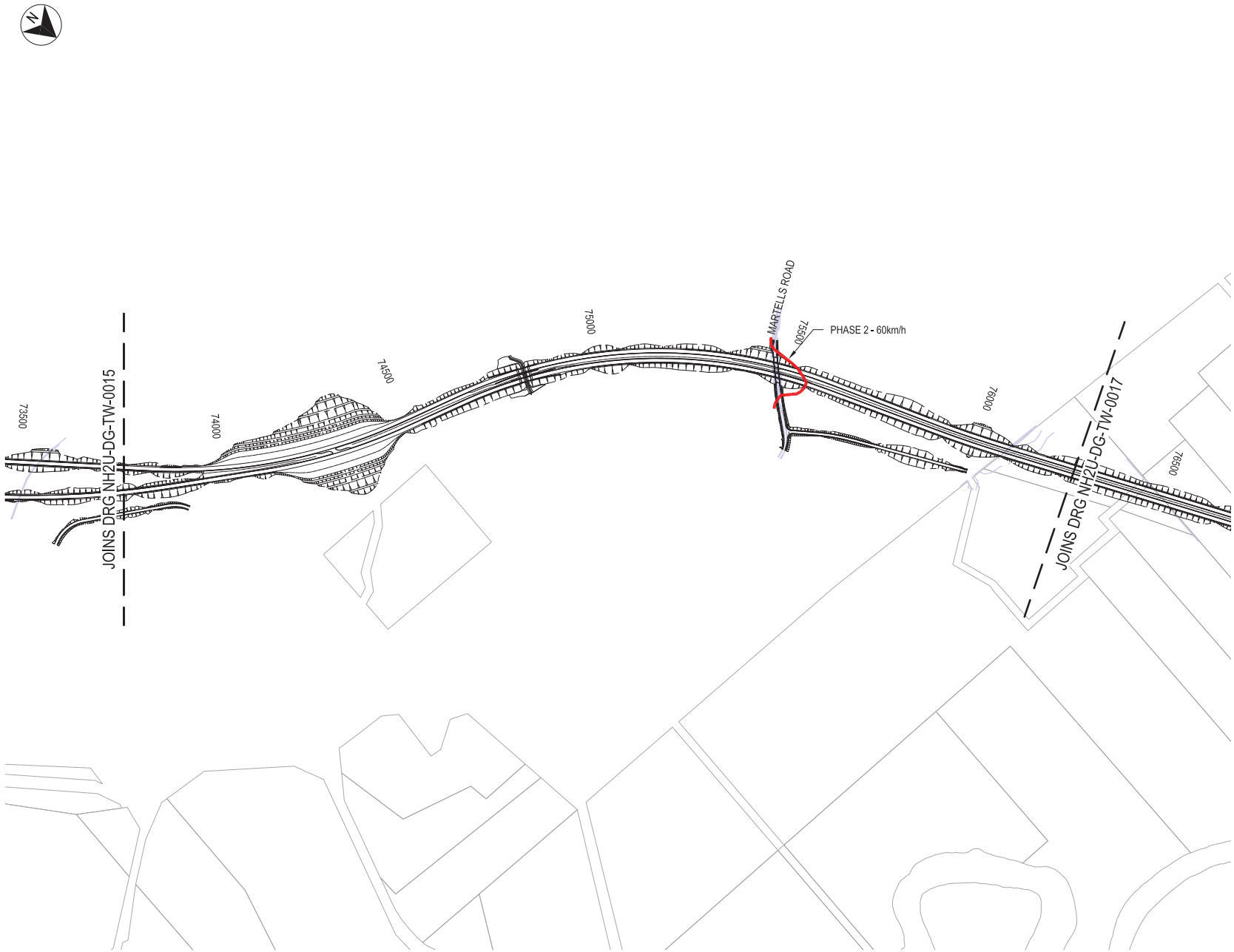

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B	31.01.2013	TRAFFIC MANAGEMENT SUBMISSION	S.Z.T.	B.J.	F.N.
A	05.09.2012	TENDER SUBMISSION	D.L.	N.P.	F.N.

TITLE	INITIAL	DATE
DRAFTSPERSON	D.L.	05.09.2012
DRAFTING CHECK	S.H.	05.09.2012
DESIGNER	G.C.	05.09.2012
DESIGN CHECK	N.P.	05.09.2012
DESIGN MANAGER	F.N.	05.09.2012
PROJECT MANAGER	K.L.	05.09.2012

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AT A3
CO-ORDINATE SYSTEM: MGA Zone 56
HEIGHT DATUM: AHD

CLIENT: NSW Government — Transport Roads & Maritime Services

CONTRACTOR: Abigroup — Constructing Australia's Future

PROJECT: NAMBUCCA AND BELLINGEN SHIRE COUNCILS
PACIFIC HIGHWAY UPGRADE
NAMBUCCA HEADS TO URUNGA
TEMPORARY BARRIER LOCATIONS, SITE ACCESS & SPEED ZONES DURING CONSTRUCTION
SHEET 6

STATUS: TMP SUBMISSION

VOLUME	DESIGN AND CONSTRUCTION CONTRACT No	
TMP		
PHASE	DRAWING No	REV
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REV	DATE	DESCRIPTION	DRAWN	REVIEWED	APPROVAL
B	31.01.2013	TRAFFIC MANAGEMENT SUBMISSION	S.Z.T.	B.J.	F.N.
A	05.09.2012	TENDER SUBMISSION	D.L.	N.P.	F.N.

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DESIGN MANAGER	F.N.	05.09.2012
PROJECT MANAGER	K.L.	05.09.2012

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CO-ORDINATE SYSTEM: MGA Zone 56
HEIGHT DATUM: AHD

CLIENT: NSW Government — Transport Roads & Maritime Services

CONTRACTOR: Abigroup — Constructing Australia's Future

PROJECT
NAMBUCCA AND BELLINGEN SHIRE COUNCILS
PACIFIC HIGHWAY UPGRADE
NAMBUCCA HEADS TO URUNGA
TEMPORARY BARRIER LOCATIONS, SITE ACCESS & SPEED ZONES DURING CONSTRUCTION
SHEET 7

STATUS: TMP SUBMISSION

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PHASE	DRAWING No	REV
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LEGEND

- SITE BOUNDARY (SWTC APP .2)
- PACIFIC HIGHWAY UPGRADE
- EXISTING HIGHWAY / LOCAL ROADS
- TYPE F BARRIER - PHASE 1
- TYPE F BARRIER - PHASE 2
- SITE ACCESS
- SITE ACCOMMODATION
- STOCK PILE AREAS

REV	DATE	DESCRIPTION	DRAWN	REVIEWED	APPROVAL
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PROJECT MANAGER	K.L.	05.09.2012

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CO-ORDINATE SYSTEM: MGA Zone 56
HEIGHT DATUM: AHD

CLIENT: NSW Government — Transport Roads & Maritime Services

CONTRACTOR: Abigroup — Constructing Australia's Future

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SHEET 8

STATUS: TMP SUBMISSION

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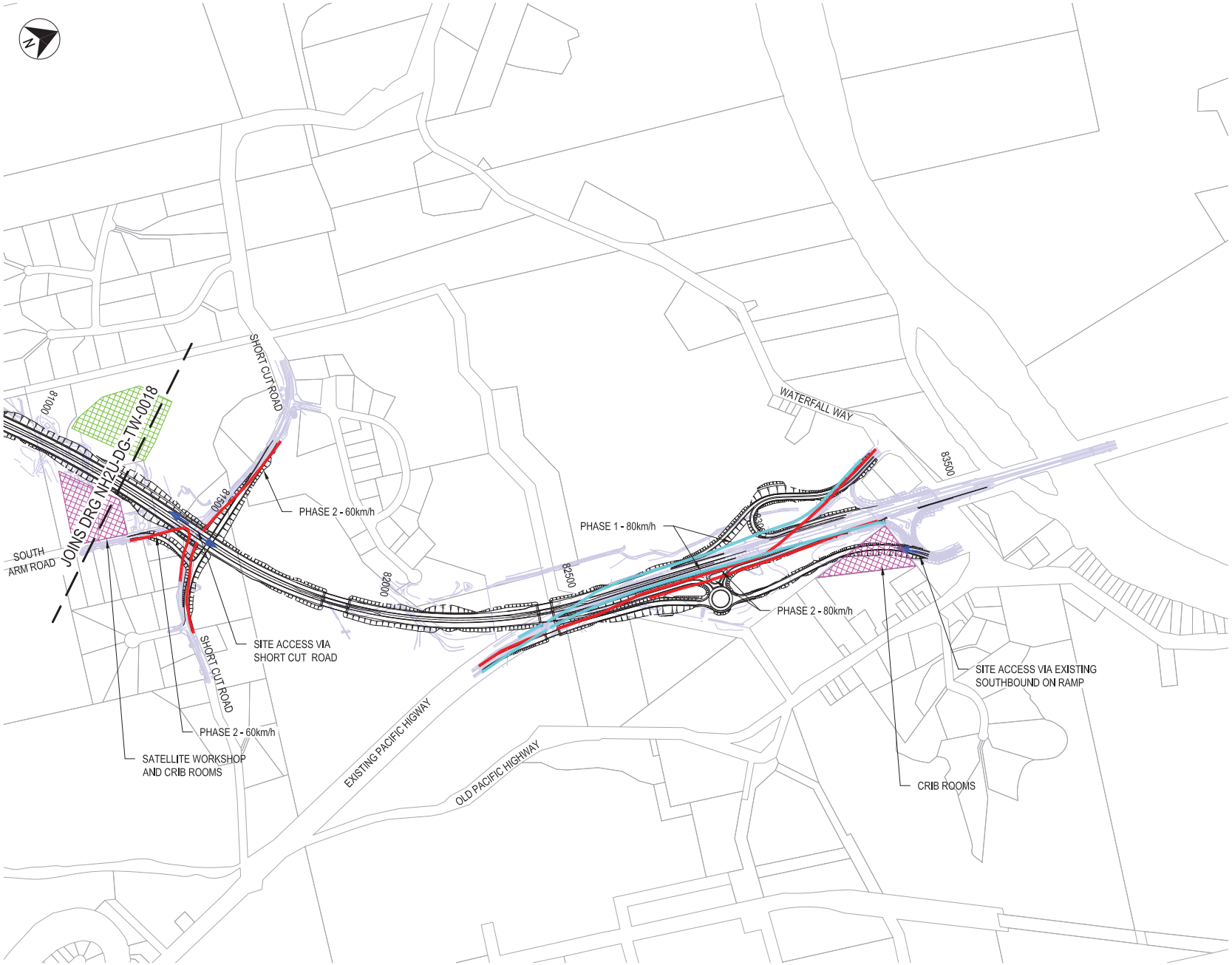

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ORIGINAL DRAWING AT A3 SIZE

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CO-ORDINATE SYSTEM: MGA Zone 56 HEIGHT DATUM: AHD

CLIENT: Transport Roads & Maritime Services (NSW Government)

CONTRACTOR: Abigroup Constructing Australia's Future

PROJECT: NAMBUCCA AND BELLINGEN SHIRE COUNCILS
PACIFIC HIGHWAY UPGRADE
NAMBUCCA HEADS TO URUNGA
TEMPORARY BARRIER LOCATIONS, SITE ACCESS & SPEED ZONES DURING CONSTRUCTION
SHEET 9

STATUS: TMP SUBMISSION

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Appendix C

Construction Traffic Intersections Analysis

Included:

App C1 - SKM Traffic Assessment
App C2 - 2x Construction access gate plans

Technical Note

To	Emidio D'Angola
From	Richard Thomas
Date	03 August 2012
Project No	NB10016
Subject	**NH2U – Construction Traffic Intersection Assessment**

1. Introduction

During the construction phase of the Pacific Highway Upgrade, five construction compound sites are proposed to be established at selected local roads. During the construction period, these sites will be accessed by construction staff and their vehicles via nominated local roads and their associated intersections. The proposed access points are summarised in **Table 1.**

- **Table 1 Proposed Construction Compound Site Locations**

Minor Road	Type of Construction Compound Site	Intersection	Intersection Control
Ballards Road	Main	Pacific Highway/ Ballard Road	Give way
Valla Road	Satellite	Pacific Highway/ Valla Road	Give way
Deep Creek Road	Satellite	Pacific Highway/ Deep Creek Road	Give way
Bourke Lane	Access only	Pacific Highway/Bourke Lane	Give way
Short Cut Road	Satellite	Pacific Highway/ Short Cut Road Short Cut Road/South Arm Road	Give way Give way
Ironbark Trail	Satellite	Iron Bark Trail/ Old Coast Road	Give way

As a result of the increase in traffic associated with construction activity, the operational performance of these intersections may be affected by the combination of both existing general traffic and the additional construction traffic. An analysis has been carried out to assess the operational performance of these intersections with the forecast 2016 traffic and the proposed geometric configurations.

The purpose of this technical note is to document the methodology used to estimate the construction traffic volumes at the nominated intersections, and to document the corresponding intersection performance analyses and commentary.

The key procedures involved during the assessment are:

- Extract relevant data sources;
- Undertake appropriate assumptions in relation to traffic volumes;
- Estimate 2016 construction traffic turning volumes at the nominated intersections;

- Estimate 2016 general/ background traffic turning volumes at the nominated intersections;
- Undertake operational performance analysis for those intersections; and
- Provide conclusions based on the analysis and commentary on the appropriateness of the concept design intersection layouts.

1.1 Data Sources and Assumptions

From the report Pacific Highway Upgrade – Nambucca Heads to Urunga *SWTC Appendix 09 – Geometric Performance and Design Requirements*, the following traffic data inputs have been extracted for analysis purposes:

- 2016 Average Annual Daily Traffic (AADT) Volumes; and
- Heavy vehicle (HV) proportions.

Information on proposed worksite construction traffic and locations has been provided by the project team.

2. 2016 Turning Traffic Volumes Estimation

2.1 2016 General Traffic

The 2016 turning volumes of general/ background traffic have been estimated by adopting the SWTC values where available, and then making assumptions to fill in the remaining required detail. The assumptions made were derived based on professional judgement by observing adjacent land uses, access points, road hierarchy, and possible route choices.

Additional assumptions made in the assessment and their potential impacts on the results include:

- The peak hour traffic volume has been estimated by assuming 10% of the AADT occurs in each of the peak hour.
- The directional traffic volumes have been estimated based on the assumption that 60% of AADT would travel north and 40% AADT would travel south during the morning peak period. This estimate has been made as a result of examining adjoining land use and the location of adjacent centres of employment, as well as some understanding of regional travel patterns. The use of a higher northbound volume, which conflicts with the southbound right turn, assists to make the modelling results conservative. Short Cut Road and Old Coast Road have an assumed 50-50 directional split.
- The AM peak period has been adopted for modelling, as this period has been assumed to coincide with the highest concentration of construction arrival movements. Anecdotal observation of other large road construction projects indicates that the staff arrival period in the morning is more condensed compared to the departure period in the afternoon. The morning arrival period also coincides with higher southbound right turn conflict at most locations, making the modelling results conservative.
- It is assumed that the peak hour of background traffic flow coincides with the peak period of arrivals to the worksite compounds, approximately 06:00 to 08:00.
- Existing Pacific Highway traffic has been calculated by adding the SWTC Appendix 9 2016 “Mainline” traffic with the 2016 “Service Road” traffic. The location of “north of Nambucca Heads Interchange” has been adopted for the determination of Pacific Highway traffic at Valla Road, Deep Creek Road and Ballards Road and no allowance for the addition or subtraction of turning traffic has been made between those locations.
- At Deep Creek Road the 2016 traffic volumes for Valla Road were adopted as being representative of the local road AADT prior to opening.

- Old Coast Road an assumed AADT of 3000 vehicles, with 10% heavy vehicle traffic was adopted.
- Bourke Lane local traffic was estimated at an AADT of 280 with 10% heavy vehicles.

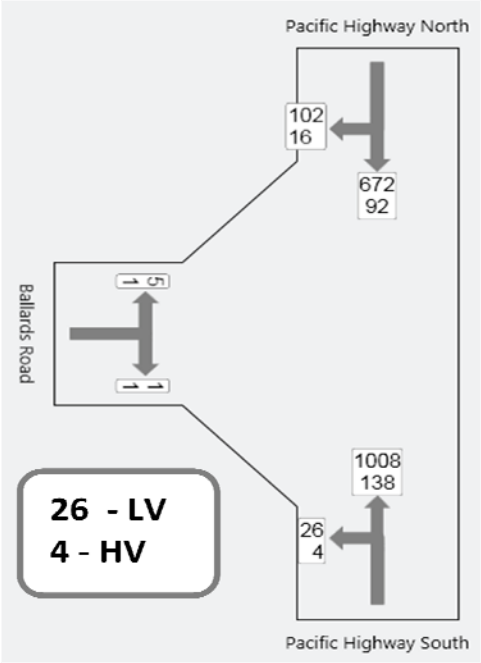
2.2 Construction Traffic

The construction traffic has been estimated based on the supplied information about workforce size, working hours, average hourly heavy vehicle flows and appropriate assumptions, which are underlined below:

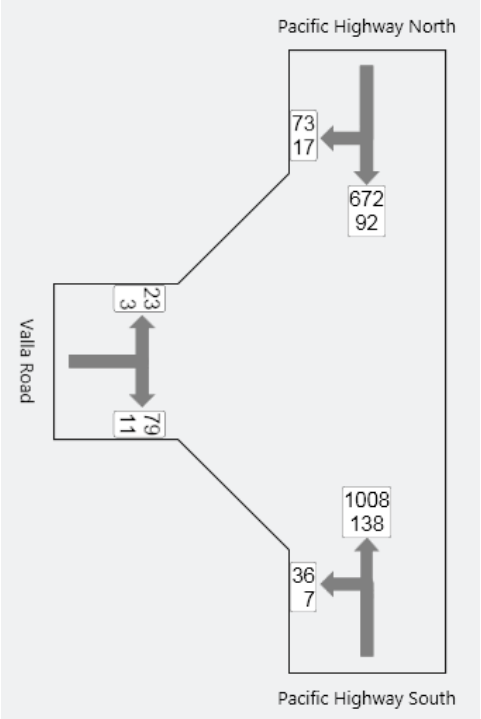
- Ballards Road is proposed to include the main construction compound, with a workforce of around 300 personnel. Valla Road is proposed as a satellite compound with a workforce size of 100 personnel for modelling purposes.
- The staff arrival and departure periods at the main worksite compound is expected to occur over a two hour period, with the arrival and departure period of one hour at the satellite compound
- Due to the longer distance from the regional towns where the construction workforce is expected to be sourced and the construction sites, it is expected the construction staff will share their vehicles to minimise the travel costs. To account for car pooling a 15% reduction has been applied to the nominated workforce size to determine the construction light vehicle (LV) volume.
- An average of 20 heavy vehicle (HV) movements per hour to/ from all construction sites has been adopted;
- Based on the proximity and the density of surrounding regional town centres, it is assumed the 80% of construction workforce and construction heavy vehicle trips will be generated to/ from the northern regions and the remaining 20% to/ from the southern regions.
- At Ironbark Trail, all arriving and departing construction traffic is expected to occur to/from the north, due to the location of the rest of the project/work compounds and likely origin of heavy vehicles. Similarly, at Bourke Lane, being a heavy vehicle access only, it was assumed that 60% of the construction traffic would arrive/depart to/from the south, and 40% to/from the north due to the location of adjacent compound locations.
- In order to balance the flows for modelling purposes at Deep Creek Road, an assumed volume of 52 additional construction light vehicles were added to the modelled volume of southbound right turning vehicles for the AM peak. This additional volume of traffic may account for vehicles arriving from the north and using Deep Creek Road as an alternative access to the Valla Road worksite. No deduction has been considered during the modelling of Valla Road.

Based on the above assumptions, the 2016 light vehicle (LV) and heavy vehicle (HV) total turning volumes at the nominated intersections have been estimated. These details are shown below in **Figure 1** to **Figure 8**, which include both existing background traffic and proposed construction traffic for the AM peak hour. The numbers in these figures represent separate LV and HVs (see legend in **Figure 1**).

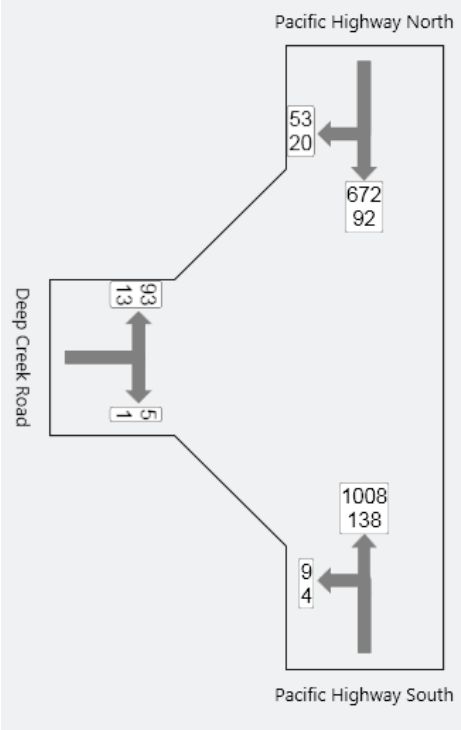
- **Figure 1 Pacific Highway/ Ballards Road- 2016 Estimated Total Volumes**



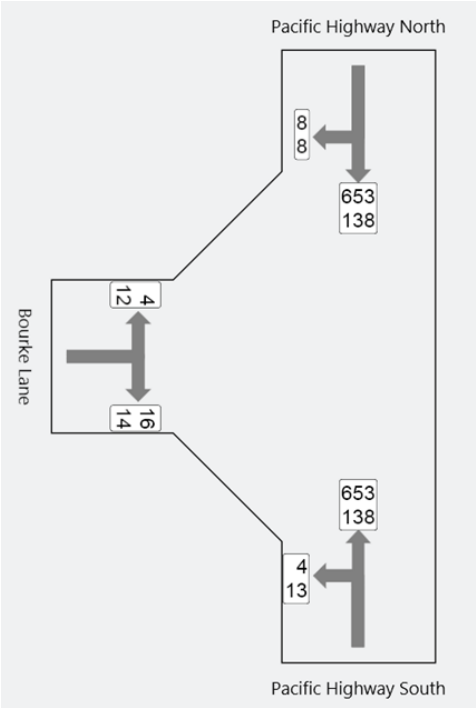
- **Figure 2 Pacific Highway/ Valla Road- 2016 Estimated Total Volumes**



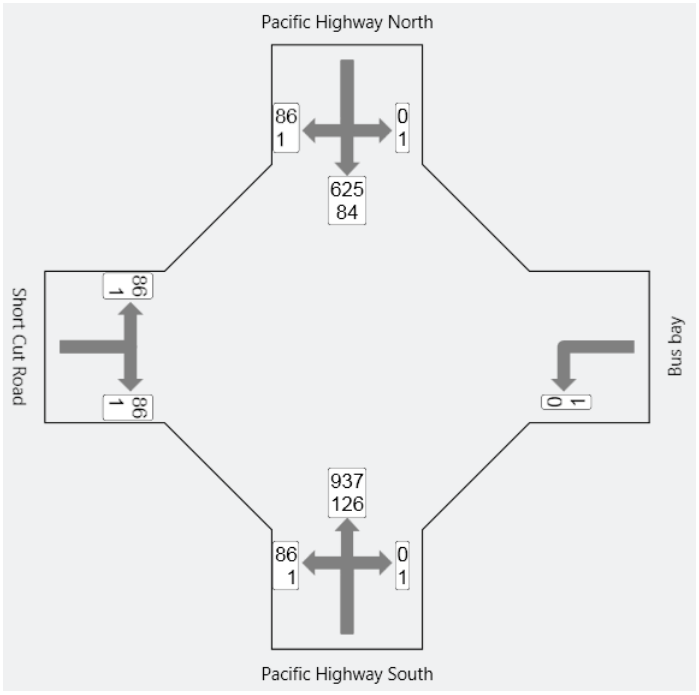
- **Figure 3 Pacific Highway/ Deep Creek Road- 2016 Estimated Total Volumes**



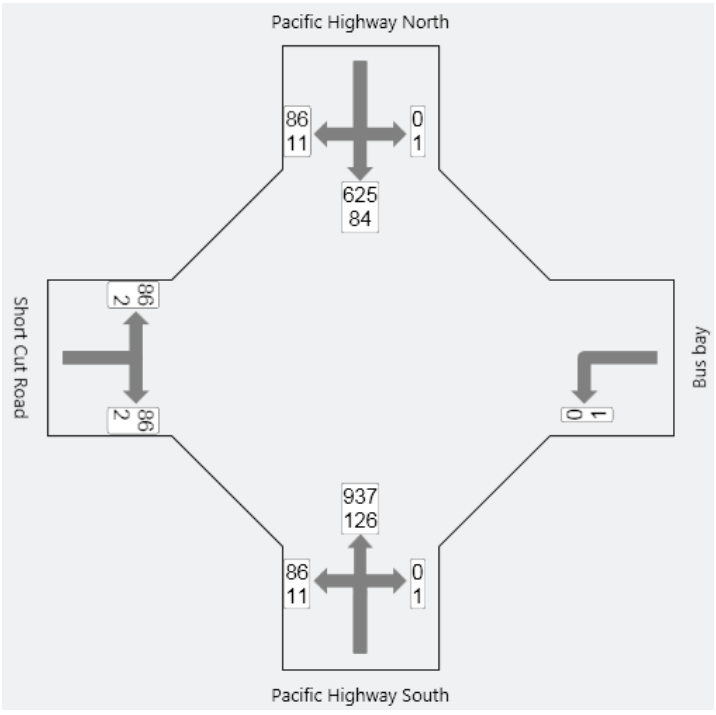
- **Figure 4 Pacific Highway/ Bourke Lane – 2016 Estimated Total Volumes**



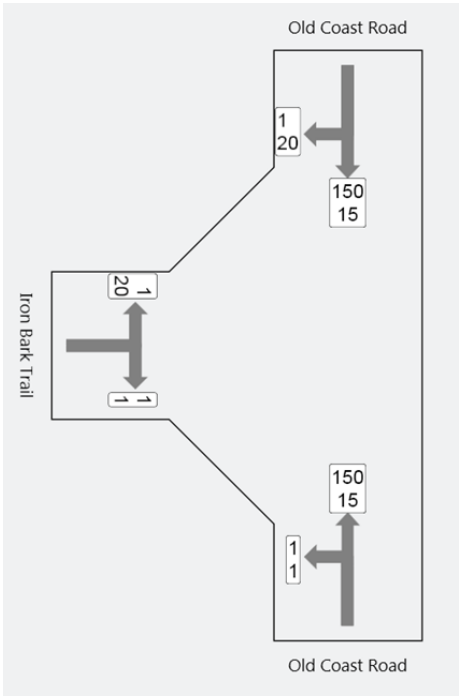
- **Figure 5 Pacific Highway/ Short Cut Road- 2016 Estimated Existing Volumes**



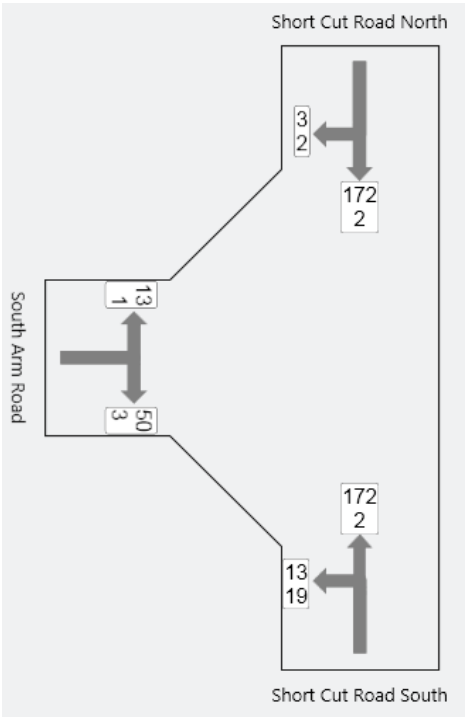
- **Figure 6 Pacific Highway/ Short Cut Road- 2016 Estimated Total/Proposed Volumes**



- **Figure 7 Old Coast Road/ Ironbark Trail- 2016 Estimated Total Volumes**



- **Figure 8 Short Cut Road/ South Arm Road- 2016 Estimated Total Volumes**



3. Intersection Performance Analysis

3.1 SIDRA Analysis

The nominated intersections with the proposed geometric configurations (refer **Figure 9** to **Figure 15** below) have been analysed by using SIDRA Intersection[1] (v5.1). The RMS NSW prefers the Level of Service (LoS) as the measure of intersection performance.

Level of Service (LoS):

Level of Service (LoS) is a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/ or passengers. This measure is used in planning design and operation of intersections. It also provides a basis for determining the number of lanes to be provided in the road network. The intersection operational conditions in terms of LoS measure are classified into five categories as listed in **Table 2**.

- **Table 2 – Level of Service (LoS) Categories (RMS NSW)**

LOS	Description	RMS NSW – Control delay in seconds (d)
A	Good	d ≤ 14.5
B	Good with minimal delays and spare capacity	14.5 < d ≤ 28.5
C	Satisfactory with spare capacity	28.5 < d ≤ 42.5
D	Satisfactory but operating at capacity	42.5 < d ≤ 55
E	At capacity and incidents will cause excessive delays	55 < d ≤ 70.5
F	Unsatisfactory and requires additional capacity	70.5 < d

(Source: AustRoads (1988))

No specific LoS for the operation of intersections during the construction period has been specific in the SWTC Appendix 9. As such, for the purposes of this assessment an acceptable level of service has been adopted of LoS D or better.

Assumptions made during the modelling include a 60 minute peak period factor and 100 per cent peak flow factor. All other SIDRA parameters were left as default.

The SWTC Appendix 9 requires deceleration lanes on the approach to right turn bays, and the length of these bays is nominated by the SWTC based on the prevailing speed limit. For Pacific Highway intersections, it has been assumed that an 80kph worksite speed limit will be in place on approach and departure to the intersections. However all deceleration lane lengths will be confirmed during the detail design process.

Short Cut Road has a speed limit of 60 kph, and auxiliary lanes at the South Arm Road intersection are not proposed in the final design or in the construction stage.

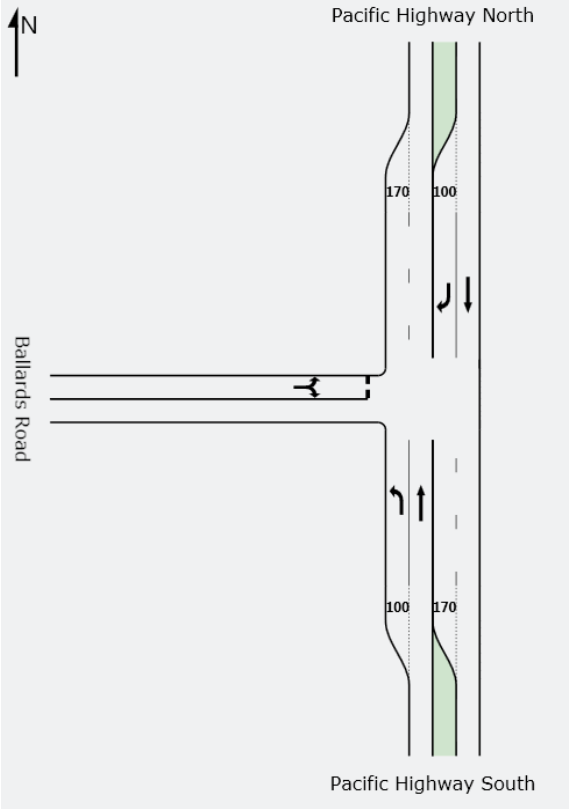
Old Coast Road has a speed limit of 100kph, and due to the anticipated limited arrivals or departures to and from the south, acceleration and deceleration lanes from this direction have not been proposed.

Indicative deceleration and acceleration lane lengths have been used in the modelling and are shown below in **Figure 9** to **Figure 15**. For the purposes of the assessment, the presence of queuing has been ignored for design deceleration lengths, as in all cases, the deceleration requirement is longer than the right turn storage requirement. The SIDRA modelling has been

[1] SIDRA Intersection is an intersection analysis software package, which estimates intersection capacity, level of service, performance, and predicts the effectiveness of intersection operation.

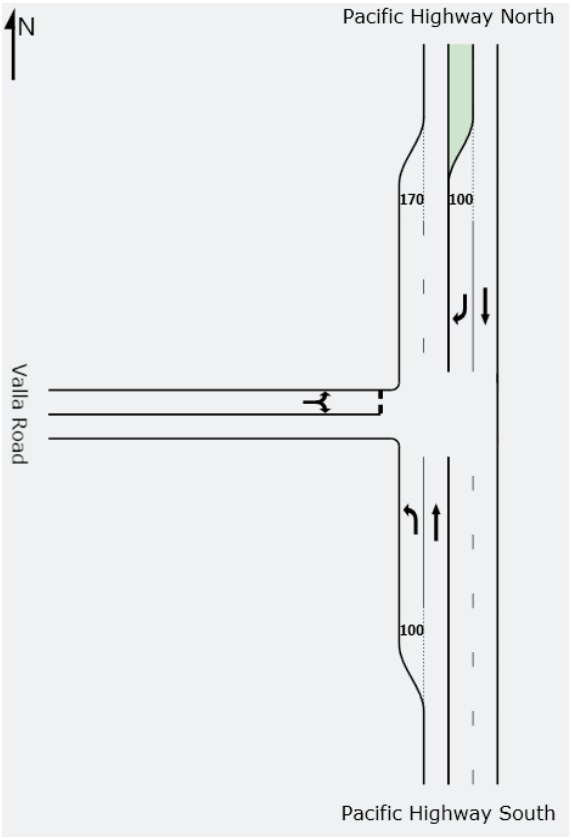
undertaken for all intersections using the 2016 estimated total volumes (general traffic plus construction traffic). An additional assessment of the existing operation of the Pacific Highway/ Short Cut Road intersection has also been made to assess the intersection performance at 2016, without any further construction traffic loading. The main objective of this analysis is to determine the proposed LoS and also the required storage length of right turn bays. The detailed design process will determine the deceleration and acceleration lane lengths and combined with the storage length requirements give the required lengths of right turn bays.

- **Figure 9 Pacific Highway/ Ballards Road Proposed Construction Period Geometry**



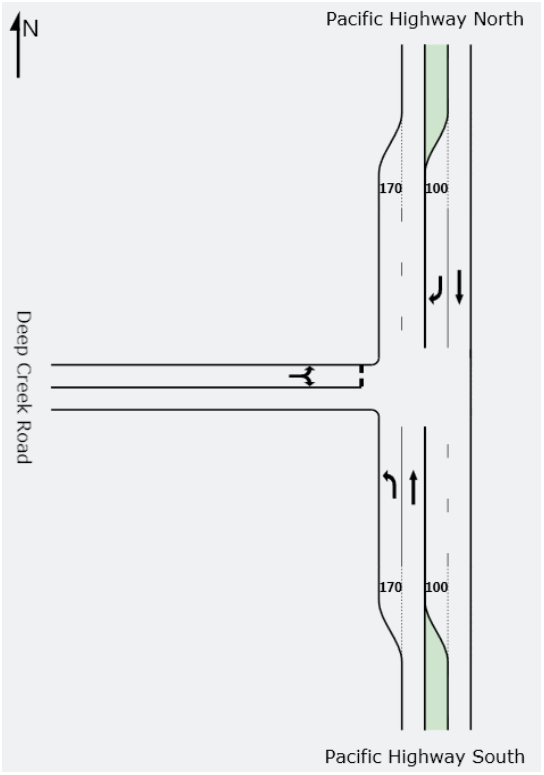
**Note auxiliary lane lengths indicative*

- **Figure 10 Pacific Highway/ Valla Road Proposed Construction Period Geometry**



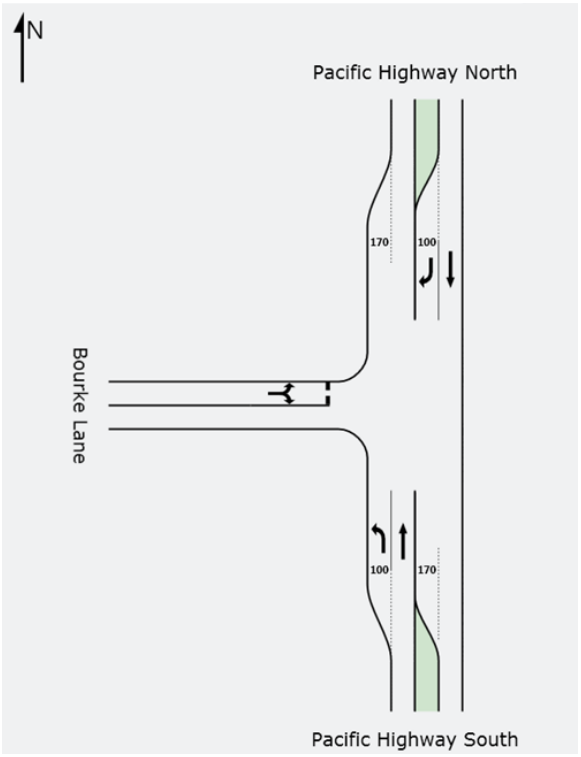
**Note auxiliary lane lengths indicative*

- **Figure 11 Pacific Highway/ Deep Creek Road Indicative Construction Period Geometry**



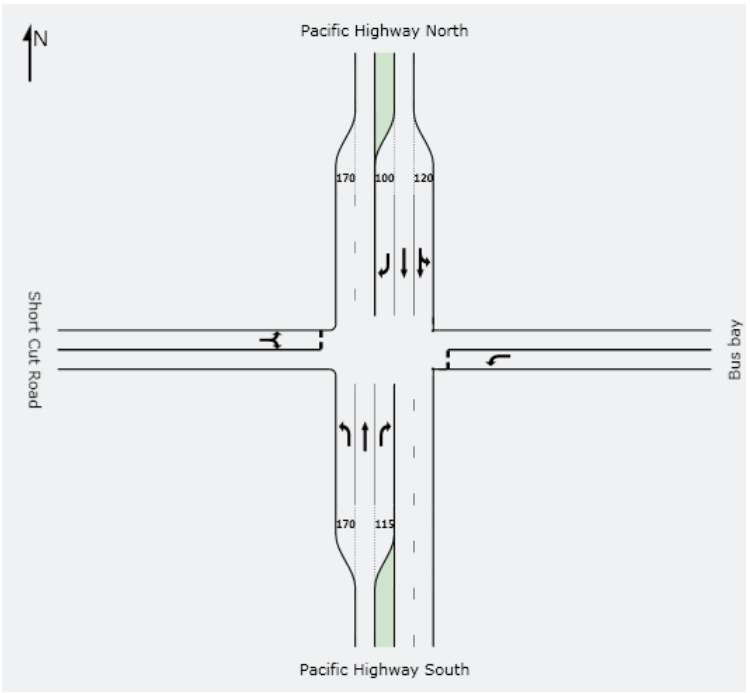
**Note: Auxiliary lane lengths indicative. Provision for northbound right turns may be required*

- **Figure 12 Pacific Highway/ Bourke Lane Indicative Construction Period Geometry**



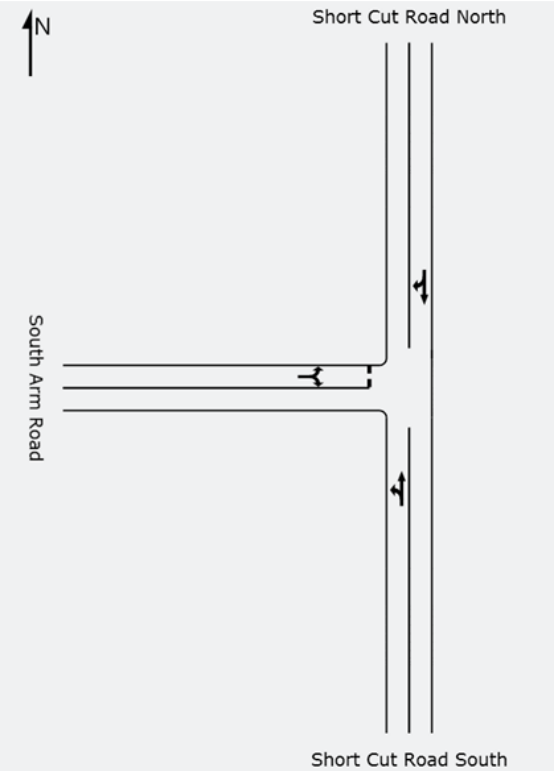
**Note: Auxiliary lane lengths indicative.*

- **Figure 13 Pacific Highway/ Short Cut Road Proposed Existing Geometry**

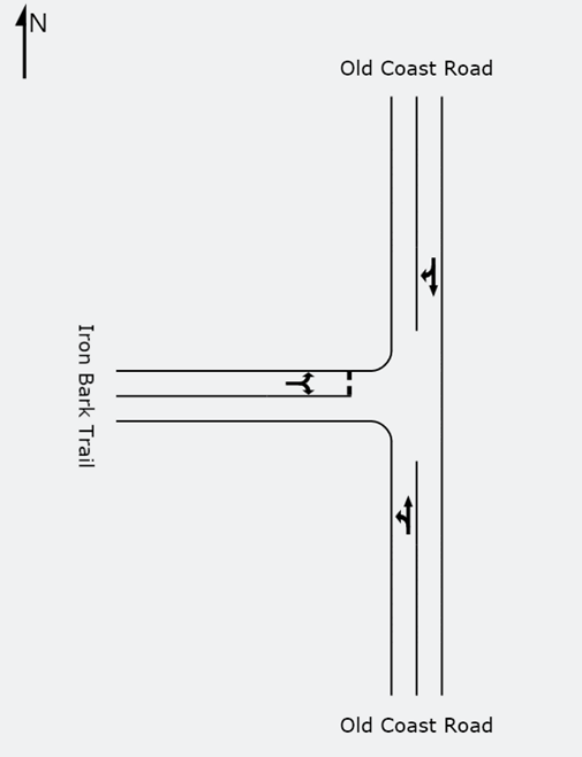


**Note auxiliary lane lengths indicative. Bus bay/u-turn facility shown indicatively.*

- **Figure 14 South Arm Road/ Short Cut Road Proposed Construction Period Geometry**



- **Figure 15 Ironbark Trail/ Old Coast Road Proposed Construction Period Geometry**



The SIDRA analysis results are shown in **Table 3**.

- **Table 3 SIDRA Summary**

Intersection	Control	Total Demand	Worst Delay (s)	Maximum Queue in Right Turn Slip Lane (m)	LoS of Worst Movement
Pacific Highway/ Ballards Road	Give way	2066	41.4 (Ballards Road)	17	C
Pacific Highway/ Valla Road	Give way	2159	37.4 (Valla Road)	15	C
Pacific Highway/ Deep Creek Road	Give way	2070	40.8 (Pacific Highway North)	14	C
Pacific Highway/ Bourke Lane	Give Way	1661	34 (Bourke Lane)	<10	C
Pacific Highway/ Short Cut Road	Give way	2123	>100 (Short Cut Road)	7	F
Short Cut Road/ South Arm Road	Give way	452	11 (Short Cut Road North)	< 10	A
Ironbark Trail/ Old Coast Road	Give way	376	20.9 (Old Coast Road)	15	B

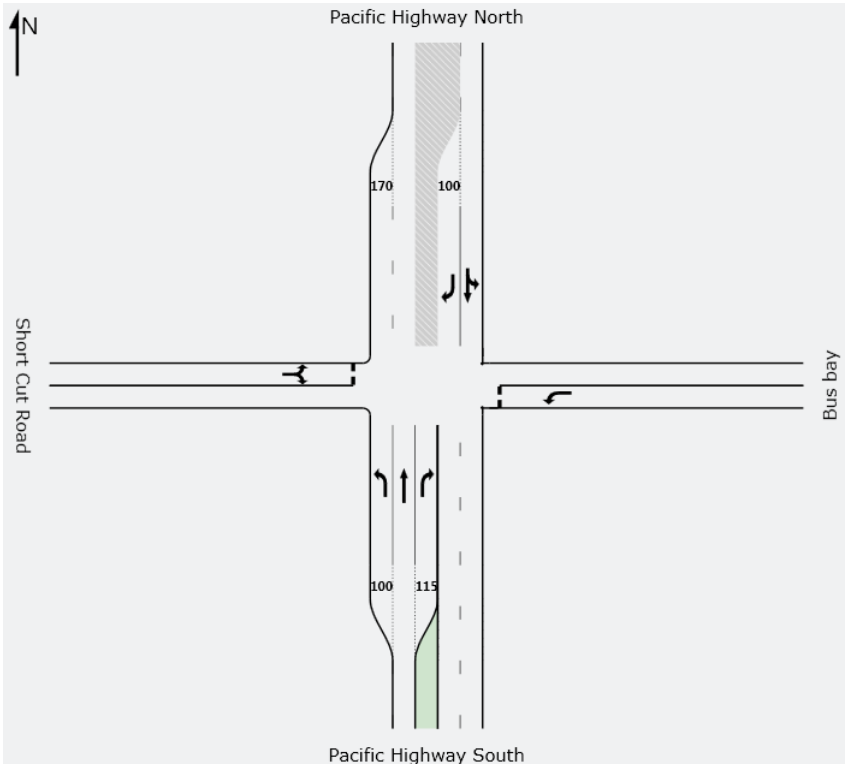
The analysis results indicate that apart from Pacific Highway/ Short Cut Road intersection, all other intersections are expected to perform well within capacity without any significant capacity issues. The LoS results of these intersections is either 'B' or 'C', which indicate that the overall performance is good with minimal delays at the approaches.

Based on the SWTC guidelines, the right turn slip lane along the northern approaches are required to have a length equal to the required storage, plus the required deceleration lengths dependant on the prevailing speed limit.

The modelling shows that the existing Pacific Highway/ Short Cut Road intersection operates over capacity with delays on the Short Cut Road approach in the existing situation prior to the application of construction vehicles on the basis of the estimated 2016 traffic volumes. It is acknowledged that the Pacific Highway traffic volumes used in the modelling are the SWTC Appendix 9 "north of Ballards Road" volume, and these may not be reflective of the actual volumes onsite. The cause of the delays in Short Cut Road is due to a lack of adequate gaps for right turning traffic to access the Pacific Highway southbound. The modelling indicates that the existing geometric configuration will fail to operate well for the estimated 2016 general traffic and further loading of construction traffic at this intersection will contribute to a further degradation of intersection performance.

In order to improve the performance of the intersection, it is suggested that the southbound median through lane on the northern approach be closed and used to create a right turn acceleration lane. This acceleration lane would reduce the number of give-way conflicts for right turners and therefore reduce the required gap time, improving intersection performance. This proposed intersection layout is shown in **Figure 16**.

- **Figure 16 Pacific Highway/ Short Cut Road- Proposed Geometry with Southbound Right Turn Acceleration Lane**



SIDRA modelling has been undertaken with the addition of proposed construction vehicle volumes in **Table 4.**

- **Table 4 SIDRA Summary- Pacific Highway/ Short Cut Road- With Proposed Southbound Right Turn Acceleration Lane**

Intersection	Control	Total Demand	Worst Delay (s)	LoS of Worst Movement
Pacific Highway/ Short Cut Road	Give way (with southbound right turn acceleration lane)	2145	38 (Short Cut Road)	C

The SIDRA analysis results show that the provision of acceleration lane/median turning lane will resolve the capacity issue for right turning traffic from Short Cut Road and provide adequate capacity for both general and construction traffic. The resulting intersection is likely to perform at a LoS 'C'.

It is noted that the intersection geometry shown at Pacific Highway/ Deep Creek Road does not include the existing northbound right turn lane. Currently there is a short northbound right turn lane at the Deep Creek Road intersection which provides protected right turn storage for vehicles accessing approximately four rural properties on the eastern side of Pacific Highway, as well as access to the rail line for maintenance vehicles. The volume of vehicles accessing this precinct is insignificant for modelling purposes and so has not been included in the model. During the design phase, intersection geometry will need to be developed which ensures safe access for vehicles accessing this precinct.

The intersection of Old Coast Road/Ironbark Trail is not covered by the SWTC Appendix 9 Figure 9.23 intersection configuration requirement. For this intersection, comparison with

AUSTROADS Guide to Road Design – Part 4A Figure 4.9 has been undertaken to determine if the warrants for auxiliary lanes are met. With an estimated AADT of 3000 vehicles on Old Coast Road (150 vehicles per hour in each direction) and up to an average of 20 vehicles turning into and out of Ironbark Trail per hour, AUSTROADS indicates that a rural BA intersection configuration would be acceptable. An onsite investigation is likely to be required to ensure safe intersection sight distance and safe approach sight distance is available, and as part of this investigation it is recommended that consideration be given to the creation of a worksite speed limit and appropriate advance signposting to assist safe conditions for through and turning traffic. The worksite speed limit is only likely to be required while trucking operations are taking place. Additionally, local widening and flaring is likely to be required to facilitate concurrent in and outbound heavy vehicle turns at the intersection.

4. Conclusion

During the construction phase of the Pacific Highway upgrade (model year 2016), worksite compounds and construction access points will be established on the nominated minor roads, which are Ballards Road, Valla Road, Deep Creek Road, Bourke Lane, Short Cut Road, and Ironbark Trail. The key intersections connecting to these roads may be effected due to the additional construction traffic. An assessment has been carried out to determine the operational performance of these intersections with the forecast 2016 traffic and the proposed geometric configurations.

The 2016 general traffic at these intersections has been estimated by adopting the SWTC values where available and then making assumptions to fill in the remaining required detail. The 2016 construction traffic has been estimated based information provided on the workforce size and the number of average hourly construction heavy vehicles. Additional assumptions have been made regarding the location of regional town centres and access routes to assess the proportions of construction traffic by direction and vehicle occupancy rate.

Based on the SWTC Appendix 9 requirements, for Pacific Highway intersections the length of right turn slip lanes is dependent on the required deceleration lengths for heavy vehicles and storage. Queue lengths for vehicle storage during peak periods have been calculated using SIDRA, however in most cases these queues are relatively short, and a practical approach to queuing based on expected bunching of heavy vehicle arrivals may be more appropriate.

The results also indicate that all intersections except Pacific Highway/ Short Cut Road are expected to operate without significant delays during the AM peak. The overall performance at these intersections likely to be ‘good’ (i.e. LoS is ‘C’ or better).

The Pacific Highway/ Short Cut Road intersection is expected to operate above capacity with the existing intersection geometry and existing estimated traffic volumes. The traffic along Short Cut Road is likely to experience delays and queues due to lack of adequate gaps for right turning traffic to access the Pacific Highway southbound.

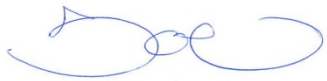
In order to improve the performance of the Pacific Highway/ Short Cut Road intersection, it is suggested that the southbound median through lane from the northern approach be closed to create a right turn acceleration facility. This facility would reduce the number of give-way conflicts for right turners and therefore reduce the required gap time, improving intersection performance.

The intersection of Pacific Highway/ Deep Creek road has been modelled with a southbound right turn acceleration lane, based on the SWTC Appendix 9 Figure 9.23 temporary works typical intersection treatment. During detailed design, it may be possible to accommodate a intersection treatment which balances the needs of both northbound right turn vehicles into the

rural residential precinct on the east side of the highway and southbound right turning vehicles from Deep Creek Road. A similar situation with a low volume of northbound right turn vehicles occurs at the existing intersection of Bourke Lane.

Given the estimated AADT at the Ironbark Trail/ Old Coast Road intersection, AUSTROADS indicates that the warrant for a rural BA intersection treatment is met, without dedicated auxiliary lanes. Investigation of site constraints should be undertaken to ensure turning traffic movements meet minimum safe sight distances and consideration given to provision of a reduced speed limit along Old Coast Road during construction, as part of the traffic control plan for the area.

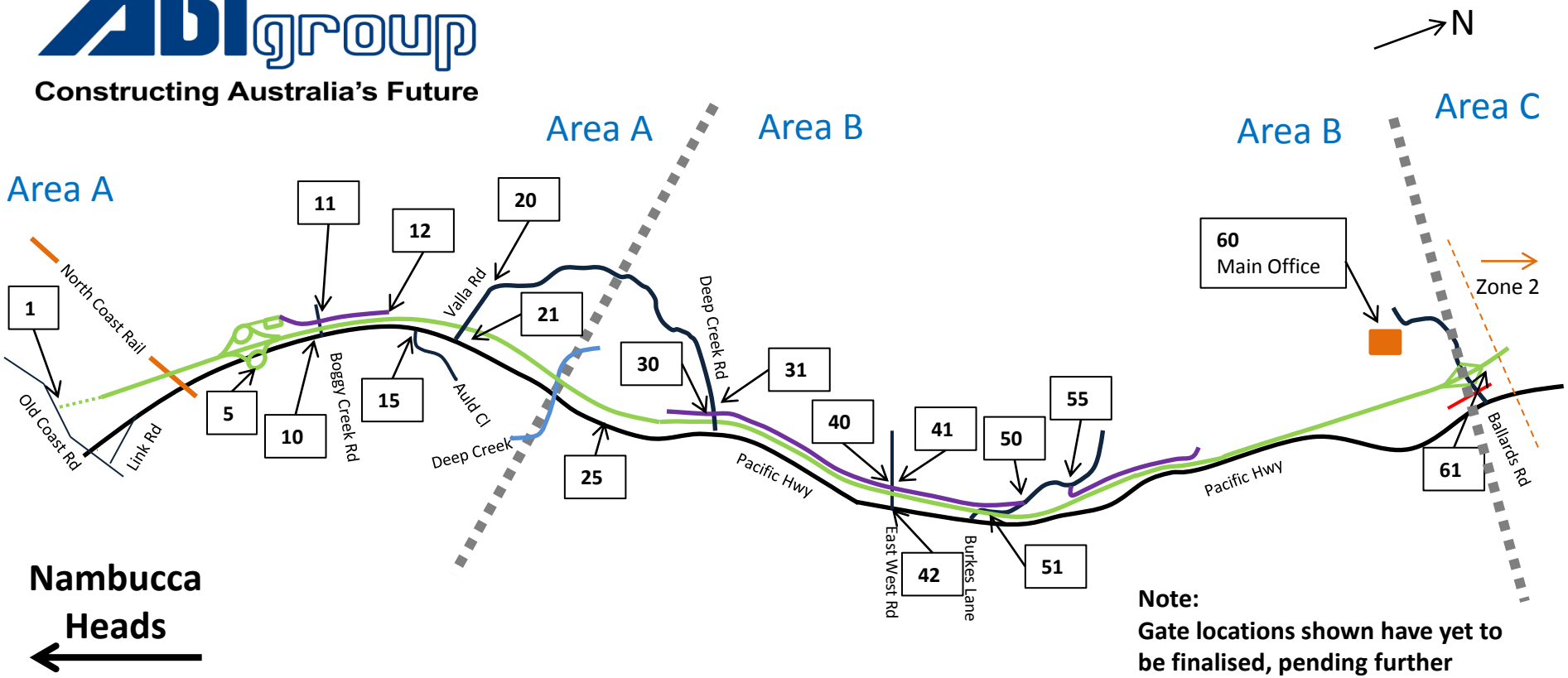
The modelling for the intersection of Short Cut Road/ South Arm indicates that this intersection would operate at a satisfactory LoS with the existing configuration.



Richard Thomas
Senior Traffic Engineer
Sinclair Knight Merz.

NH2U Site Access – Zone 1

Abigroup
Constructing Australia's Future



Note:
Gate locations shown have yet to be finalised, pending further discussions and approval by RMS.

ACCESS REQUIREMENTS;
All personnel working on site must attend the Abigroup Site Induction.
All personnel working on site must have evidence of Industry Safety Training attendance.

All site deliveries/visitors must make contact with the appropriate Abigroup site management, prior to entering the site.

The following site PPE must be worn at all times;
Hard Hat,
Safety Glasses,
High Vis vest/jacket,
Long Sleeved shirt and long trousers, and
Safety footwear.

All vehicles must be equipped with the following;
First Aid Kit,
UHF Radio
Fire Extinguisher, and
Flashing Light.

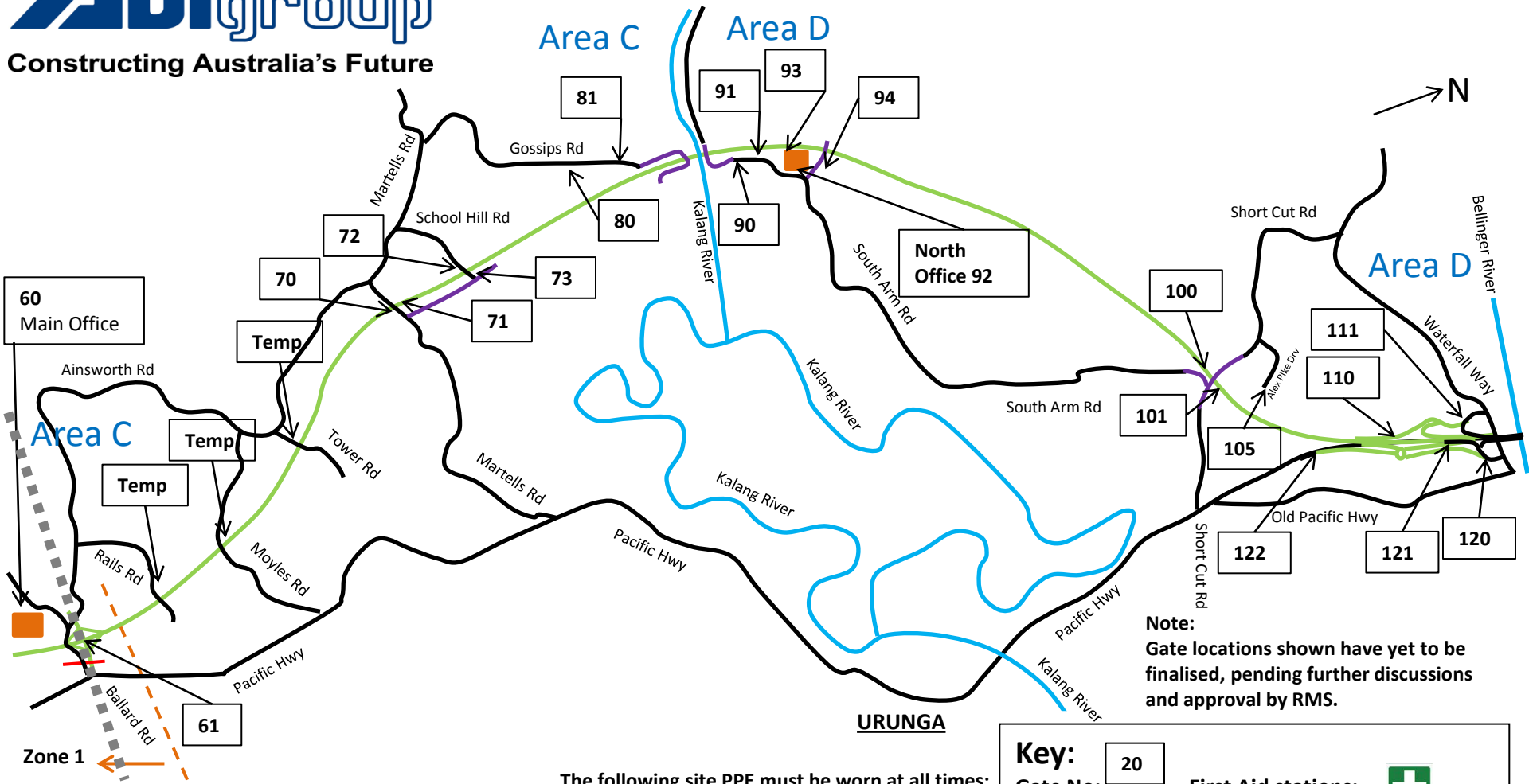
Key:
Gate No: 20
UHF – No : CH
First Aid stations:
Defibrillator:

Permitted Vehicle Access Movement:

Overhead Power Lines:
Project Works:
New Service Rd:
Existing Rds:

NH2U Site Access – Zone 2

Abigroup
Constructing Australia's Future



Note:
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All vehicles must be equipped with the following;
First Aid Kit,
UHF Radio
Fire Extinguisher, and
Flashing Light.

Appendix D

Traffic Control Plans – Traffic/Construction Staging

These plans will be completed for each location specific activity and submitted with the ROL approval.

Appendix E

Traffic Incident Response Plan

Appendix E: Traffic Incident Management & Response Plan

E.1 Traffic Incident Management Scope

The traffic incident management strategy is based on the following principles:

- Incident detection,
- Incident verification,
- Incident response,
- Incident recovery, and
- Incident review (post-recovery).

The incident response plan, as it relates to traffic management, has been developed to ensure the following outcomes:

- Mitigate the effect of the incident,
- Clear the incident as soon as practicable and safe to do so,
- Return the site and adjacent roads to normal conditions as soon as possible,
- Investigate and report on the incident together with recommendations for avoidance of similar incidents, and
- Review the effectiveness of the responses and recommending improvements if necessary to the plan.

The incident response plan details the planning, process actions and responses to incidents and includes the following elements:

- Provide written standard response procedures for managing incidents and supporting each incident type,
- Include an incident classification system defining the magnitude of incident type as minor, significant, or major,
- Provide supplementary detail for each incident type describing additional measures to be undertaken, in the event of an incident being classified or escalated to major,
- Include links to existing NSW state emergency management framework (DISPLAN) and protocols for information exchange between Lend Lease, Roads and Maritime and emergency services,
- Establish an area-based sectional system to describe the locations of incidents and detail these on plans showing main traffic routes in each section of the Works, and
- Develop standard incident reporting forms for the consistent logging of incidents by traffic management staff for incident records.

Below are the generic incident response plan classifications that will apply to the project in response to managing minor incidents by Lend Lease.

Table E-1: Incident Response Plan Classifications

Classification No.	Incident Description	In Use
IRP-01	Construction spillage (not in a road-related area)	Y
IRP-02	Motor vehicle accident classified as minor/routine	Y
IRP-03	Broken down haulage vehicle on state/regional road	Y
IRP-04	Small vehicle stationary or broken down	Y
IRP-05	Abandoned vehicle	Y
IRP-06	Vehicle on fire	Y
IRP-07	Significant traffic congestion	Y

Classification No.	Incident Description	In Use
IRP-08	Non-hazardous material spillage in trafficable lane	Y
IRP-09	Hazardous material spillage in trafficable lane	Y
IRP-10	Stray animal in trafficable lane	Y
IRP-11	Slippery road/pavement surface	Y
IRP-12	Pavement failure	Y
IRP-13	Civil unrest/demonstration or protest	Y
IRP-14	IRP systems failure due to power outage	Y
IRP-15	Service/utility failure impacting on road network	Y
IRP-16	Road occupancy breach without Roads and Maritime approval	Y

In accordance with the Project Deed and Section 6 of Roads and Maritime's Traffic Control at Worksites Manual, Lend Lease will provide an incident management and response capability to manage unplanned incidents on the road network. This capability will:

- Be available for shift work where required, ensuring that resources are available for incident response during construction hours;
- Undertake training appropriate to the duties of working in an incident response crew;
- Ensure that traffic control vehicles are fully equipped and are ready to attend incidents when called out;
- Provide assistance to other Roads and Maritime traffic commanders or emergency services when required; and
- Ensure all appropriate procedures are implemented during an incident or traffic control activity to provide for the safety of the public and workforce.

Lend Lease will provide and operate the necessary infrastructure, services, resources and systems to monitor, manage and control traffic flow on the affected maintenance areas of the road network. It should be noted that the management of traffic incidents requires a formal delegation of powers from the TMC and relevant emergency services (NSW Police). As Lend Lease has not been delegated this authority, Lend Lease will only provide assistance to other Roads and Maritime traffic commanders or emergency services. The Traffic Manager is the interface with all emergency services.

Responses to incidents will be managed in accordance with the incident management plan developed by the Traffic Manager and in line with Section 3.5.6 of the Traffic Control at Worksites Manual.

E.2 Traffic Incident Detection & Management System

Traffic incident detection and management will occur using the following systems and resources that may be available to Lend Lease:

- Transport Management Centre software applications, CMCS, IRIS, Roads and Maritime Intranet, etc.;
- SCATS data;
- Typical transport management centre work station;
- Transport Management Centre; and
- NSW Police and Emergency Services.

When an incident has been detected by Lend Lease, a resource will be used to validate the incident. Once validated the Traffic Manager will inform Roads and Maritime, the Community Manager and

local council (where appropriate) of the incident and follow the procedures contained in the incident response plan and the procedure in Clause 6.2.1 of the Traffic Control at Worksites Manual.

The Traffic Manager will log all detected traffic incidents and initiate the pre-planned traffic incident response plans once the incidents are logged. These may also call for a predetermined variable message sign strategy to be activated depending on the nature and magnitude of the incident.

Roads and Maritime's representative, Community Relations Manager and local council (where appropriate) will be immediately informed of all incidents that will affect the free-flow of traffic. During the incident the Traffic Manager will keep Roads and Maritime's representative informed on the timing and progress in rectifying the incident.

Roads and Maritime's representative can advise the Traffic Manager of any incidents in the area that have been detected or reported through the existing 131 700 public reporting number. This information may also be obtained through the use of the CMCS and IRIS system.

All reported and detected incidents will be logged and stored in a database. Details of all incidents will be taken by the Traffic Manager to coordinate the correct resources to respond to the incident. A report will be filed within two days with the incident details, including the response times to attend and rectify the minor incidents. The reported incident details will be submitted to Roads and Maritime in the format acceptable to Roads and Maritime's representative.

The Traffic Manager will ensure that all incidents are logged, investigated and reported to both Roads and Maritime and Lend Lease management for action as required. The Traffic Manager will modify procedures or controls to ensure the causes of these incidents are rectified and amend the CTMP if needed.

E.3 Traffic Incident Response Resources (Field Crews)

Lend Lease will have all the necessary traffic incident response plans and physical resources available to manage minor road incidents that may occur during construction. A response vehicle and other plant such as a contract towing resource will be managed by Lend Lease and be available to the traffic management team and located at the main project office. The response vehicle will be fitted out with personal protective equipment, signs, lights, traffic cones, barricades, fire extinguishers, spare fuel, environmental spill kits and sand to cater for oil spills etc.

During road occupancies on roads with high traffic volumes such as the Pacific Highway, queuing may occur which could hinder emergency services. Areas for which this may be a problem are to be identified during the initial site inspection. During road occupancy of these areas field crews are to have at least two personnel with blue card certificates who can be used to stop traffic in both directions in order to allow emergency vehicles to pass through.

Emergency services are to be advised ahead of road occupancies of their location and expected times. Lend Lease will also consult emergency services and relevant stakeholders in developing any additional strategies to ensure the safe passage of vehicles should an emergency arise.

Table E-2: Minimum Requirements for the Dissemination of Information to the Community

Road	Contact	Number
All	Police	000
All	Ambulance	000
All	Fire	000
All	Tow Truck	000
Pacific Highway	Roads and Maritime Traffic Safety Manager	0409 307 048
	Transport Management Centre	(02) 83961686
Local Roads north of Stn 70000	Bellingen Shire Council	TBC

Local Roads south of Stn 70000	Nambucca Heads Shire Council	TBC

E.4 Traffic Incident Response

The project interfaces with the Pacific Highway in various locations throughout the project. The area supervisors will be issued with contact lists for Roads and Maritime, Emergency services, and towing companies. In the event of an incident Roads and Maritime and emergency services (depending on severity) will first be notified and allowed to take control of the incident. The area supervisor will then assess the incident and contact other relevant parties (Traffic Manager, project staff, towing company, etc.). There will be appropriate traffic control plans developed in accordance with the Traffic Control at Worksites manual in order to deploy traffic management assets. In Emergency Incidents Clause 3.5.6 of the Traffic Control at Worksites Manual will be followed.

Attached are typical TCPs for incidents on the Pacific Highway.

Local Roads Incident Response Plan

Local roads will be interfaced with at numerous locations along the project. The area supervisor for each of the respective interface points will have contact lists for the relevant councils and where relevant, Roads and Maritime. In the event of an incident the area supervisor will contact the local council and the Traffic Manager. Depending on the severity of the incident they will also contact emergency services and towing services. In the first instance the response will be directed by the relevant authority whether it be Roads and Maritime, local council or emergency services. At their discretion Lend Lease will implement the appropriate traffic control plan and depending on the severity clause 3.5.6 of the Traffic Control at Worksites Manual will be followed.

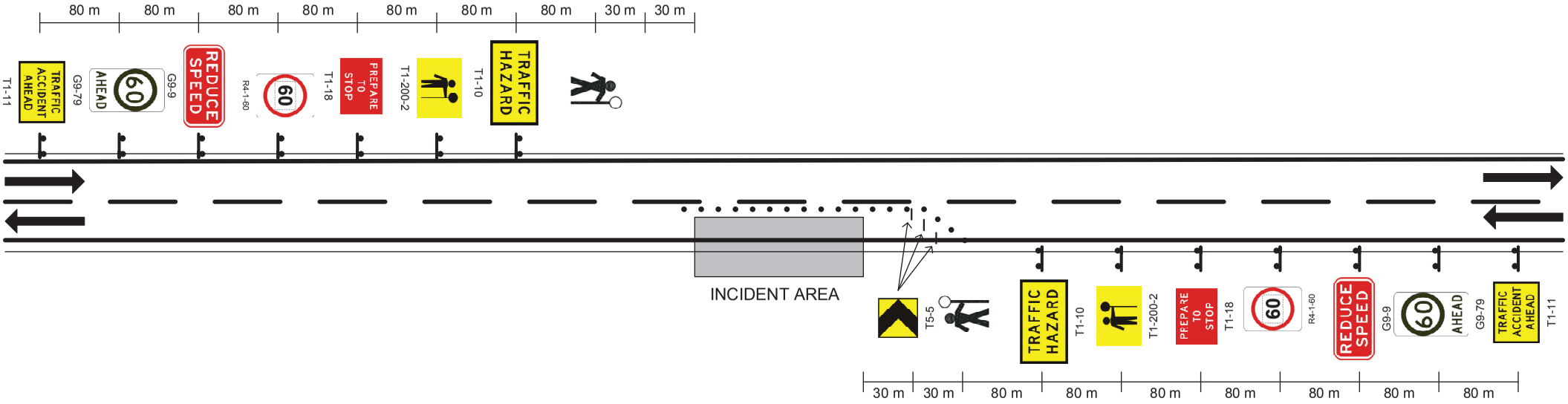
Attached is a typical TCP for an incident on a Local Road.

E.5 Traffic Accidents on Public Roads within the Work Site

In the event of a traffic accident occurring within the Construction Site or at other locations affected by Lend Lease's Work, the Traffic Manager will immediately notify Roads and Maritime Representative of the occurrence of the accident, record his knowledge of the facts and photograph the approach to the accident site, including the location of all safety devices and signs, as soon as possible after the accident. A report with this information will be forwarded to Roads and Maritime Representative within two days of the occurrence of the accident.

E.6 Out of Hours Contact

There are a number of long term worksites located near the construction accesses. Occasionally traffic control devices may need to be adjusted or maintained out of hours. In these circumstances the General Superintendent has been nominated as the Emergency Controller and can be contacted 24hrs on 1800800612. Once the General Superintendent has been contacted the General Superintendent will contact the appropriate personnel responsible in order to implement a suitable response.



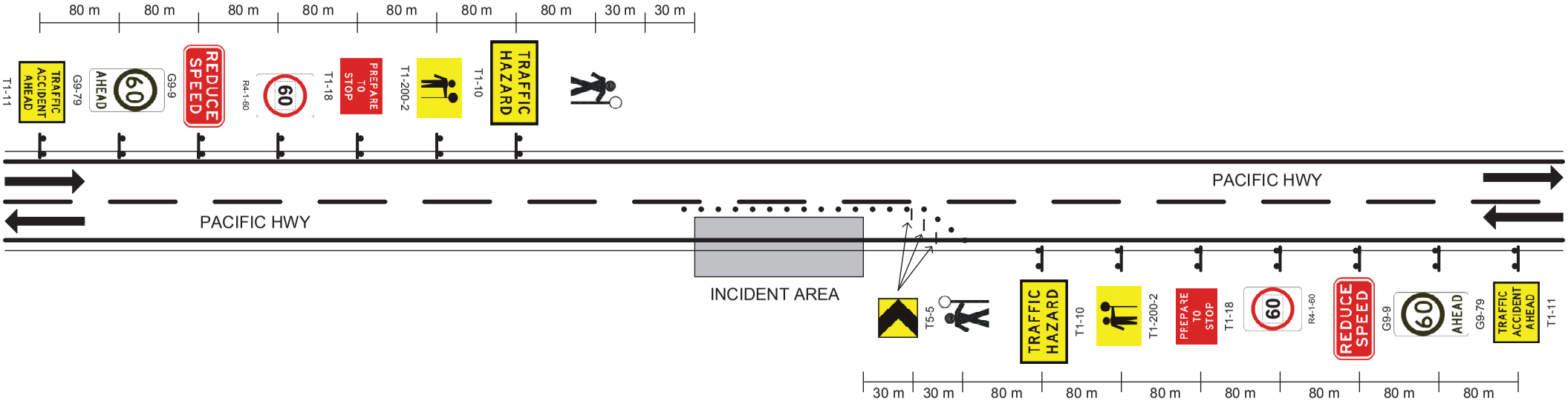
● - Traffic Cones

NOTE:

1. All signs Size B.
2. Cones to be 700 mm high and spaced at 9 m.
3. Traffic to be stopped for less than 5 minutes at a time in each direction.
4. If a queue manager is deemed necessary, the queue manager is to be located within the 60 kph speed zone. The supervisor is to anticipate the extent of traffic queuing and position the queue manager appropriately. If queues temporarily exceed this location, the queue manger is to walk forward with the back of the queue to warn on coming motorists and return to their original position once the traffic has moved on.

Ref – RTA TCP 440 Traffic Control at Work Sites v4.0

Abigroup PACIFIC HIGHWAY UPGRADE NAMBUCCA HEADS TO URUNGA	Date DD-MM-YY	Prepared: XXXX Signed: ..... Date: DD-MM-YY Certificate No: XXXX	Authorized: XXXX Signed: ..... Date: DD-MM-YY Certificate No: XXXX	Drawing Description INCIDENT RESPONSE ON LOCAL ROAD 1 LANE CLOSED (2 LANE 2 WAY)	TCP No ABI – TCP – 024



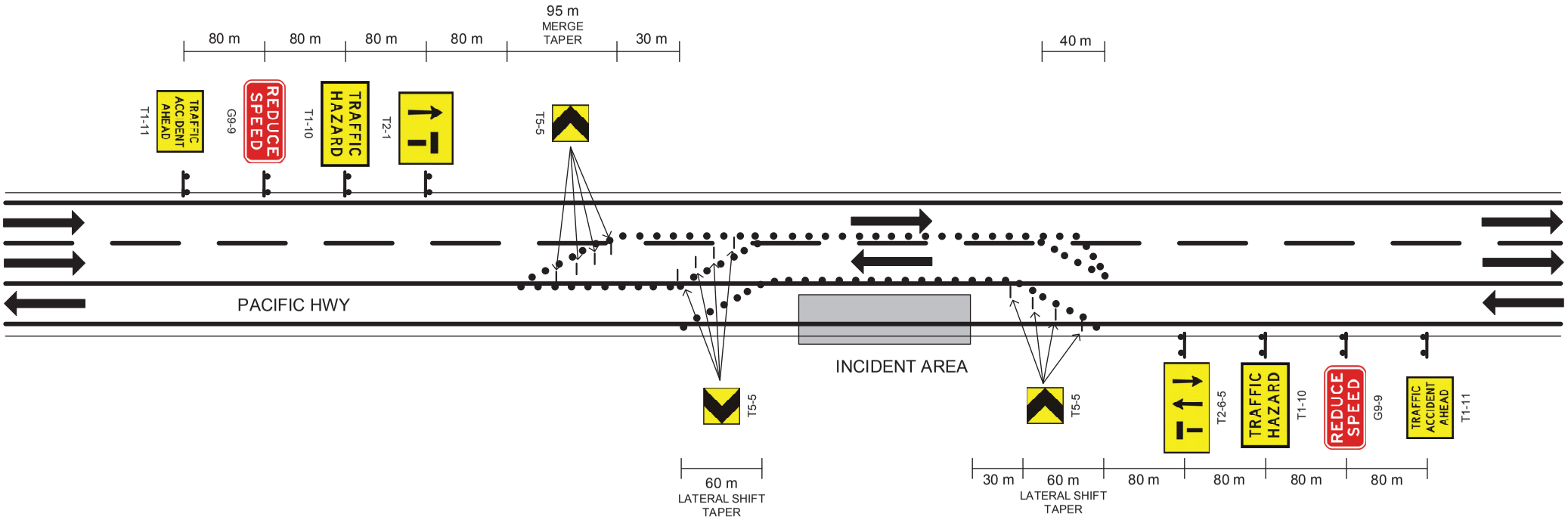
● - Traffic Cones

NOTE:

1. All signs Size B.
2. Cones to be 700 mm high and spaced at 9 m.
3. Traffic to be stopped for less than 5 minutes at a time in each direction
4. If a queue manager is deemed necessary, the queue manager is to be located within the 60 kph speed zone. The supervisor is to anticipate the extent of traffic queuing and position the queue manager appropriately. If queues temporarily exceed this location, the queue manger is to walk forward with the back of the queue to warn on coming motorists and return to their original position once the traffic has moved on.
5. Maximum queue lengths 500 m.

Ref – RTA TCP 440 Traffic Control at Work Sites v4.0

Abigroup PACIFIC HIGHWAY UPGRADE NAMBUCCA HEADS TO URUNGA	Date DD-MM-YY	Prepared: XXXX Signed: ..... Date: DD-MM-YY Certificate No: XXXX	Authorized: XXXX Signed: ..... Date: DD-MM-YY Certificate No: XXXX	Drawing Description INCIDENT RESPONSE ON PACIFIC HIGHWAY 1 LANE CLOSED (2 LANE 2 WAY)	TCP No ABI – TCP – 022



● - Traffic Cones

NOTE:

1. All signs Size B.
2. Cones to be spaced at 9m.
3. Four (4) T5-5 signs to be used in tapers.

Ref – RTA TCP 826 Traffic Control at Work Sites v4.0

Abigroup PACIFIC HIGHWAY UPGRADE NAMBUCCA HEADS TO URUNGA	Date DD-MM-YY	Prepared: XXXX Signed: ..... Date: DD-MM-YY Certificate No: XXXX Authorized: XXXX Signed: ..... Date: DD-MM-YY Certificate No: XXXX	Drawing Description INCIDENT RESPONSE ON PACIFIC HIGHWAY 1 LANE CLOSED (3 LANE 2 WAY)	TCP No ABI – TCP – 023

Appendix F

Traffic Management Procedures

Refer to RTA's Traffic Control at Worksites Manual

RTA Traffic Control at Worksites Manual

The RTA's Traffic Control at Worksites Manual (2010) can be found on Roads and Maritime website at the following link:

http://www.rta.nsw.gov.au/doingbusinesswithus/downloads/technicalmanuals/tcwsversion4/tcwsv4i2.pdf

Attached for ease of reference are the relevant checklists and forms which are required to be completed.

TRAFFIC CONTROL AT WORK SITES SAFETY INSPECTION CHECKLIST			
Date:		Time:	
Inspector:		Design & Inspect TCPs Cert No	
RTA Office/Contractor:		Site Supervisor.	
TCP Number:		TCP Modified:	Y/N
Road/Bridge Name:		Location:	
Type of work:			
Duration of work:	days	Time/s of work:	
Road configuration:			
Rate in the following manner: ✓ Acceptable	X Not Acceptable	N/A Not Applicable	

Guidance Notes:

1. Detailed Inspections using this checklist shall only be undertaken by personnel holding a current Design and Inspect Traffic Control Plans certificate.
2. Report to the Site Office or most senior person and attend site induction or be escorted.
3. Desk-top "Audit". Review paperwork and discuss site conditions, to complete Column 1. Check items against TCP and associated documents.
4. Site Inspection. Conduct site verification inspection, discussing issues with random site workers/ operators, to complete Column 2 – what you see on site.
5. Complete your report on site, where possible.
6. If you able to make a copy of the report on site, leave a copy with the supervisors.
7. Forward an additional copy to the engineer.
8. For contractor sites, forward an electronic copy to Manager Contractor Safety, RTA OHS Branch.

No	Conditions	TCWS Section	Rating	
			1	2
1	TCP			
1.1	Does the work require a:- A TMP ? A TCP ? A VMP ? (See 12 below.) A PMP ?	G10		
1.2	Are all required plans approved ?	4.3		
1.3	Is the approved TCP on site ?	4.4.1/.2		
1.4	Have signs and devices been set out as in the TCP ?	4.4.1/.2		
1.5	If modifications have been made are they approved and marked on the TCP ?	4.5		
1.6	Has a TCWS Appendix D Risk Assessment (RA) been done and been attached to the TCP ?	App D		
1.7	Does the RA cover the risks associated with the work site ?			
1.8	Does the RA cover current risks; including 'out of hours' work ?			
1.9	Is the TCP relevant for the works in progress ?	4.4.2		
1.10	Has a Road Occupancy Licence been issued and is it being complied with ?	G11		
1.11	Are the requirements implemented for safe clearances to workers and pedestrians and traffic approach speeds ?	3.6 9.3		
1.12	Other			

COMMENTS ITEM 1

2	Roadwork Speed Zones (RSZ)		Rating	
			1	2
2.1	Has the RSZ zone been authorised ?	8.2.6		
2.2	Is a copy of the SZA form held on site ?	8.2.6		
2.2	Has the SZA form been sent to local Police ?	8.2.6(a)		
2.3	Are records being kept of the times of RSZ installation ?	8.2.7		
2.4	Where a RSZ is in place, is the limit appropriate for the works being undertaken ?	8.2.3		
2.5	Is the speed limit/s operating within the approved times ?	8.2.6		
2.5	Is the length of the speed zone as per TCWS ?	8.2.4(b)		
2.6	Are Advanced Speed Warning Signs used appropriately ?	8.2.5(a)		
2.7	Are Speed signs duplicated at the start of the speed zone ?	8.2.5(a)		
2.8	Are speed signs the correct size ?	8.2.5(b)		
2.9	Are all signs installed at the correct spacing ?	8.2.5(a)		
2.10	Are all signs installed at the correct height ?	8.2.5(c)		
2.11	Have conflicting speed zone signs and pavement markings been covered/removed ?	8.2.5(e)		
2.12	Are repeater signs installed if required ?	8.2.5(a)		
2.13	Are "ENFORCED" signs required and installed ?	8.2.5(f)		
2.14	At the end of the work, has the pre-existing speed limit been reinstated ?	8.2		
2.15	Are signs covered adequately when not in use ?	3.4.1;8.2		
2.16	Other			

COMMENTS ITEM 2

3	Record keeping		Rating	
			1	2
3.1	Are records being kept for roadwork speed zones?	8.2.6		
3.2	Are records kept as required in Appendix E?	6.1		
3.2.1	By the Works Supervisor?	6.1.1		
3.2.2	By the Team Leader?	6.1.2		
3.3	RA is available on site and being kept with TCP?	App D		
3.4	Where PTS are used, is the form *Record of Approval and Use* completed and retained?	T 10.7		
3.5	Other			
COMMENTS ITEM 3				

4	Traffic Controllers (TCs)		Rating	
			1	2
4.1	Are Traffic Controllers (TCs) being used ? (Night work - 4.13)	8.1		
4.2	Are the correct number of TCs being used ?	8.1.3		
4.3	Have TC Certificates been sighted and the No's recorded ?	G10		
4.4	Is TCs high visibility clothing in good repair ?	8.1.1(a)		
4.5	Are all TCs displaying the Road Authority's logo and *Authorised Traffic Controller* ?	8.1.1(c)		
4.6	Is the traffic speed restricted to a max of 60 km/h ?	8.1.1(d)		
4.7	Is the sight distance to approaching traffic 1.5D or greater?	8.1.1(e)		
4.8	Do TCs have a clear escape route ?	8.1.4		
4.9	Has provision been made to prevent end of queue accidents ?	8.1.1(e)		
4.10	Are TCs able to communicate with each other (line of sight, two way radios, additional TCs) ?	8.1.1(f) 3.5.7		
4.11	Are the PREPARE TO STOP (T1-18) and Traffic Controller Ahead (T1-34, T1-200-2/3) signs correctly displayed ?	8.1.1(a); 8.1.4		
4.12	Are the above signs covered or removed when not required?	8.1.4		

4	Traffic Controllers (TCs) (continued)		Rating	
			1	2
4.13	Are they controlling traffic in accordance with *Instructions to Traffic Controllers*?	8.1.4		
4.14	If TCs are being used for night work:- a. are they wearing approved clothing ? b. are they safely lit and visible ? c. do they have correct communication ? d. are they using lighted wands ?	8.1.5		
4.15	Other			
COMMENTS ITEM 4				

5	Portable Traffic Signals (PTS)		Rating	
			1	2
5.1	Are PTS being used ?			
5.2	Are the PTS formally approved for use ? (This may be included on the TCP approval.)	4.4.3, 10.5		
5.3	Are the PTS being used marked as complying with RTA Specification PTS/3?	10.2		
5.4	Are the PTS correctly registered ?			
5.5	Is the approach speed of traffic reduced to 60 km/h or less?	10.7.2		
5.6	Is minimum sight distance of 150 metres provided ?	10.7.3		
5.7	Are the PTS been correctly sighted and established ?	10.7.1		
5.8	Has a Holding Line been marked on the roadway ?	TCP43		
5.9	Are procedures in place to review the end-of-queue when PTS are operating?	3.5.7		
5.10	Have all signs associated with PTS been erected correctly ?	TCP43		
5.11	Other			
COMMENTS ITEM 5				

6	Flashing Arrow Sign (FAS)		Rating	
			1	2
6.1	Is a FAS being used ?			
6.2	Is the FAS being used marked as complying with RTA either Specification FAS/4 or FAS/5 ?	11.2		
6.3	Is it located correctly ?	11.4.4		
6.4	Is it the correct size sign ?	3.2.10; 11.4.1		
6.5	Is the correct Mode of Operation being used ?	Table 11.1		
6.6	If Lane Status signs (T2-6 series) are being used in conjunction with FAS, is the message to the motorist the same ?			
6.7	Other			

COMMENTS ITEM 6

7	Variable Message Sign (VMS)		Rating	
			1	2
7.1	Is a variable message sign being used, as specified in TCWS ?	3.2.8		
7.2	Is the message related to the road or bridge works ?	3.2.8		
7.3	Are there less than 4 words per screen and no more than 2 screens on display ?	3.2.8		
7.4	Is the sign located in a safe position ?			
7.5	Is the VMS fitted with flashing blue and red lights ? If yes have them switched off/removed.			
7.6	Other			

COMMENTS ITEM 7

7	Safety Barriers		Rating	
			1	2
8.1	Are safety barriers installed correctly ?	9.6		
8.2	Have the correct barriers been installed ?	9.6 & 3.3.7		
8.3	Where barrier sections are used as Safety Barriers, are they in compliance with AS3845 ?	9.6		
8.4	Where non rigid barrier systems are used as safety barriers, is work behind the barrier prohibited from the deflection zone ?	9.6.5		
8.5	Are water filled safety barrier elements full of water ?			
8.6	Is the safety barrier erected as designed (incorporating end protection) ?	9.6.1		
8.7	Has the approach speed of traffic been reduced to the barrier design rating ?			
8.8	Other			

COMMENTS ITEM 8

9	Signs and Devices		Rating	
			1	2
9.1	Are all signs and devices in good condition ?	4.4.1		
9.2	Are the signs clearly visible and not affected by other signs, plant items, vegetation, shade, light glare etc ?	3.1.1		
9.3	Are sign faces in compliance with AS1742.3 and have Class 1 retroreflective material ?	3.2.1		
9.4	Are the correct sign sizes being used ?	3.2.2		
9.5	Are signs duplicated, where required ?	3.2.4		
9.6	Are signs erected at the correct height and position ?	3.2.8		
9.7	Are the signs erected to give the correct sight distance ?	3.2.8		
9.8	Are signs displayed on frangible mounts ?	3.2.7		
9.9	Are barrier boards sighted at right angles to the flow of traffic ?	3.3.1		

9	Signs and Devices (contined)		Rating	
			1	2
9.10	Are there any contradictory or superfluous signs, devices or markings?	4.3.2		
9.11	Have the needs of pedestrians been provided for ?	9.3		
9.12	Have the needs of cyclists been provided for ?	9.4		
9.13	Are all property accesses to the site controlled ?	9.7		
9.14	Are all cones and bollards installed at the correct spacing ?	5.2.2		
9.15	Are the correct sized cones and bollards being used ?	3.3.3		
9.16	Where tapers are used, have they been identified as *lateral shift* or *merge* tapers and are they the correct length ?	5.2 Table 5.2		
9.17	Where there are 3 lanes of traffic or more in one direction and two lanes are closed, are the separate merge tapers of the correct length ?	5.2.9		
9.18	Are the 2 tapers separated by at least 1.5 D ?	5.2.9		
9.19	Where work is beyond a crest or curve, has the taper been set up before the crest or curve ?			
9.20	Where temporary pavement marking and markers are used, do they comply with the requirements of TCWS Manual ?	3.3.6		
9.21	Other			

COMMENTS ITEM 9

10	End-of Queue		Rating	
			1	2
10.1	Has the potential for end of queue accidents been considered and appropriate action taken ?	3.5.7(a)		
10.2	Has an assessment of expected queue length been undertaken/documented ?	3.5.7(b)		
10.3	Has protection been provided where the end-of-queue is likely to be within D of the first downstream PTS sign ?	3.5.7(c)		
10.4	Is a sight distance between approaching motorists and the end-of-queue, being maintained at greater than 2D (open road areas) and 1.5D (built up areas) ?	3.5.7(c)		
10.5	Where the first PTS sign is more than 4D from the control point, are *repeater signs* placed at intervals of not more than 4D ?	3.5.7(c)		
10.6	Is the traffic queue monitored at all times during the course of the work ?	3.5.7(b)		
10.7	Other.			
COMMENTS ITEM 10				

11	Workers on foot near plant		Rating	
			1	2
11.1	Have workers working within 3 metres of plant been trained/briefed/tool-boxed on requirements of TCWS and RTA TIP Sheet ?	9.23		
11.2	Where workers are working close to revolving plant, are satisfactory risk controls in place ?	9.23		
11.3	Has a VMP been developed where the conditions listed in TCWS occur on site ?	9.23.1		
11.4	Are spotters being used near reversing plant or delivery vehicles ?	9.23		
11.5	Other			
COMMENTS ITEM 11				

12	Works Traffic (VMPs)		Rating	
			1	2
12.1	Have acceleration and deceleration lanes been provided ?	7.2		
12.2	Are U turns being undertaken safely ?	7.3		
12.3	Are reversing movements being undertaken safely ?	7.3		
12.4	Are signs provided for stock pile sites etc ?	7.7		
12.5	Are median crossovers being used correctly ?	7.8		
12.6	Has a VMP been approved and provided ? Written VMP shall be prepared in 100km/h zones.	7.5;7.6 9.23.1		
12.7	Does the person authorising the VMP have traffic control qualifications ? If so, what qualifications ?			
12.8	Have access and egress to the site been safely provided ?	7.2		
12.9	Are delivery vehicles required to report to a designated location/person ? Is it happening on site ?	9.23		
12.10	Other			

COMMENTS ITEM 12

13	Miscellaneous		Rating	
			1	2
13.1	For intermittent work are all requirements met ?	9.1.2		
13.2	Where a spotter is used, are all requirements being met ?	9.1.2		
13.3	For mobile work are all requirements being met ?	9.17		
13.4	If the work is conducted at night are all requirements being met ?	9.2		
13.5	Where travelling plant or vehicles travel slower than 20 km/h below the normal road speed limit, do they comply with the requirements of TCWS ?	9.1.3, 9.1.10		
13.6	Other			

COMMENTS ITEM 13

ADDITIONAL COMMENTS

Signed (Inspector).....

DAILY CHECKLIST – TRAFFIC CONTROL AT SHORT TERM WORK SITES

SITE SUPERVISOR:_____ **DATE:**_____

REPORTING OFFICE/COMPANY:_____

SITE:	**1**		**2**		**3**		**4**	
TCP No:								
INSPECTION:	Pre–Start	Pre–Close	Pre–Start	Pre–Close	Pre–Close	Pre–Start	Pre–Close	Pre–Start
TIME: (24 hrs)								
All signs used during the work are to be recorded below, using the following codes: Y – signs and devices are in place during pre–start check and between shifts. N – signs and devices are no longer required at pre–close down check. X – signs and devices are damaged, vandalised or missing.								
Signs and devices:								
Traffic Signals – time operational	To		To		To		To	
Appr No								
Temp Speed – time operational	To		To		To		To	
Appr No								
Speed (km/h)								
Supervisor's Initials:								

SITE 1

SITE 2

SITE 3

SITE 4

WEEKLY CHECKLIST – TRAFFIC CONTROL AT LONG TERM WORK SITES

NATURE OF WORK_____ **TCP No**_____

LOCATION_____

REPORTING OFFICE/COMPANY_____

DATE								
INSPECTION	Pre–Start	Pre–Close	Pre–Start	Pre–Close	Pre–Close	Pre–Start	Pre–Close	Pre–Start
TIME: (24 hrs)								
All signs used during the work are to be recorded below, using the following codes: ***Y – signs and devices are in place during pre–start check and between shifts.*** ***N – signs and devices are no longer required at pre–close down check.*** ***X – signs and devices are damaged, vandalised or missing.***								
Signs and devices								
Traffic Signals – time operational	To		To		To		To	
Appr No								
Temp Speed – time operational	To		To		To		To	
Appr No								
Speed (km/h)								
Supervisor's Initials:								

COMMENTS:

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Appendix G

Traffic Control Risk Management

The attached preliminary risk assessment is to be considered in the detailed site-specific SWMS prepared in consultation with the traffic control workforce.

ITEM	POTENTIAL HAZARDS (What may cause an injury/illness to occur)	RISK RANKING High-Med-Low	HAZARD CONTROLS (What controls can be put in place to prevent an injury/illness) NB Controls must not raise or create an increased risk	WHO WILL ENSURE THIS IS DONE
1	• Incorrect signage causing confusion to motorists and construction vehicle drivers, • Incorrect spacing of signs or stopping point with a potential to cause a motorist to brake heavily or the roadwork's catching drivers by surprise	2/M 2/M	1. Use TCWS standard TCPs where possible 2. Minor modifications, as per TCWS, may be made by a 'RED' card qualified person 3. TCP can only be developed/drawn up by an 'ORANGE' card qualified person (Design & Inspect TCPs) 4. Developed TCPs must have the HOLD POINT released by Roads and Maritime and be implemented at the worksite before any work commences,	Traffic Control Engineer
2	• Vehicle collision • Traffic Controller or worker hit by traffic during site set-up	1/H 1/H	1. Plant, equipment and work activity cannot establish onto site nor commence until such time as the Traffic Control set-up is completed 2. Traffic Controllers to plan their set up in accordance with industry practice, using such devices as the light board and flashing lights to warn approaching traffic of a potential hazard, as well as starting at the approach to the worksite and then proceeding through and past the worksite 3. Set-up and work must comply with the dates and times specified in the ROL.	Engineer, Foreman, Traffic Controllers
3	• Exposure to local road or highway traffic • Incorrect location of signs, road furniture • Vehicle, pedestrian or workers collision	1/H 2/M 1/H	1. Sign markings to be set out as per TCP, 2. Vehicle driver to remain in the vehicle, only the passenger may dismount from the passenger side only and mark the road edge 3. Vehicle driver to ensure vehicle is placed to protect the worker ahead, maintaining a distance of at least 5m behind the worker while they are marking 4. High visibility clothing, vehicle used with flashing light to warn traffic, signs to be marked for placement well clear of the carriageway 5. Depending on the nature of the area, it may be prudent to deploy Traffic Controller/s to slow traffic through an area while marking. 6. Ensure escape routes are available at all times, constantly check and employ a 'what if' attitude at all times while close to a carriageway or road.	Engineer, Foreman, Traffic Controllers
4	• Worker or Traffic Controller hit by traffic. • Signs being blown into oncoming traffic • Traffic 'rear-ender' collisions • Driver complacency when a worksite is unmanned but signs are still deployed	1/H 1/H 2/M 2/M	1. Sign set out as per TCP before establishing plant, equipment and personnel into the work area, 2. Ensure signs are set up clear of roadway and are properly secured to remain in position during winds, rain, or passing traffic, 3. Monitor oncoming traffic queuing distances and release traffic if que exceeds allowed limits in accordance with ROL, 4. Signs must be covered when leaving the work area during or at the end	Engineer, Supervisor, Traffic Controllers

ITEM	POTENTIAL HAZARDS (What may cause an injury/illness to occur)	RISK RANKING High-Med-Low	HAZARD CONTROLS (What controls can be put in place to prevent an injury/illness) NB Controls must not raise or create an increased risk	WHO WILL ENSURE THIS IS DONE
	• Workers hit by traffic • Manual handling injuries from lifting and placing signs and sandbags,	1/H 1/H	of the shift 5. Nobody may enter an uncontrolled road or Highway or cross the Highway, unless it is properly controlled under Traffic Control conditions. 6. Traffic Control equipment and crew is to be sufficient to effect the requirements of the ROL, TCP and otherwise satisfy the requirements of the work 7. Use work vehicle as physical barrier between oncoming traffic when establishing signage etc. 8. Reference PMP & VMP. 9. Always walk with eyes pointing at oncoming traffic (avoid pointing back to oncoming traffic). 10. Deploy signs starting from furthest point from work site	
5	• Exposure to traffic, • Struck by vehicles, • Covers on signs blowing off and signs being exposed. • Signs being moved by others. Traffic in work zone.	1/H 1/H 2/M 2/M	1. Signs must be closed off from the furthest end of signage and work towards traffic, 2. Always have visual contact with traffic, 3. Signs to be covered so that they do not open due to wind 4. Traffic Control Crew is to be vigilant and regularly check signage, 5. Supervisor must conduct a regular, recorded Inspection. 6. PMP & VMP	Engineer, supervisor, Traffic Controllers
6	• Drivers and workers less sensitive / unable to detect potential hazards when approaching or passing work zone. • Workers less visible at night • Traffic Controllers deployed on or near a local road or Highway	1/H 1/H 1/H	1. Task Lighting provided by day-maker(s) and allow more time for traffic to respond to control measures being enforced 2. Reflective tape and reflectors such as Chevron Boards are to be used during night works. 3. Workers inside the delineated work area to wear High-visibility clothing with reflective strip as a minimum 4. Traffic Controllers and workers deployed on or otherwise exposed to traffic must wear White Overalls with Reflective Strip (Roads and Maritime approved) 5. Traffic Controllers must not turn their backs to traffic and to have access to an escape route at all times 6. Ensure there is adequate room inside the site so tail of vehicles does not protrude from the gate into live traffic at any time 7. PMP & VMP	Engineer, Supervisor, Traffic Controllers
7	• Blocking local roads or Highway	2/M 2/M	1. Check TCP and VMP access to site, use traffic control where necessary. 2. Ensure there is sufficient space inside the work zone to allow vehicles	Engineer, Foreman

ITEM	POTENTIAL HAZARDS (What may cause an injury/illness to occur)	RISK RANKING High-Med-Low	HAZARD CONTROLS (What controls can be put in place to prevent an injury/illness) NB Controls must not raise or create an increased risk	WHO WILL ENSURE THIS IS DONE
	• Damaging road signs and guide posts • 'Bellying' out on mounds and dips in road.	2/M 2/M	and trucks to move well clear of the traffic 3. Check clearance around corners and bends, set up signage off to the side of access gates. 4. Check clearance at dips on local roads and mounds on site and only access site when suitable vehicle or truck for the conditions present	
8.	• Hitting / falling onto roadway • Hanging over / obstructing roadway & road users • Items and objects placed on Barriers • Motorists distracted by construction works i.e. gawk factor • Leaving signs open causing drivers to be complacent through work zones when no workers present • Traffic Controllers distracted by construction activity	1/H 1/H 2/M 1/H 2/M 2/M	1. Ensure adequate distance between machinery, equipment and workmen and the moving traffic lane 2. Worksite set up in accordance with the TCP 3. Workers not to wander outside work zone, must be paying attention to work, be aware of traffic control and movements of traffic at all times 4. Nobody may place anything on top of a Traffic Barrier at any time for any period of time. 5. Workers who are close to roadways must remain alert for straying vehicles. 6. Nobody may sit on or stand near Traffic Barriers 7. Personnel to maintain at least 1m clearance behind a Traffic Control Barrier, or lesser distance if it is allowed in the area Traffic Management Plan. 8. Traffic Controllers are to watch oncoming traffic and must not turn their back to watch the construction activity.	Supervisor, Traffic Controllers
9.	• Vehicle Collision • Person/Worker collision • Blind spots	1/H 1/H 2/M	1. Remove signs starting from worksite walking away from worksite 2. Ensure truck positioned between traffic controller and oncoming traffic.	Supervisor, Traffic Controllers
10.	• Pedestrians	1/H	1. Adequate pedestrian access must be maintained at all times to ensure pedestrians have safe passage past (or through) work areas and TCPs 2. Where this cannot be maintained, alternate pedestrian access must be established	Traffic Coordinator, Supervisor, Traffic Controllers