles on local communities along the construction routes.

This plan has been developed in accordance with these principles, with the primary objective of promoting the continuous, safe and efficient movement of road users through the project corridor. The CTAMP and the additional Specific Traffic Management and Safety Plans (STMSPs) that will be developed for each specific traffic stage of the project works will aim to:

- Ensure all road users are given consideration during all phases of the project works
- Maximise the safety for the workers, by isolating work areas from traffic flows, applying low exposure work methods, through the installation of appropriate traffic control; and providing education to the construction workforce
- Provide a safe environment for all road users through the installation of a high standard of traffic controls, which effectively warn, inform, guide and that comply with the best practice, Roads and Maritime requirements and the Australian Standards
- Plan and stage all works effectively to avoid road occupancy where possible and minimise conflict points on the existing road network
- Implement traffic control operations that minimise delays to road users taking into consideration traffic volumes including peak times of the day and seasonal traffic
- Minimise driver confusion by ensuring clear and concise traffic management schemes
- Effectively plan all construction vehicle movements including the provision of safe ingress and egress points at the interfaces with the existing road network
- Limit obstructions and restrictions on the existing road network, and when required provide alternate routes to maintain access for the local community, transport operators including over-dimension load movements and local businesses
- Proactively support the Roads and Maritime and emergency services unplanned incident management strategies, through incident detection, communication, initial response and sharing of resources

- Effectively communicate changed traffic conditions with key stakeholders including the community, road authorities, Police, Local Councils, emergency service agencies and transport operators
- Satisfy the key requirements related to traffic, transport and access contained within the Environmental Assessment and CoA
- Ensure that no one is injured on the project and there is no property damage
- Actively monitor traffic impacts related to the construction works
- Maximise the value and outcomes of traffic monitoring activities so that the information can be applied to the planning and implementation of traffic control plans
- Ensure compliance with relevant specifications and the Roads and Maritime – Traffic Control at Work Sites (TCWS) Manual
- Meet the Program/Schedule and have construction complete by December 2019 (to open to traffic by 2020)
- Deliver a high standard of community engagement and awareness during the construction works.

2.3 Project overview and contractual requirements

The CTAMP describes the approach and procedures to be adopted to comply with the requirements of the following principal project documents listed below:

- The project contract.
- The Environmental Assessment and project CoAs.
- The Roads and Maritime G10 Traffic Management Specification.
- The Roads and Maritime Road Occupancy Licence.

In addition, the requirements of the following documents shall be satisfied:

- Relevant Australian Standards for traffic management practices.
- The Roads and Maritime Traffic Control at Work Sites Manual.
- Relevant AUSTROADS Guidelines.
- Relevant Roads and Maritime Technical Directions and Guidelines.
- Pacific Highway Road User Delay Management Strategy.
- Project policies and procedures.

The traffic management and road safety principles, strategies and measures detailed in this plan will also address the requirements of relevant key authorities and stakeholders.

The strategies identified in this CTAMP will specifically address the following:

- Traffic management objectives.
- Risk Management.
- Organisation, roles and responsibilities.
- Traffic Management processes.
- Construction activities and potential road network impacts.
- The implementation of traffic management controls and measures to be applied.
- Conducting traffic control inspections, audits and monitoring.
- Stakeholders and the community consultation process.
- Reporting requirements.

2.4 Plan relationship

This CTAMP operates as the master document in a set of plans, drawings and instructions dealing with the safe and effective management of traffic during the design, construction and maintenance phases of the project. The CTAMP also interfaces with other associated plans produced as part of the overall Project Management System.

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

- Specific Traffic Management and Safety Plan sub-plan(s).
- Construction Staging Drawing(s).
- Temporary Works Drawing(s).
- Traffic Control Plans (TCPs).
- Vehicle Movement Plans (VMPs).
- Traffic instructions.
- Safe Work Method Statements (SWMS).

The relationship between the CTAMP and the related project management documents are shown in Figure 1.

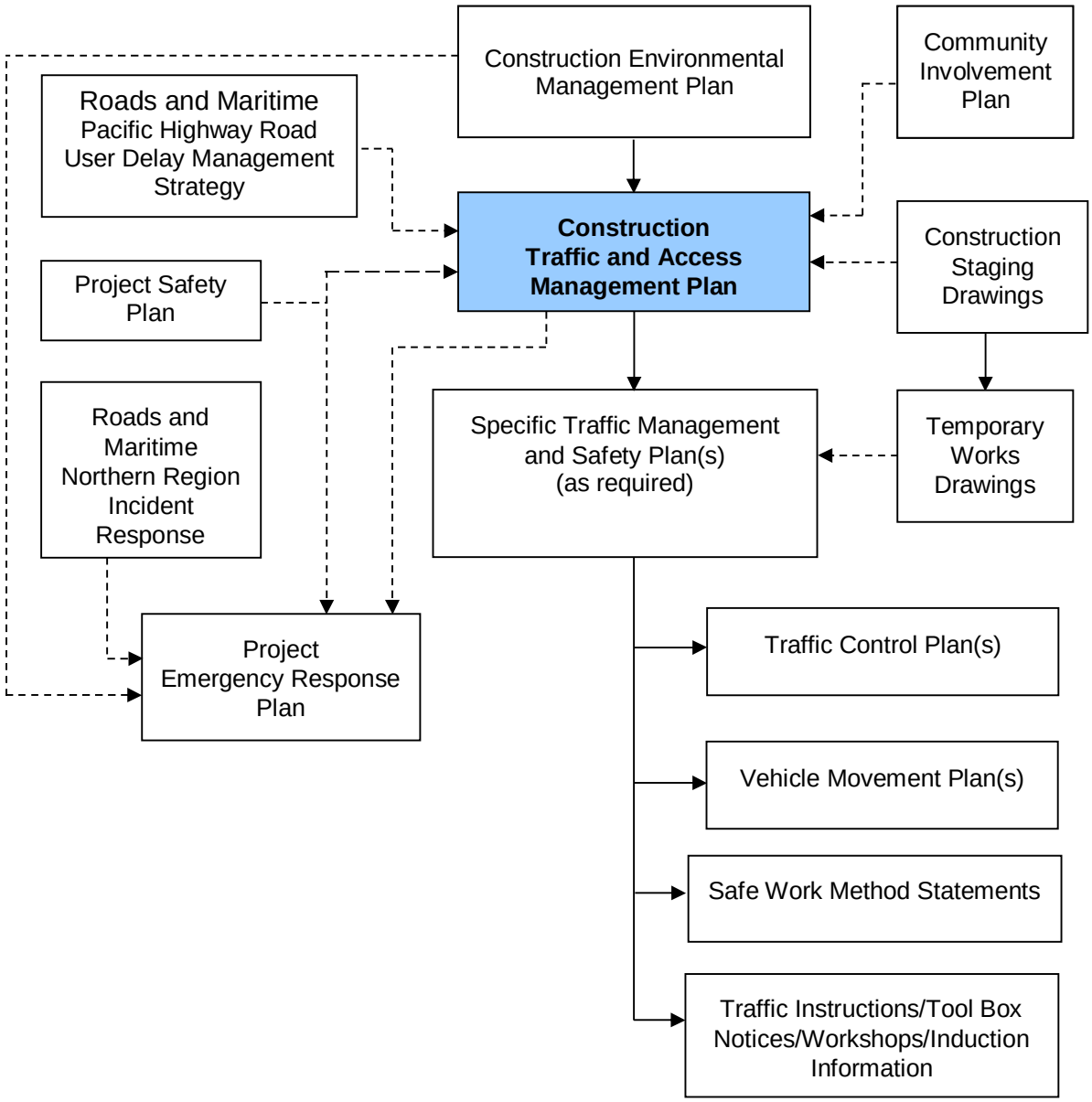


Figure 1 Plan relationship

2.5 Consultation

Extensive consultation for the project commenced during the route selection phase and continued during the environmental impact assessment of the concept design. The primary objective of consultation was to keep stakeholders well informed and involved during each stage of project development.

Further consultation with relevant stakeholders and government authorities has continued through the development of the CEMP and associated plans. Those consulted include:

- NSW Environment Protection Authority.
- NSW Department of Primary Industries – Fisheries Conservation and Aquaculture.
- NSW Office of Environment and Heritage.
- Clarence Valley Council.
- Richmond Valley Council.
- Ballina Shire Council.
- NSW Office of Water.
- Commonwealth Department of the Environment.

Consultation will continue throughout the project with relevant stakeholders and government authorities, applicable to sections 3 to 11 of the project. The outcomes of the consultation will be documented where relevant in subsequent revisions of the CTAMP.

Future consultation will be undertaken with relevant authorities eg Yamba Port Authority in relation to potential impacts from construction of major bridges over the Clarence and Richmond Rivers.

2.6 Plan distribution

This CTAMP is available to all personnel and sub-contractors via the project document control management system. An electronic copy can be found on the project website.

The document is uncontrolled when printed. One controlled hard copy of the CTAMP and supporting documentation will be maintained by the Pacific Complete Traffic Manager at the Project Office.

Registered copies will be distributed to:

- Project Managers.
- Construction Managers.
- Environmental Managers.
- Communications Managers.
- Roads and Maritime Authorised Delegate.
- Roads and Maritime Environmental Services Manager, Pacific Highway.
- Roads and Maritime Traffic Manager, Pacific Highway.

2.7 Plan revision

The CTAMP is a sub plan of the Construction Environment Management Plan (CEMP) and the review and document control processes for this plan are detailed in Sections 9 and 10 of the CEMP. The Pacific Complete Traffic Manager is responsible for the review and update of this sub plan in accordance with the process described in the CEMP.

The CTAMP will be reviewed at least every 12 months (minimum; to be reviewed immediately following any major changes) by the Pacific Complete Traffic Manager to confirm its appropriateness and effectiveness for managing the traffic impacts of the specific works occurring on site. In addition to this process, an adaptive management process will be applied whereby the CTAMP will be regularly reviewed and updated to address:

- Changes required as a result of feedback from stakeholders.
- Changes in the design and construction process that materially affects the CTAMP.
- The need to prevent the reoccurrence of any compromise of safety of road users, the public or the road workers.
- Changes identified by the continuous improvements process.
- Changes in design or construction sequence, staging, methodology or re-sourcing.
- Progress of the construction works.
- Changes in access to the project site.
- Changes in risks or evidence that the risk assessment is no longer valid.
- Following any adverse inspection/audit findings.
- Changes as sections of works are completed and maintenance period commences.
- Changes as directed by the Roads and Maritime site management as required.

When reviewing and amending the CTAMP, the Pacific Complete Traffic Manager will apply the following procedure:

- Conduct a formal investigation of the specific matter / request for amendment.
- Consult with the relevant stakeholders and develop an appropriate solution / mitigation measure.
- Prepare the necessary amendments to the CTAMP.
- Forward the amendments to the relevant stakeholders for review and comment.
- Review stakeholder feedback, and where necessary revise amendments and conduct further consultation.
- Finalise the CTAMP amendments.
- Distribute revised CTAMP (controlled copies) to all stakeholders, as per the CTAMP distribution list.
- Hold internal, and where necessary external, information sessions detailing the CTAMP amendments and any specific mitigation measures.
- Apply the amendments and specific mitigation measures on the project.
- Monitor the outcomes resulting from the changes and conduct further revisions as necessary.

The relevant transport stakeholders include Roads and Maritime site management representatives, Transport Management Centre (TMC), Clarence Valley Council, Richmond Valley Council, Ballina Shire Council, emergency service agencies, transport associations and Department of Planning and Environment (DP&E).

2.8 Continuous improvement

Continuous improvement of this plan will be achieved by the ongoing evaluation of traffic management performance against the relevant CoA's and CTAMP objectives 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 and performance.
- 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.
- Make comparisons with objectives.

2.9 Project description

The general features of the portion of the project covered by this CTAMP are:

- Approximately 125km (sections 3 to 11) of motorway standard highway, comprising a four-lane divided carriageway (two lanes in each direction) that can be upgraded to a six-lane divided carriageway in the future, if required.
- Bypass of Grafton, South Grafton, Ulmarra, Woodburn, Broadwater and Wardell. The following major interchanges are to provide access to and from the upgraded highway at:
    - Glenugie (Eight Mile Lane)
    - Tyndale (Sheey's Lane)
    - Maclean (Goodwood Street)
    - Harwood (Yamba Road)
    - Harwood (Watts Lane)
    - Woombah (Iluka Road)
    - Woodburn (Trustums Hill Road)
    - Broadwater (Broadwater - Evans Head Road)
    - Wardell (Coolgardie Road)
- 37 bridges over rivers, creeks and floodplains, including major bridges over the Clarence and Richmond rivers.
- Bridges and underpasses to maintain access along local roads crossed by the project
- Service roads and access roads to maintain connections to existing local roads and properties
- Connectivity structures to help wildlife cross above or below the project, including median crossings for arboreal mammals, dedicated culverts and land bridges
- Rest areas located at around 50-kilometre intervals at Pine Brush (Tyndale), north of Mororo Road, and north of Richmond River; to compliment rest areas at Ballina and Arrawarra being undertaken as part of other projects
- Checking stations for heavy vehicles within Richmond River rest area.

Figure 2 Woolgoolga to Ballina overview (Sections 3 to 11)

2.9.1 Project alignment

As shown in Figure 2, the project alignment would follow the existing Pacific Highway alignment in some locations and deviate from this alignment in others. In general, where the project alignment follows the existing highway alignment, the carriageway of the existing highway would be incorporated the upgrade, becoming either the northbound of southbound carriageway of the Pacific Motorway.

Only one new carriageway would need to be constructed in these locations, although works may also be carried out on the existing highway carriageway to improve its gradient or alignment in accordance with design standards.

Where the proposed alignment deviates from the existing highway alignment, two new carriageways would be constructed, either on a completely new alignment or closely following the existing alignment.

Section 3 – Glenugie Upgrade to Tyndale

Section 3 of the project is about 35.0 kilometres long, from the northern end of the current Glenugie Upgrade to Tyndale.

This section of the upgrade would follow a new alignment to the east of the existing highway, bypassing the towns from South Grafton to Tyndale and passing through a mix of open grazing land and remnant bushland on the eastern side of Coldstream River. No major delays to motorists are envisaged due to the isolation of Section 3 from the existing highway.

Section 4 – Tyndale to Maclean

Section 4 of the project is about 13.2 kilometres long, from Tyndale to Maclean.

This section of the upgrade would follow a new alignment to the east of the existing highway for nearly the entire length, returning to the existing highway alignment at Maclean. No major delays to motorists are envisaged due to the isolation of Section 4 from the existing highway.

Section 5 – Maclean to Iluka road, Mororo

Section 5 of the project is about 14 kilometres long, from Maclean to Iluka Road, Mororo.

The upgrade would involve constructing either a new northbound or new southbound carriageway that would generally follow the existing highway alignment.

The alignment would cross the Clarence River via the Harwood Bridge and require construction of an additional bridge to provide the dual carriageway arrangement.

Section 6 – Iluka Road to Devils Pulpit Upgrade

Section 6 of the project is about 9.2 kilometres long from Iluka Road, Mororo to the southern end of the Devils Pulpit upgrade.

The upgrade would involve constructing either new northbound or new southbound carriageways closely following the existing highway alignment, with minor deviations to meet design standards for road gradient and curvature.

A bridge would be built where the upgrade crosses the Clarence River North Arm at Mororo to provide the dual carriageway arrangement for the crossing.

Section 7 – Devils Pulpit Upgrade to Trustums Hill

Section 7 of the project is about 15.3 kilometres long, extending from the northern end of the Devils Pulpit upgrade to just south of Gap Road, Trustums Hill.

The alignment would generally follow the existing highway alignment with minor deviations to the west to straighten the alignment to meet design standards. Where the proposed

alignment deviates to the west, northbound and southbound carriageways would be constructed.

For the remainder of the section, a carriageway would be constructed adjacent to the existing highway, and the existing highway would be used for the other carriageway.

Section 8 – Trustums Hill to Broadwater National Park

Section 8 of the project is about 11.1 kilometres long, from just south of Gap Road to Broadwater National Park.

The alignment would initially follow the existing highway alignment before deviating to the west at Woodburn interchange between Gap Road and Trustrums Hill Road. North of the interchange, the alignment would cross back over the existing highway alignment and follow a new alignment to the east, bypassing Woodburn and re-joining the existing highway alignment at the end of the section.

The upgrade of this section would involve constructing northbound and southbound carriageways.

Section 9 – Broadwater National Park to Richmond River

Section 9 of the project is about 7.6 kilometres long, from Broadwater National Park to the Richmond River.

Approximately the first 3 kilometres of this section would follow the existing highway alignment through Broadwater National Park with the construction of northbound and southbound carriageways using the existing road reserve to the greatest extent possible, although some acquisition from Broadwater National Park would be required on the western side of the upgrade.

Between the northern boundary of Broadwater National Park and the Richmond River, the upgrade would deviate to the east of the existing highway alignment, bypassing the town of Broadwater.

Section 10 – Richmond River to Coolgardie Road

Section 10 of the project is about 13.5 kilometres long, from the southern side of the Richmond River just east of Broadwater, to Coolgardie Road, Coolgardie.

The upgrade in this section of the project would cross the Richmond River and follow a new alignment to the west of the existing highway, bypassing the town of Wardell, before re-joining the existing alignment at Coolgardie Road.

Section 11 – Coolgardie Road to Ballina Bypass

Section 11 of the project is about 5.4 kilometres long, from Coolgardie Road to the Ballina Bypass connection approximately 300 metres south of the Pimlico Road intersection.

Between Coolgardie Road and about 150 metres north of Whytes Lane, northbound and southbound carriageways would be constructed immediately west of the existing highway. The southbound lanes of the existing highway would become a local service road and the single northbound lane would be decommissioned.

About 150 metres north of Whytes Lane, the proposed alignment would re-join the existing highway alignment. The existing highway would be incorporated into the southbound carriageway of the upgrade and a northbound carriageway would be constructed to the west.

At the end of this section a new 220 metre single carriageway bridge would connect Pimlico Road to Smiths Drive.

2.10 Program

The schedule for Woolgoolga to Ballina (Sections 3 to 11 of the Pacific Highway Upgrade Project) has been prepared by Tracey, Brunstrom & Hammond Pty Ltd. It is anticipated that construction for the entire project will be completed in late 2019 and that the project will be fully open to the public in 2020. Table 2-2 shows the indicative construction schedule for each project section.

Table 2-2 Construction program (indicative dates)

Section	Location	Construction start date	Construction completion date
3	Glenugie Upgrade to Tyndale	May 2016	August 2019
4	Tyndale to Maclean	June 2016	March 2019
5	Maclean to Iluka Road	June 2016	June 2019
6	Iluka Road to Devils Pulpit upgrade	September 2016	September 2017
7	Devils Pulpit upgrade to Trustums Hill	September 2016	March 2018
8	Trustums Hill to Broadwater National Park	September 2016	February 2019
9	Broadwater National Park to Richmond River	September 2016	May 2019
10	Richmond River to Coolgardie Road	October 2016	July 2019
11	Coolgardie Road to Ballina Bypass	October 2017	August 2019

2.11 Construction hours of operation

The following construction hours will be adhered to for the project in accordance with CoA B15, B16, B18 and B21.

Construction activities will be undertaken during the following standard construction hours (in accordance with condition B15):

a) 7:00am to 6:00pm Monday to Friday, inclusive; and

b) 8:00am to 5:00pm Saturday; and (excluding Arrawarra Rest Area, which is 8:00am to 1:00pm Saturday)

c) at no time on Sunday or public holidays.

Construction works outside the standard construction hours will be undertaken in the following circumstances as per the Out of Hours Works Procedure (in accordance with condition B16):

a) construction works that generate noise that is:

   (i) no more than 5 dB(A) above rating background level at any residence in accordance with the *Interim Construction Noise Guideline* (DECC, 2009); and

   (ii) no more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (DECC, 2009) at other sensitive receivers; or

b) for the delivery of materials required outside the standard construction hours by the NSW Police Force or other authorities for safety reasons; or

c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environment harm; or

d) between 6:00am and 7:00am and 6:00pm and 7:00pm Monday to Friday (except public holidays) in sparsely populated areas (these construction hours may be reviewed and/or revoked by the Secretary in consultation with the EPA in the case of unresolved noise complaints); or

e) low noise impact activities and work between:
   (i) 6:00am and 7:00am Monday to Friday; and/or
   (ii) 6:00pm and 7:00pm Monday to Friday; or
f) works approved through an Environmental Protection Licence; or
g) works approved by a Construction Environment Management Plan or Construction Noise and Vibration Management Plan for the SSI.

Construction activities resulting in impulsive or tonal noise emission (such as rock breaking, rock hammering, pile driving) shall only be undertaken (in accordance with condition B18):

(a) between the hours of 8:00am to 5:00pm Monday to Friday;
(b) between the hours of 8:00am to 1:00pm Saturday; and
(c) in continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block.

For the purposes of this condition 'continuous' includes any period during which there is less than one hour respite between ceasing and recommencing any of the work the subject of this condition.

The works subject to this condition may be undertaken in sparsely populated areas within the standard construction hours.

Blasting associated with the SSI shall only be undertaken during the following hours (in accordance with condition B21):

(a) 9:00am to 5:00pm, Monday to Friday, inclusive;
(b) 9:00am to 1:00pm on Saturday; and
(c) At no time on Sunday or public holidays.

Blasting outside the above hours and in accordance with the standard construction hours where:

(i) no sensitive receivers in sparsely populated areas would be impacted by blasting; or
(ii) an agreement has been made with receivers within 200m of the blast zone to permit blasting in accordance with the standard construction hours.

This condition does not apply in the event of a direction from the NSW Police Force or other relevant authority for the safety or emergency reasons to avoid loss of life, property loss and/or to prevent environmental harm.

It is noted that the Pacific Highway construction projects adjacent to Sections 3 – 11 have existing approvals regarding construction hours of operation, as detailed below.

Glenugie Upgrade section (CoA 2.9)

7am – 6pm Mondays to Fridays

8am – 1pm – Saturdays

No work on Sundays or public holidays

Blasting (CoA 2.11):

9am to 5pm M-F

9am-1pm Sat

No time on Sundays or public holidays

Iluka Rd to Woodburn – Devils Pulpit Upgrade (CoA C2)

7am to 6pm M-F

8am to 1pm Saturdays

No time on Sundays or public holidays

High impact (CoA C3)

8am to 6pm M-F

8am to 1pm Saturdays

In continuous blocks not exceeding 3 hours each

Blasting (CoA C4)

9am to 5pm M-F

9am-1pm Sat

No time on Sundays or public holidays

Ballina Bypass (CoA 43)

All construction activities, including entry and departure of heavy vehicles will be restricted to the hours of 7:00 am to 6:00 pm (Monday to Friday); 8:00 am to 1:00 pm (Saturday) and at no time on Sundays and public holidays.

Notwithstanding the above, construction activities will be undertaken between the hours of 7:00am and 4:00pm on Saturdays between chainage 130100-134810, including the operation of the Cumbalum and Ross Lane ancillary facilities.

Works outside these hours that may be permitted include:

a) any works which do not cause noise emissions to be audible at any nearby residential property;
b) the delivery of materials which is required outside these hours as requested by Police or other authorities for safety reasons;
c) emergency work to avoid the loss of lives, property and/or to prevent environmental harm; and,
d) any other work as agreed through the Construction Noise and Vibration Management Plan Process.

Noisy activities (CoA 47)

Sheet piling and any other activities which result in impulsive or tonal noise generation close to residences and other sensitive receptors will only be scheduled between the following hours (unless otherwise specified in the Construction Noise and Vibration Management Plan):

a) 9 am to 3 pm, Monday to Friday; and,
b) 9 am to 12 pm, Saturday

Where activities are undertaken for a continuous three hour period and are audible to noise sensitive receptors, a minimum respite period of at least one hour shall be scheduled before activities recommence.

Blasting (CoA 48)

Blasting will only be undertaken between the hours of 9:00 am and 3:00 pm, Monday to Friday, and 9:00 am to 12:00 pm on Saturday.

3 Organisation, roles and responsibilities

3.1 Position descriptions

Position descriptions including definitions of responsibility have been developed for all staff on the project. The traffic management structure and responsibilities are detailed in this plan.

All project staff associated with developing, implementing, operating and/or managing traffic control plans and associated site activities will undertake the appropriate Roads and Maritime Traffic Control Training courses (noting that the training packages were recently revamped in July 2015; although previous qualifications will remain valid until they expire). These include:

- Traffic Controller (previously known as the Blue Card).
- Implement Traffic Control Plans (previously known as the Yellow Card).
- Prepare a Work Zone Traffic Management Plan (previously known as the Red Card and Orange Card).

To further enhance the knowledge of project staff, the Pacific Complete Traffic Manager will prepare induction information, tool box notices, and, in conjunction with the contractors' Traffic Managers, conduct training sessions on road safety and traffic management issues.

The key position descriptions relating to traffic management activities on the project are detailed in the next section.

3.2 Pacific Complete roles and responsibilities

3.2.1 Project Director

The Project Director shall support the senior site management in complying with the traffic management requirements associated with the project. This support includes but is not limited to the following:

- Ensuring sufficient resources are made available and allocated for traffic management to the project including in house and subcontractor resources.
- Ensuring quality assurance procedures are maintained to an acceptable level and to ensure auditing is undertaken in accordance with the requirements of the Standards.
- Providing at director level a communication avenue to and from the site management with stakeholder senior representatives.

3.2.2 Pacific Complete Traffic Manager (also referred in RMS G10 as Traffic Control Site Manager)

The Pacific Complete Traffic Manager will hold a current Roads and Maritime Design and Inspect Traffic Control Plan (Orange Card) qualification and will be responsible for the overall management of traffic and road safety on the project, as per G10 specification. The Pacific Complete Traffic Manager or their delegate shall:

- Develop, implement and maintain the CTAMP.
- Maintain current copies of the Specific Traffic Management and Safety Plans, Traffic Control Plans, Vehicle Movement Plans, Road Occupancy Licences and Speed Zone Authorisations and their controlled documentation.
- Carrying out regular inspections and auditing of the traffic control measures to ensure that they are effective and are being followed.

- Provide technical advice to the Pacific Complete team relating to traffic engineering, traffic management and road safety issues.
- Provide the contractor Traffic Managers with guidance relating to project requirements and relevant standards and guidelines to be addressed when the contractor Traffic Managers are developing traffic management strategies.
- Assist in the development of traffic staging and temporary works plans.
- In conjunction with the contractor Traffic Managers, manage the development and approvals of all traffic control plans in accordance with G10 Specification and Traffic Control at Worksite Manual.
- Liaise with all key internal and external stakeholders, such as the Transport Management Centre, NSW Police and Local Councils on traffic management and safety issues.
- Facilitating traffic awareness and providing information to the contractor Traffic Managers to include during toolbox talks to site personnel.
- Monitor installed traffic management schemes for their safe operation and use and ensure defects or unsafe installations are amended.
- Maintain the quality assurance system associated with traffic management issues including preparation and storage of all necessary records.
- Maintain records of reports (as received from the contractor Traffic Managers) relating to the occurrence of all delays, including those caused by incidents, to the free flow of traffic of greater than five minutes and/or traffic queue lengths greater than 500 metres and as required under the conditions of the project Road occupancy Licences as issued by Roads and Maritime.
- Be contactable at all times (7 days per week and 24 hours per day) during the construction phase of the Contractor's Work to receive and respond to traffic /incident related inquiries from key stakeholders, including the Roads and Maritime Traffic Manager (Pacific Highway), the Transport Management Centre in Sydney (TMC-NSW), Roads and Maritime Northern Traffic Operations Unit, Local Councils and the NSW Police.
- Collate records of all road occupancies and traffic flow delays and durations, traffic queue lengths and other ROL related matters received from the contractor Traffic Managers.

3.3 Contractor roles and responsibilities

The project will engage a dedicated traffic team, to support the construction and design units, to focus on the road safety and traffic management activities during the design and construction phase.

3.3.1 Contractor Traffic Manager

The Contractor Traffic Manager employed by the contractors (which are expected to be a dedicated resource) will hold a current Roads and Maritime Design and Inspect Traffic Control Plan (Orange Card) qualification and will be responsible for the overall management of traffic and road safety on the project, as per G10 specification. Their responsibilities will include the following:

- Maintain current copies of the Specific Traffic Management and Safety Plans, Traffic Control Plans, Vehicle Movement Plans, Road Occupancy Licences and Speed Zone Authorisations and their controlled documentation.

- Ensuring that the approved traffic control measures are established implemented and maintained in accordance with the approved plans.
- Amending and updating the plans, as required, to ensure that they remain current as the work progresses.
- Carrying out regular inspections and auditing of the traffic control measures to ensure that they are effective and are being followed.
- Identifying locations and times where traffic congestion or unsafe conditions for vehicles, cyclists, pedestrians and workers are occurring, and providing recommendations for improvement.
- Provide technical advice to the construction team relating to traffic engineering, traffic management and road safety issues.
- Develop traffic management strategies that comply with all project requirements and relevant standards and guidelines.
- Assist in the development of traffic staging and temporary works plans.
- Manage the development and approvals of all traffic control plans in accordance with G10 Specification and Traffic Control at Worksite Manual.
- Liaise with all key internal and external stakeholders, such as Pacific Complete management team representatives, Transport Management Centre, NSW Police and Local Councils on traffic management and safety issues.
- Facilitating traffic awareness and providing information for toolbox talks to site personnel.
- Be responsible for the implementation of Road Occupancy Licences (ROLs) and must continuously monitor the implementation and operation of all road occupancies to ensure that they are compliant with the ROLs, including but not limited to:
    - Monitoring and quantifying the durations of traffic flow delays.
    - Monitoring, measuring and recording traffic queue lengths, including the maximum traffic queue lengths in each direction and the total occupancy stoppage time.
    - Maintaining and adjusting traffic control measures and devices to assist prevailing traffic flows, minimise lane and shoulder occupancies and any lost traffic flow capacity and minimise traffic flow delay durations and queuing.
    - Monitoring of over-dimension heavy vehicle movements.
- Be responsible for the implementation of Speed Zone Authorisations (SZAs) and continuously monitor the implementation and operation of temporary roadwork speed limits.
- Monitor installed traffic management schemes for their safe operation and use and ensure defects or unsafe installations are amended.
- Manage the road safety auditing program of traffic management schemes in accordance with project requirements.
- Maintain the quality assurance system associated with traffic management issues including preparation and storage of all necessary records.
- Report immediately to the Pacific Complete Traffic Manager the occurrence of all delays, including those caused by incidents, to the free flow of traffic of greater than five minutes and/or traffic queue lengths greater than 500 metres and as required under the conditions of the project Road occupancy Licences as issued by Roads and Maritime.
- Be contactable at all times (7 days per week and 24 hours per day) during the construction phase of the contractor's work to receive and answer traffic /incident related inquiries from the Pacific Complete Traffic Manager, including the Roads and Maritime Traffic Manager (Pacific Highway), the Transport Management Centre in Sydney (TMC-

NSW), RM Roads and Maritime S Northern Traffic Operations Unit, Local Councils and the NSW Police.

- Produce records of all road occupancies and forward records of all traffic flow delays and durations, traffic queue lengths and other ROL related matters to the Pacific Complete Traffic Manager upon request.
- Stop work on any activity if it is considered to be necessary to prevent traffic incidents or to comply with the directions of the Pacific Complete Traffic Manager, TMC-NSW, TMC-NR or NSW Police.

3.3.2 Construction Manager

The Construction Manager shall support the Traffic Manager in their duties and shall take steps to confirm that those duties are performed in compliance with the Project Specifications and until all obligations of the project are satisfied. In addition to this the Construction Manager shall ensure that:

- The communication of construction requirements and traffic management requirements is efficient and thorough and to ensure they are fully coordinated.
- The activities requiring traffic management installations are identified in good time to permit the necessary planning and administration to be undertaken in accordance with the Specifications.
- The traffic management installations are not altered or removed during the course of the construction works.
- The procedures and site rules associated with traffic management are monitored and controlled.
- The construction engineers plan their works with due consideration for the restraints associated with traffic management requirements and constraints.

3.3.3 Project Manager

The Project Manager shall principally ensure the requirements of the Project Specification documents are satisfied and maintained through the duration of the works and until all obligations of the Deed are satisfied. In order to achieve this, the Project Manager shall:

- Ensure adequate project resources are allocated to traffic management.
- Ensure senior management on site supports the contractor Traffic Manager in his duties.
- Ensure safe traffic management has a priority status in terms of project delivery.
- Ensure suitable training is available to all responsible personnel.
- Ensure periodic audits are undertaken of the traffic management quality assurance systems.

The Project Manager will also have responsibility to ensure the traffic management schemes are planned and implemented in full compliance with the requirements of the Specification documents and other referenced documents. The summarised responsibilities are as follows:

- Coordinate the project resources to design and plan traffic management schemes to satisfy the requirements of the construction team.
- Coordinate the project resources to implement, alter or remove traffic management schemes to suit the project programme.
- Ensure trained competent persons are engaged to act in traffic management specific roles and training requirements are kept up to date.

3.3.4 Safety managers

The project safety managers shall provide support to the Traffic Manager on issues of public and workforce safety as it pertains to traffic management.

3.3.5 Traffic Foreman

The Traffic Foremen shall support the Traffic Manager in their duties and perform duties delegated to them by the contractor Traffic Manager, or delegate. Primary roles of the Traffic Foreman are summarised below:

- Co-ordinate daily resource requirements between the various construction teams to ensure that traffic control personnel are allocated to the job which are they are best skilled.
- Carrying out regular inspections of the traffic control plans and devices to ensure that they are effective, of a high quality and are being followed.
- Co-ordinate breaks for traffic control crews to ensure fatigue is managed.
- Provide training for new traffic control personnel to ensure they are competent and able to be used in a variety of roles within the project.
- Contact the contractor Traffic Manager with any concerns regarding traffic control activities which they believe to be ineffective, unsafe or poorly performing.
- Manage traffic control personnel to avoid any disputes and to provide a best for project resource.

3.3.6 Traffic control personnel

The Traffic Manager shall initially verify and then keep records of all documentation for individuals and organisations that are directly and indirectly associated with traffic control for the Project. Pacific Complete will appoint traffic controllers under Section 6 of the Roads Regulation 2008 (NSW) in order to provide for safe movement of vehicles and other road users around, through or past the works.

The Traffic Manager shall keep a record of all appointed individuals and shall ensure only those appointed individuals are engaged with traffic control duties. The Traffic Manager shall undertake audits of personnel undertaking traffic control duties as part of the routine traffic control inspections throughout the duration of the project.

It is a requirement that any Traffic Control Organisation shall be registered under Roads and Maritime' Registration Scheme Category G "Traffic Control". The Traffic Manager shall initially verify the credentials of the organisations and following appointment then maintain records for inspection. Furthermore, the Traffic Manager shall periodically request from the organisations to ensure they are complying with the quality assurance requirements associated with the Registration.

A register of the traffic controllers and their qualification will be attached to this document during construction. As required under the G10 specification all traffic controllers will hold, as a minimum, the Roads and Maritime Traffic Controllers "blue card".

3.4 Resource management

The Project Director and the Construction Manager will manage the project resources throughout the duration of the project to ensure that personnel are appropriately qualified, trained and suitable for the work activities they are required to perform and that the construction program can be fulfilled. This will be continuously monitored to ensure that the project is appropriately resourced at all stages.

3.5 Traffic management system

All traffic management documents will be planned in accordance with the project specification. All schemes are subject to approval before they are implemented, including those prepared by Pacific Complete:

- Construction Traffic and Access Management Plan. (CTAMP)

In addition, the schemes to be prepared by the contractors are also subject to approval before they are implemented, including, but not limited to:

- Specific Traffic Management and Safety Plan (STMSP).
- Traffic Staging Plans if more than one stage.
- Temporary Works Drawings.
- Traffic Control Plan(s).
- Vehicle Movement Plan(s).
- Road Occupancy Licence as required.
- Speed Zone Authorisations as required.
- Predictions of delays to traffic (where applicable), possible mitigation and procedures for alleviating delay.
- Independent Road Safety Audit on Specific Traffic Management and Safety Plan/Traffic Staging Plans.

The Pacific Complete Traffic Manager and contractor Traffic Manager shall ensure that all approval requirements are met prior to the implementation of any traffic management scheme on the project. A description of each key traffic management process is detailed below.

3.5.1 Construction Traffic and Access Management Plan (CTAMP)

The Construction Traffic and Access Management Plan (this Plan) identifies and defines the requirements, management processes, obligations and responsibilities for traffic management during the construction of the project in accordance with the project objectives and requirements. The procedures and processes described in the CTAMP will ensure that all statutory and project specific conditions as defined in the applicable codes, performance specifications and the contract are complied with during the construction of the project.

This CTAMP outlines the overall traffic management measures, durations, impacts and mitigation strategies for a particular area and outlines how work activities will be carried out in a safe and efficient manner. STMSPs will be developed based on the CTAMP.

The CTAMP details the specific road safety and traffic management measures that will be applied by Pacific Complete whilst undertaking the construction works. The CTAMP is based on the principles and the obligations under the Contract, Roads and Maritime G10 and G36 specifications, Australian Standard 1742.3, Department of Planning & Environment and environmental approvals, and the requirements of relevant road authorities, standards, guidelines and other key stakeholders. The CTAMP identifies the construction impacts resulting from the proposed work activities involved, provides a detailed assessment of these impacts and describes the control measures that will be applied to address the impacts on the existing road network and the local community. Compliance with all project requirements is also demonstrated in the CTAMP.

The CTAMP addresses provisions for access to properties affected by the work and the safe passage of cyclists and pedestrians in accordance with the Roads and Maritime G10 specification.

3.5.2 Specific Traffic Management and Safety Plans (STMSPs)

Based on the CTAMP submitted to DP&E, separate Specific Traffic Management and Safety Plans (STMSPs) will be developed, in line with the submitted CTAMP (APPENDIX B1 of the CEMP). Separate STMSP's will be developed for each traffic staging. STMSP's will be audited by an independent Road Safety Auditor prior to submission to Roads and Maritime for approval.

Traffic Staging Plans will be included as part of the STMSP to show the traffic configurations at each stage of the works. The Traffic Staging Plans will illustrate the work site, construction activities, construction durations, road alignment and geometry and direction of traffic.

The STMSP shall demonstrate and satisfy:

- Provision for the safe passage of all road users, including public transport, pedestrians and cyclists, at all times during the performance of the project work.
- Approval by the relevant Authority in the use and care of Local Roads.
- Compliance with Roads and Maritime G10 specification, traffic management practices set out in the relevant Australian Standards, the Roads and Maritime 'Traffic Control at Worksites' and this CTAMP.
- Planning of work activities to avoid delays and detours that inconvenience motorists and other road users or interfere with traffic during periods of heavy traffic flows.
- Proposed changes to traffic flows, vehicle and pedestrian/cycle movements and arrangements for traffic control on arterial roads shall be to the Roads and Maritime's satisfaction and submitted at least 14 days prior to the proposed change.
- Notifying the community and road users of the proposed changes.

Preparation of the STMSPs will be responsibility of the contractors and will be reviewed by Pacific Complete. Once approved the STMSP will be included on the register attached as Appendix D to this plan. This register will contain the details of all approved STMSPs on the project and include version information and approval date.

3.5.3 Traffic staging plans (TSP)

All details regarding location specific traffic management works will be captured in Traffic Staging Plans (TSPs). Concept TSPs have been developed for each of the construction stages required for construction activities and will be further developed as part of the construction planning phase.

TSPs will be included as part of STMSPs to illustrate the traffic configurations at each stage of the works. They show the work site, construction activities, construction durations, road alignment and geometry and direction of traffic. These plans will be prepared in accordance with the Roads and Maritime G10 specification.

The staging plans should be read in conjunction with the construction staging program. TSPs illustrate the proposed traffic staging to be implemented during the construction of the project.

The traffic staging drawings define the following:

- Sequencing.
- Basic construction methodology.
- Temporary works.
- Particular traffic management measures/controls.
- Work areas.
- Available traffic lanes.

Traffic diversions or traffic switches are required to construct Sections 3 to 11 of the project. All temporary diversions and switches will be in accordance with the Road Design Guide and will be approved by the Roads and Maritime as part of the STMSPs.

Prior to opening a traffic switch, Roads and Maritime will be notified as per Roads and Maritime G10 Specification. Unless otherwise approved by Roads and Maritime /Pacific Complete, Pacific Complete will not disturb existing roadways for at least two days after opening temporary roadways or detour to traffic, to provide for the event where failure of the temporary roadways or detour occurs and there is a need to redirect traffic back onto the existing roadways.

Within 24 hours of the implementation of long term traffic arrangement, an independent Road Safety Audit will be carried out and any issues noted in the audit and appropriate traffic control measures will be implemented. A complete report including control measures will be submitted to Roads and Maritime within 7 days.

Construction staging along the Pacific Highway may result in the lanes being shifted onto the exiting shoulders or temporary pavements. The lateral shifts will only require a minimal road geometry change. Any temporary works requiring facilitating a traffic switch will be completed as per the Roads and Maritime G10 specification.

Access for all properties will be maintained during all stages of the works unless otherwise agreed by Roads and Maritime and property owners.

TSPs for this project will be provided as part of the STMSPs submitted by contractors

3.5.4 Temporary works drawings

Temporary works drawings are detailed design plans of temporary roads that are required to facilitate construction staging. These drawings are based on the Construction Staging Drawings and will include details of the required earthworks, drainage, horizontal and vertical alignments, carriageway cross sections, lane configuration, junction treatments, property access modifications, environmental controls, pavement design, lines and sign posting, TCPs, safety barriers and road side furniture.

Pacific Complete will prepare temporary works drawings as required for treatments such as road widening's, sidetracks, median crossovers, temporary pavement tie-ins, and contra-flow utilising opposing carriageways. A certification will be provided by the road designer that the drawings comply with the relevant standards prior to submission to Roads and Maritime.

3.5.5 Traffic Control Plans (TCPs)

Traffic Control Plans (TCPs) are diagrams that illustrate the signs and devices that will be installed to warn traffic, and guide it around or past, or if necessary through the work site. These plans will address the specific measures stipulated within the CTAMP, STMSPs and TSPs and will comply with the requirements of AS1742.3, Roads and Maritime G10 specification, and the Roads and Maritime Traffic Control and Work Sites (TCWS) manual.

Site specific TCPs will be developed for short term works and whenever appropriate will be based on standard TCPs available in the TCWS. A TCP, as part of the CTAMP, will be prepared for each stage in accordance with the requirements of the TCWS manual, Roads and Maritime G10 specification and associated Australian Standards and submitted to Roads and Maritime for approval at least 10 days prior to the start of works.

All TCPs prepared for the project will be prepared by a person who has undertaken and passed Roads and Maritime 'Traffic Control at Worksites' training courses and holds a current 'Red' and 'Orange' card certification.

All TCPs shall be developed with the aim to:

- Warn drivers of changes to the usual road conditions.

- Inform drivers about changed conditions.
- Guide drivers through the work site.
- Ensure the safety for workers, motorists, pedestrians and cyclists.

The TCPs will be designed to address the following issues where applicable:

- Use of traffic control devices.
- Traffic diversion (as required).
- Speed limit sign requirements.
- Environmental issues.
- Changes to the daily construction activities onsite.
- Other construction activities in the area.
- Key risks and control measures recorded on the Health Safety and Environment Risk Register.
- Security arrangements.
- Provision for pedestrian traffic and their safety.
- Provision for cyclists and their safety.
- Provision for vehicle and plant movements.
- Parking restrictions and parking facilities;
- Clarence Valley Council, Richmond Valley Council and Ballina Shire Council requirements;
- Specifying clearways for Oversize Transport and Heavy Vehicle movement;
- Provision for trade vehicles and plant movements;
- Changes to the light vehicle parking areas;
- Informing all site personnel of the high risk areas;
- Identifying areas where Temporary Parking Control may be required;
- Providing pedestrians with safe access to and from the work site;
- Providing Emergency Services vehicles access and direction to the site if a need arises; and
- Providing adequate signage within the construction site for safe access and egress.

project specific TCPs will be developed and submitted to Roads and Maritime for approval and release of the hold point at least 3 days prior to start of works.

The TCPs will detail the short traffic control signs, devices and traffic controllers required to warn approaching vehicles of the works, and guide the traffic through and around the worksite during works.

3.5.6 Vehicle movement plans

A Vehicle movement plan (VMP) is a diagram showing the preferred travel paths for vehicles associated with a work site entering, leaving or crossing the through traffic stream. VMPs will be prepared for all construction vehicle movements including at each interface with the existing road network and on the internal haul roads. In accordance with Roads and Maritime G10 specification, VMPs and appropriate haulage routes would be developed that:

- Drivers would be inducted to VMPs to ensure that they keep to nominated routes
- Deliveries would be timed to occur outside peak traffic periods
- Queuing on the highway would be avoided by the use of two-way radios to call up haulage trucks from layover areas on a ‘just in time’ basis.

As VMPs will be constantly changing, a register of current VMPs will be maintained and communicated to site personnel.

Deliveries to the site must comply with Condition B15, i.e. during the standard construction hours (as detailed in Section 2.11), except where by the NSW Police Force or other authorities for safety reasons (as per Condition B16 (b)).

3.5.7 Traffic instructions

Traffic instructions will be developed by the Traffic Managers as required, to educate the construction personnel in relation to specific traffic management processes and activities as the need arises throughout the project, such as lessons learnt, safety messages and continuous improvements. When approved, these instructions will be forwarded by the Traffic Managers to relevant Construction Team members. Specific training sessions will be conducted by the Traffic Managers to reinforce the instruction information as required.

3.5.8 Safe work method statements (SWMS)

Where it is considered that a work process must be carried-out in a strictly controlled manner to ensure the specified safety and quality requirements will be met, a specific Safe Work Method Statement (SWMS) will be prepared and implemented.

Safe Work Method Statements will be prepared in consultation with workers and relevant managers/supervisors and implement before the related work activity commences on site to ensure the issues relating to safety and quality are appropriately addressed.

The provisions for working, on or adjacent to road carriageways, and the traffic control measures to be applied will be incorporated where necessary within the SWMS.

3.5.9 Road occupancy licence

Approval will be obtained from the Pacific Complete / Roads and Maritime management representative for all road occupancies, detours and closures in accordance with the Contract. Road Occupancies must comply, as a minimum, with the requirements as set out in the Roads and Maritime G10 specification however, it is noted that Roads and Maritime may elect to prohibit road or lane closures due to special events or other high traffic demands.

When any unplanned closure of a lane or a restriction in the flow of traffic occurs on the existing Pacific Highway, Pacific Complete will immediately advise the Roads and Maritime site management representative of the nature of the closure or restriction and the schedule for re-opening of the lanes. Pacific Complete will take all required measures to open the lane as quickly as possible.

A road occupancy is defined as any part of Pacific Complete work, including maintenance of the existing highway that will or is likely to delay, including obstruct, restrict, close, interfere with, slow or stop, the free flow of traffic on any lane or shoulder of the existing highway, the temporary works being used by existing highway traffic or any part of the works opened to traffic. Road occupancies include, but are not limited to:

- Shoulder occupancies and/or closures.
- Lane occupancies and/or closures.
- Any occupation of the construction site by labour, equipment, or plant that requires a TCP under the provisions of Roads and Maritime G10 specification.
- Any other event that causes delays to the free flow of traffic.

The duration of a delay is defined as the total period of time during which the free flow of traffic is obstructed, restricted, closed, interfered with, slowed or stopped and includes the

time taken to clear all stopped, slowed and queued traffic and return the traffic to free flow condition.

In accordance with the requirements of NSW Traffic Legislation, Pacific Complete will obtain the necessary approvals from the appropriate road authorities prior to conducting any works within the road reserve.

Road occupancy on local roads

Pacific Complete will obtain the concurrence of the relevant Local Council(s) prior to the installation of temporary traffic controls/devices and occupying any part of the local road network.

The submission to the Council will include:

- Brief details of the works to be conducted.
- Any relevant design drawings of the works.
- Program of the works.
- Copies of TCPs.
- Copies of VMPs.
- If applicable, details of Speed Zone Authorisation (SZA) submission.
- Contact details of a construction site representative.

Roads and Maritime road occupancy licensing

The Road Occupancy Licence (ROL) scheme for the Pacific Highway is managed by the contractors' Traffic Manager at the Pacific Highway Office at Grafton. All ROL applications will be submitted to the Pacific Complete management representative for forwarding on to the Traffic Manager at the Pacific Highway Office for approval. It is noted that there is a new on-line ROL system in use and Pacific Complete will be guided by the Roads and Maritime site management representative regarding obtaining access to this system.

Roads and Maritime ROL submission procedure

Guidance on applying for an ROL is provided in the Roads and Maritime Road Occupancy Manual issued by the TMC. The manual contains a number of explanatory notes, checklists, and application forms.

The contractor Traffic Managers will be responsible for submitting ROL applications to the Pacific Complete / Roads and Maritime site management representative for approval. All ROLs are to be submitted electronically by the contractor Traffic Manager via the Online Planned Incidents website, OPLINC. The Traffic Manager Pacific Highway office will assess ROLAs in consultation with Pacific Complete / Roads and Maritime site management representative before approving. The Roads and Maritime generally requires at least 10 working days to process the application and will either grant or reject application within this period.

It should be noted the ROL request must comply with the various road safety and traffic management principles and objectives outlined in this plan and the Roads and Maritime G10 specification.

Extensions to ROL period of operation

Roads and Maritime has generally limited the maximum period of a ROL from one month to 12 months. To obtain extensions, Pacific Complete will be required to re-submit ROL submissions.

It is the responsibility of the contractor Traffic Managers to ensure the validity of each approved ROL, thus regular monitoring of ROL expiry dates is essential. The Traffic Managers will maintain a ROL database, which will contain details of ROLs to assist with this process.

ROL conditions

Generally, the Roads and Maritime will apply conditions to ROL approvals, which may include:

- Maximum traffic stoppage times.
- Maximum queue lengths.
- Maximum travel time delays.
- Measures to provide information to road users.
- Provision of a weekly schedule outlining the proposed road occupancies for the preceding week.
- Records detailing the date and time of the road occupancy, and the location of all signs, and any other relevant information associated with the traffic control, must be kept.

These conditions will be confirmed and reviewed once the approved project ROL has been issued by Roads and Maritime. The Roads and Maritime has the power to revoke ROL approvals at any time for breaches of the associated conditions.

Authorisation limitations

In accordance with Roads and Maritime requirements, the responsibility for compliance with the ROL conditions remains with Pacific Complete. The granting of an ROL by the Roads and Maritime does not:

- Constitute approval by the Roads and Maritime of any actions that relate to traffic safety, occupational health and safety, or environmental issues and management.
- Relieve Pacific Complete or any person of their responsibility for compliance with legislation, regulations, or established operational procedures.
- Change any management accountability or responsibility.

3.5.10 Roadwork speed limits

Roadwork speed limits and zoning in road occupancies on the project will comply with the Roads and Maritime 'Traffic Control at Work Sites' manual and the Roads and Maritime NSW Speed Zoning Guidelines. The key principles for the effective implementation of roadwork speed limits are:

- They are self-enforcing or will be enforced.
- They are not be used alone but with other traffic control signs and devices.
- They are not be used in place of more effective traffic controls.
- They are only to be used while roadworks are in progress or the lower standard road conditions exist.

Pacific Complete acknowledges that roadwork speed zones must be logical and credible, as well as enforceable.

The roadwork speed limits to be used on this project will be implemented in accordance with the requirements of the Roads and Maritime G10 specification, approved ROL conditions and the Roads and Maritime TCWS manual. The temporary roadwork speed limit for the Pacific Highway is to be 80km/h and 40km/h for local roads. Lower roadwork speed limits of 40 and 60km/h on the Pacific Highway will be permitted for short term temporary works

subject to consultation with the Roads and Maritime site management representative and approval of the relevant TCP. To ensure that roadwork speed limit signage is effective in advising road users of the prevailing speed limit, roadwork speed signs will be a minimum Type C size signs duplicated on both sides of the carriageway at any changes in posted speed limits. Also, to ensure that the maintenance requirements for the signage are kept to a minimum, the signs must be supported on two posts.

Determining the need for a roadwork speed zone

Roadwork speed zones are only effective in controlling driver behaviour if they appear reasonable to drivers. A reduced roadwork speed zone must only be implemented where it is warranted.

Roadwork speed zones must not be applied as the first option to control traffic, but as a supplementary measure to the installation of more effective temporary traffic control signs and devices.

Roadwork speed zones may be installed to assist in controlling vehicle speeds when traffic travels through the work site, workers are endangered by high speed traffic, dust or smoke reduces visibility, there is loose material on the road surface, the road geometry is of a lower standard, deep excavations are adjacent to the travel lanes, on bridges for reason of structural safety and diversion onto opposing travel lanes or carriageways.

Submission procedure

The process to apply for SZAs is the same as per the above ROL submission process.

Guidance for applicants applying for SZA is provided in the Roads and Maritime Road Occupancy Manual issued by the Transport Management Centre (TMC). The manual contains a number of explanatory notes, checklists, and application forms.

The contractor Traffic Managers will be responsible for submitting Speed Zone Authorisation submissions to the Pacific Complete / Roads and Maritime site management representative for approval. The Roads and Maritime generally requires at least 10 working days to process the application and will either grant or reject the application within this period.

Once approved, Pacific Complete will forward a copy of the SZA to the local NSW Police Highway Patrol Office, and if necessary to the Local Council. Copies of speed zone authorisations applicable to any road occupancies must be available at the road occupancies for the duration of the road occupancies.

Extensions to SZA period of operation

The Roads and Maritime limits the period of operation of a SZA from one month to 12 months. To obtain extensions, the contractor Traffic Managers will be required to re-submit a SZA submission.

It is the responsibility of the contractor Traffic Managers to ensure the validity of each approved SZA, thus regular monitoring of SZA expiry dates is essential. The Traffic Managers will maintain an ROL database, which will contain details of SZA to assist with this process.

Speed Zone authorisation conditions

Generally, the Roads and Maritime will apply conditions to SZA approvals, and has the power to revoke an approval at any time for breaches of the conditions.

The typical conditions include, but are not limited to:

- A copy of the SZA must be forwarded to the local NSW Police Highway Patrol representative and for local roads to the Local Council representative accordingly.

- The temporary roadwork speed zone must be installed in compliance with conditions, notes, applicable dates and locations stipulated in SZA.
- All temporary roadwork speed limits must be installed as per the TCP and operated in accordance with Roads and Maritime TCWS manual.
- Similar to all regulatory signs, the speed limit signs are to be properly erected, and any contradictory signs or road markings are to be removed or fully covered.
- Records detailing the date and time the speed limit is in operation, the speed limit displayed, and the location of all signs, and any other relevant information associated with the speed limit, must be kept.

Authorisation limitations

Similar to ROL approvals and in accordance with Roads and Maritime requirements, the responsibility for compliance with the SZA conditions remains with Pacific Complete. The Roads and Maritime granting of a SZA does not:

- Constitute approval by Roads and Maritime of any actions that relate to traffic safety, occupational health and safety, or environmental issues and management.
- Relieve Pacific Complete or any person of their responsibility for compliance with legislation, regulations, or established operational procedures.
- Change any management accountability or responsibility.

3.5.11 Road safety audits

The objectives of a road safety audit are:

- Provide an independent assessment of the design from a road safety perspective.
- Review the existing road environment and identify any safety related issues.
- Look beyond the project limits and consider the effects in transition areas any proposed design changes will have on the existing built environment.
- Identify potential safety problems of a particular design or section of road.
- Ensure that measures to eliminate or reduce the problems are considered fully by the asset owner. Road Safety Audits will be undertaken when any significant changes are made to existing road conditions.

Pacific Complete will ensure that road safety audits are undertaken on the STMSP documents, all long-term TCPs and temporary works and TSPs. These audits will be conducted in accordance with the RMSs 'Road Safety Audits Guide (TC2003/RS03), with reference to current practices outlined in AUSTROADS Road Safety Audit Guide (2nd Edition 2002).

Road safety audits for the project TSPs will be conducted by independent road safety auditors as outlined in Section 2.10 and 3.4 of Roads and Maritime G10 Specification.

The contractors will be responsible for commissioning and managing Road Safety Audits; Pacific Complete will be a reviewing authority. It is expected that Local Councils may also be reviewing authorities where the audit scope involves local roads and pedestrian infrastructure.

Typically, on-site audits will involve a two person team with at least one accredited auditor certified to Level 3 and holding a Roads and Maritime Design and Inspect Traffic Control Plans (Orange Card) and an engineer familiar with the details of the traffic control and safety devices typically used at work sites.

A written audit report will be provided to Roads and Maritime/ Pacific Complete within 7 days of initial audit including details of actions taken in response to identified corrective actions in the post implementation road safety audit.

Upon receipt of the road safety audit, the Traffic Managers will promptly address the issues raised in the road safety audits and prepare a response to the audit that:

- Details actions taken/to be taken to address each of the issues raised.
- Provides justification for proposals and actions on particular issues raised.

Identifies issues raised in the audit that are outside the scope and control of the traffic management team (such as deficiencies unrelated to traffic management activities).

3.5.12 Risk management

Risk management techniques will be applied to determine hazards and associated risks which could affect the delivery of the project. Strategies and control measures will be developed and implemented to manage these hazards and risks. The Project Director will be responsible for ensuring that the risk management strategy for the project includes the development, implementation and ongoing maintenance of a formal risk management plan as part of the Project Management System.

As part of this process, a Risk Management Plan will be prepared for the Traffic Management component of the project to identify and address the risks associated with road safety, traffic management and road network issues specific to the site. This plan will be integrated with the overall Project Risk Analysis.

In accordance with the Roads and Maritime G10 specification, Pacific Complete will conduct an initial Traffic Management Risk Assessment Workshop commencement of any significant traffic management works. This workshop will assist in the development of a Traffic Management Risk Management Plan for the project and will also be used to consult with key internal and external stakeholders regarding the following issues:

- Further development of the CTAMP.
- The key requirements of the project relating to traffic management including training and knowledge requirements, planning for traffic switches, TCPs, contract requirements, safety barrier systems, delineation, signage and guidance to motorists and road safety auditing requirements.
- Raise awareness of good traffic management practices to be implemented on the project.
- Discuss road network planning provisions.

The risk and opportunity issues identified at the workshop will be recorded and a risk management plan developed. This plan will be included as an appendix to this plan. The risks and associated control measures will be further developed and addressed when finalizing the STMSPs and Construction Staging Plans.

Additional workshops will be held as appropriate to train site personnel regarding the implementation of STMSPs and TCPs and when traffic management issues need to be reinforced or reviewed.

In addition to the over-arching Risk Management Plan for Traffic Management, specific Safe Work Method Statements will be prepared and implemented where a traffic management work process must be carried out in a strictly controlled manner to ensure the safety and quality requirements are met. The selected traffic control sub-contractor will undertake the traffic control activities for the project in accordance with an approved Safe Work Method Statement detailing all work activities associated with the implementation of traffic control. The site specific risks associated with each TCP will be identified, assessed and addressed during the planning and design phase and also verified on site prior to implementation.

The risk assessment process for traffic control activities will be addressed in accordance with the requirements stipulated in the Roads and Maritime TCWS and Australian Standard (AS) 1742.3.

4 Construction activities and impacts

Pacific Complete will sequence construction works with the objective to maximise safety for workers and road users by isolating work areas from traffic flow, maintaining the existing road capacity, minimising road user delays, avoiding undertaking major activities during peak traffic periods, and avoiding installing restrictions that impact on heavy vehicle transport operators. The effective planning and staging of all construction activities is the key to achieving these objectives.

The number and extent of traffic switches will be minimised in order to encourage drivers to become familiar with the temporary traffic arrangements. The switches will be designed based on the following criteria:

- Plan and design traffic staging plans ensuring minimum traffic impact and one lane in each direction of Pacific Highway will be maintained at all times and all associated local roads and minimise the number of traffic changes.
- Reduce speed limit on Pacific Highway as necessary to create a safe working and travelling environment.
- Place concrete safety barriers to protect workforce, and create safe access and egress to work areas.
- Minimise lane closures in both number and duration.
- Minimise driver confusion.
- Provide safe and accessible construction areas.
- Schedule the works to exclude lane closures during Public Holiday Weekends and School Holidays and minimise closures during daylight hours in accordance with ROL requirements.
- Schedule the work to minimise the duration of shoulder closures for tie-ins to existing pavements.
- Minimise disturbance and inconvenience on local roads while accessing the construction site.
- Maintain access to properties at all times.
- Utilising the construction footprint as the main haulage route.

Typically, the following sequences of activities are anticipated for all project work areas:

- Traffic management – installing traffic control devices, temporary linemarking, temporary pavements or enhancement to existing intersections for site access gates.
- Site establishment – installing boundary fencing, construction facilities and environmental controls then carrying out pre-clearing vegetation fauna surveys.
- Relocation or protection of services – relocating and protecting electricity, gas, water and telecommunications infrastructure affected by the project.
- Site preparation – removal of harvestable timber, clearing and grubbing, topsoil stripping and storage, construction of haul roads.
- Earthworks – undertaking cut and fills works along the alignment to achieve desired levels, removal of unsuitable material, batter and embankment shaping.
- Structures – building bridges, drainage and fauna underpass facilities.
- Pavements – forming sub and base layers and construction final pavement finishes.
- Road Furniture – installing signage, line marking, safety barriers and fauna overpass structures.

- Landscaping and restoration – reuse of topsoil, planting of native plants and seeding disturbed areas with native and cover crops species (note – this will take place throughout the construction phase as elements of the project are complete, and ongoing disturbance is not anticipated).
- Maintenance of roadways – ongoing maintenance activities in line with section 7 of the G10 for duration of project.
- Open to traffic – decommission construction facilities and commissioning new road and related infrastructure.

4.1 Construction activity

This section describes the alignment and construction activity for each section of the project. Individual construction traffic levels will be dependent on the final detail design, whole-of-project scheduling, and final works programming for each section of the project.

4.2 Construction traffic staging

The effective management of traffic during the construction phase of the project is critical.

The traffic staging for the project will be prepared by the contractors and will be further developed taking into consideration constructability issues, program requirements and feedback obtained from consultation with Roads and Maritime site management representatives and key stakeholders.

Pacific Complete will seek to review the proposed construction staging as it is being developed, to ensure that it is fit for purpose and consistent with expectations, and that any required amendments are quickly identified and reviewed in accordance with the overall construction staging development.

When the construction traffic staging has been complete, Pacific Complete will undertake a formal review and issue any comments back to the contractor.

4.3 Road network

4.3.1 Local roads

There are a number of local roads that are intersected by, join or intersect with the project. These roads service very small communities, numbers of properties or unpopulated areas. These roads generally experience very low volumes of traffic movements each day.

The roads located near to the project are listed from south to north in Appendix A (sourced from the EIS). An estimate of population numbers and indicative existing traffic flows (low, medium, high) are also shown.

As noted in Appendix A, most local roads experience low traffic flows (i.e. less than 1000 vehicles per day).

However, medium traffic flows (i.e. between 1000 and 5000 vehicles per day) are currently experienced on Yamba Road, Maclean in Section 5; Woodburn – Evans Head Road, Woodburn in Section 8; and Wardell Road, Wardell in Section 10 of the project.

There are no local roads likely to be used by construction traffic with high existing traffic flows (i.e. greater than 5000 vehicles per day).

In terms of haulage in the vicinity of Wardell, a strategy would be prepared for bulk earthworks between the crossing of the Richmond River and the interchange at Wardell

(Section 10). The strategy would seek to maximise the extent of haulage within the project boundary and limit the need to haul material through the town of Wardell, where possible.

At various stages during the project duration these roads will require traffic management installations to facilitate the construction works. It is noted that Wooli Road, Tucabia Road and Tucabia-Tyndale Road would be used by all construction traffic.

In addition, there are a number of roads in the vicinity of the project that will be affected principally due to the increase in traffic associated with the project. The impacts on the adjacent road network resulting from the construction activities associated with the project will be assessed and measures implemented in accordance with the requirements of the project and the road authority to ensure any impacts are kept to a minimum.

These roads will be monitored throughout the project to assess the current local traffic characteristics to ensure that any likely impacts are taken into consideration when planning work activities.

Pre-construction surveys will be undertaken to record the condition of existing road and bridge infrastructure in accordance with the Roads and Maritime G10 specification. Defect identification and rectification on the existing road network will be managed as part of the project maintenance procedure.

4.3.2 Pacific Highway

Traffic surveys in 2011 measured average daily traffic along the Pacific Highway between Section 3 to Section 11 of the project. In addition, estimated daily traffic volumes in 2016 were extracted from the Roads and Maritime Saturn model. The average daily traffic volumes and heavy vehicle composition on the project section of the Pacific Highway are shown in Table 4-1 (over page).

The Pacific Highway is an inter-regional travel route with a significant volume of heavy vehicles. Between Section 3 to Section 11 of the highway, heavy vehicles represent approximately 22% of the total volume of traffic.

Fluctuations in traffic volumes occur over the Christmas-New Year period, the Easter period, and the June-July and October school holidays. The average daily traffic during the Christmas period is much higher than the yearly average.

The Pacific Highway varies between one and two lanes in each direction. The estimated capacity of the highway is about 1,200 vehicles per hour per lane. This provides an adequate level of service except during peak holiday periods. ROL conditions ensure that impacts from work activities are minimised during the peak holiday traffic periods.

The existing Level of Service on the Pacific Highway within the project area would typically vary between B and C. However, a lower Level of Service is experienced during holiday peak periods which can result in congestion and delays. Traffic delays can also occur due to unplanned incidents.

The daily traffic volume profiles for the highway indicate light traffic volumes generally peak during the middle of the day (generally between 8am and 4pm), while heavy vehicle traffic remains fairly constant throughout the day.

It should be noted that crash analysis of the Woolgoolga to Ballina section of the Pacific Highway has revealed that the highway section between Richmond River and Coolgardie Road located within the project area (section 10) has a very high crash frequency. This crash risk will be taken into consideration when planning work activities on this section of the Pacific Highway.

Table 4-1 Average daily traffic volumes on the existing Pacific Highway

Project Section	Location	2011 surveyed average daily traffic volumes [1]		2016 ADT [2]	
		Total Daily Volume (veh/day)	% Heavy Vehicle	Total Daily Volume (veh/day)	% Heavy Vehicle
3	Glenugie Upgrade to Tyndale	9,555	23%	10,038	25%
4	Tyndale to Maclean	9,478	23%	10,184	24%
5	Maclean to Iluka Road	11,711	21%	12,531	23%
6	Iluka interchange to Devil's Pulpit upgrade	7,157	28%	7,758	30%
7	Devils Pulpit upgrade to Trustums Hill	7,157	28%	7,758	30%
8	Trustums Hill to Broadwater National Park	8,609	26%	9,302	28%
9	Broadwater National Park to Richmond River	9,030	25%	9,747	27%
10	Richmond River to Coolgardie Road	9,735	23%	9,998	25%
11	Coolgardie Road to Ballina Bypass	21,752	13%	23,346	14%

1 From EIS Chapter 14
2 ADT data from Saturn model

4.4 Construction access points

A concept strategy for the location of construction access points for the project area has been developed however these locations need to be further developed and confirmed on site, including the design of appropriate TCPs detailing the required signage and traffic control measures. The timing of operation of the construction gates will be developed in conjunction with the staging of works and will be updated as work progresses on site.

The concept strategy for the primary construction access points are detailed in Table C – 1 in Appendix C (showing sites intended).

In addition, figures have been prepared showing the extent of local roads that will be utilised to access the ancillary sites (from the existing Pacific Highway) – these are provided in Appendix B.

It is noted that there are no local roads shown that were not already previously indicated in the EIS.

The sites noted in Appendix C are subject to change, based on further detailed assessment and planning (by the contractors). Any changes will be communicated prior to approval/operation.

Where possible, direct access to sites will be provided from Pacific Highway or the new alignment. The use of local roads for construction vehicle access will be minimised as much as possible when accessing these sites (e.g. where multiple access options are noted, such

as directly from the construction site, the route involving least impact to local roads will be adopted unless the construction sequence prevents this).

Vehicle turning movements for each access point will be proposed by the contractor; Pacific Complete will review each to ensure adequate sight distance is being provided in all instances. This is to ensure that safe intersection sight distance, deceleration, acceleration and storage for the anticipated vehicle type and quantity criteria is met in all instances. Pacific Complete will ensure that all construction vehicle movements are verified on site prior to each access becoming operational. Intersection signage will be provided to reinforce restricted turning movements and the contractor Traffic Managers are to notify all construction staff of approved Vehicle Movement Plans at each gate access prior to gate operation commencing. Turning movements are to be closely monitored at each access and reviewed if operational safety issues are identified.

All ancillary sites setup for the project will be assessed against relevant MCoA requirements and approvals prior to commencement of construction or installation of facilities.

Specific vehicle movement plans (VMPs) will be developed for all haulage routes including gate numbers, access or specific instructions, marshalling points and contact details (UHF channel and Phone Number).

4.5 Construction site office

To identify the most appropriate location for the site offices and compounds, Pacific Complete has considered the physical constraints in the area, the logistics of servicing the construction site, and the potential impact on the road network.

4.5.1 Site office locations

The locations for construction site offices have not yet been determined – this will be proposed by the contractor for each works portion.

The proposed access points will be addressed in a global site VMP as access locations are assessed, constructed and placed in operation.

Pacific Complete will review the proposed site office location against a number of features, including access arrangements, as discussed below.

4.5.2 Site office access requirements

Pacific Complete will ensure that all access points to site offices include the following features:

- Sited to satisfy minimum sight distance requirements
- Allow for turning vehicle movements of largest vehicles
- Sign posted in accordance with statutory requirements
- Sufficient on-site car parking to accommodate anticipated demands
- Vehicle ingress and egress points
- Adequate lighting
- Appropriate security

Pacific Complete will review proposed site office access arrangements for compliance with the above features.

4.5.3 Workforce traffic generation

Estimates of full time construction staff has been sourced from the Environmental Impact Statement, which estimated a peak of around 3,747 full time workers for sections 3 to 11.

A breakdown between sections is shown in Table 4-2 below, including estimated traffic generation of staff vehicles to/from site offices.

Table 4-2 Workforce traffic generation estimates

	Staff numbers [1]	Vehicle numbers [2]	Weekday trip movements		Daily trips
			trips 'in'	trips 'out'	
Section 3	1,000	850	850	850	1,700
Section 4	500	425	425	425	850
Section 5	647	550	550	550	1,100
Section 6	200	170	170	170	340
Section 7	300	255	255	255	510
Section 8	300	255	255	255	510
Section 9	200	170	170	170	340
Section 10	447	380	380	380	760
Section 11	153	130	130	130	260
Total	***3,747***	***3,185***	***3,185***	***3,185***	***6,370***

[1] Sourced from Woolgoolga to Ballina Pacific Highway Upgrade Environmental Impact Statement, 2012

[2] Assuming average vehicle occupancy of 0.85 persons per vehicle.

The increase in vehicular traffic detailed above could be considered fairly substantial (i.e. around 10% increases on existing volumes on Pacific Highway). However, it is noted that the majority of these trips would occur around project commencement/closing times (i.e. 7am/6pm weekdays), which would not typically correspond with the general traffic peak periods. In this regard, it is anticipated that the above traffic volumes should be able to be incorporated within the existing highway capacity.

Note that the estimates above account for home-to-work and work-to-home trips only and do not include potential additional daily trips carried out by managers, supervisors and survey/lab staff.

Pacific Complete will instruct the contractors to carry out detailed traffic generation estimates for each site office.

4.6 Material haulage operations

4.6.1 Haulage routes

Proposed haulage routes have been sourced from the Environmental Impact Statement. Pacific Complete will ensure that the contractors undertake detailed planning to confirm haulage routes.

An overview of the indicative haulage routes is shown in Figure 3. It is further noted that Wooli Road, Tucabia Road and Tucabia-Tyndale Road would be used by all construction traffic.

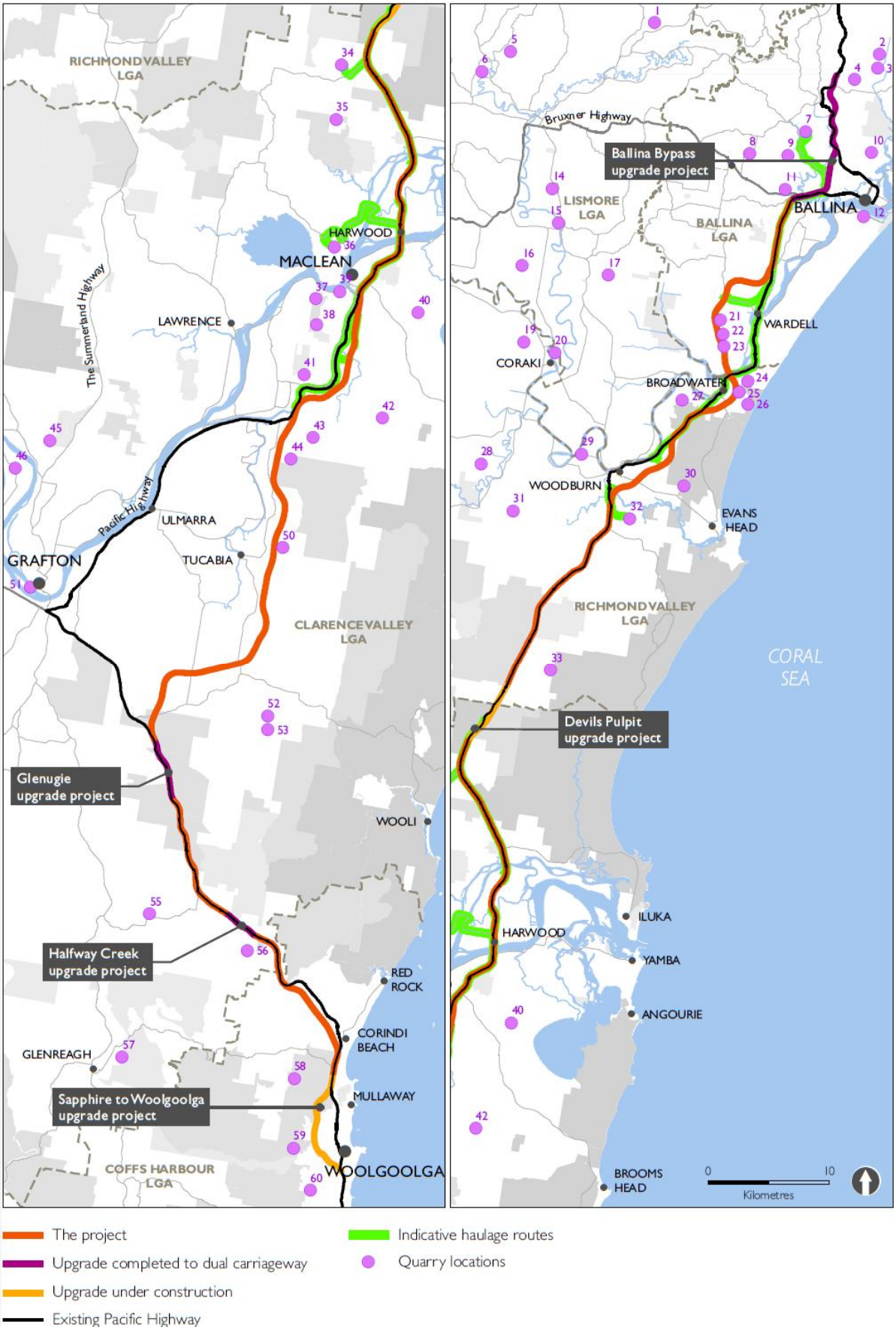


Figure 3 Indicative Haulage Routes (source: EIS)

It is expected that haulage of earthworks materials would generally be along the new formation as far as possible. However, there are a number of local roads that could potentially be used for haulage routes. A summary of the roads for each section is shown in Table 4-3 below. This list is indicative and could change following detailed construction traffic management planning by the contractor. A confirmed list of local roads used for haulage will be included in the STMSPs, to be prepared by the contractors, for review by stakeholders and the community prior to commencement.

Table 4-3 Local roads identified to be used for haulage routes

Section	Access road to be used	Haulage of material to		
		stockpile sites	batch plants	other
3	Eight Mile Lane	-	Sites 3a and 4b	
	Avenue Road	-	Site 3a	
	Wooli Road	-	Site 4b	
	Mitchell Road	-		
	Firth Heinz Road	-		
	Tucabia Road	-	Sites 8 and 9	
	Bostock Road	-		
	Somervale Road	-		
	Crowley's Road	-		
	Sheehy's Lane	-		
	Benson Lane	-		
	Existing access road		Site 8	
4	Shark Creek Road	-	Site 3	Yes (note 3 in section 4 sheet)
	McIntyres Lane	Sites 4a and 4b	Site 4c	
	Causley's Lane	Site 5	-	
	Goodwood Road	-	-	
	Jubilee Street	-	-	
5	Yamba Road	Site 2a	Site 2b	
	Watts Lane	Site 3b	Site 3b	Yes (note 5 in section 5 sheet)
	Chatsworth Road	Sites 4a and 4b	-	
	Carrols Lane	Sites 5a and 5c	Site 5b	
	Farlows Lane	-	Site 1	-
6	(nil)			
7	(nil)			
8	Existing road north of Tuckombil Canal	-	-	Yes (note 4 in section 8 sheet)
	Alfred Street	-	Site 2b	
	Wagner Street	-	Site 2b	
	Woodburn – Evans Head Road	Sites 2a and 2c	Site 2b	Yes (note 6 in section 8 sheet)
	Norman Street	-	Site 2b	
	Existing access road south of Lang Hill	-	Site Extra 8c	
9	Broadwater - Evans Head Road	-	Site 3	Yes (note 3 in section 9 sheet)
10	Back Channel Road	-	-	
	Old Bagotville Road	-	-	
	Thurgates Lane	-	-	
	Hillside Lane	-	Site 3a	
	Wardell Road	-	Site 3a	
	Coolgardie Road	-	Site 5	

Section	Access road to be used	Haulage of material to		
		stockpile sites	batch plants	other
	Lumleys Lane	-	-	
	Local access road	-	Site 3a	
	Local property access	-	Site 6	
11	McAndrews Lane	Sites 1a and 1b	Site 1a	
	Sartories Lane	Site 1a	Site 1a	
	Whytes Lane	Site 1b	-	
	Pimlico Road	Site 2	Site 2	
	Smith Street	-	-	

In most cases, the local roads listed above have low levels of existing traffic (less than 1000 vehicles per day). Medium traffic flows are currently experienced on Yamba Road, Maclean in Section 4 of the project; Woodburn – Evans Head Road, Woodburn in Section 8 of the project; and Wardell Road, Wardell in Section 10 of the project. These local roads would potentially be more sensitive to road traffic increases during construction in view of the nature of existing traffic. Appropriate routing arrangements would be required during construction to minimise impacts for local road users and the communities of Harwood, Woodburn and Wardell.

As noted above, the increased construction traffic volume on the local roads is likely to be within the capacity of the local roads. However, safety and road-maintenance considerations would need to be taken into account. As part of detailed construction management planning, condition surveys would need to be undertaken to monitor road, asset and traffic conditions; condition surveys would need to be repeated during construction; and again upon completion to check whether the roads have been returned to their pre-construction condition.

4.6.2 Mass haulage – total requirements

Road base, sand, aggregate and earthwork material from outside the project would be hauled to site using local roads and the existing Pacific Highway.

Estimates of the material requirements for construction of the project have been sourced from the Environmental Impact Statement. The estimates are in the order of some 1.23 million tonnes of road base, 0.79 million tonnes of sand and 1.44 million tonnes of aggregate. A further 0.5 to 0.6 million tonnes of earthworks material is also assumed to be required from outside the project (assuming an earthworks shortfall of 315,000 cubic metres across the project). All other earthworks materials are assumed to be available from cuttings located within the project boundary.

Total truck volumes assume each road truck has a 12 cubic metre and/or 25 tonne capacity. Based on this, the mass haulage for the projects results in the following total truck traffic:

- around 162,000 truck trips in total for the road base, sand and aggregate haulage
- a further 343,000 truck trips are potentially required to transport earthworks materials from within the project (along the existing Pacific Highway)

When compared to existing heavy vehicles on Pacific Highway, truck numbers are estimated to increase by around 13.8 per cent on average.

Indications from the 2011 traffic surveys and growth forecasts for the year the project is anticipated to open to traffic (2016) indicate the Pacific Highway has adequate capacity to absorb construction traffic. This increase is not anticipated to reduce the highway's current level of performance, except during peak holiday times.

4.6.3 Mass haulage – traffic volumes

Estimates of the truck volumes required for the haulage of materials along the existing highway has been sourced from the Environmental Impact Statement and is summarised in Table 4-4 below. Note that these estimates are indicative only and are expected to be refined following detailed assessment and will be reported by the contractor as part of their CTAMP submission.

Table 4-4 Haulage of earthworks and spoil materials along the existing highway

Estimated quantity (cubic metres) [1]	Haulage details		Approximate distance	No. of truck trips for earthworks / spoil haulage
	From	To		
35,000	Section 2 and 3 (Glenugie)	Section 2	15 km	2,900 trips
160,000	Section 3	Section 2	20 km	13,400 trips
10,000	Section 3	Section 3 (Glenugie)	10 km	830 trips
810,000	Section 3	Section 5	35–45 km	67,500 trips
840,000	Section 4	Section 5	10–15 km for general fill material and up to 45 km for other material	70,000 trips
325,000	Section 3	Section 6	35–45 km	27,100 trips
30,000	Devils Pulpit	Section 6	40 km	2,500 trips
35,000	Devils Pulpit	Section 7	5–10 km	2,900 trips
150,000	Section 3	Section 7	50–60 km	12,500 trips
20,000	Section 8	Devils Pulpit	30 km	1,700 trips
100,000	Section 8 south of Woodburn interchange	Section 8 (north of Tuckombil Canal)	4 km along road formation, existing highway and access road north of canal	8,300 trips
80,000	Section 8 south of Woodburn interchange	Section 8 (north of Macdonalds Creek	10 km along road formation and existing highway	6,700 trips
960,000	Section 3	Section 9	70–85 km	80,000 trips
295,000	Section 3	Section 10	80–95 km	24,600 trips
95,000	Section 10	Section 11	10 km	7,900 trips

[1] The quantities are rounded to the nearest 5000 cubic metres. The number of truck trips is based on road trucks of 12 cubic metres capacity and rounded to the nearest 100 trips.

Cuttings within Section 3 would potentially provide fill material for the project. The indicative start dates, duration of haulage operations and average number of truck trips per day for the movement of the material from Section 3 to Sections 5, 6, 7, 9 and 10 are shown in Table 4-5 below.

Table 4-5 Estimated timing of haulage operations north along highway from Section 3

Haulage details [1]		Indicative haulage duration	Average truck trips per day (estimated)
From	To		
Section 3	Section 5	12 months	280 truck trips / day
Section 3	Section 6	6 months	230 truck trips / day
Section 3	Section 7	3 months	210 truck trips / day
Section 3	Section 9	18 months	230 truck trips / day
Section 3	Section 10	9 months	170 truck trips / day

[1] Assuming 20 haulage days per month and rounded to the nearest 10 trips.

Assuming a 13 hour working day, the number of truck trips between Section 3 and 5 described in Table 4-5 above equates to around 22 vehicles per hour or 1 vehicle every 2.7 minutes. This would have a minimal impact on highway operation as this traffic increase is

within the capacity of the existing highway. However, potential impacts could include reduced travel times from slower speeds and safety implications from drivers becoming frustrated at slower travel speeds and temporary traffic arrangements.

The townships of Harwood, Woodburn, Broadwater and Wardell are located along the existing highway and would experience a noticeable increase in construction traffic. The estimated number and duration of additional truck movements along the highway at these townships is shown in Table 4-6 below. These additional daily truck volumes include the delivery of materials and equipment to the road corridor and ancillary facilities.

Table 4-6 Estimated increases in average daily truck volumes on the existing highway during construction (indicative only)

Traffic levels		Harwood (section 5)	Woodburn (section 8)	Broadwater (section 9)	Wardell (section 10)
Current	All vehicles	11,711 vehicles/day	8,609 vehicles/day	9,030 vehicles/day	9,735 vehicles/day
Current	Heavy vehicles	2,413 heavy vehicles/day	2,226 heavy vehicles/day	2,233 heavy vehicles/day	2,233 heavy vehicles/day
Forecast	Vehicle range forecast	230 to 910 vehicles/day	230 to 400 vehicles/day	170 to 220 vehicles/day	170 to 220 vehicles/day
Forecast increases	All vehicles (average 3.2%)	2% to 7.8%	2.7% to 4.6%	1.9% to 2.5%	1.7% to 2.3%
Forecast increases	Heavy vehicles (average 13.8%)	9.5% to 37.7%	10.3% to 18%	7.6% to 9.9%	7.6% to 9.9%

Peak heavy vehicle activity would result in a 37.7 per cent increase in current heavy vehicle numbers using the Pacific Highway near Harwood. This represents an increase of 7.8 per cent on total daily traffic flow near this location. At Woodburn, peak increases in heavy vehicle activity would be around 18 per cent. This represents an increase of around 4.6 per cent on total daily traffic. At Broadwater, peak increases in heavy vehicle activity would be around 10 per cent. This represents an increase of 2.5 per cent on total daily traffic. At Wardell, peak increases in heavy vehicle activity would be around 10 per cent. This represents an increase of around 2.3 per cent on total daily traffic.

These increases are expected to be within the highway's existing capacity and are not anticipated to result in a significant impact to the existing performance. However, noticeable increases in traffic levels and road user delay are predicted at Harwood (Section 5) and Wardell (Section 10) during peak construction periods.

4.6.4 Haulage along local roads

Some earthworks and batching materials would need to be hauled along local roads.

Local roads that could be used for haulage of earthworks are shown in Table 4-7 below.

Table 4-7 Haulage of earthworks materials on local roads

Section no.	Local road used	Haulage		Quantity of earthworks	No. of truck trips
		From	To		
Section 8	Local Access Road north of Tuckombil Creek	South of Woodburn interchange	North of Tuckombil Canal	100,000 cubic metres	8,300 truck trips
Section 9	Broadwater – Evans Head Road	Section 3	Section 9	35,000 cubic metres	2,900 truck trips

In Section 8, haulage of earthworks material along the formation of the upgraded highway would not be available across the Tuckombil Canal until the new bridge is constructed. However, the rock fill material would need to be placed for the soft soil treatment site before the construction of the northern bridge abutment could start.

In Section 9, haulage of earthworks material into the construction site directly from the existing highway immediately north of the Richmond River crossing would not be safe. Access would need to be by the existing intersection with Broadwater - Evans Head Road.

The proposed locations for asphalt and concrete batching plants for the production of concrete and asphalt for pavement construction are summarised in section 4.5. While the majority of these locations can be accessed directly from the existing highway, specific sites would require the delivery of materials to the site batch plants along local roads.

Local roads that could be used for haulage of batching materials are shown in Table 4-8 below.

Table 4-8 Delivery of materials to site batch plants via local roads

Project section	Local road used for material deliverables
Section 3	Local access road
	Eight Mile Lane and Avenue Road
	Eight Mile Lane and Wooli Road
	Tucabia Road and a local access road
	Coldstream Road (Tucabia Road)
	Sheeys Lane
Section 4	Shark Creek Road and access track
	McIntyres Lane
Section 5	Farlows Lane
	Watts Lane
Section 8	Alfred Street, Wagner Street and Woodburn Evans Head Road; or Norman Street and Woodburn Evans Head Road
Section 9	Broadwater - Evans Head Road
Section 10	Wardell Road, Hillside Lane and local access road
	Coolgardie Road
	Local property access
Section 11	McAndrews Lane and Sartories Road
	Pimlico Road

The management of construction haulage traffic is detailed in section 5.5 of this plan. The measures and processes to be implemented on the project will ensure that construction haulage traffic movements interacting with road users on the Pacific Highway and local road network will be undertaken in a safe and efficient manner and traffic delays kept to a minimum.

4.6.5 Management of construction traffic

On commencement of contractors, and prior to commencing any works on site, the following process will be undertaken to update the mass haulage details including any borrow sites:

- Pacific Complete will require contractors to submit their specific traffic management and safety plans (as per Section 2.4) for the site and these would include vehicle movement plans which would contain detailed haulage routes in the form of maps/figures. Maps will include details of local roads to be used, locations of any sensitive receivers, haulage routes, direction of travel, access to the site, any limitations of the route and location of borrow sites and/or quarries.
- Contractors will also need to provide details of how many trucks etc are likely to be required and the likely duration of truck movements around any sensitive receivers.
- The specific traffic management and safety plans will be reviewed by Pacific Complete and Roads and Maritime to determine if further mitigations are required.
- Pacific Complete and/or the contractor as required will liaise with local councils in relation to vehicle movement plans in case of any complaints.

Pacific Complete will ensure that mitigations are developed where necessary especially in regard to truck movements around peak sugar cane harvest season and summer holiday season.

4.7 Impacts

4.7.1 Pacific Highway function and access

Construction will generally be undertaken clear of traffic. This will result in only minor impacts on the existing Pacific Highway and local traffic. The existing highway is expected to continue to operate generally in line with its existing performance, however temporary disruptions and delays will occur.

The highway may need to be partially or fully closed from time to time. The number, type and duration of these road closures would depend on the construction methods adopted, particularly for construction of the tie-ins with the existing Pacific Highway. Where full road closures are required, these would be at night to minimise disruption to traffic. Detours for local traffic during full road closures would be considered where alternative routes exist. Road user management delay strategies will be implemented to ensure construction activities minimise delays to traffic and works are undertaken within the prescribed road occupancy parameters for the project.

Pacific Complete would be responsible for liaising with Roads and Maritime and other key stakeholders including local councils to ensure road closures and disruptions are managed safely and efficiently. This includes communication of closures to affected communities, identification of alternative routes, clear and unambiguous way finding, variable message signage, temporary traffic signals and traffic control personnel.

A reduced speed limit from 100km/h to 80km/h for the length of the project will result in an increased travel time through this section of the Pacific Highway. This will be managed through project static signage and VMS messages to ensure that motorists are informed of changed traffic conditions and driver expectations are managed pro-actively.

There will be a need to remove or shorten existing overtaking lanes to facilitate the construction of gate accesses and staging works. This will reduce the number of overtaking opportunities along this length of the Pacific Highway and have the potential to impact on the current performance of the highway. As stated in the CTAMP, specific impacts associated with each stage of construction will be addressed in the STMSPs and specific staging design drawings with close consultation with Roads and Maritime and key stakeholders. This process is consistent with all Pacific Highway projects.

An overtaking lane impact strategy will be developed by Pacific Complete to identify the specific overtaking lane locations proposed to be impacted with a program of implementation for consultation and agreement with the Pacific Complete / Roads and Maritime site management representative.

4.7.2 Adjacent project works

There will be an adjacent Pacific Highway Upgrade project, the Halfway Creek to Glenugie project, which interfaces at the Glenugie Upgrade project (which, in turn, interfaces with the southern end of this project). In addition, the northern section of the project interfaces with the Pimlico to Teven works of the Ballina Bypass project. There will need to be close liaison between all three projects to ensure that work activities are co-ordinated and traffic delays kept to a minimum. To ensure that a high level of co-ordination is achieved, it is proposed that a weekly traffic co-ordination meeting is held with key traffic representatives from all three projects in attendance to discuss work programs and interface issues such as adjacent traffic control operations, vehicle movement plans, maintenance activities and incident management. It is proposed that this meeting is facilitated by an Roads and Maritime representative.

4.7.3 Property access

There are a number of property accesses impacted by the construction work. Pacific Complete will maintain property access at all times throughout the project and will carefully stage the works to ensure disruptions to residents are kept to a minimum. The success in the management of the interface between these private accesses and the construction works is critical to maintain a positive public profile of the project in the local community.

Pacific Complete will provide an alternative access to a standard that is at least equivalent to that currently existing and meets the relevant road safety standards prior to commencement of construction or opening of the project to traffic, whichever is relevant. Details for provision of altered access for both construction and operation shall be determined in consultation with the landholder.

4.7.4 Local road network

All roads will be maintained at the existing capacity unless reducing it is allowed by the Roads and Maritime site management representative and is for specific construction purposes. Any reduction in capacity for the purpose of construction staging will be temporary and kept to a minimum. The details of any new road alignment will be outlined in the relevant STMSP.

4.7.5 Public transport

The public transport operations in the area consist of long distance coach services and local bus services.

There will be minimal disruption to existing passenger and school bus routes during construction. The existing highway will be retained for local access.

The location of any bus stop that is close to a construction site will be reviewed to ensure it is still safe to operate. It may be necessary in some situations to temporarily move the bus stop to a safer location. If this is required, all key stakeholders will be consulted and the details of any changes included in the relevant TCP.

Current local and school bus routes would generally continue to use existing bus routes. Some individual bus operators may modify bus routes or add services to use the upgraded Pacific Highway. School bus services that operate within towns would not be affected by the project.

4.7.6 Pedestrians and cyclists

Pedestrians travelling through the worksite would be guided to cross the road at designated locations where required. This may cause minor delays but given the very low pedestrian volumes using the Pacific Highway, this is not considered to be a significant issue. No remedial measures are proposed, however Pacific Complete will make specific review of arrangements for maintaining pedestrian accessibility within all town centres.

The construction activity along the duplicated section of the existing highway would require the narrowing of the road shoulder which may impact on cyclists passing through the work site. Cyclists would need to move into the traffic lane as they travel through the work site. Given the rural nature of the road, it is expected that cyclist volumes would be low and the overall delay is anticipated to be relatively minor. No remedial measures are proposed, however Pacific Complete will make specific review of arrangements for maintaining cyclist accessibility within all town centres.

4.7.7 Emergency services

Construction activity will have only minor impacts on emergency vehicles, as vehicular access along the Pacific Highway will be maintained. Emergency services will be kept fully informed of all changed traffic conditions throughout the various construction stages of the

project. Pacific Complete will ensure that all construction accesses and adjusted property accesses are clearly signposted with identification signage.

4.7.8 State forest road network

During construction, potential impacts on areas of State forest may result from the temporary use of land for construction activities such as ancillary facilities or temporary sedimentation basins.

At some locations, small parcels of land would need to be acquired for the project, and adjacent forest roads may be impacted. Roads, access tracks and fire trails in State forests likely to be affected by the project include:

- Section 3: Dungel Road, Eight Mile Lane, No 1 Fire Road, Shields Road (Glenugie State Forest)
- Section 6: Mororo Fire Trail (Mororo State Forest)
- Section 7: Cypress Road, Darkys Road, South Pacific Trail, North Pacific Trail, (Doubleduke State Forest), Glencoe Road, McFayden Road, Serendipity Road, (Tabbimoble State Forest).

The Pacific Complete will consult with all key stakeholders to ensure that construction State forest vehicular access is maintained at all times and that any adverse impacts to State forest operations are kept to a minimum.

Figure 4 and Figure 5 show where alterations to the State forest road and access track network are likely to be required as a result of construction. Appropriate access arrangements would need to be agreed with Forests NSW prior to construction to provide alternative means of access and egress, in particular for timber trucks and other State forest traffic. Arrangements would be finalised in conjunction with Forests NSW following detailed design. In particular, access to Glenugie State Forest around the interchange at Eight Mile Lane and Lookout Road would be further reviewed at the detailed design stage in consultation with Forests NSW (source: EIS).

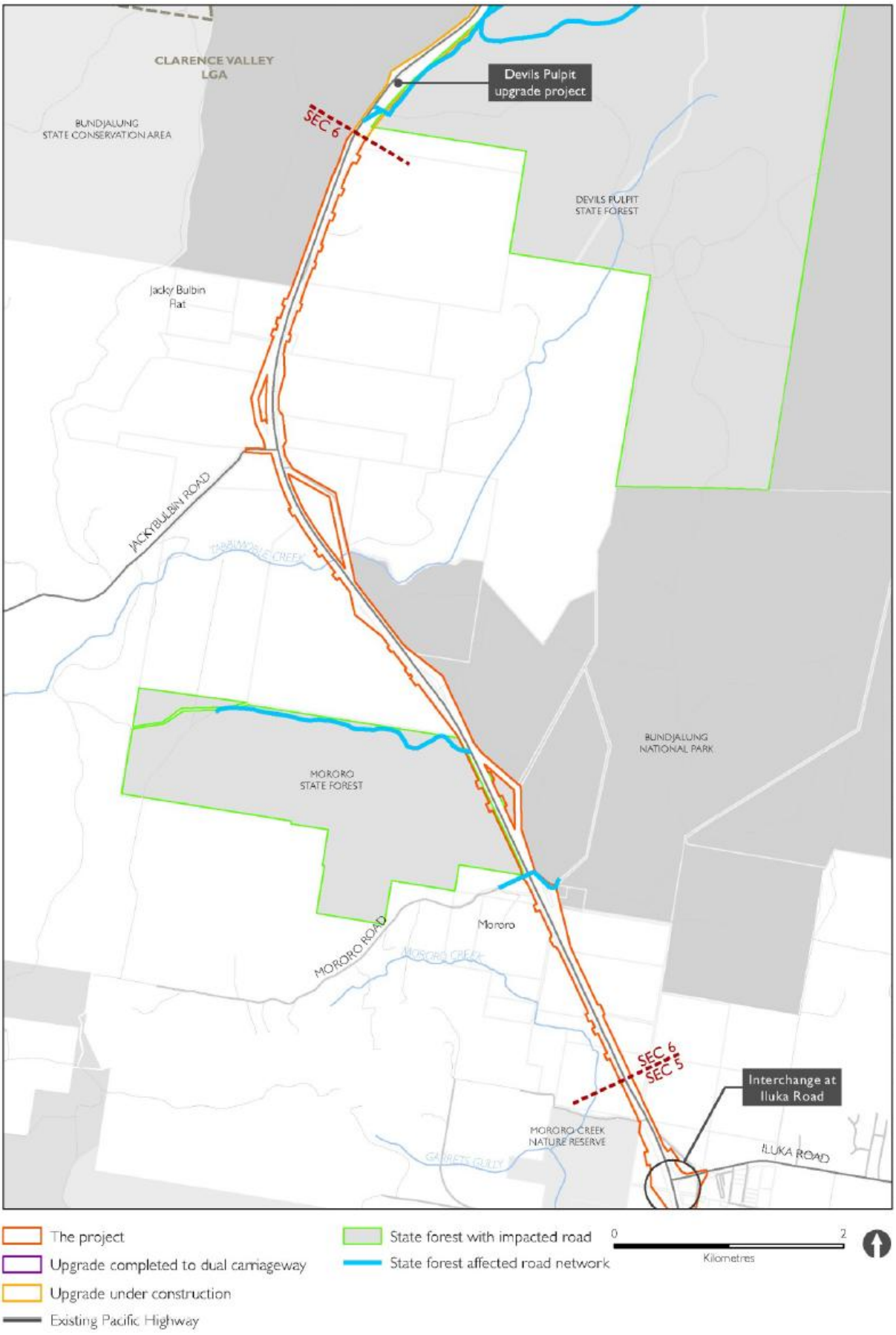


Figure 4 Impacts to state forest road network: Section 6 (source: EIS)

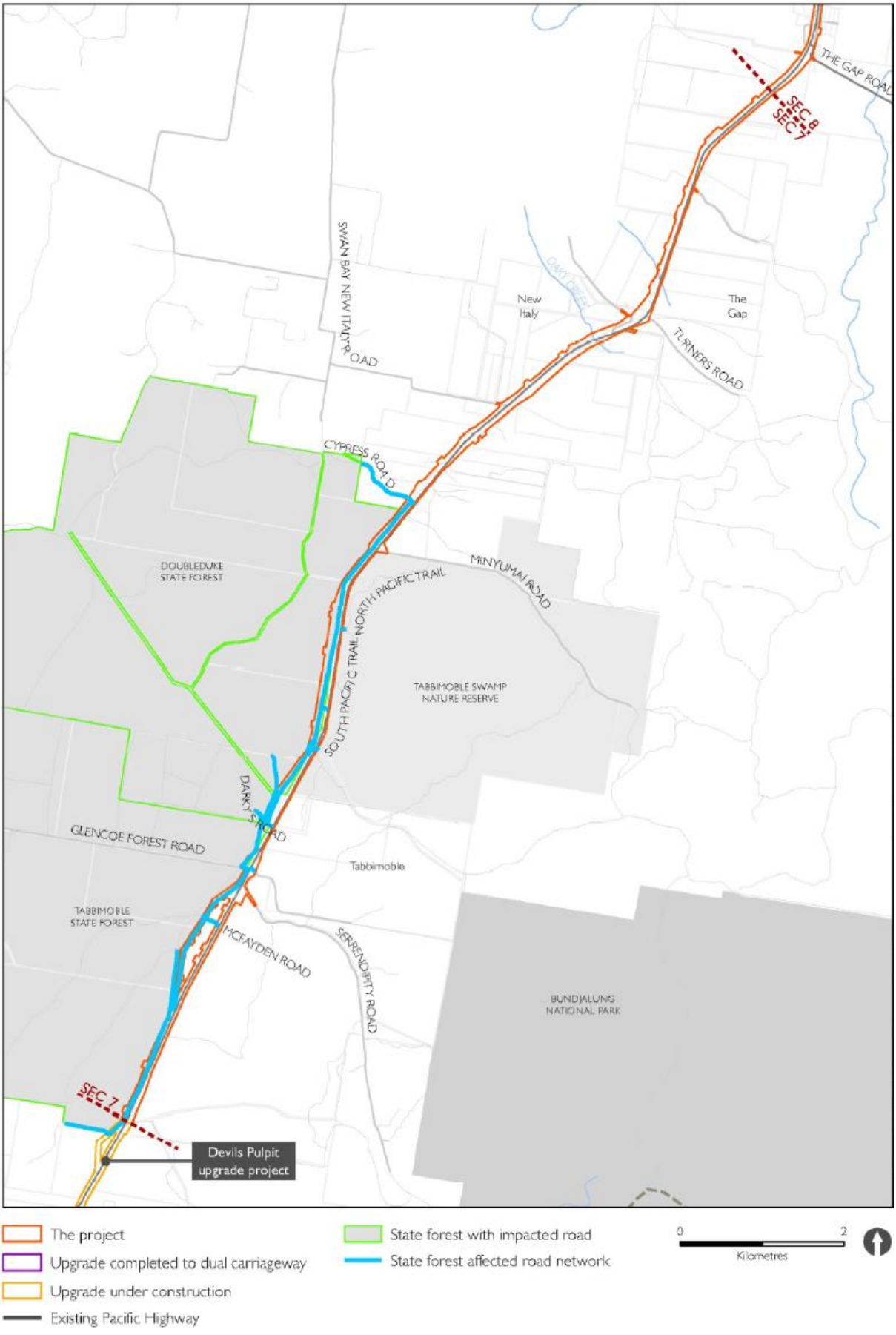


Figure 5 Impacts to state forest road network: Section 7 (source: EIS)

5 Traffic operations

Pacific Complete acknowledges the importance of planning and staging all works to avoid road occupancies during peak traffic flow periods and to minimize the delays to all road users.

Historical traffic volume and composition data will be referenced to assist in the planning and design of temporary traffic management controls. Data from Roads and Maritime permanent and temporary count stations along the existing highway and surrounding major local roads will be used as a basis for this analysis. Additional traffic data will be obtained as identified in the planning stages of each STMSP.

Additional speed monitoring will also be managed by the Traffic Managers to assist in the planning of traffic control activities and also to identify the effectiveness of the traffic management schemes implemented. This data will also assist in identifying locations where Police enforcement assistance will be required and will be included in any submissions to the local highway patrol representatives of the NSW Police via the Roads and Maritime site management representative.

To ensure that all traffic control operations fulfil the obligations of the Roads and Maritime G10 Specification, traffic controllers will be trained to continually monitor and record queue lengths and delays. A marker will be placed at a 500m point from the traffic controller so that it clearly sets out the limit of the required traffic queue.

A log sheet will be kept of all traffic stoppages recording the stoppage and the resultant queue length. This information will form the basis of the traffic control performance reporting to be submitted to the Roads and Maritime site management representative.

5.1 Road User Delay management

The Pacific Highway is a key component of the transport network between Brisbane and Sydney. The highway is of fundamental importance in making this vitally important transport system work. As one of Australia's most heavily used interstate highways, the road is a vital piece of national infrastructure. The route is of great strategic and regional significance. Its functions include the carriage of interstate freight and passenger traffic, providing for local and regional traffic within the fastest growing rural area in New South Wales and providing access to a large number of popular coastal holiday resorts.

The benefits of reducing road user delay associated with construction works along the highway include travel time savings, lowering driver annoyance, benefits to commerce relating to reliable deliveries of freight and an improved public image for Roads and Maritime. Therefore, Pacific Complete acknowledges the importance of minimising delays to road users on the Pacific Highway during the construction phase of the project.

To achieve this goal, a road user delay management strategy will be employed throughout the project. The key principles of this strategy are to plan work activities and work sites to minimise:

- Disruption of established traffic movements and patterns.
- Interference with traffic at peak movement periods.
- Interference with public transport services.
- The amount of road closed to traffic at any one time.

The measures to reduce road user delay are addressed in the design of traffic management schemes, the planning of the work area to be isolated from the traffic lanes, developing work methods to avoid impacts on the road network and road occupancy planning. These measures include:

- Seek options and layouts at the design development stage which minimise impacts on traffic during construction.
- Minimise the road space occupied by the works in time, width and length.
- The road capacity should not be reduced unnecessarily and sufficient capacity should be provided to accommodate expected traffic volumes.
- Co-ordinate works at each work area to ensure road users do not encounter several delays in quick succession.
- Undertake detailed site investigations to avoid any unforeseen problems that may increase traffic delays.
- Effectively plan all work activities and ensure that road occupancies are not implemented at times of peak traffic volumes, such as periods associated with school and public holidays.
- Ensure compliance with the CTAMP and project requirements.
- Plan maintenance works to avoid activity close to an active construction site.
- Ensure co-ordination of road occupancies with transport operators regarding schedules and over-dimension loads.
- Maintain the ability to stop work and clear the travel lanes to allow traffic flows to return to normal free-flow conditions.
- Ensure adequate spacing between points at which traffic is delayed.
- Ensure road users are well informed of changed traffic conditions.

The Roads and Maritime G10 Traffic Management specification stipulates traffic delay requirements for the project. In accordance with these project requirements, Pacific Complete will ensure that when undertaking the works, the free flow of traffic is not delayed in any direction:

- At any single road occupancy for a duration of longer than 5 minutes.
- Cumulatively due to all road occupancies for a duration of longer than eight (8) minutes.

In addition to these travel time delay requirements, traffic queues caused by road occupancies, measured in any direction, must not exceed 500m in length. If traffic queues reach 500m in length, the cause of the delay must be removed until the flow of traffic returns to free flow conditions.

To minimise delays through the work site, traffic controllers located closest to, and within a road occupancy on each of the approaches to the road occupancy, must be positioned no greater than 600m apart. Also, road occupancies involving the closure of any shoulder or auxiliary lane must provide a minimum of one travel lane in each direction at all times through the road occupancy. Partial closure of any length of an auxiliary lane may only be implemented if the remaining open length of the auxiliary lane is equal to or greater than 600m where the posted speed limit is 100km/h and 400m where the posted speed is 80km/h. If this open length cannot be achieved, the entire length of auxiliary lane must be closed.

The Traffic Manager will ensure that traffic control activities are planned to operate within this traffic delay criteria and the Traffic Managers will undertake daily travel time surveys through the project to monitor and verify the delays caused by the project works to ensure that this criteria is being satisfied.

The contractor Traffic Manager will develop a travel time monitoring regime that is approved by the Pacific Complete management representative to measure compliance with the road occupancy parameters.

5.2 Road occupancies

A number of the diversions or stages will require closing of shoulders and lanes on either the existing, temporary or new pavements of the Pacific Highway. Road occupancy licences will be obtained for each type of work involving closures. Several TCPs may operate under the same road occupancy licence. The contractor Traffic Manager is to ensure that all signs and devices installed in accordance with approved TCPs make logical sense from the road user point of view. Particularly where one TCP overlaps another TCP and/or signage on adjacent worksites.

The various works requiring site specific TCPs are listed in Section 3.5.5. The TCP with applications and works, timing details will be submitted to Roads and Maritime at least 10 days in advance.

Pacific Complete will obtain an approved ROL prior to the commencement of any works on or near the Pacific Highway except in the case of an emergency, or when directed by Police or Emergency services.

5.3 Speed zoning strategy

A temporary speed reduction (for the duration of construction) from 100 km/hr to 80 km/hr on the Pacific Highway is proposed for the length of the project area and is in accordance with the requirements of the Roads and Maritime G10 specification. The speed limit may be reduced further during temporary short term lane traffic control works (e.g. reduced to 40 km/hr where required, such as adjacent to construction activities) and this will be detailed within TCP's as required. All changes to speed limits will be in accordance with the approved Road Occupancy Licences and Speed Zone Authorisations issued by Roads and Maritime. Roads and Maritime will be provided 14 days' notice of any proposal to change the posted speed limit. Road users will be advised of any speed limit changes utilising VMS on the Pacific Highway and traffic alerts issued via media. Temporary speed zoning changes shall be recorded for operational times of speed zone controls.

5.4 Safety and amenity of road users

Pacific Complete will safely manage the interaction with all road users, including pedestrians, cyclists and over-dimension heavy vehicles during the construction of this project. Pacific Complete recognises the importance of giving consideration to all road users, including vulnerable users, and maintaining access for all road users through and around the work sites.

5.4.1 Management of pedestrians

Pacific Complete will ensure that access is maintained for pedestrians at all times during the undertaking of construction and maintenance works. The STMSPs will outline any signage and/or delineation required for the specific areas of the work. Any necessary diversion of existing walking routes will be undertaken following consultation with key stakeholders and approval from the relevant road authority. The safe night time use of walking routes will be considered in the planning of any diversion.

When planning construction activities, Pacific Complete will give consideration to the:

- Number of pedestrians.
- Type of pedestrian activity.
- Origin and destination points of the pedestrians, and their desired travel path.

- Needs of vulnerable pedestrians, such as young children, the elderly, vision impaired, disabled people, people with prams and trolleys.
- Proximity of pedestrian generating developments.

Pacific Complete will provide a safe road environment for pedestrians by clearly defining all work areas, and where required, defined walking paths will be provided. These paths will be clearly signposted and delineated.

Where feasible, Pacific Complete will aim to maintain all existing pedestrian crossing facilities. Where this cannot be achieved alternative facilities that are a similar standard to the present facility will be provided.

A TCP will be developed for all alterations to existing pedestrian crossing facilities.

Pacific Complete will obtain approval from the relevant road authority prior to adjusting any existing pedestrian facility or the implementation of any new temporary facility.

Pacific Complete will adopt the following process to provide for the safe passage of pedestrians:

- All existing pedestrian/cycle facilities will be maintained in their existing location throughout the construction phase where possible.
- Where pedestrians are required to move through or around a work area, provision will be made via a temporary footpath or planned diversion to minimise the deviation from the existing route.
- Where crossing will be temporarily relocated, they will be located as close as possible to the existing crossing and will be constructed to the same standard as the crossings they replace (such as crossings will be signalised or utilise Traffic Controllers if the crossings they replace were signalised).
- No existing crossing will be closed without a suitable temporary alternative.

All footpath and crossing treatments will be implemented in accordance with relevant Roads and Maritime TCWS and AS1742.3, which will address but not be limited to the following:

- The revised location of crossings and temporary footpaths will be developed in consultation with the appropriate road authorities and user groups.
- All footpaths adjacent to or within works areas will be clearly delineated, signed and fenced to prevent access to work areas, and will be sufficiently separated from vehicular traffic.
- Pedestrians will be segregated from live vehicular traffic by safety barriers where required.
- Appropriate pedestrian detour signage will be provided to guide/direct pedestrians where detours and closures are in effect.
- The revised location of cycle travel paths (and alternative routes) will be developed in consultation with the appropriate road authority and cycle user group(s).
- 'Cyclist Dismount' signage will be provided at any location where cyclists are expected to cross the carriageway or any other locations where the proposed path may not be suitable for high speed path users.

5.4.2 Management of cyclists

Pacific Complete will ensure that access is maintained for cyclists at all times during the undertaking of construction and maintenance works. The STMSPs will outline any signage and/or delineation required for the specific areas of the work. Any necessary diversion of existing cycling routes will be undertaken following consultation with key stakeholders and approval from the relevant road authority. The safe night time use of cycling routes will be considered in the planning of any diversion.

When planning construction activities, Pacific Complete will give consideration to the:

- Number of cyclists.
- Type of cycling activity.
- Origin and destination points of the cyclists, and the connectivity of their routes.
- Proximity of cyclist generating developments.
- The travel speed of cyclists.

Pacific Complete will provide a safe road environment for pedestrians by clearly defining all work areas, and where required, defined walking paths will be provided. These paths will be clearly signposted and delineated.

Where feasible, Pacific Complete will aim to maintain all existing cycling facilities. Where this cannot be achieved alternative facilities that are a similar standard to the present facility will be provided.

A TCP will be developed for all alterations to existing cycling facilities.

Pacific Complete will obtain approval from the relevant road authority prior to adjusting any existing cycling facility or the implementation of any new temporary facility.

5.4.3 Management of heavy vehicle access

Pacific Complete will ensure that access is maintained for heavy vehicles, including over-dimension loads, at all times during the undertaking of construction works. Planning of traffic control operations and temporary works will incorporate the requirements of all heavy vehicle access through the work site.

To facilitate the movement of heavy vehicles Pacific Complete will:

- Give consideration to the movement of heavy vehicles and over-dimension loads when preparing temporary works drawings and TCPs.
- Minimise traffic control operations at night so as not to disrupt night freight movements.
- Limit obstructions and restrictions on the carriageways, and when required provide alternatives to maintain access for transport operators including over-dimension load movements.
- When traffic control operations are in place, traffic controllers will effectively co-ordinate the movement of over-dimension vehicles through the work site.
- Assist the Roads and Maritime Special Permits Unit and over-dimension operators by notifying Roads and Maritime, including the Pacific Highway Traffic and Safety Manager, of any obstructions that may impact on over-dimension vehicle movements.

Pacific Complete will also ensure the effective management of over-dimension heavy vehicle movements relating to the construction works. In particular, one of the highest risk activities will be the delivery of super-T bridge girders to site. This activity will require detailed planning to address all risks and ensure that the activity is undertaken in a safe and efficient manner.

It is proposed that a girder delivery strategy will be developed through consultation with key stakeholders. For the purpose of girder delivery, these stakeholders will include representatives from the construction team and Roads and Maritime project team, Roads and Maritime Traffic Manager (Pacific Highway) and Roads and Maritime Northern Traffic Operations Manager (TOM), Roads and Maritime Special Permits Unit Manager, NSW Police, Local Councils and haulage operators.

5.4.4 Management of access and connectivity

Measures to manage potential impacts associated with access and connectivity in Sections 3 to 11 are summarised in Table 5-1.

Table 5-1 Mitigation measures – access and connectivity

Section	Mitigation measure
Section 3	Access to Glenugie State Forest around the interchange at Eight Mile Lane and Lookout Road would be further reviewed in consultation with Forests NSW.
Section 4	Access arrangements between the interchange at Maclean and Townsend via Jubilee Street would be reviewed taking into consideration the current heavy vehicle movements to the industrial estate at Townsend.
	Access to local cane farms would be further reviewed by the contractor to ensure access is maintained throughout construction, and in particular to understand access requirements during harvesting periods
Section 5	The layout of the intersection at Yamba Road would be reviewed to better meet the needs of truck movements from Harwood Mill.
	Connectivity between the shared user path from Harwood Bridge to Yamba Road would be reviewed to refine pedestrian and cyclist access.
	The need for a full interchange at Yamba Road would be investigated should traffic growth warrant it in the future.
	The need for a full interchange with south facing ramps at Watts Lane, Harwood would be investigated should traffic growth warrant it in the future.
	The need for the overbridge and the arrangement of local access at Chatsworth Road would be reviewed at the detailed design stage depending on specific staging and delivery of the highway.
	The need for the overbridge and arrangement of local access at Carrols Lane would be reviewed at the detailed design stage depending on specific staging and delivery of the highway.
	Access to local cane farms would be further reviewed by the contractor to ensure access is maintained throughout construction, and in particular to understand access requirements during harvesting periods
Section 10	The need and delivery strategy for the heavy vehicle checking station at the rest area in Section 10 north of Richmond River would be reviewed.
	Access to local cane farms would be further reviewed by the contractor to ensure access is maintained throughout construction, and in particular to understand access requirements during harvesting periods
Section 11	Access to local cane farms would be further reviewed by the contractor to ensure access is maintained throughout construction, and in particular to understand access requirements during harvesting periods

5.5 Construction vehicle management

Pacific Complete will manage construction vehicle movements to ensure that all traffic associated with the works can safely travel on the road network to and from the construction site, safely enter and exit the site access points, manoeuvre to and from traffic streams and turn at work areas, depots, stockpile sites and quarries. Pacific Complete will plan all construction vehicle movements with the aim to minimise the risk to other road users and keep the traffic generated by the project to minimum. The management of works traffic will be undertaken in accordance with the Roads and Maritime 'Traffic Control at Work Sites' manual.

Pacific Complete will monitor the use of local roads by construction heavy vehicle traffic in consultation with Clarence Valley Council, Richmond Valley Council and Ballina Shire Council and develop measures to minimise and/or restrict use of local roads by heavy vehicle traffic as far as reasonable and practicable. Mitigation measures would include:

- Priority given to construction traffic using the Pacific Highway and the project corridor offline.
- Minimising the number and frequency of construction vehicles using local roads through planning of work activities and deliveries.

- Limiting construction vehicle movements on local roads to certain times of day to avoid conflict with local road users.

The types of construction vehicle movements may include:

- Deliveries of materials, supplies, plant or equipment to site.
- Transportation of over dimension loads.
- Haulage of materials on and off site associated with earthworks operations.
- Deliveries of concrete and AC bitumen from batching plants to pavers.
- Regular trips by construction personnel in work trucks and utilities.

5.5.1 Driver responsibilities

All drivers employed on the project, whether direct employees or subcontractors, have a responsibility to drive safely and in accordance with the Australian Road Rules and any other safe driving instructions issued on the project.

Drivers must exercise care at all times and work in accordance with vehicle movement plans (VMPs).

5.5.2 Types of vehicles

The types of vehicles used on the project may include, but not be limited to:

- Off-road plant/vehicles e.g. Scrapers, dump trucks.
- On-road registered vehicles e.g. 4wd utilities; single unit trucks with or without dog trailers; semi-trailers; B-Doubles; and over-dimension floats/platforms etc.

5.5.3 Hazardous movements

When planning construction vehicle movements, the following hazardous movements will require particular consideration:

- Entering and exiting work sites to and from adjacent travel lanes.
- U-turn movements across travel lanes and at median crossover points between dual carriageways.
- Reversing manoeuvres within the work area and in the adjacent travel lane.
- Travelling through the work area between construction personnel and hazards.
- The stopping of construction vehicles within adjacent travel lanes.

Pacific Complete will apply controls and measures to mitigate the risk of these hazardous movements including:

- The restriction of specific movements (e.g. turning bans).
- The provision of temporary traffic controls.
- The installation of deceleration, acceleration and turning lanes outside of the through lanes.
- Educating drivers.
- The installation of warning devices on vehicles.
- The implementation and compliance with project VMPs.

5.5.4 Planning vehicle movements

It is essential that satisfactory arrangements are planned and implemented for vehicles associated with the construction works. This mainly involves entering and leaving the traffic stream at work areas, accesses and side roads, or turning around.

Locations for turning across lanes carrying traffic and for entry and exit to and from work areas for vehicles associated with the work will be restricted to well defined points selected after considering relevant factors including:

- Sight distance.
- Vertical grades.
- Horizontal grades.
- Volumes of through and turning traffic.
- Approach speeds of through traffic.
- Areas clear of traffic lanes for accelerating and decelerating.

When planning construction vehicle movements Pacific Complete will:

- Comply with all relevant environmental approvals.
- Minimise the number of vehicle movements by balancing earthworks and recycling excavated materials.
- Conduct a risk assessment to identify specific hazards and to facilitate the application mitigation measures.
- Promote safe driving principles.
- Develop on-road haulage routes that not only provide an efficient operation but minimises the impact on the road network and local community.
- Analyse, assess and mitigate the impacts of the traffic generated by the construction works.
- Set-up depots, stock piles and batching plants at locations that minimise travel distances and impacts.
- Limit haulage operations to the construction corridor as much as feasible.
- Limit the number of access points and haul road crossings.
- Evaluate the need for temporary traffic control.
- Implement appropriate environmental controls.
- Provide an efficient and well maintained vehicle fleet.
- Prepare Vehicle Movement Plans (VMP) for all construction vehicle movements.
- Determine the most appropriate hours of operation that will minimise the impact on the road network and local communities.

5.5.5 On-site construction vehicle movements

Construction vehicle movements on the construction site need to be carefully planned to address the various hazards and conflict points that occur within the work area and where a number of work areas interface with each other including the presence of workers on foot adjacent to working plant, mixing light vehicles with heavy vehicles, rough surfaces, poor sight distance and alignments, deep excavations and steep embankments.

To address these risks Pacific Complete will ensure that:

- A risk assessment is conducted for all work activities and vehicle movements.
- VMPs are developed for all vehicle movement on sites.
- Regular toolbox meetings are held to discuss on-site vehicles movements.
- All plants are fitted with the appropriate safety features.
- All plants are regularly inspected for road-worthiness and are deemed ‘fit-for-purpose’.
- All access tracks are clearly defined and sign posted.

- Pedestrian tracks and crossing points are provided where necessary and clearly sign posted.
- Large plants, such as scrapers are separated from small plant items where possible.
- Workers do not operate within exclusion zones of moving plant.
- Exclusion zones at work areas and around plant are clearly delineated and where possible, physical separation is provided.
- Spotters and traffic controllers are positioned to assist and warn workers who are operating in close proximity to access roads and moving plant.
- Appropriate temporary traffic controls are installed where required.
- Consideration is given to the installation of reduced on-site speed limits.
- Site escorts are considered at locations where high-risk activities are being undertaken.

5.5.6 Road network construction vehicle movements

Pacific Complete will plan all vehicle movements to minimise the impact on the road network. However, where on-road haulage operations are required Pacific Complete will:

- Conduct traffic analysis to determine the number of vehicle movements and assess the potential impact on the road network.
- Develop a route that maximises the use of the arterial roads and minimises the use of local roads.
- Select a route that has a minimal impact, and /or where the potential impacts can be effectively managed.
- Consult with Clarence Valley Council, Richmond Valley Council and Ballina Shire Council and the Roads and Maritime Representative during the development of haulage plans.
- Where possible, avoid movements during peak periods.
- Develop a detailed VMP and toolbox all drivers.
- Ensure that the fleet is regularly maintained.

5.5.7 Construction access points

The most hazardous movement for construction vehicles occur when the vehicle is entering or exiting the construction site to and from the adjacent travel lane. The risk is increased on high speed high volume roads where existing access points are limited, as drivers do not expect vehicles to be turning from or entering the traffic flows.

When planning construction access points Pacific Complete will:

- Consider the use of existing local road junctions to access construction work areas where feasible.
- Keep the number of access points to a minimum.
- Ensure that the new construction access points do not adversely impact on any existing intersections, traffic facilities or traffic generating developments.
- Ensure that all access points comply with the Roads and Maritime G10 Specification Temporary works Intersection Treatment and relevant design guidelines in relation to sight distance, turning paths appropriate for the vehicle usage, intersection layouts, lane widths, acceleration and deceleration lanes and right turn bays to protect the right turn movement unless agreed with the Pacific Complete / Roads and Maritime site management representative based on site specific traffic management and vehicle movement plan submissions.
- Ensure the junction configuration has sufficient capacity to accommodate the traffic generated by the construction site.

- Ensure that security fences and gates at access points are indented to enable vehicles to park clear of the adjacent travel lanes.
- Ensure that access points are constructed of a suitable all weather surface that prevents debris from being tracked onto the adjacent travel lanes.
- Ensure that all access points are clearly visible to approaching traffic and signposted accordingly.
- Consider the use of temporary traffic control to facilitate short-term major haulage operations and the movement of over-dimension vehicles where required.

Each site access will be detailed in a STMSP and the associated vehicle movement plan(s), which will show the exact entry and exit points for works vehicles and the associated signage.

5.5.8 Implementation of traffic controls

The risk assessment, and or VMP will identify those specific locations where temporary traffic controls will be required to mitigate a particular hazardous movement.

The type of temporary traffic controls to be installed by Pacific Complete may include, but not be limited to:

- Truck turning ahead signs in advance of access points.
- Reduce speed zones on the approaches to access points and turning locations.
- Traffic controllers at access points to facilitate entry and exit movements where required.
- Road shoulder closures to provide deceleration and acceleration lanes.
- Closure of slow and fast lanes on dual carriageways to provide deceleration and acceleration lanes.

In addition, all access points will have a unique identification number that will be sign posted on the approaches and at the access.

Details of all access points and signage will be detailed on the overarching project Construction Traffic and Access Management Plan.

5.5.9 Environmental controls

Pacific Complete will implement various environmental controls and measures for the haulage operations to mitigate the impacts on the surrounding road network. The controls and measures to be applied will include, but not be limited to:

- The compulsory covering of all loads prior to leaving the site.
- Provision of wheel wash facilities or other devices to ensure mud, dirt or other material is not deposited onto any road which is open to the public.
- Maintenance of all construction vehicles to prevent loss of fuels, lubricants, loads or other substances, whether in the form of dust, liquids, solids or otherwise.
- Dust suppression measures conducted regularly at loading/unloading areas and along the routes.
- Clean-up crews, including street sweepers, will be available to manage material spills.

5.5.10 Monitoring

During haulage operations regular monitoring will be undertaken along the various haulage routes to ensure that:

- Operations are complying with the CoA and the requirements of the CTAMP.
- Haulage vehicles are only travelling along those routes that have been agreed for use with road authorities.

- Haulage operations are not causing increased traffic congestion throughout the road network.
- The VMPs are being applied and compliance is being achieved.
- Damage to pavements and traffic facilities are reported and rectified.
- Haulage vehicles are fitted with appropriate warning devices.
- All required TCPs are installed correctly.
- The required vehicle and access point environmental controls have been applied and are performing to the required level.
- The monitoring of local roads will be conducted in consultation with Clarence Valley Council, Richmond Valley Council and Ballina Shire Council.

5.6 Traffic control signs and devices

Traffic control devices are all signs, traffic signals, pavement markings, traffic islands, and/or other devices placed or erected to regulate, warn and/or guide road users. All traffic control devices used on the project will be in accordance with Roads and Maritime and Australian standards and guidelines. The development of temporary signposting schemes associated with the traffic staging arrangements will be undertaken to meet the requirements as stipulated in the Roads and Maritime G10 specification.

5.6.1 Traffic control devices

The following traffic control devices may be used as required by the Roads and Maritime G10 Specification and as shown on the STMSPs:

- Safety barriers.
- Pavement markings and signs.
- Portable variable message signs.
- Radar activated speed signs.
- Temporary traffic signals.
- Anti-gawking screens.
- Lighting towers.

5.6.2 Safety barriers

Where identified in the TCP for work, safety barriers will be provided to protect the work areas and pedestrian areas from traffic. The safety barriers used on the project will be selected from the list of safety barrier products accepted by Roads and Maritime. A statement of the basis for the selection and locations of safety barrier systems and their end treatments will be submitted to the Pacific Complete / Roads and Maritime site management representative prior to implementation.

All safety barriers will be installed in accordance with Specification Roads and Maritime R132 and the acceptance conditions for that safety barrier product.

An exclusion zone will be established behind barriers as required and no construction work or pedestrian movement will be permitted within the deflection or impact zone of safety barriers.

All safety barrier installations will be inspected to ensure compliance with the manufacturer's specification and Roads and Maritime requirements.

5.6.3 Pavement markings and signs

All pavement markings, retro-reflective raise pavement markers and signposting used in the temporary works will comply with the requirements of Roads and Maritime specifications R141, R142 and R143 respectively, to the same standard as permanent work.

Unless otherwise specified, waterborne paint will be used for pavement markings for temporary works.

The removal of redundant pavement markings from wearing surfaces, other than final wearing surfaces, will comply with the Roads and Maritime Traffic Control at Work Sites manual and Roads and Maritime specification requirements.

5.6.4 Portable VMSs

During the construction of this project, Pacific Complete will utilise portable VMS to enhance advanced warning sign posting and provide changed traffic condition information to road users.

When not required for construction activities, the VMS can also be utilised to support the Roads and Maritime's incident management operations, and for the display of road safety messages.

The use of VMS and the appropriate message will be incorporated within the site specific TCPs. The positioning and setting of VMS messages will be coordinated by the contractor Traffic Managers and approved by the Pacific Complete management representative.

Pacific Complete will deploy the VMS and set standard messages in accordance with the Roads and Maritime' Use of VMS Policy - Technical Directions TDT 2010/07 and TDT2005/02B. All VMS utilised on the project will portable in nature, Type C size, solar powered and in accordance with AS 4852.2.

As required in the Roads and Maritime G10 Specification, trailer-mounted VMS signs are to be provided on the construction site from the start of any construction activity on the construction site until the date of construction completion. The signs must be used to aid traffic safety and delay management and to provide information to road users. These VMS will be incorporated in the project signage and advanced warning signage strategy targeting the main approaches to the project area and the locations and messages will be implemented in consultation with the Roads and Maritime representative.

Where required by the conditions of a ROL, additional VMS sign must be provided and installed on the Pacific Highway and the existing highway on each approach to all road occupancies. During the period of operation of the road occupancy, the VMS must be operated continuously to notify all road users of the road occupancy by displaying appropriate messages to this effect. The VMS must have a remotely controlled 24-hour message change facility to make immediate changes to the messages on the VMS. The VMS must be installed at least one week prior to the day of the implementation of the road occupancy to provide advance notification to all road users of the future road occupancy.

5.6.5 Radar activated speed signs

As required in the Roads and Maritime G10 Specification, speed monitoring VMS will be provided during the construction period at suitable locations as identified in the STMSPs and as approved by the Roads and Maritime site management representative.

The speed monitoring VMS will be located in positions suitable for influencing the travelling speed of motorists entering the reduced speed zone. The locations and the message will be agreed with the Roads and Maritime site management representative prior to implementation.

Calibration details from the VMS supplier will be obtained to confirm the accuracy of each device is within the manufacturer's tolerances.

The effectiveness of the speed limit reductions will be monitored and a log of vehicle speeds will be submitted to the Roads and Maritime Representative each week.

5.6.6 Flashing arrows signs

Flashing Arrow Signs (FAS) are key components of most TCPs, in particular for use when closing single lanes along dual carriageways, and conducting mobile traffic control operations.

The requirements of when to utilise a FAS are stipulated in the various standard TCPs contained in Appendix 4 of the Roads and Maritime TCWS manual. When stipulated by the TCP, Pacific Complete will implement FAS in accordance with Section 11 of the Roads and Maritime TCWS Manual.

All FAS used on this project will comply with the Roads and Maritime equipment specification FAS/4 and be controlled by the appropriately trained traffic control team member.

5.6.7 Portable traffic signals

In some situations during the construction of this project, Pacific Complete will utilise portable traffic signals to enhance Traffic Controller operations. The specific uses may include one lane alternate, haul road crossings, and for short-term full closure operations. All portable traffic signals installed on the Pacific Highway will be manually operated by a Traffic Controller and coordinated with end of queue management arrangements.

When stipulated by the TCP, Pacific Complete will implement the portable traffic signals in accordance with Section 10 of the Roads and Maritime TCWS Manual.

All portable traffic signals used on this project will comply with Roads and Maritime equipment specification PTS/3 and be controlled by the appropriately trained traffic control team member.

In accordance with Section 51 of the Road Transport (Safety and Traffic Management) Act, Pacific Complete will obtain approval from the relevant road authority prior to installing the set of portable traffic signals.

5.6.8 Project signage requirements

The temporary project identification signs will be installed as directed by the Pacific Complete / Roads and Maritime site management representative and will be located on the approaches to the site. These signs will be integrated with the advance warning sign schemes on approach to both ends of the site consistent with other Pacific Highway upgrade projects. In addition, identification signage will be provided at all construction access points and security signage will also be provided at all construction access points and along the work area perimeter to discourage unauthorised access.

5.6.9 Anti-gawking screens

Suitable anti-gawking screens will be considered for use at critical locations along the Pacific Highway within the project area to ensure that drivers' attention is not diverted by adjacent construction activities. The use of anti-gawking screens will be considered in the design of traffic staging and TCPs.

When installed, the screens must not present a hazard to road users or obscure any existing traffic control devices and must be maintained to ensure that they remain securely fixed in place at all times.

5.6.10 Lighting towers

Lighting towers used to facilitate night works or when where there is insufficient light must comply with the following requirements:

- Trailer-mounted with a minimum of four 1500 watt flood lights on a 360 degree telescoping hydraulic mast extendable to 9 metres in height.
- Noise rating of 83dB (A) at operators ear, 81dB (A) at 1 metre, 70dB (A) at 7 metres.

Lighting towers will be positioned away from motorists and light directed to prevent blinding of motorists. All other requirements with regards to lighting (e.g. management of fauna / biodiversity) will be adhered to.

5.7 Traffic control inspections

The continuous monitoring of temporary traffic controls implemented at work sites is critical to the success of providing a safe environment for road workers and road users.

Inspections of the temporary traffic controls will be conducted in accordance with the Roads and Maritime 'Traffic Control at Work Sites' manual and Australian Standard AS 1742.3 and will focus on monitoring compliance against the TCP and identify any safety hazards, to enable Pacific Complete to implement corrective solutions.

Pacific Complete will be conducting four main types of inspections on this project:

- Pre-start and pre-close down inspections of short-term traffic control.
- Weekly inspections of long-term traffic control.
- Night inspections of long-term traffic control.
- Pre-opening inspections of temporary roads.

5.7.1 Inspection frequency and responsibilities

The Construction Managers or delegate (Traffic Managers) will ensure regular inspections of temporary traffic controls are conducted during the construction of this project.

The frequency of the traffic control at work sites inspections will be subject to the construction program and the types of activities in progress. The responsibility and frequency of inspections summarised in Table 5-2.

Table 5-2 Traffic control inspection schedule

Inspection	Responsibility	Frequency
Pre-start and pre-close down	Traffic Control Leading Hand and Site Engineer	Before works start and prior to closing down. The Leading Hand must also conduct regular inspections throughout the shift.
Weekly inspections	Foreman and Site Engineer	On the day before the work begins, and at least once per week.
Night inspections	Foreman and Site Engineer	At least once during the first week and at least every two months.
Pre-opening inspections of temporary roadways	Project Managers and Traffic Managers	Prior to opening any temporary traffic switches, sidetracks or carriageway deviation to traffic.

5.8 Temporary works

5.8.1 Temporary roadways

Where required, the construction of temporary roadways and detours will be in accordance with the approved Construction Staging road design drawings. This includes the modification and strengthening of existing pavement and road shoulders, where they are unlikely to be able to support the new traffic loadings. The works on temporary roadways and detours is subject to Temporary Works Design approval and construction will not proceed without prior Roads and Maritime approval.

Construction of temporary roadways will comply with the relevant Roads and Maritime Specifications for the particular roadworks element.

Temporary works will meet the needs of all road and path users, provide traffic safety, security, maintain access to properties, temporary environmental controls, temporary facilities, temporary infrastructure and all temporary measures to meet the requirements of the Roads and Maritime G10 Specification.

5.8.2 Design standards

The design and sign posted travel speed limit for carriageways carrying Pacific Highway traffic will be 80km/h. Minimum widths of traffic lanes to be 3.5m, except as required by section 6.1 of Roads and Maritime G10 Specification. The minimum width of shoulders will be 1.2m.

Where a single carriageway of the main carriageways is utilised as a two way road for Pacific Highway traffic as part of traffic staging and where the available shoulder width on the single carriageway is less than 3.0 metres, breakdown bays are to be provided for each direction of traffic flow at a maximum spacing of one kilometre along the single carriageway. Cross carriageway accesses with deceleration lanes may be utilised as breakdown bays. As a minimum, breakdown bays must satisfy the following criteria:

- Have a sealed surface.
- Be a minimum 35 metres long and 3.5 metres wide, excluding shoulder.
- Be signposted, including advance signage.

For the avoidance of doubt:

- When a permanent carriageway is utilised as a two way road and the single carriageway contains a 2.5m wide shoulder and an adjacent 1.0m wide SO gutter or minimum 0.5m wide verge, the 3.0m shoulder width condition will be satisfied.
- When the permanent carriageway is utilised as a two way road, the single carriageway will generally require widening, on the offside of the permanent carriageway, in the areas that do not contain cross carriageway access at a spacing of less than one kilometre. Cross carriageway accesses with deceleration lanes satisfy the requirements relating to breakdown bays as indicated in the points above.

5.8.3 Temporary lighting

The STMSPs shall identify the need for temporary lighting. The requirement for lighting shall be determined by risk assessment and shall be agreed with the Pacific Complete / Roads and Maritime site management representative. The positions and numbers of lighting sources will be identified in the STMSP.

5.8.4 Opening temporary roadways and detours

Prior to opening temporary roadways and detours to traffic all pavement markings, retro-reflective raised pavement markers, signposting and safety barriers and installation of portable or temporary traffic signals must be completed.

An inspection by a person qualified in the Roads and Maritime 'Design and Inspect Traffic Control Plans' course will be arranged to verify that regulatory signs, warning signs and traffic control devices have been suitably located to be visible and effective under the site conditions and expected traffic speeds before opening the temporary roadways to traffic.

Any deficiencies identified during the inspection should be rectified prior to opening and the adjustments amended on the TCP to show the final traffic control arrangement in place.

Unless otherwise approved by the Roads and Maritime site management representative, traffic may only be switched to a temporary roadway or detour where the Pacific Complete workforce will be performing work on the construction site for minimum of two successive days thereafter. Unless otherwise approved by the Roads and Maritime site management representative, the existing roadway being replaced cannot be disturbed for at least two days after the opening of the temporary roadway or detour to traffic, to provide for the event where failure of the temporary roadway or detour occurs and there is a need to redirect traffic back onto the existing roadway.

5.8.5 Road safety audit of temporary roadways or detours

Pacific Complete is required to arrange for a road safety audit within 24 hours of implementation of any TCPs for long-term temporary work. A qualified road safety auditor will be arranged to undertake an inspection of the traffic control measures during both daytime and night time.

If the original measures prove not to be fully effective, the Traffic Managers, in consultation with the Road Safety Auditor and the Pacific Complete / Roads and Maritime site management representative, will revise the TCP without delay and implement appropriate corrective measures.

The contractor Traffic Managers will submit a report to the Pacific Complete management representative within 7 days of implementation of the TCPs. This report will include findings from the Road safety Auditor's inspections and any changes implemented to the long-term work TCPs.

5.8.6 Removal of temporary roadways and detours

Upon completion of the works, the temporary roadways and/or detour arrangements will be removed and the area restored to a condition equivalent to that which existed prior to the commencement of the work.

5.9 Management of unplanned incidents

The detailed management of large scale emergencies and incidents within the boundary of the site shall be in accordance with the State requirements as laid out in the State Disaster Plan as detailed below.

Notwithstanding this, should an incident occur within the boundary of any area subject to a TCP, Pacific Complete will assist the Roads and Maritime or Emergency Services as required. The Roads and Maritime and Emergency Services will have the contact number for the Pacific Complete Traffic Manager and will be able to call for assistance at all times throughout the duration of the project.

For non-emergency but disruptive incidents the Pacific Complete Traffic Manager or his representative will attend the location of the incident and assess the course of action

required and the level of involvement required of Pacific Complete resources. This assessment and the course of action will be coordinated with the local emergency services if they are in attendance.

The Traffic Managers, Construction Manager and the Construction General Superintendent are the contractor personnel to be contacted in the case of an emergency or other serious incident within the length of the Works. These persons will have sufficient access to labour, plant and materials as necessary to immediately undertake repairs, to a minimum sufficient level of safety to permit traffic to use the area damaged or disrupted by the incident. Within an acceptable minimum time the area will be completely repaired to the full and compliant safety level.

Should a works vehicle breakdown en-route or within the compound, it is the sub-contractors responsibility to arrange recovery. Should the breakdown cause congestion on the Pacific Highway, the contractor Traffic Managers will be able to determine the level of assistance required.

5.9.1 Management of emergencies in NSW

The Government of New South Wales acknowledges the inevitable nature of emergencies and their potentially significant social, economic and environmental consequences. Accordingly, the Government has enacted the State Emergency and Rescue Management Act, 1989. Emergencies may be controlled by combat agencies or emergency operations controllers as specified in the State Emergency and Rescue Management Act, 1989, which recognises the need for a coordinated response by all agencies having roles or responsibilities for such emergencies. Organisations have been identified in the State Disaster Plan as the agencies primarily responsible for controlling particular hazards/emergencies. Combat agencies particularly relating to NSW are detailed in Table 5-3.

Table 5-3 Unplanned incident agency responsibilities

Event	Agency
Law enforcement/Emergencies	NSW Police
Fire	NSW Fire Brigades/NSW Rural Fire Service
Hazardous materials	NSW Fire Brigades
Flood	NSW State Emergency Service
Storm and tempest	NSW State Emergency Service

5.9.2 Roads and Maritime responsibilities

In accordance with its statutory obligations, Roads and Maritime has the ultimate responsibility for road safety and traffic management of the State Road Network. It is the lead agency for traffic management in New South Wales, including the management of unplanned incidents in co-ordination with NSW Police. For further information refer to the "Roads and Maritime and Police – Memorandum of Understanding (MOU) Traffic Management of Incidents" (1999).

Road Network Operations (RNO), represented in Northern Region as the Northern Region Traffic Operations Unit is responsible for the management of unplanned incidents throughout the NSW State road network. The Roads and Maritime Transport Management Centre (TMC) at Eveleigh support RNO in the management of unplanned incidents. Under the Roads and Maritime and Police MOU, the incident scene and responsibility is divided into three cordons:

- Inner Cordon – Police lead with Roads and Maritime support.
- Outside the Inner Cordon – Roads and Maritime lead with Police support.
- Outside of Outer Cordon – Roads and Maritime lead and manage.

Pacific Complete may be requested by emergency service agencies or the Roads and Maritime to provide support when emergencies / unplanned incidents occur within, or adjacent to the construction site.

5.9.3 Pacific Complete roles and responsibilities

The site management of unplanned incidents is ultimately the responsibility of the Construction Manager or Construction General Superintendent. These persons will determine the actions required in response to requests from emergency response agencies including the Roads and Maritime and shall direct Pacific Complete and subcontractor resources as required.

Any issues associated with traffic management shall be coordinated by the Traffic Managers under the direction of the Construction Manager or Construction General Superintendent.

5.9.4 Management of unplanned incidents

The occurrence of unplanned incidents within the construction site will potentially have negative impacts on the operation of the road network. Similarly incidents that occur on the surrounding road network can temporarily restrict construction activities.

In the event of an unplanned traffic incident the contractor Traffic Managers will:

- Determine the details of the incident and identify the likely impact on the road network.
- Inform the Project Director, Roads and Maritime' Traffic Management Centre (TMC) and appropriate emergency and support services immediately and continually co-ordinate activities for the duration of the incident.
- Establish a point of contact on site.
- Agree with the Construction Manager on immediate action to prevent any further harm.
- If resources are available, provide initial response to unplanned incidents with the aim to make incident scene safe, and prevent further harm to persons or property.
- Provide close support to emergency services, including traffic control in the vicinity of the incident.
- During major incidents provide a senior construction representative on-site to liaise with the Roads and Maritime and TMC, and emergency service agencies.
- In consultation with the Construction Manager, reschedule planned works that will interfere with the incident, or create additional delays to those road users already affected by the incident.
- Monitor and disseminate road condition information to the Roads and Maritime' TMC and for their distribution to road users.
- Log all information received and actions taken.
- Monitor traffic incidents to identify a trend and in consultation with the Roads and Maritime enhance traffic control measures where required.
- Note lessons learned.
- Ensure all actions specified in section 9 of the Roads and Maritime G10 Specification are undertaken.

5.9.5 On-site traffic control resources

Where available, Pacific Complete will provide access to on-site traffic control resources to cater for unplanned incidents (if required).

5.9.6 Traffic control

Where required, the temporary traffic management and control measures implemented during incidents within or adjacent to the construction site will be based on the requirements stipulated in the Roads and Maritime 'Traffic Control at Worksites Manual', and where further reference is required, Australian Standard AS1742.3, and Roads and Maritime G10 specification.

5.9.7 VMSs

Pacific Complete considers VMSs as a very effective traffic control tool. During the construction of this project, Pacific Complete will utilise portable Variable Message signs on approach to each end of the site on the Pacific Highway to enhance advanced warning sign posting and provide changed traffic condition information to road users.

When not required for construction activities, the VMS can also be utilised to support the Roads and Maritime incident management operations.

The use of VMS and the appropriate message will be incorporated within the site specific TCPs.

The positioning and setting of VMS messages will be coordinated by the contractor Traffic Managers.

Pacific Complete will deploy the VMS and set standard messages in accordance with the Roads and Maritime' VMS Policy - Technical Directions TDT 2010/07 and TDT2005/02B and as directed by the TMC, Police and/or Roads and Maritime Representative.

5.9.8 Incident response plans

Pacific Complete will develop specific incident response plans to address identified risks and scenarios that may impact the Pacific Highway and local road network within the project area. Refer to Figure 6 for a generic incident response plan.

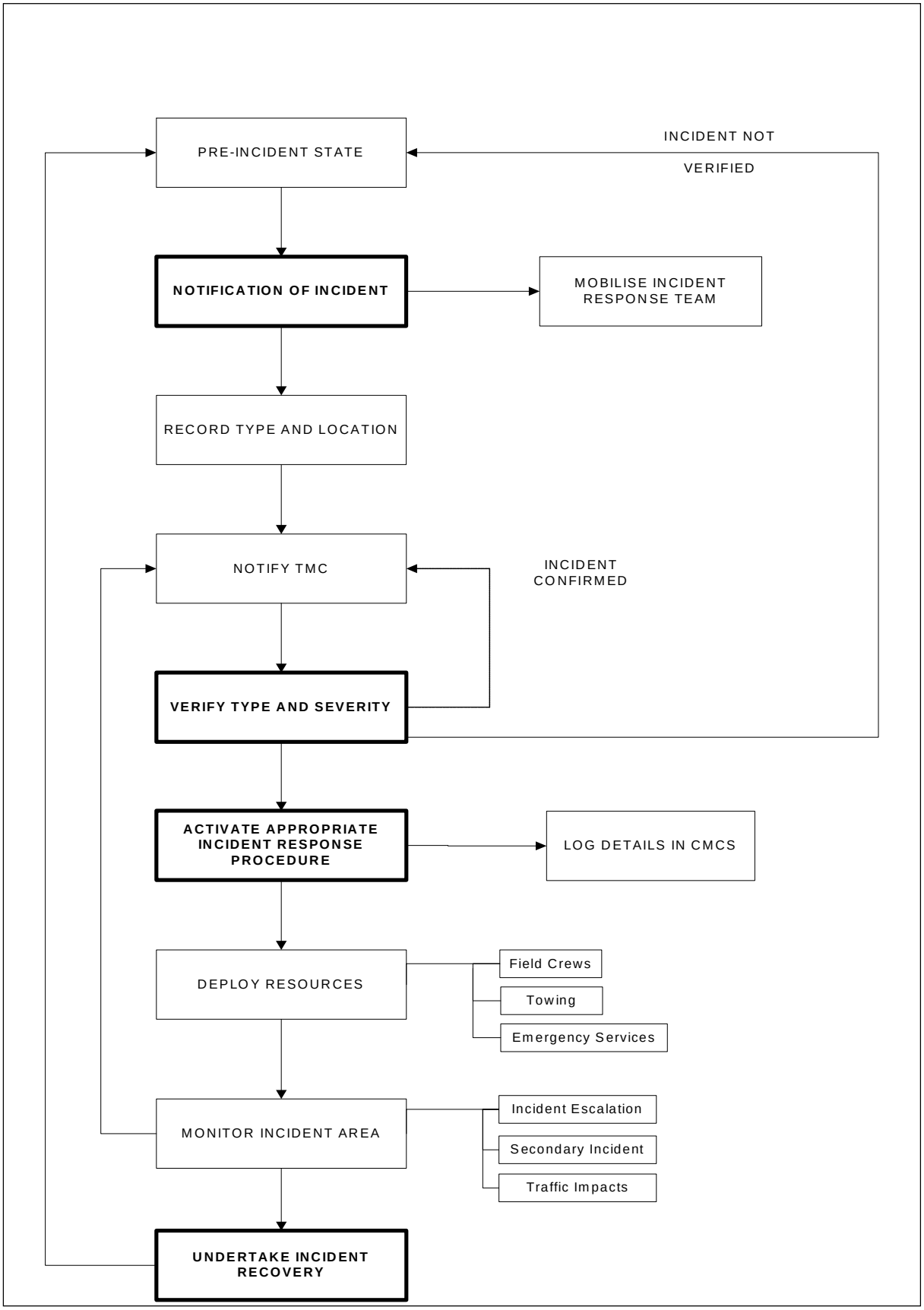


Figure 6 Generic incident response plan

5.10 Management of special events

A special event is a local or regional event which generates increased traffic volumes, reduces traffic speed or lowers the capacity of the road network. Some examples of special events include marathons, fun runs, cycling events, parades, marches and street market days.

In traffic terms, Roads and Maritime defines a Special Event as any planned activity that is wholly or partially conducted on a road, requires multiple agency involvement, requires special traffic management arrangements and may involve large numbers of participants and/or spectators.

5.10.1 Key guideline

In 2006, the NSW Government published an update to "The Guide to Traffic and Transport Management for Special Events" (version 3.4, 2006), which provides a comprehensive guide for organising, managing and controlling special events. This guide was developed in consultation with representative from: the NSW Premier's Department; Roads and Maritime; Local Government Association; numerous NSW Local Councils; Police and members of the events industry.

5.10.2 Responsibilities for special events

In accordance with its statutory obligations, Roads and Maritime has the ultimate responsibility for road safety and traffic management of the State Road Network. It is the lead agency for traffic management in New South Wales, including the management and control of major special events.

The Roads and Maritime Road Network Operations (RNO), represented in Northern Region as the Northern Region Traffic Operations Unit is responsible for the management of special events throughout the NSW State road network. The Roads and Maritime' Transport Management Centre (TMC) at Eveleigh support RNO in the management of special events. The RNO assesses and coordinates special events, which is conducted in consultation with event organisers, Police and Local Councils.

The specific roles of the Roads and Maritime, Local Council and Police are stipulated in the Guide to Traffic and Transport Management for Special Events.

5.10.3 Classes of special events

Special events are classified based on the potential disruption to traffic and transport systems, and the disruption to the non-event community. The four classifications are as follows:

- **Class 1** – is an event that impacts major traffic and transport systems and there is significant disruption to non-event community. For example: an event that affects a principal transport route in Sydney, or one that reduces the capacity of the main highway through a country town.
- **Class 2** – is an event that impacts local traffic and transport systems and there is low scale disruption to the non-event community. For example: an event that blocks off the main street of a town or shopping centre but does not impact a principal transport route or a highway.
- **Class 3** – is an event with minimal impact on local roads and negligible impact on the non-event community. For example: an on-street neighbourhood Christmas party.
- **Class 4** – is an event that is conducted entirely under Police control (but is not a protest or demonstration). For example: a small march conducted with a Police escort.

5.10.4 The role of Pacific Complete

Where special events are expected to generate additional vehicle or pedestrian traffic in any areas directly or indirectly affected by the construction works or temporary works, Pacific Complete must co-operate with the Roads and Maritime site management representative and other authorities to facilitate traffic and pedestrian flows on the existing road network or adjacent to the construction site.

The role of Pacific Complete in special events of any category that may impact on the road network through or in the vicinity of a construction site will be one of participation and co-operation in the planning and implementation process. Pacific Complete will be proactive and maintain regular contact with road authorities to identify upcoming special events to ensure any conflict with construction activities can be addressed at an early stage in the planning process.

5.11 Maintenance

In accordance with the requirements of the Roads and Maritime G10 specification, Pacific Complete will carry out maintenance of the pavement and drainage on existing roads and pavement constructed for staging, including shoulders and kerb and gutter, within the Limits of the Contract. The maintenance will start at the commencement of work on site other than site establishment.

Pacific Complete will undertake the maintenance of existing roadways, temporary roadways and detours and new roadway opened to traffic in accordance with section 7 of the Roads and Maritime G10 specification.

Inspection/maintenance of existing roadways, new roadways, temporary roadways and detours will be undertaken on a weekly basis as follows:

- Existing roadways – including repairing potholes, cleaning kerbs and gutters, clearing drainage blockages, removal of debris from roadway, straightening and cleaning roadside furnishings, grass mowing and trimming of vegetation, as needed.
- Temporary roadways and detours – including maintenance of the existing pavements, line marking, kerb and gutter, road shoulders and verges, ancillary services, roadside environment, drainage, signage, trimming of vegetation and housekeeping.
- New roadways opened to traffic – including cleaning of kerbs and gutters, clearing of drainage blockages, removal of debris from roadway, grass mowing and trimming of vegetation, as applicable.
- Inspection of traffic control devices for short term and long term traffic management will be completed on a daily basis by a qualified minimum Roads and Maritime blue or yellow card holder. Reporting will be in the format provided in the Traffic Control at Worksite Manual. Inspection and Control of Traffic Management and uploaded into the web based document management system on completion.

5.12 Climatic and seasonal conditions

To address variable climatic conditions, appropriate delineation, advance warning signs and speed zoning will be provided at all times to cater for foggy conditions and when required, lighting will be provided if night vision is poor.

In the event of bushfires or flooding, these situations will be treated as an unplanned incident and a response will be implemented in accordance with the relevant incident response plan.

6 Environmental mitigation and management measures

A summary of the environmental mitigation and management measures for the Woolgoolga to Ballina project, relevant to traffic and transport is summarised in Table 6-1.

Table 6-1 Environmental mitigation and management measures – traffic and transport

Issue	ID no.	Measure / requirement	When to implement	Responsibility	Reference
Construction traffic management	T&T 1	Construction traffic management plans will be prepared and implemented for work sites. They will include: • Identification of all public roads to be used by construction traffic • Management methods to direct construction traffic to use identified roads. • Identification of all public roads that may be partially or completely closed during construction, and the expected timing and duration of closures. • Details on likely impacts on existing traffic (including pedestrians, vehicles, cyclists and disabled persons). • Temporary traffic arrangement measures, including property access. • Details on access to construction sites, including entry and exit locations, and measures to prevent construction vehicles queuing on public roads. • A response plan for any incident involving construction traffic. • Mechanisms for monitoring, reviewing and amending the success of the plans. The traffic management plans would be prepared in consultation with councils.	Pre-construction and construction	Contractor traffic managers	SPIR (T&T1)
Bulk earthworks haulage	T&T 2	A strategy will be prepared for bulk earthworks haulage between the crossing of the Richmond River and the interchange at Wardell. The strategy will seek to maximise the extent of haulage within the project boundary and limit the need to haul material through the town of Wardell.	Pre-construction	Contractor traffic managers	SPIR (T&T2)

Issue	ID no.	Measure / requirement	When to implement	Responsibility	Reference
Inspection of roadwork traffic schemes	T&T 3	Traffic control schemes will be inspected as follows: • Pre-start and pre-closedown inspections of short-term traffic controls. • Weekly inspections of long-term traffic controls. • Night-time inspections of long-term traffic controls.	Construction	Contractor traffic managers	SPIR (T&T3)
Vehicle movement	T&T 4	• Vehicle movement plans and haulage route plans will be prepared. Drivers would be briefed on these vehicle movement plans during project induction. • Deliveries would be planned to occur outside peak traffic periods, where possible. • To minimise queuing of construction vehicles on the highway, site personnel would use two-way radios to call up haulage trucks from layover areas on a 'just in time' basis.	Construction	Contractor traffic managers	SPIR (T&T4)
Road occupancy	T&T 5	Applications for Road Occupancy licences will be submitted to Roads and Maritime Services and the relevant council at least 10 working days prior to proposed occupancy.	Pre-construction and construction	Contractor traffic managers	SPIR (T&T5)
Road damage	T&T 6	• Pre-construction road dilapidation reports will be prepared for all roads likely to be used by construction traffic. • Post-construction road dilapidation reports will be prepared following the completion of construction for all roads assessed prior to construction. • Dilapidation resulting from construction activity will be repaired. • Copies of road dilapidation reports will be sent to the relevant roads authority.	Construction	Contractor traffic managers	SPIR (T&T6)

Issue	ID no.	Measure / requirement	When to implement	Responsibility	Reference
Property and road access	T&T 7	• Access would be maintained to properties during construction including, where necessary and road access feasible, temporary alternative access unless otherwise agreed with property owners. • Where any legal access is permanently affected, alternative access to an equivalent standard to and from a public road will be provided where a property has no other legal means of access and where such alternative access is feasible and practical. Where alternative access arrangements are not feasible or practical and a property is left with no access to a public road, negotiations will be undertaken with the relevant property owner for acquisition of the property in accordance with the provisions of the Land Acquisition (Just Terms Compensation) Act 1991.	Construction	Contractor traffic managers and Pacific Complete Traffic Manager	SPIR (T&T7)
Bus services	T&T 8	Where changes in access affect bus stop locations, temporary alternatives will be provided in conjunction with bus operators and affected schools to maintain access during construction.	Construction	Contractor traffic managers	SPIR (T&T8)
Access to state forests	T&T 9	Where access to State forest land is affected during construction, a new access route will be provided in consultation with the Department of Primary Industries (Forests NSW).	Construction	Contractor traffic managers and Pacific Complete Traffic Manager	SPIR (T&T9)
Maritime traffic	T&T 10	Where maritime traffic access to the Clarence and Richmond rivers is affected during construction of bridge crossings, appropriate signage will would be provided indicating alternative means of access and the timing of the works.	Construction	Construction managers	SPIR (T&T10)
	T&T 11	Access to the Clarence and Richmond rivers will be maintained for industry and recreational waterway users	Construction	Construction managers	SPIR (T&T11)
Access and connectivity	T&T 12	Access to Glenugie State Forest around the interchange at Eight Mile Lane and Lookout Road will be further reviewed in consultation with State Forest Corporation.	Pre-construction and construction	Contractor traffic managers	SPIR (T&T12)
	T&T 13	The layout of the intersection at Yamba Road will be reviewed to better meet the needs of truck movements from Harwood Mill, where reasonable and feasible.	Pre-construction	Contractor traffic managers	SPIR (T&T13)
	T&T 14	The need for a full interchange at Yamba Road will be investigated should traffic growth warrant it in the future and when funding is available.	Pre-construction	Contractor traffic managers	SPIR (T&T14)

Issue	ID no.	Measure / requirement	When to implement	Responsibility	Reference
	T&T 15	The need for a full interchange with south facing ramps at Watts Lane, Harwood will be investigated should traffic growth warrant it in the future and when funding is available.	Pre-construction	Contractor traffic managers	SPIR (T&T15)
	T&T 16	The need for the overpass and the arrangement of local access at Chatsworth Road will be reviewed at the detailed design stage depending on specific staging and delivery of the highway.	Pre-construction	Contractor traffic managers	SPIR (T&T16)
	T&T 17	The need for the overpass and arrangement of local access at Carrols Lane would be reviewed at the detailed design stage depending on specific staging and delivery of the highway	Pre-construction	Contractor traffic managers	SPIR (T&T17)
	T&T 18	Connectivity between the shared user path from Harwood Bridge to Yamba Road would be reviewed to refine pedestrian and cyclist access	Pre-construction	Contractor traffic managers	SPIR (T&T18)

7 Reporting

Pacific Complete will undertake reporting of traffic management and road safety issues in accordance with the project requirements. It is acknowledged that the timely and accurate reporting of traffic management issues is essential in ensuring that the Roads and Maritime, internal and where necessary, external stakeholders are kept well informed at regular intervals. This assists in tracking the performance of the project, responding to incident management, liaising with key stakeholders and satisfying reporting requirements.

During the project Pacific Complete will report to the client, community consultative committees and other relevant stakeholders on all traffic management and road safety issues that may impact on the road network.

The Pacific Complete Traffic Manager, in conjunction with the contractor Traffic Manager, will be responsible for reporting the following information.

7.1 Traffic control operations

- Report immediately to the Pacific Complete / Roads and Maritime site management representative the occurrence of all delays, including those caused by incidents, to the free flow of traffic greater than five minutes and/or traffic queue lengths of greater than 500 metres;
- Produce records of all traffic flow delays and durations, traffic queue lengths and other ROL related matters to the Pacific Complete / Roads and Maritime site management representative by 9:00am on the Thursday following the week being recorded; and
- Provide a forecast of the proposed road occupancies for the following week to the Pacific Complete / Roads and Maritime site management representative. The forecast must be in the form of a schedule running from Monday to Sunday and contain full details of the locations and timing of all proposed road occupancies. The forecast must be provided to the Pacific Complete / Roads and Maritime site management representative by 9:00am on the Thursday of the week preceding the week being forecast.

7.2 Traffic-related incidents

- Traffic–related incidents occurring within the construction site or at other locations affected by the work will be reported to Pacific Complete immediately.
- A formal report detailing the incident, photographs of the approach to the incident site, including the location of all safety devices and signs and any recommended corrective actions will be forwarded to Pacific Complete within 2 days of the occurrence of the incident.

7.3 Traffic management performance

- Monthly reports will be provided to the Pacific Complete / Roads and Maritime site management representative summarizing the traffic management performance for the month concluded, traffic management activities undertaken during the month, details of incidents and any corrective actions, recent and proposed traffic changes, road network performance, status of approved and anticipated ROL/SZA applications, results from recent road safety audits and traffic management inspections and monitoring, and the status of traffic management documentation under development.

7.4 Toolbox notices/training sessions/induction information

The Traffic Manager will prepare general traffic management and road safety-related information to be delivered during inductions. Regular updates specific for sites will be held during toolbox talks.

- Traffic management and road safety information will be disseminated across the entire project team or relevant sections of the construction team as required.
- Presentations on traffic management and road safety information to stakeholder forums will be undertaken as required.
- Site operating guidelines and information relating to driving to/from sites (e.g. to manage driver behaviour on local roads) is to be included in site inductions and other information sessions to ensure that the instructions are disseminated to sub-contractors and delivery drivers.

The Roads and Maritime "Traffic Control at Worksites" Manual and Australian Standard 1742.3 will be referenced in terms of reporting requirements for traffic control activities.

7.5 Records

As identified in the Annexure G10/C, Pacific Complete will maintain all records as below (to be provided and maintained by the contractors):

- Traffic Control qualification details
- Road Occupancy Licences obtained
- Specific Traffic Management and Safety Plan
- Traffic Staging Plans, including road design plans if applicable
- Traffic Control Plans (TCP) and Vehicle Movement Plans (VMP) if not part of the CTAMP
- Risk issues identified in Traffic Management Risk Assessment Workshop
- Road Safety Audit of TSP report and associated documentation
- Inspection report on traffic control measures, prior to opening of traffic switches or temporary roadways
- Road Safety Audits reports on TSP implementations
- Daily inspection records of traffic control measures in place
- Register of changed traffic speed conditions.

Appendices

Appendix A – Local Road Network

Table A-1 Local Road Network (from EIS, Chapter 14)

Project section	Station	Road and Location	Town, village, location services	Population and / or number of properties (estimated)	Traffic level[1]	Seasonal changes
Glenugie to Tyndale (Section 3)	36	Eight Mile Lane, Glenugie	Glenugie, Pillar Valley, Grafton Regional Airport	650	Low	Yes
	39.1	Old Six Mile Lane, Lavadia	Grafton Regional Airport	70	Low	Yes
	41.45	Avenue Road, Lavadia	Private property	Less than 10 dwellings	Low	No
	41.9	Wants Lane, Lavadia	NA	NA	Low	No
	45.5	Wooli Road, Pillar Valley	Wooli, Pillar Way, Tucabia	1135	Low	Yes
	48.8	Mitchell Road, Pillar Valley	Private property	Less than 10 dwellings	Low	No
	51.9	Firth Heinz Road, Tucabia	Private property	25 dwellings	Low	No
	55.5	Bostock Road, Tucabia	Private property	Less than 10 dwellings	Low	No
	56.9	Somervale Road, Tucabia	Pine Brush State Forest, Private property	Less than 10 dwellings	Low	No
	63.6	No Name - From Coldstream Road, Tyndale	Private property	Less than 10 dwellings	Low	No
	64.9	Crowley Road, Tyndale	Private property	Less than 10 dwellings	Low	No

Project section	Station	Road and Location	Town, village, location services	Population and / or number of properties (estimated)	Traffic level[1]	Seasonal changes
	66.6	Benson Lane, Tyndale	Private property	Less than 10 dwellings	Low	No
	67.2	Sheeys Lane, Tyndale	Private property	25 dwellings	Low	No
Tyndale To Maclean (Section 4)	69.4	Connection to Bondi Hill Road, Tyndale - access road over project	Private property	Less than 10 dwellings	Low	No
	69.4	Bondi Hill Road, Tyndale	Private property	Less than 10 dwellings	Low	No
	71.2	Byron's Lane, Tyndale	Private property	Less than 10 dwellings	Low	No
	74.05	Norleys Lane, Shark Creek	NA	NA	Low	No
	75.1	Gallaghers Lane, Shark Creek	Private property	Less than 10 dwellings	Low	No
	75.2	Shark Creek Road, Shark Creek	Private property	Less than 10 dwellings	Low	No
	75.4	Stokes Road, Gullmarrad	Private property	Less than 10 dwellings	Low	No
	77	McIntyres Lane, Gulmarrad	Gulmarrad	1645 people	Low	No
	77.8	Clyde Essex Drive, Gulmarrad	Gulmarrad	1645 people	Low	No
	78.4	Causeleys Lane, Gulmarrad	Gulmarrad	1645 people	Low	No
	80.5	Cameron Street, Maclean	Maclean	2600 people	Low	Yes
	80.6	Goodwood Street, Maclean	Private property	Less than 10 dwellings	Low	No
	81.2	Jubilee Street, Maclean	Townsend	820 people	Low	No

Project section	Station	Road and Location	Town, village, location services	Population and / or number of properties (estimated)	Traffic level[1]	Seasonal changes
	81.5	Schwonberg Street, Maclean	Private property	Less than 10 dwellings	Low	No
Maclean to Iluka (Section 5)	83.1	Koala Drive/Farlows Lane, Maclean	Private property	30 dwellings	Low	No
	86.2	Yamba Road, Maclean	Maclean, Island, Yamba	8500 people	Medium	Yes
	86.9	River Street, Harwood	Harwood	355 people	Low	No
	87	Petticoat Lane, Harwood	Harwood	355 people	Low	No
	87.8	Watts Lane, Harwood	Harwood	355 people	Low	No
	89.1	Anderson Lane, Harwood	Private property	Less than 10 dwellings	Low	No
	89.3	Serpentine Channel Road South, Harwood	Private property	Less than 10 dwellings	Low	No
	90	Ryans Lane, Chatsworth	Private property	Less than 10 dwellings	Low	No
	90.8	Chatsworth Road/Serpentine Channel Road North, Chatsworth	Chatsworth	215 people	Low	No
	93.3	Carrolls Lane, Chatsworth	Chatsworth	215 people	Low	No
	93.85	Chatsworth Road, Chatsworth	Chatsworth	215 people	Low	No
	93.85	Fischers Road, Chatsworth	Private property	Less than 10 dwellings	Low	No
	94.5	Garretts Lane East, Wombah	Private property	Less than 10 dwellings	Low	No

Project section	Station	Road and Location	Town, village, location services	Population and / or number of properties (estimated)	Traffic level[1]	Seasonal changes
	94.7	Garretts Lane/Lewis Lane, Mororo	Private property	Less than 10 dwellings	Low	No
	95.45	Iluka Road, Woombah	Woombah	745 people	Low	No
	96.05	Banana Road, Mororo	Private property	Less than 10 dwellings	Low	No
Iluka to Devils Pulpit (Section 6)	98.4	Mororo Road, Mororo	Private property	20 dwellings	Low	No
	103.4	Old Pacific Highway, Mororo	NA	NA	Low	No
Devils Pulpit to Trustums Hill (Section 7)	102.75	Tullymorgan-Jacky Bulbin Road	Jacky Bulbin Flat	NA	Low	No
	114.3	Serendipity Road, Tabbimoble	Private property	Less than 10 dwellings	Low	No
	114.5	Glencoe Road, Tabbimoble	Tabbimoble State Forest and Doubleduke State	NA	Low	No
	118.8	Minyumai Road, Tabbimoble	Tabbimoble State Forest	NA	Low	No
	119.5	Cypress Road, Tabbimoble	Tabbimoble State Forest	NA	Low	No
	121.1	Swan Bay - New Italy Road, New Italy	New Italy	295 people	Low	No
	123.05	Whites Road, New Italy	Private property	Less than 10 dwellings	Low	No
	122.9	Red Gates Road/Turners	NA	NA	Low	No

Project section	Station	Road and Location	Town, village, location services	Population and / or number of properties (estimated)	Traffic level[1]	Seasonal changes
		Road, New Italy				
	124.8	Nortons road, New Italy	NA	NA	Low	No
Trustums Hill to Broadwater National Park (Section 8)	127	The Gap Road, The Gap	Bunjalung National Park	NA	Low	No
	127.5	Wondawee Way, Woodburn	NA	NA	Low	No
	127.5	Sharpe Road, Trustums Hill	Private property	Less than 10 dwellings	Low	No
	128.2	Brickella Road	NA	NA	Low	No
	128.3	Tuckombil Road, The Gap	NA	NA	Low	No
	129	Trustums Hill Road, Woodburn	Private property	15 dwellings	Low	No
	129.3	Pacific Highway, Trustums Hill, Woodburn	Woodburn	775 people	Low	No
	131.1	Watsons Road, Woodburn	Private property	Less than 10 dwellings	Low	No
	132.1	Woodburn - Evans Head Road, Woodburn	Woodburn, Evans Head	3000 people	Medium	Yes
Broadwater National Park to Richmond River (Section 9)	140.7	Pacific Highway, Woodburn, Rileys Hill and Broadwater (through Broadwater National Park)	Rileys Hill, Broadwater	650 people	Low	No
	142.7	Broadwater - Evans Head Road, Broadwater	Evans Head, Broadwater	3000 people	Low	No

Project section	Station	Road and Location	Town, village, location services	Population and / or number of properties (estimated)	Traffic level[1]	Seasonal changes
	143.8	Broadwater Quarry Road, Broadwater	Private property	Less than 10 dwellings	Low	No
	143.6	Fisher Street, Broadwater	Broadwater	435 people	Low	No
	144.1	Byrnes Street, Broadwater	Private property	Less than 10 dwellings	Low	No
	145.6	Pacific Highway, Broadwater	Broadwater	435 people	Low	No
Richmond River to Coolgardie Road (Section 10)	146	Back Channel Road, Wardell	Private property	Less than 10 dwellings	Low	No
	148.9	Old Bagotville Road	Private property	Less than 10 dwellings	Low	No
	149	Montis Road, Wardell	Private property	Less than 10 dwellings	Low	No
	151.25	Thurgates Lane, Wardell	Private property	Less than 10 dwellings	Low	No
	152.8	Hillside Lane, Wardell	Private property	Less than 10 dwellings	Low	No
	152.9	Wardell Road, Wardell	Wardell	960 people	Medium	No
	154.35	Lumleys Lane, Wardell	Private property	Less than 10 dwellings	Low	No
	157.5	Kays Road	Private property	Less than 10 dwellings	Low	No
	157.5	Coolgardie Road, Wardell	Wardell	Approximately 40 dwellings	Low	No
Coolgardie Road to Ballina Bypass (Section 11)	159.15	Laws Road, Pimlico	Private property	Less than 10 dwellings	Low	No
	159.83	Whytes Lane, Pimlico	Pimlico	455 people	Low	No

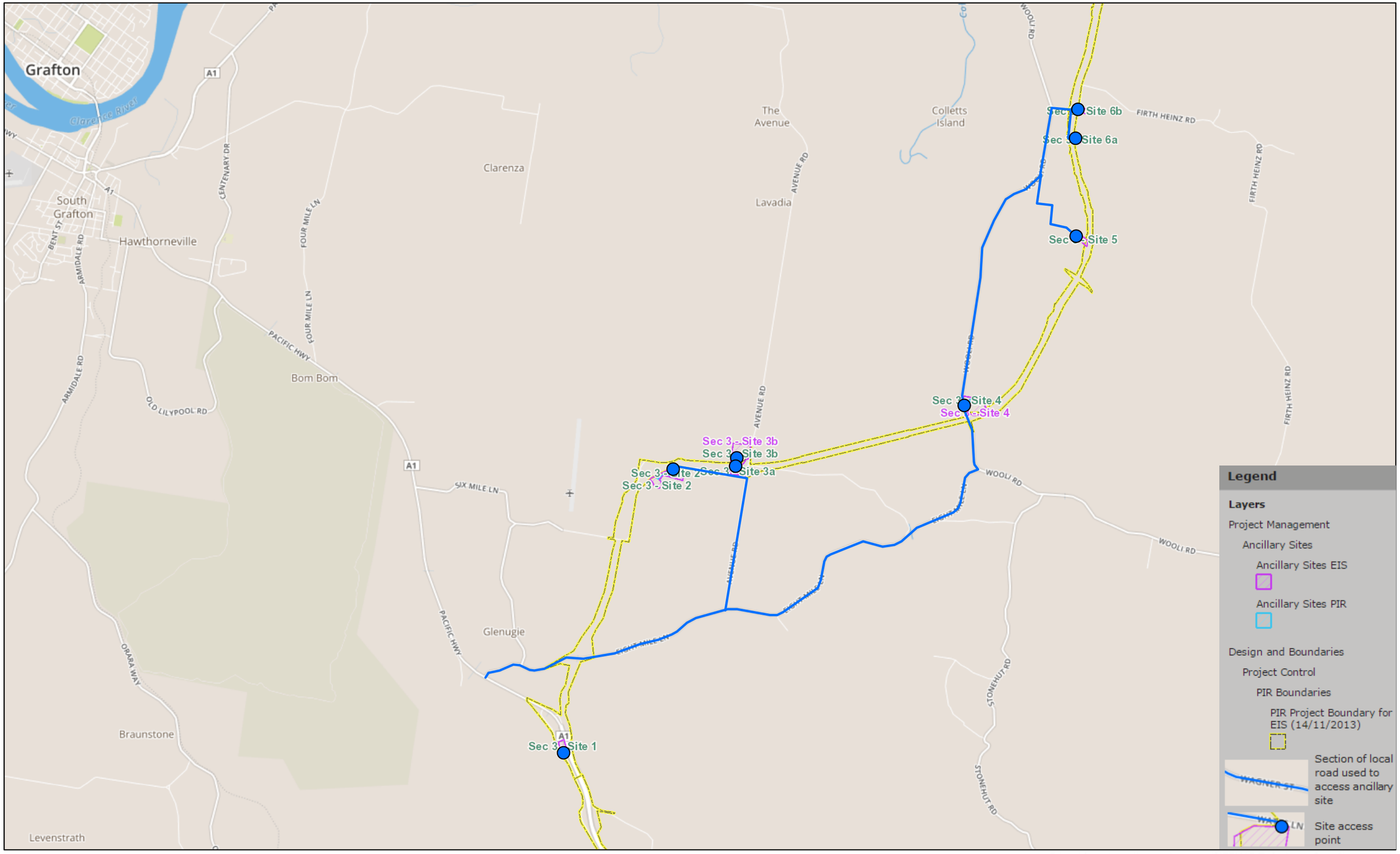
Project section	Station	Road and Location	Town, village, location services	Population and / or number of properties (estimated)	Traffic level[1]	Seasonal changes
	159.8	McAndrews Lane, Pimlico	Pimlico	455 people	Low	No
	160	Whytes Lane West, Pimlico	Private property	Less than 10 dwellings	Low	No
	164.3	Pimlico Road, Pimlico	Pimlico	455 people	Low	No
	164.7	Smiths Drive, Ballina	Private property	85 dwellings	Low	No

1. Refer to EIS Chapter 14, Low – less than 1000 vehicles per day, Medium – between 1000 and 5000 vehicles, High – greater than 5000 vehicles per day.

Appendix B – Local roads used to access ancillary sites (from Pacific Highway)

Local roads used to access sites (Section 3: sites 1 - 6)

Woolgoolga to Ballina Upgrade Project



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Local roads used to access sites (Section 3: sites 7 - 10)

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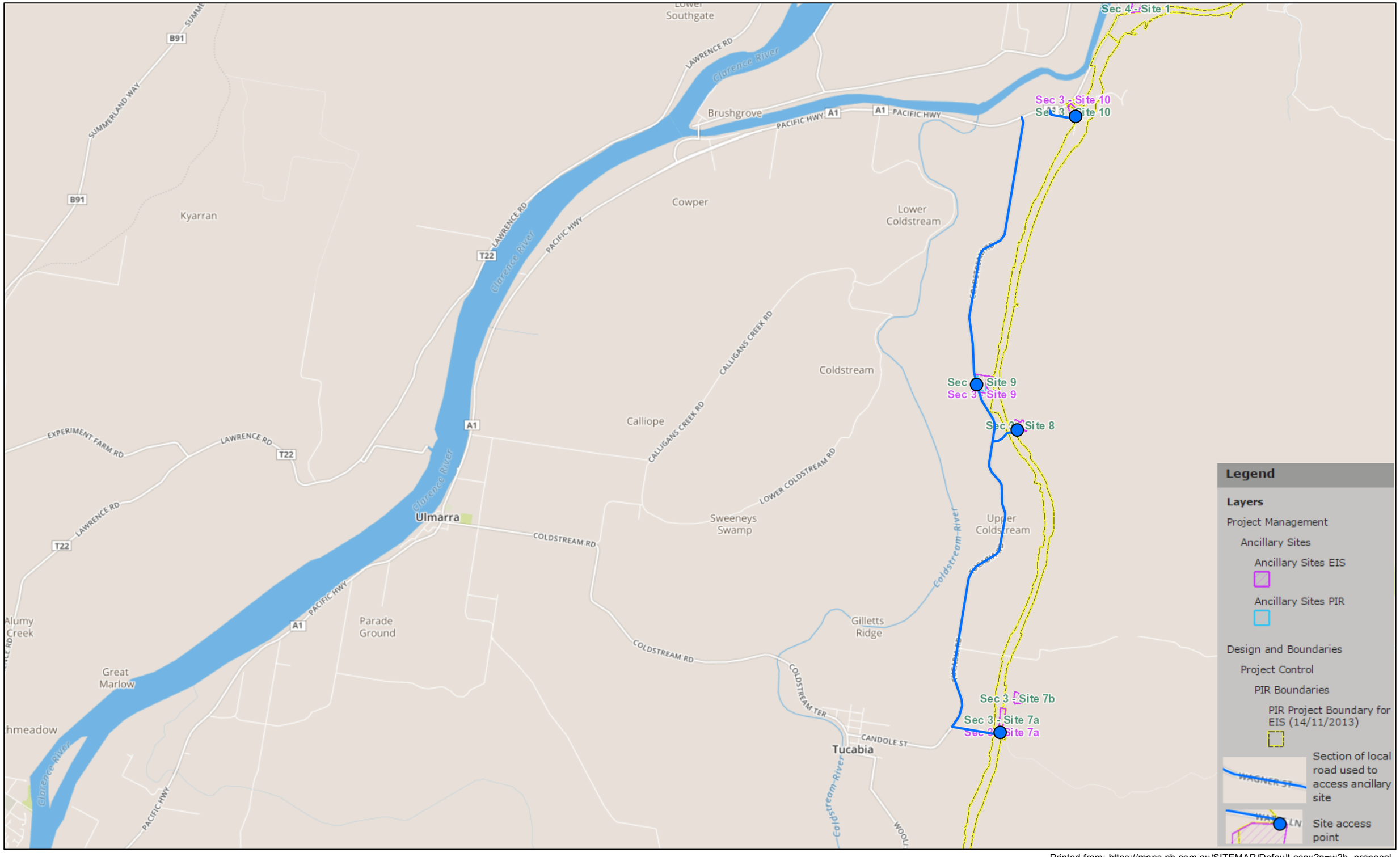

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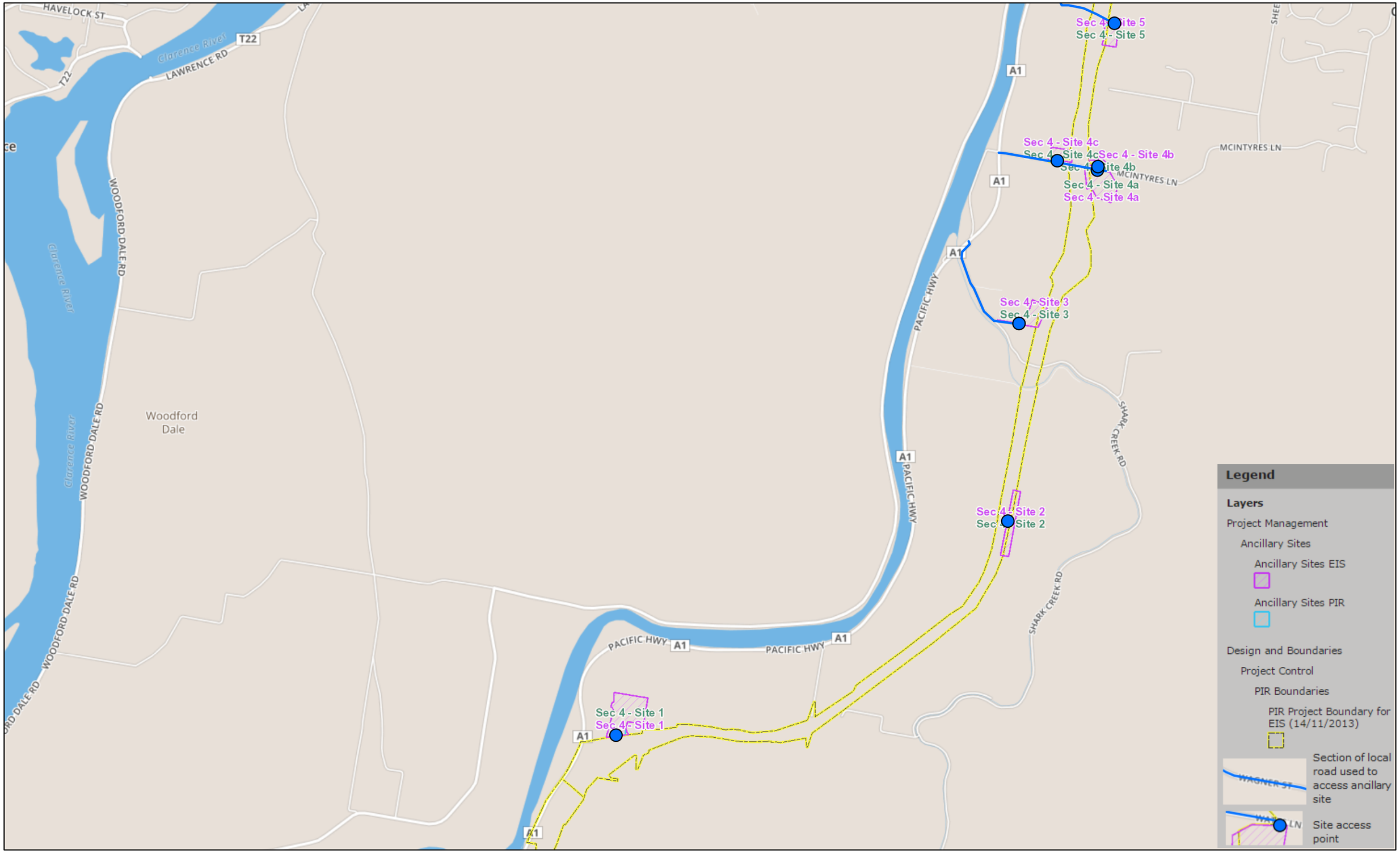

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Local roads used to access sites (Sec.4 site 5 - Sec.5 site 2)

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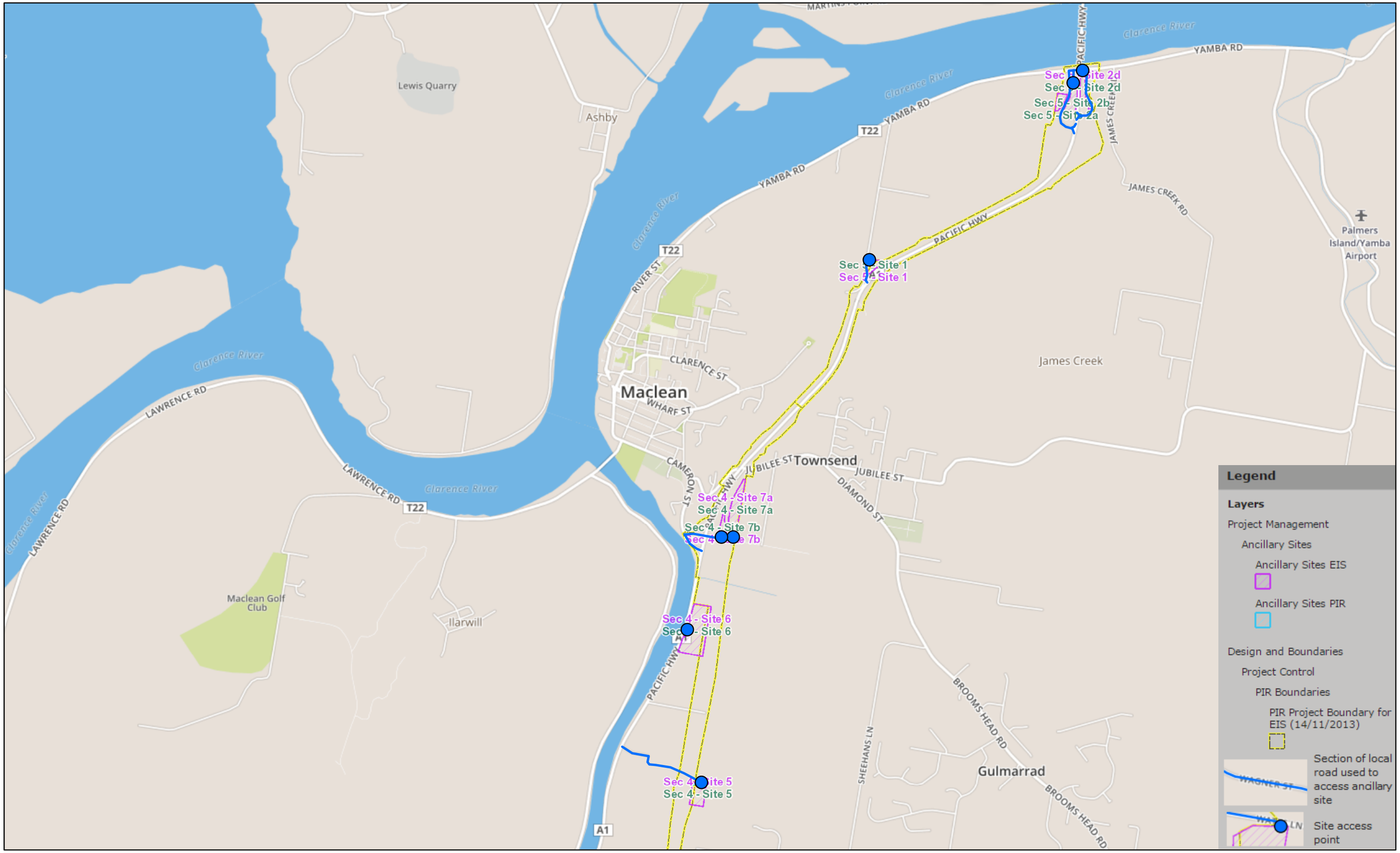

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Local roads used to access sites (Section 5: sites 2 - 3)

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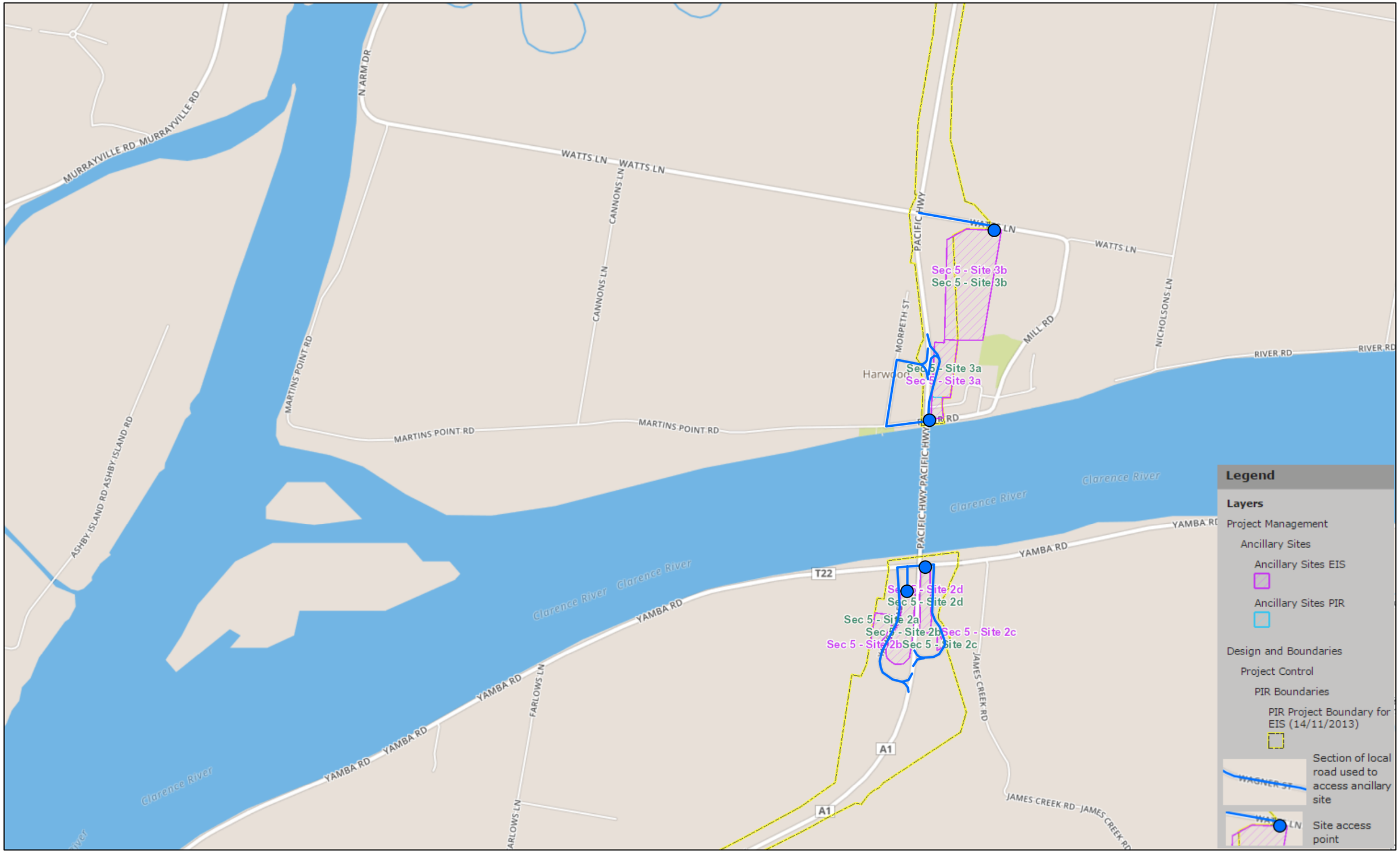

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Local roads used to access sites (Section 5: sites 4 - 9)

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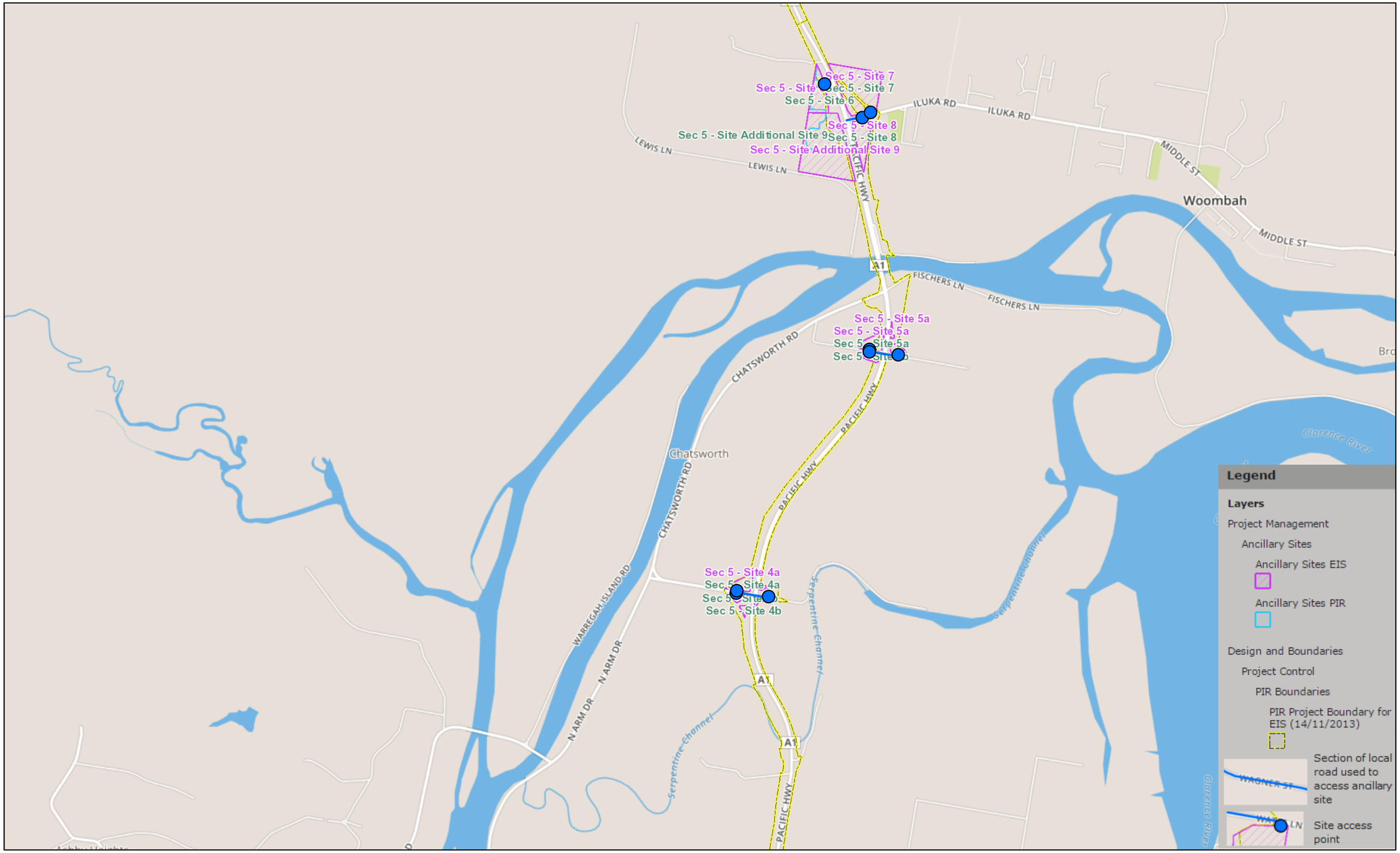

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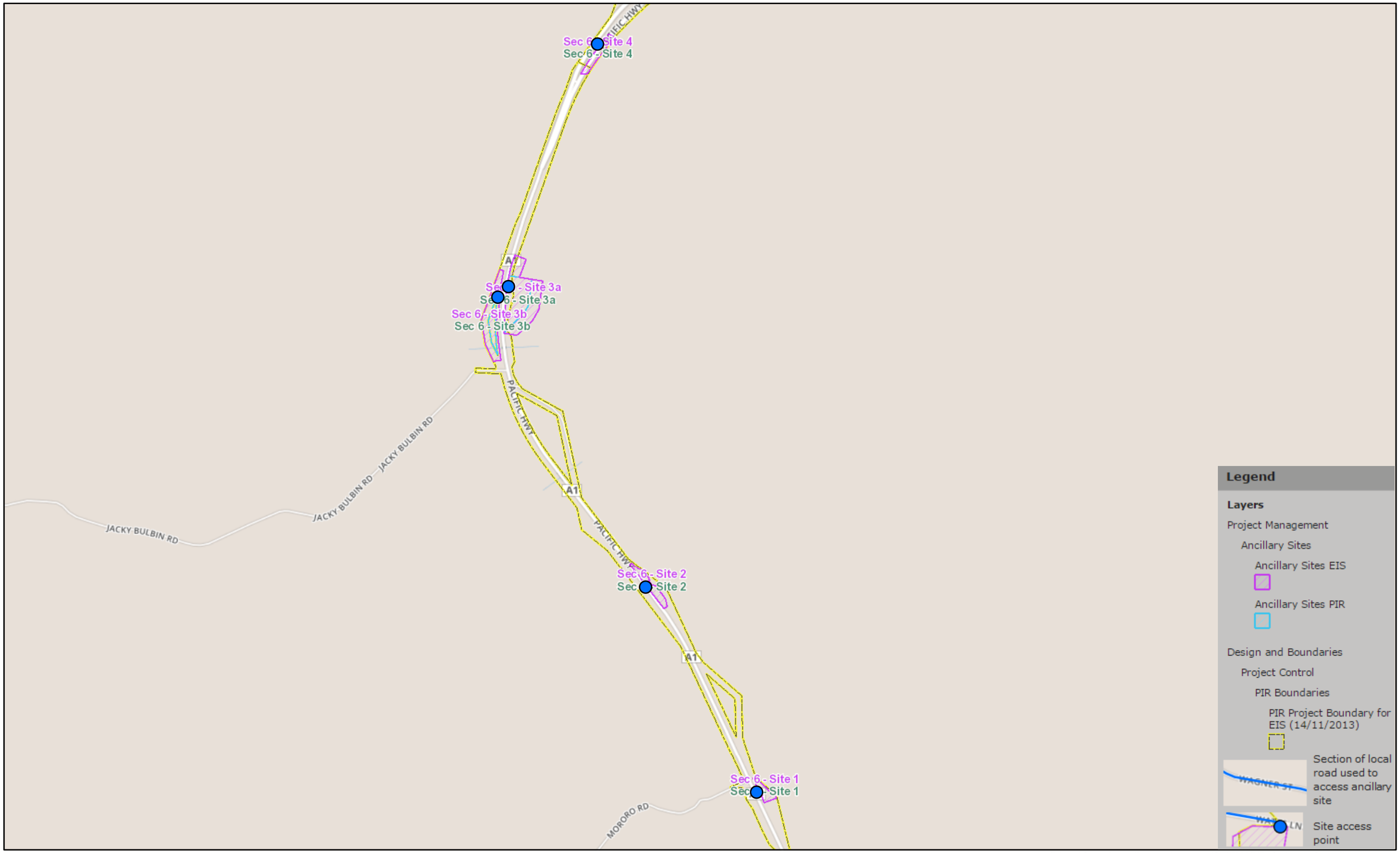
Local roads used to access sites (Section 6: sites 1 - 4)

Woolgoolga to Ballina Upgrade Project



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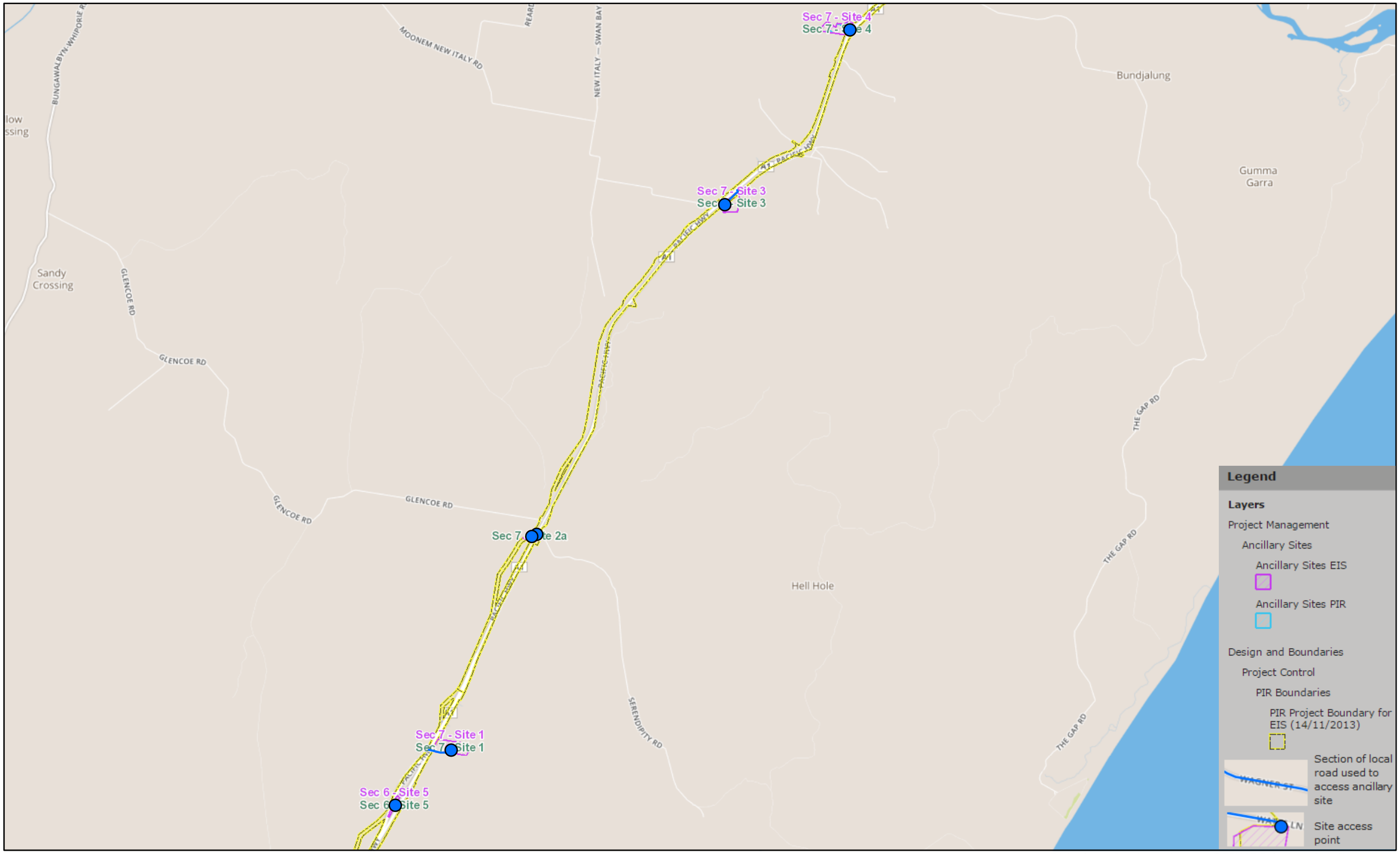
Local roads used to access sites (Sec.6 site 5 - Sec 7 site 3)

Woolgoolga to Ballina Upgrade Project



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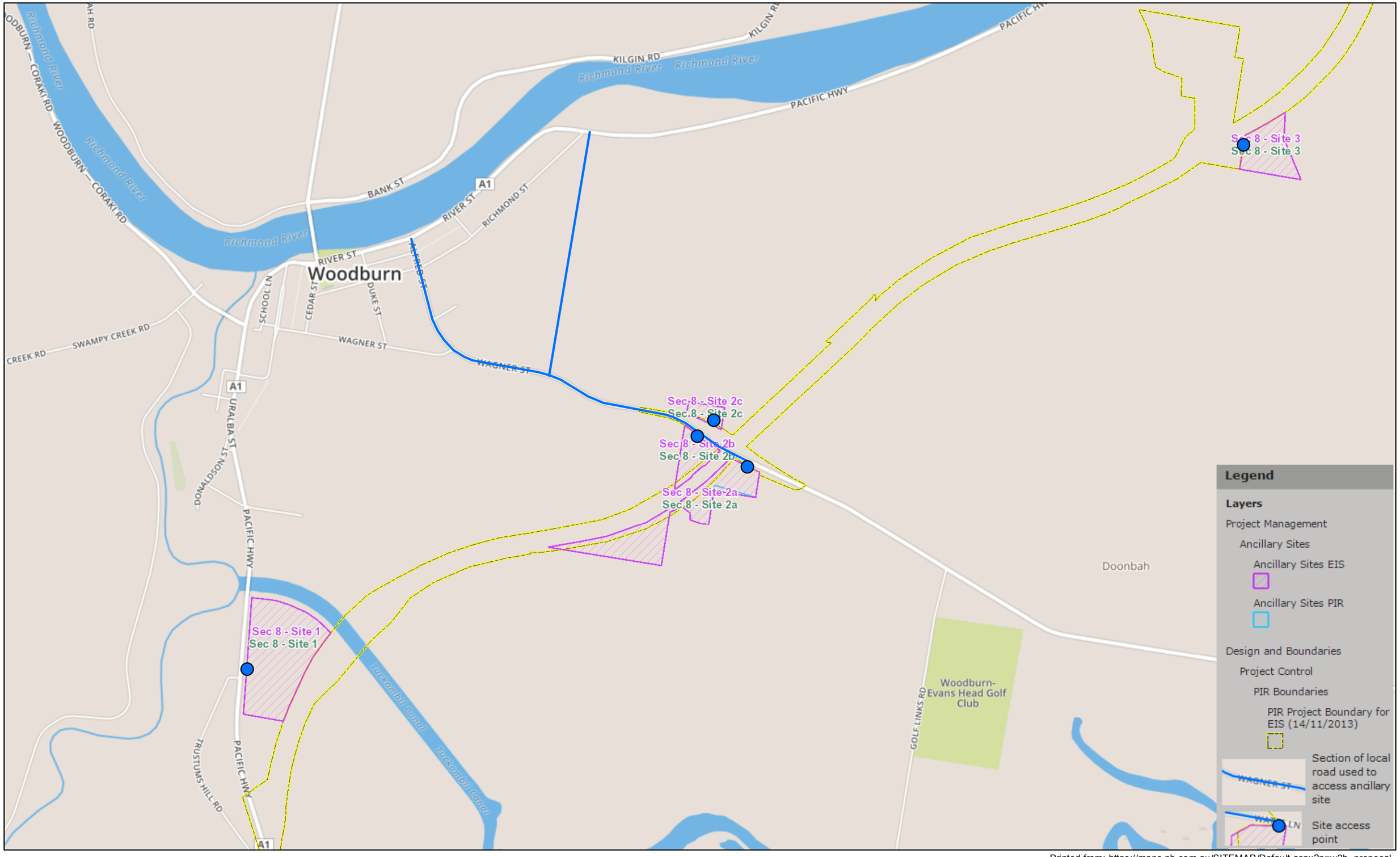
Local roads used to access sites (Section 8: sites 1 - 3)

Woolgoolga to Ballina Upgrade Project



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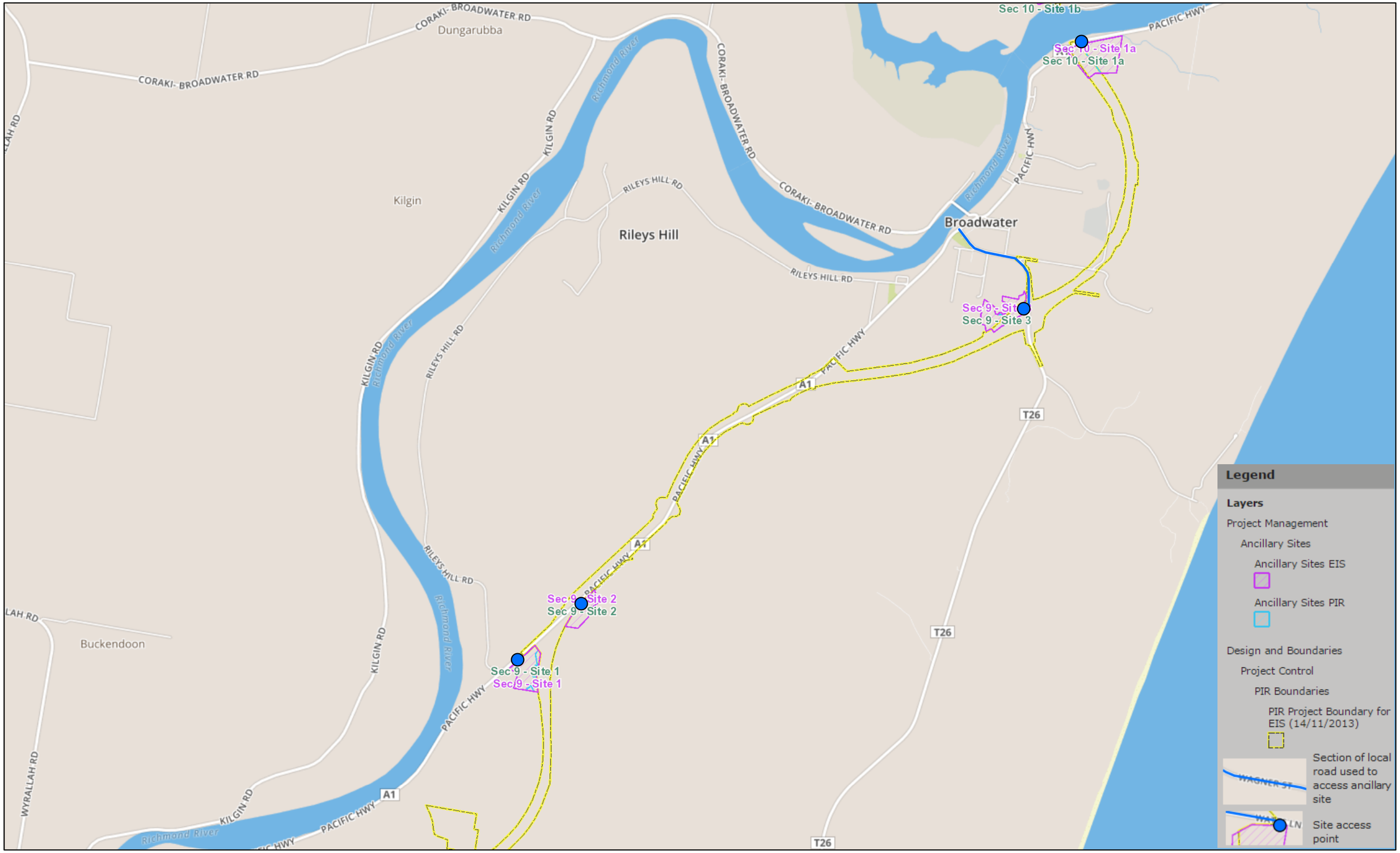
Local roads used to access sites (Section 9: sites 1 - 3)

Woolgoolga to Ballina Upgrade Project



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July 9, 2015

PARSONS BRINCKERHOFF

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DRAFT

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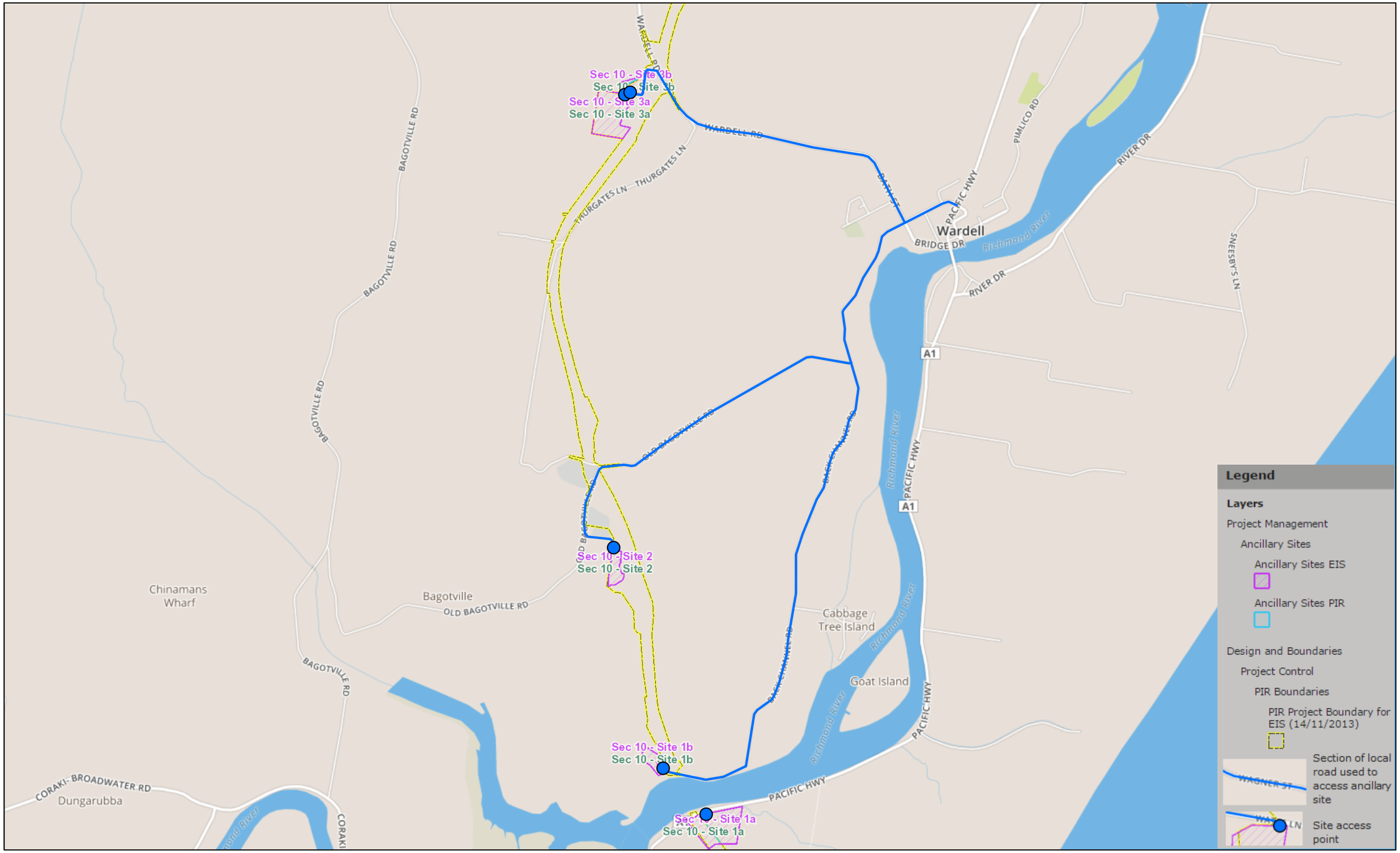
Local roads used to access sites (Section 10: sites 1 - 3)

Woolgoolga to Ballina Upgrade Project



July 9, 2015

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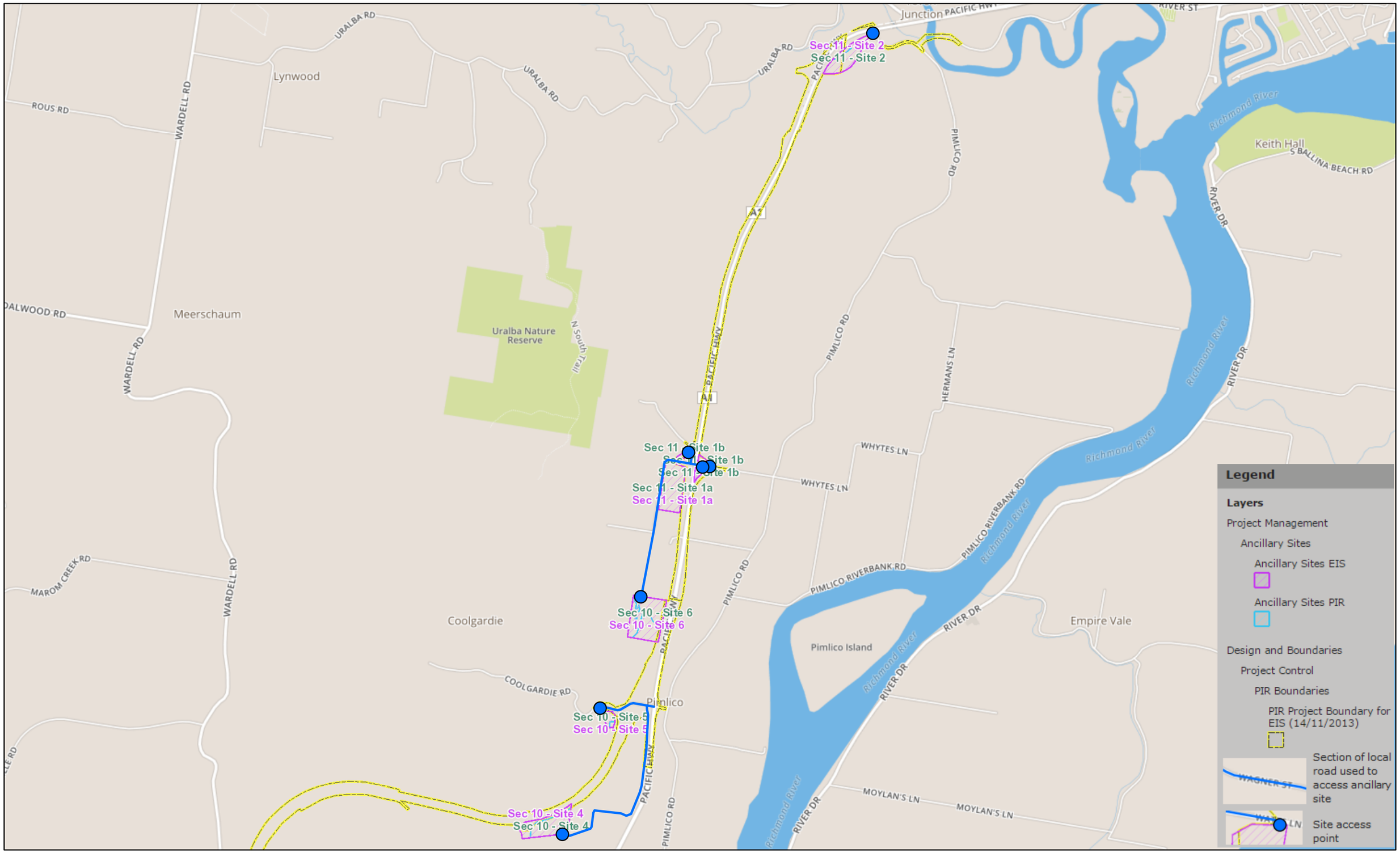
Local roads used to access sites (Sec.10 site 4 - Sec.11 site 2) **Woolgoolga to Ballina Upgrade Project**



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Appendix C – Construction access points

Table C-1 Proposed Construction Access Points

Section / Site no.	Location	Key operations	Local roads required for access	Vehicle movements
3 – 1	34.27 - 34.48	Main office/compound; Batch plant; Plant workshop	An existing access track south of the site	All movements
3 – 2	39.5 - 40.2	Batch plant	Eight Mile Lane, Avenue Road and Old Six Mile Lane	Left-turn in; right-turn out
3 – 3a	41.1 - 41.4	Batch plant; Plant workshop	Eight Mile Lane and Avenue Road	Left-turn in; right-turn out
3 – 3b	41.1 - 41.4	Main office	Eight Mile Lane and Avenue Road	Left-turn in; right-turn out
3 – 4	45.5 - 45.9	Batch plant; Plant workshop	Eight Mile Lane and Wooli Road	Right-turn in; left-turn out
3 – 5	49.4 - 49.6	Batch plant	Mitchell Road	Left-turn in; right-turn out
3 – 6a	51.4 - 51.5	Batch plant	Nil (access directly from new alignment)	All movements
3 – 8	61.1 - 61.4	Batch plant; Plant workshop	Tucabia Road and the quarry access road; or an existing access road	All movements
3 – 9	62.0 - 62.3	Batch plant	Tucabia Road	Left-turn in; right-turn out
3 – 10	67.2 - 67.4	Main site office; Batch plant; Plant workshop	Sheeys Lane	Left-turn in; right-turn out
4 – 1	69.3 - 69.6	Main site office/compound; Batch plant; Plant workshop	Nil (access from the new ramps for the north Tyndale interchange)	All movements
4 – 3	75.5 - 75.75	Batch plant	Shark Creek Road and a construction access track into the site	Left-turn in; right-turn out
4 – 4c	77.05 - 77.2	Main site office/compound; Batch plant; Plant workshop	McIntyres Lane	Right-turn in; left-turn out
4 – 6	79.45 - 79.9	Main site office/compound; Batch plant; Plant workshop	Nil (direct access from Pacific Highway)	All movements
4 – 7a	80.55 - 81.1	Main office	Nil (access directly from the construction site)	All movements
4 – 7b	80.55 - 80.8	Main office	Goodwood Street	Left-turn in; right-turn out
5 – 1	83.35 - 83.55	Batch plant; Plant workshop	Farlows Lane; or access directly from the construction site	Right-turn in; left-turn out; or all movements

Section / Site no.	Location	Key operations	Local roads required for access	Vehicle movements
5 – 2b#	85.8 - 86.1	Main site office/compound; Batch plant; Plant workshop	Yamba Road	All movements
5 – 2d#	85.98 - 86.22	Bridge compound	Yamba Road	All movements
5 – 3a	86.9 - 87.25	Bridge compound	River Street	All movements
5 – 3b	87.25 - 87.78	Main site office/compound; Batch plant; Plant workshop	Watts Lane; or access directly from the construction site	Right-turn in; left-turn out; or all movements
5 – 5a	93.3 - 93.4	Main site office/compound	Carrolls Lane; or access directly from the construction site	Right-turn in; left-turn out; or all movements
5 – 5b	90.67 - 90.73	Batch plant	Carrolls Lane; or access directly from the construction site	Left-turn in; right-turn out; or all movements
6 – 2	100.1 - 100.5	Main office/compound; Batch plant; Plant workshop	Nil (direct access from Pacific Highway)	All movements
6 – 3	103.05 - 103.75	Main office/compound; Batch plant; Plant workshop	Nil (direct access from Pacific Highway)	All movements
7 – 1	109.9 - 110.25	Main office/compound; Batch plant; Plant workshop	An access track along the southern edge of the site	Left-turn in; right-turn out
7 – 2b	114.2 - 114.45	Main office/compound	Nil (direct access from Pacific Highway)	All movements
7 – 3	121.2 - 121.7	Batch plant; Plant workshop	An existing access track along the western part of the site	Left-turn in; right-turn out
8 – 1	129.7 - 130.1	Main site office/compound; Batch plant; Plant workshop	Nil (direct access from Pacific Highway)	All movements
8 – 2a	131.2 - 132.15	Roads and Maritime site office	Alfred Street, Wagner Street and Woodburn-Evans Head Road; or Norman Street and Woodburn-Evans Head Road	Right-turn in; left-turn out
8 – 2b	131.8 - 132.1	Main site office/compound; Batch plant; Plant workshop	Alfred Street, Wagner Street and Woodburn-Evans Head Road; or Norman Street and Woodburn-Evans Head Road	Right-turn in; left-turn out;
9 – 1	136.7 - 137.1	Main site office/compound; Batch plant; Plant workshop	Nil (direct access from Pacific Highway)	All movements

Section / Site no.	Location	Key operations	Local roads required for access	Vehicle movements
9 – 3	142.25 - 142.78	Main site office/compound; Batch plant; Plant workshop	Broadwater - Evans Head Road	Right-turn in; left-turn out;
10 – 1a	145.3 - 145.6	Bridge compound; Batch plant	Nil (direct access from Pacific Highway)	All movements
10 – 1b	146.2 - 146.45	Bridge compound	Back Channel Road	Left-turn in; right-turn out
10 – 3a	152.1 - 152.5	Earthworks borrow; Batch plant; Plant workshop	Wardell Road, Hillside Lane and a local access road; or access directly from the construction site	Left-turn in; right-turn out
10 – 3b	152.55 - 152.7	Main site office/compound	Wardell Road, Hillside Lane and a local access road	Right-turn in; left-turn out;
10 – 5	157.3 - 157.45	Main site office/compound; Batch plant; Plant workshop	Coolgardie Road; or access directly from the construction site	Left-turn in; right-turn out; or all movements
10 – 6	158.2 - 158.57	Main site office/compound; Batch plant; Plant workshop	A local property access to the west of the site; or access directly from the construction site	All movements
11 – 1a	159.38 - 159.8	Main site office/compound; Batch plant; Plant workshop	McAndrews Lane and Sartories Road	Left-turn in; right-turn out
11 – 2	163.6 - 164.4	Batch plant; Plant workshop	Pimilco Road	Right-turn in; left-turn out

- Location of site accesses to Section 5 2a, 2b, 2c, 2d need to be reviewed in detail in conjunction with contractors and reviewed by Clarence Valley council.

Appendix D – Site specific Traffic Management and Safety Plan register

Plan ID	Contractor	STMSP title	Version	Approval Date	Active (Y/N)