



West Culburra Subdivision Development
Transport and Accessibility Impact
Assessment

transportation planning, design and delivery

West Culburra Subdivision Development

Transport and Accessibility Impact Assessment

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Table of Contents

1. Introduction	1
1.1 Background	1
1.2 Purpose of this Report	2
1.3 References	2
2. Existing Conditions	4
2.1 Road Network	5
2.2 Traffic Volumes	6
2.3 Relevant Transport Studies	10
2.4 Public Transport	11
2.5 Pedestrian Infrastructure	12
2.6 Cycle Infrastructure	12
2.7 Crash Analysis	13
2.8 Intersection Operation	18
2.9 Performance of Rural Road Network	25
3. Development Proposal	26
3.1 Land Uses	26
3.2 Vehicle Access	29
3.3 Pedestrian and Bicycle Facilities	29
3.4 Parking	30
4. Vehicle Access	31
4.1 Introduction	31
4.2 Intersection Assessment and Concept Design	31
5. Sustainable Transport Infrastructure	33
5.1 Policy and Planning Guidelines	33
5.2 Bus Routes	35
5.3 Bus Stops	36
5.4 Walking and Cycling Network	37
5.5 Sustainable Transport Infrastructure Summary	42
6. Loading Facilities	44
7. Traffic Impact Assessment	45
7.1 Traffic Generation	45
7.2 Distribution and Assignment	47
7.3 Traffic Impact	59

7.4 Possible Traffic Impact In Culburra	63
8. Rural Road Assessment	64
8.1 Austroads Cross-Section Warrants	64
8.2 Existing Daily Traffic	67
8.3 Anticipated Daily Development Traffic	68
8.4 S94 Requirements	70
8.5 Warrants for Overtaking Lanes	71
8.6 Summary	73
9. Conclusion	74

Appendices

A: Survey Results	
B: RMS Crash Data	
C: Calculation of Traffic Growth Factors & Trip Generation Rates (Shoalhaven City Council)	
D: SIDRA INTERSECTION Results	
E: SIDRA INTERSECTION Layouts	
F: Preliminary Intersection Concept Design	
G: Bus Operator Correspondence	

Figures

Figure 2.1: Subject Site and Its Environs	5
Figure 2.2: Traffic Count and Travel Time Survey Locations	7
Figure 2.3: Existing AM / PM Peak Hour Traffic Volumes	8
Figure 2.4: Existing Saturday Peak Hour Traffic Volumes	9
Figure 2.5: Proposed Golf Course, Long Bow Point, Culburra	10
Figure 2.6: Public Bus Services	12
Figure 2.7: Prince Edward Avenue Existing Shared Path, Proposed and Possible Future Cycleways	13
Figure 2.8: Reported Crashes – Greenwell Point Rd/ Mayfield Rd intersection (July 2007 – June 2012)	15
Figure 2.9: Reported Crashes – Princes Highway/ Kalandar Street intersection (July 2007 – June 2012)	15
Figure 2.10: Reported Crashes – Princes Highway/ Moss Street intersection (July 2007 – June 2012)	16
Figure 2.11: Reported Crashes – Princes Highway/ Forest Road intersection (July 2007 – June 2012)	16

Figure 2.12:	Princes Highway at Forest Road (looking south)	17
Figure 2.13:	Princes Highway at Forest Road (looking north)	17
Figure 2.14:	Princes Highway/ Forest Road Intersection – Proposed Seagull Arrangement	17
Figure 2.15:	Existing Friday AM Peak Hour Traffic Volumes (May 2012), 120 th HH Growth Factor and Equivalent 120 th HH Traffic Volumes	21
Figure 2.16:	Existing Friday PM Peak Hour Traffic Volumes (May 2012), 120 th HH Growth Factor and Equivalent 120 th HH Traffic Volumes	22
Figure 2.17:	Existing Saturday Peak Hour Traffic Volumes (May 2012), 120 th HH Growth Factor and Equivalent 120 th HH Traffic Volumes	23
Figure 3.1:	West Culburra Subdivision - Proposed Stages	26
Figure 3.2:	Indicative Subdivision Concept Layout	28
Figure 3.3:	Proposed Collector Road and Access Locations	29
Figure 3.4:	Proposed Cycleways	30
Figure 4.1:	Eastern Access Preliminary Concept Layout	31
Figure 5.1:	Potential bus stop locations and indicative 400 metre walking catchment	37
Figure 5.2:	Street Patterns and Accessibility	38
Figure 5.3:	Appropriate cycling facilities based on vehicle speeds and volumes	40
Figure 5.4:	Methods of Separation	40
Figure 5.5:	Four Types of Cyclists	41
Figure 7.1:	Bureau of Transport Statistics Travel Zone	48
Figure 7.2:	2006 Census Journey to Work Destinations	49
Figure 7.3:	Directional Distribution Analysis – Road Network Entry/Exit Locations	50
Figure 7.4:	Directional Distribution – Friday AM Peak Hour	53
Figure 7.5:	Directional Distribution – Friday PM Peak Hour	54
Figure 7.6:	Directional Distribution – Saturday Peak Hour	55
Figure 7.7:	Weekday AM Equivalent 120 th Highest Hour Volumes plus Development Traffic	56
Figure 7.8:	Weekday PM Equivalent 120 th Highest Hour Volumes plus Development Traffic	57
Figure 7.9:	Saturday Equivalent 120 th Highest Hour Volumes plus Development Traffic	58
Figure 8.1:	Austroads Table 4.5: Single carriageway rural road widths (m)	64
Figure 8.2:	Existing AADT and Seasonal Traffic Volumes	67
Figure 8.3:	Anticipated Development Daily Traffic	69
Figure 8.4:	Anticipated Post Development Daily Traffic	70
Figure 8.5:	Existing Speed Limit and Road Section Lengths	72

Tables

Table 1.1:	DGR's and Relevant Report Sections	1
Table 2.1:	Princes Highway Projected Traffic Volumes (Princes Highway Upgrade REF, 2009)	11
Table 2.2:	Route 729 Bus Service Frequency	11
Table 2.3:	Reported Crash Summary (July 2007 – June 2012)	14
Table 2.4:	SIDRA INTERSECTION Level of Service Criteria	19
Table 2.5:	Growth Factors to be Applied to May 2012 Recorded Flows to Calculate 120 th HH Flows	20
Table 2.6:	Existing Operating Conditions (Equivalent 120 th Highest Annual Hour)	24
Table 3.1:	Indicative Development Schedule	27
Table 5.1:	Pros and Cons for Shared and Separated Paths	40
Table 5.2:	Non-regular cyclists preference for separation from vehicles	41
Table 5.3:	Separated Path Widths	42
Table 7.1:	Estimated Development Traffic Generation (RMS Rates)	45
Table 7.2:	Empirical Traffic Generation Rates (Shoalhaven City Council)	46
Table 7.3:	Estimated Development Traffic Generation (Shoalhaven City Council Empirical Traffic Generation Rates)	46
Table 7.4:	Existing Directional Distribution – Friday AM Peak Hour (May 2012 Traffic Counts)	50
Table 7.5:	Existing Directional Distribution – Friday PM Peak Hour (May 2012 Traffic Counts)	51
Table 7.6:	Existing Directional Distribution – Saturday Peak Hour (May 2012 Traffic Counts) Development Traffic Distribution	51
Table 7.7:	Empirical Traffic Generation Rates and 120 th HH Directional Splits (Shoalhaven City Council)	51
Table 7.8:	Proposed Directional Distribution – Friday AM Peak Hour	52
Table 7.9:	Proposed Directional Distribution – Friday PM Peak Hour	52
Table 7.10:	Proposed Directional Distribution – Saturday Peak Hour	52
Table 7.11:	Future Operating Conditions (Equivalent 120 th HH plus Development Traffic)	60
Table 7.12:	Signalised Intersection Traffic Volume Comparison	61
Table 7.13:	Post-Development Intersection Operating Conditions – Three Arm Roundabout	62
Table 7.14:	Post-Development Intersection Operating Conditions – Four Arm Roundabout	62
Table 8.1:	Summary of Existing Rural Road Characteristics	65
Table 8.2:	Summary of Existing Rural Road Characteristics	66
Table 8.3:	Design AADT and Existing Daily Traffic	68

1. Introduction

1.1 Background

The West Culburra development involves a mixed use subdivision development over approximately 110 hectares (ha) on land bounded to the north by the Crookhaven River, Lake Woollumboola and the existing urban area of Culburra to the east, Jervis Bay National Park to the south and Coonamia Road to the west.

The proposed subdivision is comprised of six key stages, proposed to be undertaken in stages over a period of approximately 10 years. On completion, the West Culburra Development will include a mixture of medium density housing types, ranging from small lots for the 55+ aged group to multi-storey units. A Collector Road is proposed to provide access to the development from Culburra Road.

A major project application (no. 09–0088) was lodged with the NSW Department of Planning and Infrastructure in April 2010 seeking approval for the Concept Plan under Part 3A of the Environmental Planning and Assessment Act 1979.

GTA Consultants was commissioned by Reality Realizations Pty Ltd in May 2012 to undertake a transport and accessibility impact assessment for the proposed development and in particular to address Section 5 (Traffic and Access) of the Director-General's Environmental Assessment Requirements (DGR's) dated 27 May 2010 as follows. Table 1.1 lists the DGR's and the corresponding sections of the report where these are addressed.

Table 1.1: DGR's and Relevant Report Sections

Section 5 – Traffic and Access	Addressed in
5.1 Prepare a Transport and Accessibility Impact Study in accordance with Table 2.1 of the RMS's Guide to Traffic Generating Developments, having regard to the principles of the NSW Planning Guidelines for Walking and Cycling and the NSW State Plan (2010) to include:	-
a) Details and analysis of proposed access to the site.	Section 4
b) Network modelling using TRACKS.	Section 2.8 & 7
c) Appropriate arrangements for the provision of road and public transport infrastructure needed to service the site. Specifically in relation to the Nowra/Culburra bus service, inclusive of the feasibility of the proposed diversion of the existing service, early provision of the service and funding.	Section 5.2
e) An assessment based on the current speed zonings, with consideration of safe spacing of intersections within 100km/hr speed zones.	Section 4.2.1
f) An assessment of the impacts on the surrounding road network.	Section 7.3
5.2 Provide for a road network allows for (potential) future public access to the coastal foreshore.	Section 5.4
5.3 Demonstrate consistency of the proposal with the NSW Government's Integrating Land Use & Transport policy package.	Section 5

1.2 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposed development, including consideration of the following:

- i existing traffic conditions surrounding the site
- ii pedestrian and bicycle requirements
- iii the traffic generating characteristics of the proposed development
- iv suitability of the proposed access arrangements for the site
- v the transport impact of the development proposal on the surrounding road network.

1.3 References

In preparing this report, reference has been made to the following:

- an inspection of the site and its surrounds
- Austroads Guide to Road Design, Part 4B: Roundabouts (second edition), 2011
- Austroads Part 6A: Pedestrian and Cyclist Paths, 2009
- Comments from Scott Wells (Traffic and Transport Unit, Shoalhaven City Council) on Long Bow Point Golf Course Traffic and Parking Assessment, dated 31 May 2012
- Environmetrics, 2006, Sydney Cycling Research: Internet Survey. For the City of Sydney
- Integrating Land Use and Transport, NSW Department of Urban Affairs and Planning, 2001
- NSW Bicycle Guidelines, Roads and Maritime Services, 2005
- NSW 2021: A Plan to Make NSW Number One, 2011
- NSW 2021: A Plan to Make NSW Number One, Regional Action Plan: Illawarra Community Discussion Paper, 2011
- NSW Planning Guidelines for Walking and Cycling, Department of Infrastructure, Planning and Natural Resources, 2004
- NSW Speed Zoning Guidelines (RMS, 2011).
- Portland Bureau of Transportation (PBT), 2010, Four Types of Transportation Cyclists. Assessed at: <http://www.portlandonline.com/transportation/index.cfm?a=158497&c=44671>
- Shoalhaven City Council, Traffic and Transport Unit, Calculation of Traffic Growth Factors & Trip Generation Rates, correspondence dated 19 February 2013
- Shoalhaven City Council Subdivision Code (DCP 100), 2002
- Shoalhaven City Council Car Parking Code, Development Control Plan (DCP) 18, 1996.
- Shoalhaven City Council DCP No. 67, Culburra Expansion Area, 1996
- Shoalhaven Draft Local Environmental Plan (LEP) 2009
- Shoalhaven LEP 1985
- Shoalhaven Integrated Transport Strategy, 2000
- Traffic and Parking Assessment - Proposed 18 Hole Championship Golf Course, Long Bow Point, Culburra, prepared by Traffic Solutions Pty Ltd, March 2012
- traffic surveys undertaken by Skyhigh in May 2012 as referenced in the context of this report
- plans for the proposed development site constraints prepared by Allen, Price and Associates: Site Constraints, revision Po4, dated 25 July 2012

- plans for the proposed development site constraints prepared by John Toon Pty Ltd, plan no's 1 – 6, dated April 2010
- other documents and data as referenced in this report.

2. Existing Conditions

The subject site is located at Culburra, 180km south of Sydney and 20km east of Nowra.

The West Culburra subdivision development, as specified in the Part 3A submission, covers an area of approximately 110 ha. The land area is currently unoccupied and subject to the following land use classifications under Shoalhaven City Council Local Environmental Plan (LEP) 1985 (amendment no. 41):

- 2(c) – Residential 'C' (Living Area)
- 3(f) – Business 'F' (Village)
- 4(a) – Industrial 'A' (General).

Under Shoalhaven Draft LEP 2009, which was exhibited in July 2011, the land area is subject to the following land use classifications:

- R1 – General Residential
- IN1 – General Industrial
- B2 – Local Centre.

In addition to these, certain land areas within the development area are subject to a zoning of E2 – Environmental Conservation. The overall effect of the of Draft LEP 2009 was to confine the area allocated to residential development to the Crookhaven River catchment whilst maintaining the non-residential uses as proposed in LEP 1985.

The surrounding properties predominantly include residential and commercial uses to the east. The location of the subject site and its surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject Site and Its Environs

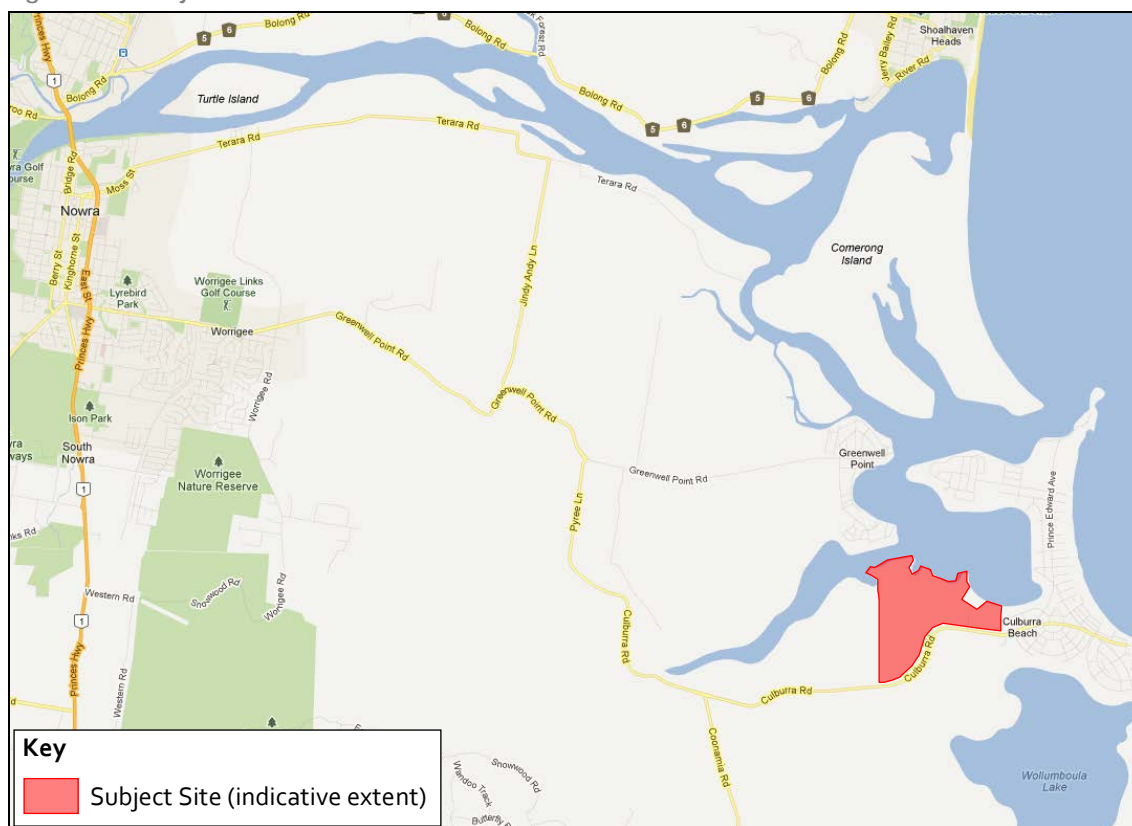


Image Source: Google Maps

2.1 Road Network

2.1.1 Adjoining Roads

Culburra Road

Culburra Road is a Regional Road (RR7632) generally aligned in an east-west direction and carries approximately 5,200 vehicles per day¹. It is a two-way, 7 metre wide road set within a 20 metre wide road reserve (approx.), configured with one lane in each direction. Culburra Road is the key link between Culburra and Nowra to the west and in the vicinity of the subject site is subject to a 100km/hr posted speed limit. North of Mayfield Road, the name of the road changes to Pyree Lane.

Pyree Lane

Pyree Lane is a Regional Road (RR7632) aligned in a north-south direction and carries approximately 5,200 vehicles per day¹. It is a two-way, 6 metre wide road set within an 11 metre wide road reserve (approx.), configured with one lane in each direction. Pyree Lane is the key link between Culburra and Nowra to the west and is subject to a 100km/hr posted speed limit. South of Mayfield Road, the name of the road changes to Culburra Road.

¹ Based on the peak hour traffic counts undertaken by Skyhigh in May 2012 and assuming a peak-to-daily ratio of 8% for arterial roads and 10% for local roads.

Coonamia Road

Coonamia Road is a Local Road to the west of the site and is aligned in a north-south direction. It is a two-way, 7 metre wide road set within a 20 metre wide road reserve (approx.), configured with one lane in each direction and carries approximately 2,600 vehicles per day¹. Coonamia Road is the sole link between Culburra and the coastal villages of Callala Bay, Callala Beach and Currarong to the south.

Greenwell Point Road/ Kalandar Street

Greenwell Point Road is a Regional Road (RR7632) aligned in an east-west direction. It is a two-way, 6 metre wide road set within a 13 metre wide road reserve (approx.), configured with one lane in each direction and carries approximately 6,000 vehicles per day¹. Greenwell Point Road provides the sole road access between Nowra and the coastal village of Greenwell Point. West of McKay Street in East Nowra, the name of the road changes to Kalandar Street.

Forest Road

Forest Road is a Local Road aligned in an east-west direction. It is a two-way, 7 metre wide road set within a 20 metre wide road reserve (approx.), configured with one lane in each direction and carries approximately 2,600 vehicles per day¹. Forest Road is the key link between the coastal villages of Callala and Currarong and the Princes Highway. Forest Road was recently upgraded as a flood free connection to the Princes Highway.

Princes Highway

The Princes Highway is a State Road (HW1) aligned in a north-south direction and is the key coastal route between Sydney and the Victorian border. Through Nowra, the Princes Highway is a two-way, 12.8 metre wide road set within a 22 metre wide road reserve (approx.), configured with two lanes in each direction and carries approximately 35,000 vehicles per day¹.

2.1.2 Surrounding Intersections

The following key intersections currently exist in the vicinity of the site:

- Culburra Road/ Coonamia Road (unsignalised)
- Pyree Lane/ Greenwell Point Road (unsignalised)
- Princes Highway/ Kalandar Street (signalised)
- Princes Highway/ Forest Road (unsignalised).

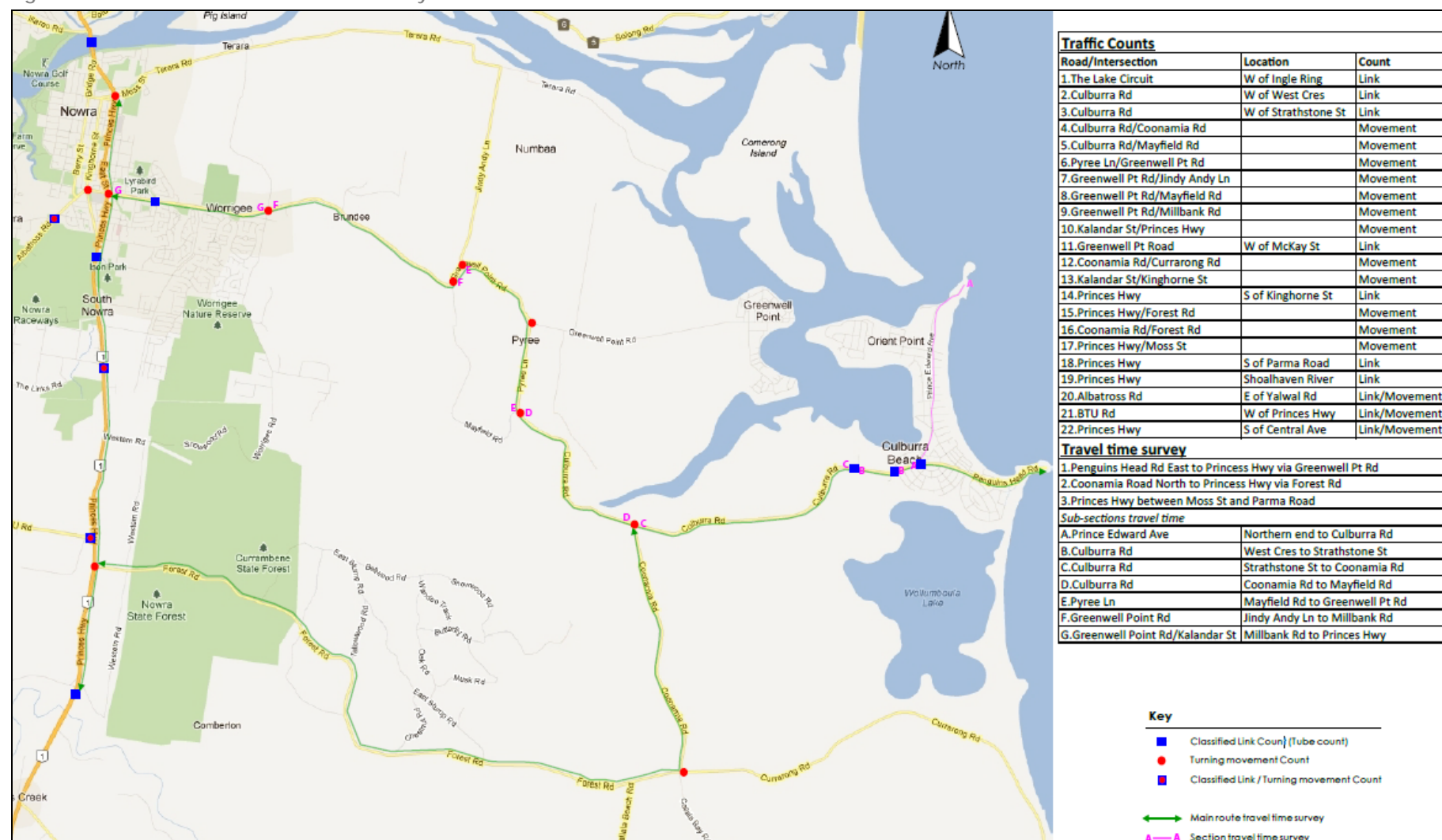
2.2 Traffic Volumes

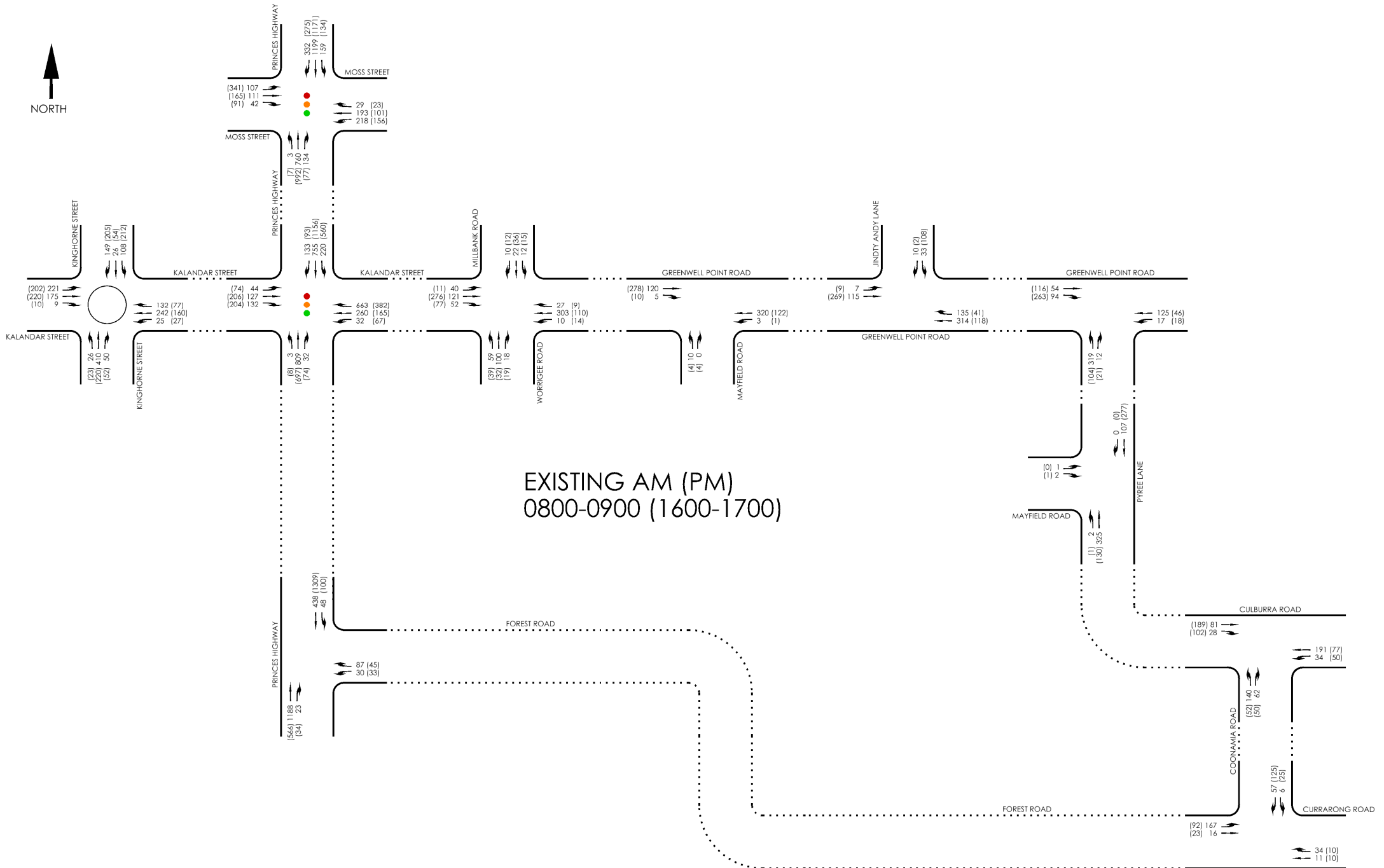
GTA Consultants commissioned traffic movement counts and travel time surveys on key intersections and roads surrounding the site as shown in Figure 2.2. The intersection traffic movement counts were undertaken by Skyhigh during the following peak periods:

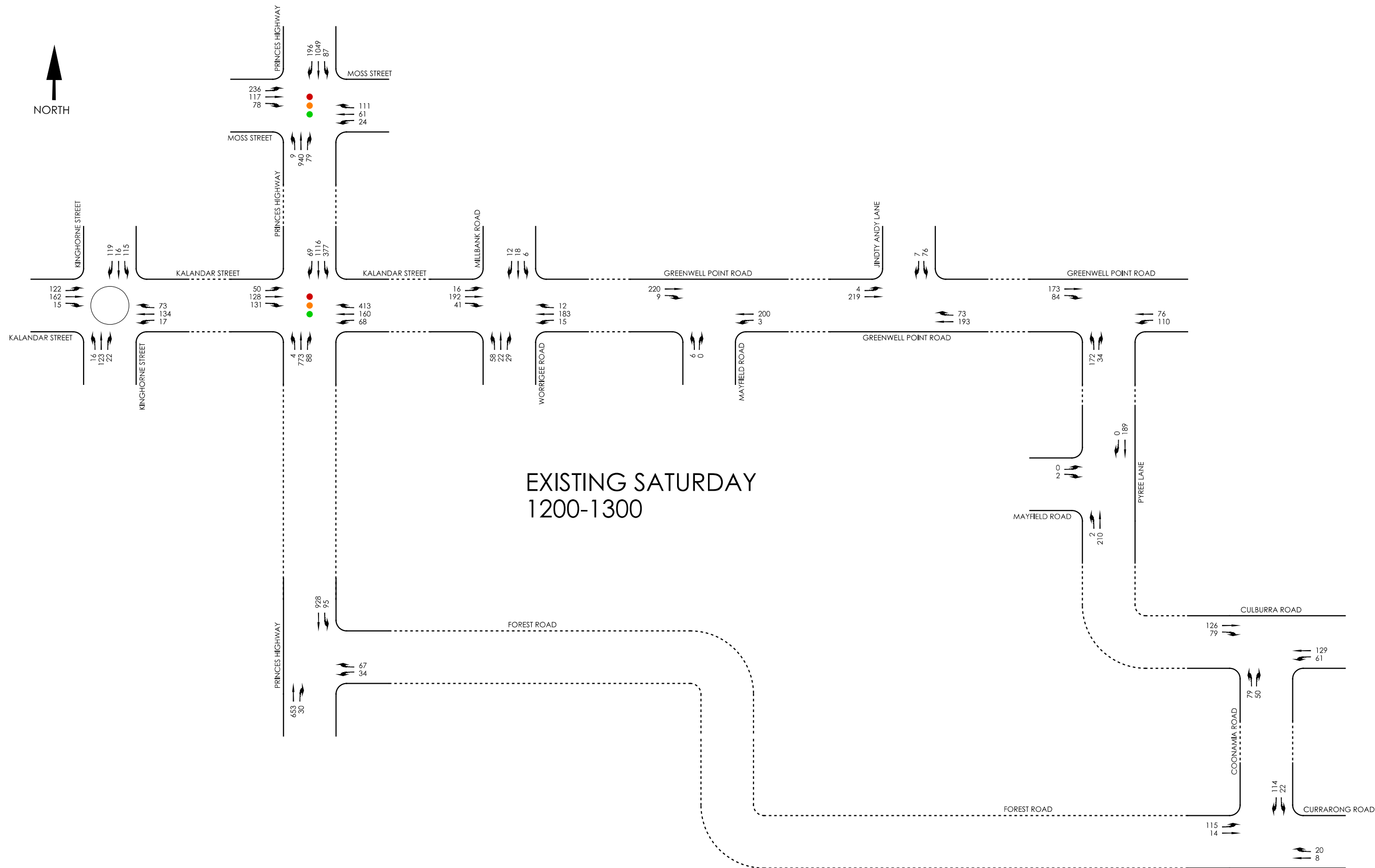
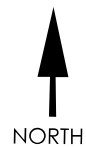
- Friday 04 May 2012: 7:00am to 9:00am and 4:00pm to 6:00pm
- Saturday 05 May 2012: 12:00pm to 2:00pm.

The existing weekday AM and PM peak hour traffic volumes are summarised in Figure 2.3 with Saturday peak hour traffic volumes summarised in Figure 2.4. Full results of the traffic movement counts are contained in Appendix A.

Figure 2.2: Traffic Count and Travel Time Survey Locations







SATURDAY

2.3 Relevant Transport Studies

2.3.1 Long Bow Point Golf Course, Traffic and Parking Assessment

A traffic and parking assessment was prepared by Traffic Solutions Pty Ltd in March 2012 to support a Development Application (DA) for a proposed 18 hole championship golf course at Long Bow Point, Culburra. The proposed golf course is located west of the established residential areas of Culburra on the southern side of Culburra Road as shown in Figure 2.5.

The report states that vehicle access to the golf course is proposed directly from Culburra Road via a new intersection approximately 1km west of Strathstone Street as shown in Figure 2.5.

Figure 2.5: Proposed Golf Course, Long Bow Point, Culburra

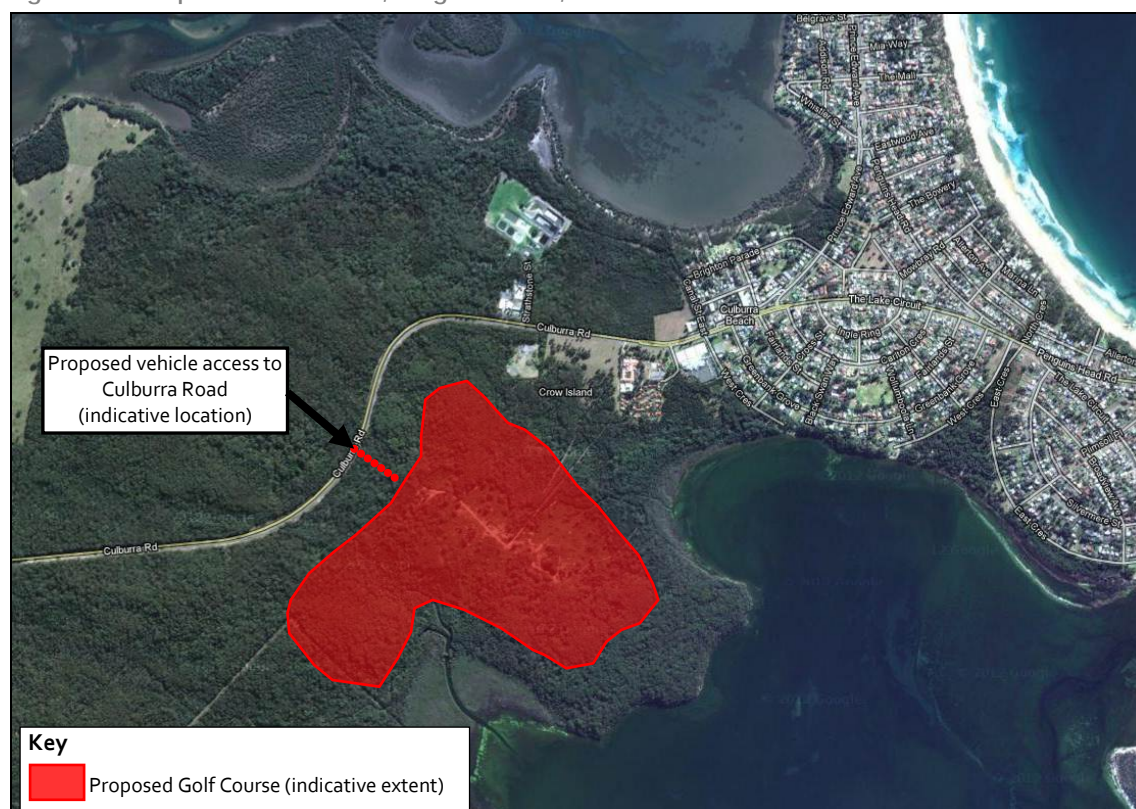


Image Source: Google Maps

Traffic generation estimates for the proposed golf course development were based on surveys undertaken on a Wednesday and Saturday at Nowra Golf Club. It was estimated that the proposed golf course would generate 33 and 53 vehicle movements (two-way) during the weekday AM and PM peak periods, and 66 vehicle movements (two-way) during a Saturday peak hour.

As GTA Consultants understands it, the DA (DA11/1728) for the development has been submitted to Shoalhaven City Council and is currently under review.

2.3.2 Princes Highway Upgrade REF

Construction works for the upgrade of a 6.3km section of the Princes Highway between Kinghorne Street and Forest Road, south of Nowra have commenced. Key features of the upgrade include:

- Duplication of the Princes Highway from two to four lanes
- Realignment of the Princes Highway between Warra Warra Road and Forest Road, west of the roads present alignment
- Reconstructing the Forest Road intersection to allow all turning movements
- Relocation of the BTU Road intersection approximately 400 metres north of its existing location
- New pedestrian and cycling facilities.

On completion the upgrade will provide consistent four lane conditions between Bomaderry and Jervis Bay Road (4.5km south of Forest Road).

The Review of Environmental Factors (REF) for the project was completed in November 2009 and estimated a 2.5% linear growth rate in traffic volumes on this section of the Princes Highway up to 2028. This growth rate was based on the recorded Annual Average Daily Traffic (AADT) counts taken on the Princes Highway (station number 07.707) over a five year period; 25,636 in 2003 to 27,888 in 2008. The REF projected traffic volumes are summarised in Table 2.1.

Table 2.1: Princes Highway Projected Traffic Volumes (Princes Highway Upgrade REF, 2009)

Year	Annual Average Daily Traffic (AADT)
2012	29,511
2018	33,688
2022	34,919
2028	39,250

2.4 Public Transport

Culburra is served by one public bus service, route 729, which operates between Bomaderry Railway Station, Nowra, Orient Point and Culburra Beach via Greenwell Point Road, Pyree Lane and Culburra Road as shown in Figure 2.6. This service is operated by Kennedy's Bus and Coach with the weekday frequency summarised in Table 2.2. The nearest bus stops to the proposed development are located on Prince Edward Avenue in the vicinity of Culburra shops, east of the site.

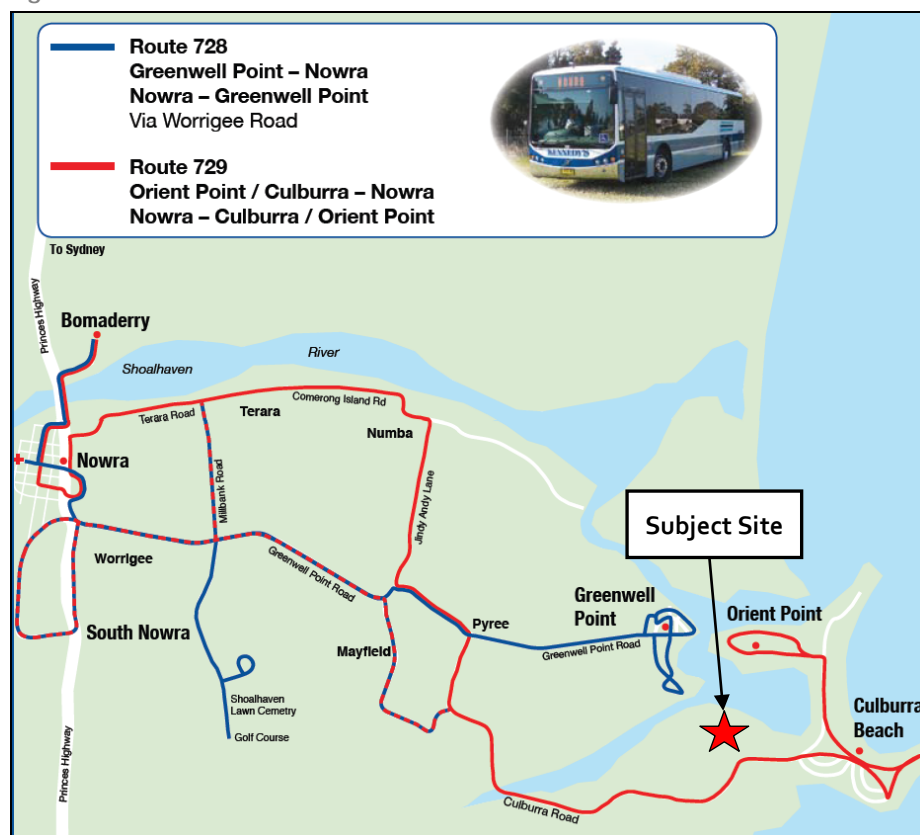
Table 2.2: Route 729 Bus Service Frequency

Direction	No. of AM Weekday Services	No. of PM Weekday Services
Culburra to Nowra	3	2
Nowra to Culburra	2	3

It is noted that this service does not operate on weekends or public holidays.

Kennedy's Bus and Coach also provide school bus services to Culburra and Orient Point.

Figure 2.6: Public Bus Services



Source: Kennedy's Bus and Coach website: www.kennedystours.com.au/ (accessed 06 September 2012)

2.5 Pedestrian Infrastructure

There is no pedestrian infrastructure in the immediate vicinity of the subject site. The nearest dedicated pedestrian infrastructure is located in the established residential areas of Culburra to the east of the proposed development. The footpath network within the urban area of Culburra is limited with many streets having wide verges in lieu of paved footpaths.

2.6 Cycle Infrastructure

The nearest dedicated cycle infrastructure to the site is a 2.5 metre wide shared path adjacent to Prince Edward Avenue between The Lake Circuit and Penguins Head Road as shown in Figure 2.7. Further discussion on cycling infrastructure is contained in Section 3 and Section 5.

Figure 2.7: Prince Edward Avenue Existing Shared Path, Proposed and Possible Future Cycleways



Source of Base Plan: Bicycle Information NSW website www.bicycleinfo.nsw.gov.au/maps/ (accessed 06 September 2012)

2.7 Crash Analysis

GTA Consultants obtained vehicle crash data from RMS for the following eleven key intersections between Culburra and Nowra for the five year period to June 2012:

- i Culburra Road/ Coonamia Road
- ii Culburra Road/ Mayfield Road
- iii Greenwell Point Road/ Pyree Lane
- iv Greenwell Point Road/ Jindy Andy Lane
- v Greenwell Point Road/ Mayfield Road
- vi Greenwell Point Road/ Millbank Road/ Worrigee Road
- vii Princes Highway/ Kalandar Street
- viii Coonamia Road/ Currarong Road/ Forest Road

- ix Kalandar Street/ Kinghorne Street/ Albatross Road
- x Princes Highway/ Forest Road
- xi Princes Highway/ Moss Street.

The accident history within 100m of the approaches to the above intersections were analysed to determine whether there any accident clusters or safety issues at these locations. The results of the crash analysis are presented below and full details are contained in Appendix B.

Table 2.3: Reported Crash Summary (July 2007 – June 2012)

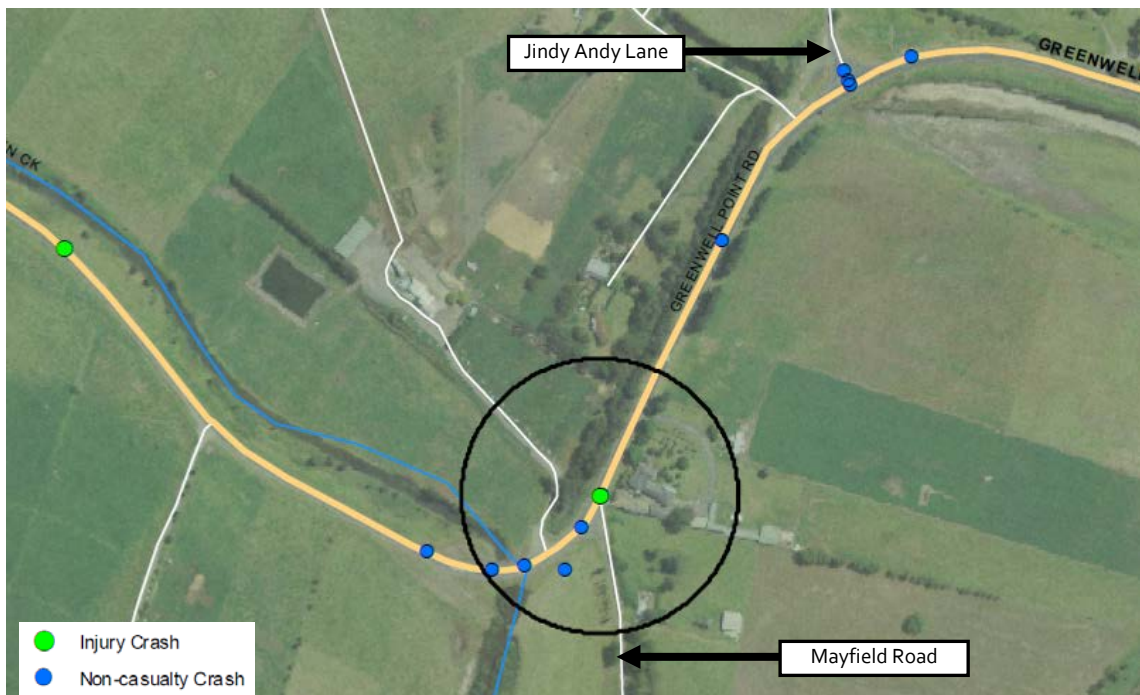
Intersection	No. of Crashes (within 100m of intersection)
Culburra Road/ Coonamia Road	2 (resulting in 3 people injured)
Culburra Road/ Mayfield Road	2 (resulting in 1 person injured)
Greenwell Point Road/ Pyree Lane	2 (resulting in 2 people injured)
Greenwell Point Road/ Jindy Andy Lane	5 (resulting in no injuries)
Greenwell Point Road/ Mayfield Road	8 (resulting in 1 person injured)
Greenwell Point Road/ Millbank Road/ Worrigea Road	4 (resulting in 4 people injured)
Princes Highway/ Kalandar Street	18 (11 injury crashes resulting in 13 people injured)
Coonamia Road/ Currarong Road/ Forest Road (includes Forest Road/ Callala Bay Road intersection)	4 (1 injury crash resulting in 1 person injured)
Kalandar Street/ Kinghorne Street	4 (3 injury crashes resulting in 3 people injured)
Princes Highway/ Forest Road	18 (12 injury crashes resulting in 22 people injured)
Princes Highway/ Moss Street	29 (13 injury crashes resulting in 14 people injured)

As shown in Table 2.3 the more notable accident clusters occurred at the following intersections:

- Greenwell Point Road/ Mayfield Road
- Princes Highway/ Kalandar Street
- Princes Highway/ Moss Street
- Princes Highway/ Forest Road.

The location of crashes in the vicinity of these intersections is shown graphically in Figure 2.8 to Figure 2.11.

Figure 2.8: Reported Crashes – Greenwell Point Rd/ Mayfield Rd intersection (July 2007 – June 2012)



Source: RMS

Figure 2.9: Reported Crashes – Princes Highway/ Kalandar Street intersection (July 2007 – June 2012)



Source: RMS

Figure 2.10: Reported Crashes – Princes Highway/ Moss Street intersection (July 2007 – June 2012)



Source: RMS

Figure 2.11: Reported Crashes – Princes Highway/ Forest Road intersection (July 2007 – June 2012)



Source: RMS

The Princes Highway/ Forest Road intersection is currently a painted seagull arrangement as shown in Figure 2.12 and Figure 2.13.

Figure 2.12: Princes Highway at Forest Road (looking south)



Figure 2.13: Princes Highway at Forest Road (looking north)



Image Source: Google Maps

As stated in Section 2.3.2, works have commenced for the upgrade of the Princes Highway between Kinghorne Street and Forest Road. As part of these upgrade works the Forest Road intersection will be upgraded to a kerbed seagull intersection allowing all turning movements as shown in Figure 2.14.

Figure 2.14: Princes Highway/ Forest Road Intersection – Proposed Seagull Arrangement



Source: RMS

The upgraded works will significantly improve safety at the intersection by providing a dedicated left turn slip lane from the Princes Highway and a vegetated median along the Princes Highway, providing greater protection for turning vehicles.

The intersections of Princes Highway with Kalandar Street and Moss Street are the most heavily trafficked and congested intersections in the study area. Due to these significantly higher traffic volumes and the congestion, which results in many rear end shunts, it is not unexpected that there are more crashes at this location.

The road alignment on the eastbound approach to Mayfield Road is relatively tight and warning signage (Reduce Speed, 45km/h advisory signage and Chevron Alignment Markers & safety barrier has been provided to try and minimise the crash risk.

2.8 Intersection Operation

The Director-General's Environmental Assessment Requirements (DGR's) dated 27 May 2010 stipulated that network modelling be undertaken using TRACKS modelling software to assess the current (and future) performance of the intersections in the study area.

TRACKS is a suite of software programs produced by Gabites Porter Consultants of Christchurch, New Zealand. The traffic authority has a TRACKS model of the area that is required for use as the basis of our analysis. However, we have been unable to obtain a model to date. On 14th May 2012, Scott Wells, Traffic and Transport Unit Manager, Shoalhaven City Council wrote:

"There has been an ITUC meeting to discuss third party use of TRACKS models, I am yet to see the minutes, however there was general acceptance, subject to conditions. It was agreed there would be no fee for use however a condition would be to ensure the level of model validation in the area required for testing was improved prior to use. Engagement for that purpose would be by Council at your clients cost, the updated model and all data would be Council's. Once the model is updated and agreed sufficient for use for your purposes, and all costs to achieve the improved level of validation have been paid for, you could then use the model subject to conditions."

Negotiations between GTA Consultants and Shoalhaven City Council took place for the release of the TRACKS model to undertake the required network modelling. In subsequent correspondence Scott Wells wrote on 24th January 2013:

"...we (Council Traffic Unit) never asked for TRACKS modelling, it was an RMS request for DPI to include in DGRs and this was included in the DGRs without consultation with Council. The only available TRACKS model that covers this area is an AADT model and there has never been specific validation in the area subject of assessment. This means without checking against field data there is no high level confidence in regards to the strategic distributions to/from the site and Princes Highway.... For the purposes of your study use of SIDRA at Princes Highway/Moss street and Princes Highway/Kalandar Street should suffice in my view".

Consequently, assessment of the traffic impact of the proposed development has been undertaken using SIDRA INTERSECTION², a computer based modelling package which calculates intersection performance on an individual intersection basis. Conversely TRACKS software assesses traffic impacts on a network wide scale.

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

Table 2.4 shows the criteria that SIDRA INTERSECTION adopts in assessing the level of service.

² Program used under license from Akcelik & Associates Pty Ltd.

Table 2.4: SIDRA INTERSECTION Level of Service Criteria

Level of Service (LOS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity, accident study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

The road network under consideration as part of this assessment is shown in Figure 2.3 and Figure 2.4 and includes the following eleven intersections:

- i Culburra Road/ Coonamia Road (priority controlled)
- ii Culburra Road/ Mayfield Road (priority controlled)
- iii Greenwell Point Road/ Pyree Lane (priority controlled)
- iv Greenwell Point Road/ Jindy Andy Lane (priority controlled)
- v Greenwell Point Road/ Mayfield Road (priority controlled)
- vi Greenwell Point Road/ Millbank Road/ Worrigea Road (stop controlled)
- vii Princes Highway/ Kalandar Street (signalised)
- viii Coonamia Road/ Currarong Road/ Forest Road (priority controlled)
- ix Kalandar Street/ Kinghorne Street (roundabout)
- x Princes Highway/ Forest Road (priority controlled)
- xi Princes Highway/ Moss Street (signalised).

2.8.1 Base Scenario - 120th Highest Annual Hour

As stated in Section 2.2, traffic volumes were recorded in May 2012. The queuing at the intersection was also recorded so that the base year model could be validated.

However, as the NSW South Coast is a popular tourist destination subject to influxes of tourists over long weekends and during school holidays, particularly during the summer school holidays. To reflect this seasonal increase in traffic volumes in the vicinity of the development site, the 120th highest annual hour (HH) has been used as the Design Hourly Volume (DHV) for the base traffic scenario as instructed by Scott Wells of Shoalhaven City Council in correspondence dated 24th January 2013:

"We would also consider the assessment incomplete without undertaking adjustment of the surveyed flows to equivalent 120th HH demand flow levels consistent with AUSTROADS guidelines".

Use of the 120th HH as the DHV reflects a peak hour within the highest 1% of all hourly volumes recorded over a year and as such represents a period of high seasonal traffic volumes.

The traffic counts undertaken as part of this assessment were undertaken in May 2012 during a period of low tourist activity. Subsequently, the recorded peak hour traffic flows require application of an appropriate growth factor to represent the 120th HH.

Calculation of Growth Factors

The calculation of an appropriate growth factor to be applied to the May 2012 recorded traffic flows was undertaken by the Traffic and Transport Unit of Shoalhaven City Council. The growth factors were calculated by analysing 2008 annual hourly traffic volume data from Greenwell Point Road and Forest Road as well as data from the RMS permanent traffic count stations at Falls Creek, north of Jervis Bay Road (approximately 4km south of Forest Road, count station 07.053). The growth factors to be applied to the recorded May 2012 traffic flows are summarised below with further details of the calculation of growth factors contained in Appendix C:

Table 2.5: Growth Factors to be Applied to May 2012 Recorded Flows to Calculate 120th HH Flows

Road	Friday AM Peak Hour (8-9am)	Friday PM Peak Hour (4-5pm)	Saturday Peak Hour (12-1pm)
Local Roads & Traffic to/ from Princes Highway	1.12	1.41	1.25
Princes Highway through traffic (north-south movements)*	1.13	1.07	1.18

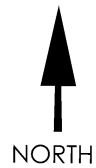
* Relates to the Princes Highway intersections with Moss Street, Kalandar Street and Forest Road.

Source: Shoalhaven City Council (Appendix C)

Application of the growth factors shown in Table 2.5 to the surveyed May 2012 peak hour volumes and the equivalent 120th HH traffic flows used for the base scenario assessments of the Friday AM, Friday PM and Saturday Peak hours are shown graphically in Figure 2.15, Figure 2.16 and Figure 2.17 respectively.

2.8.2 Existing Intersection Operation

Table 2.6 presents a summary of the existing operation of the eleven intersections within the road network under consideration using 120th HH traffic volumes to account for the seasonal growth in traffic in the region. Full results presented in Appendix D of this report while the intersection layouts from SIDRA are contained in Appendix E.

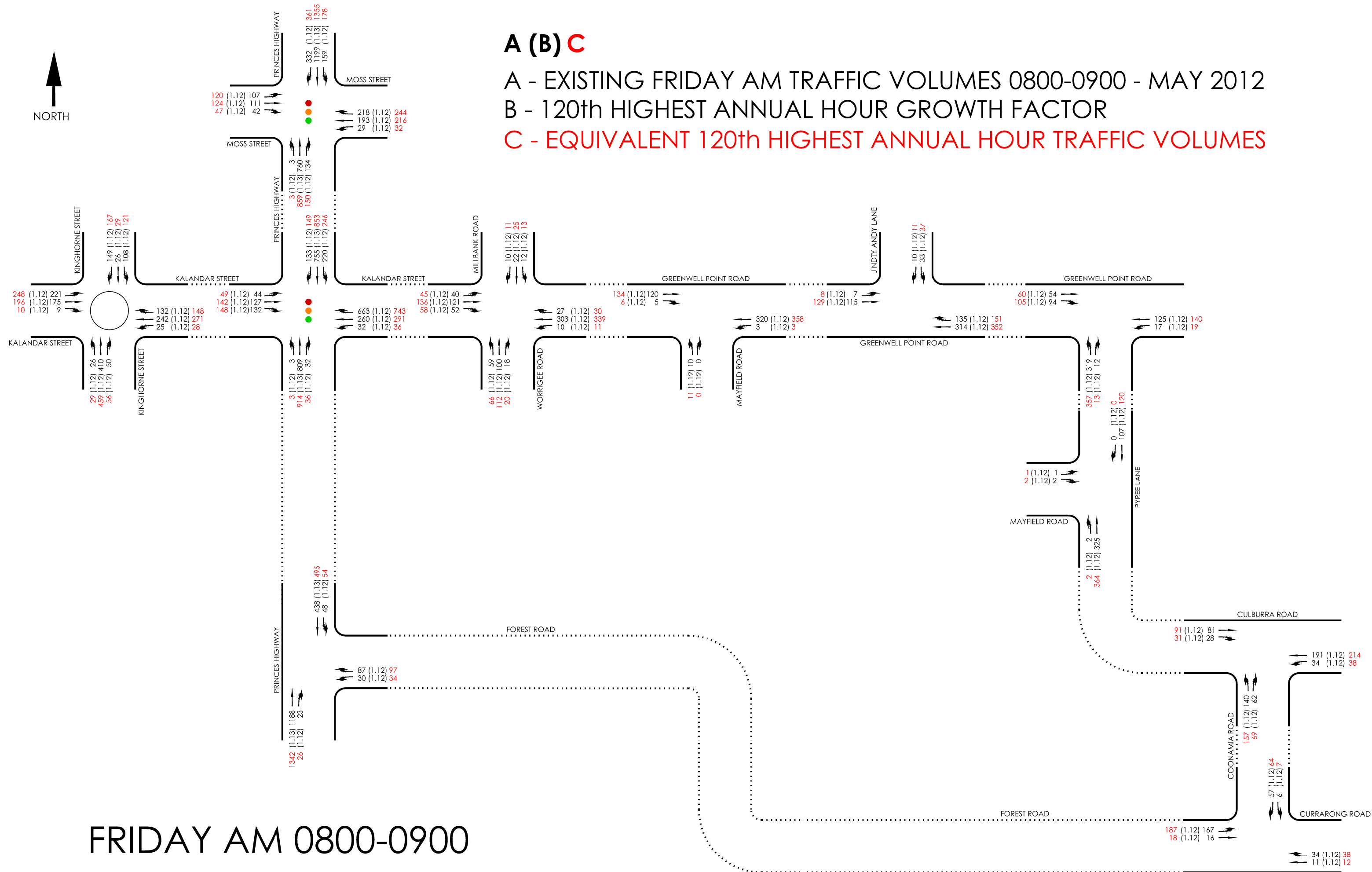


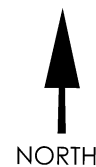
A (B) C

A - EXISTING FRIDAY AM TRAFFIC VOLUMES 0800-0900 - MAY 2012

B - 120th HIGHEST ANNUAL HOUR GROWTH FACTOR

C - EQUIVALENT 120th HIGHEST ANNUAL HOUR TRAFFIC VOLUMES



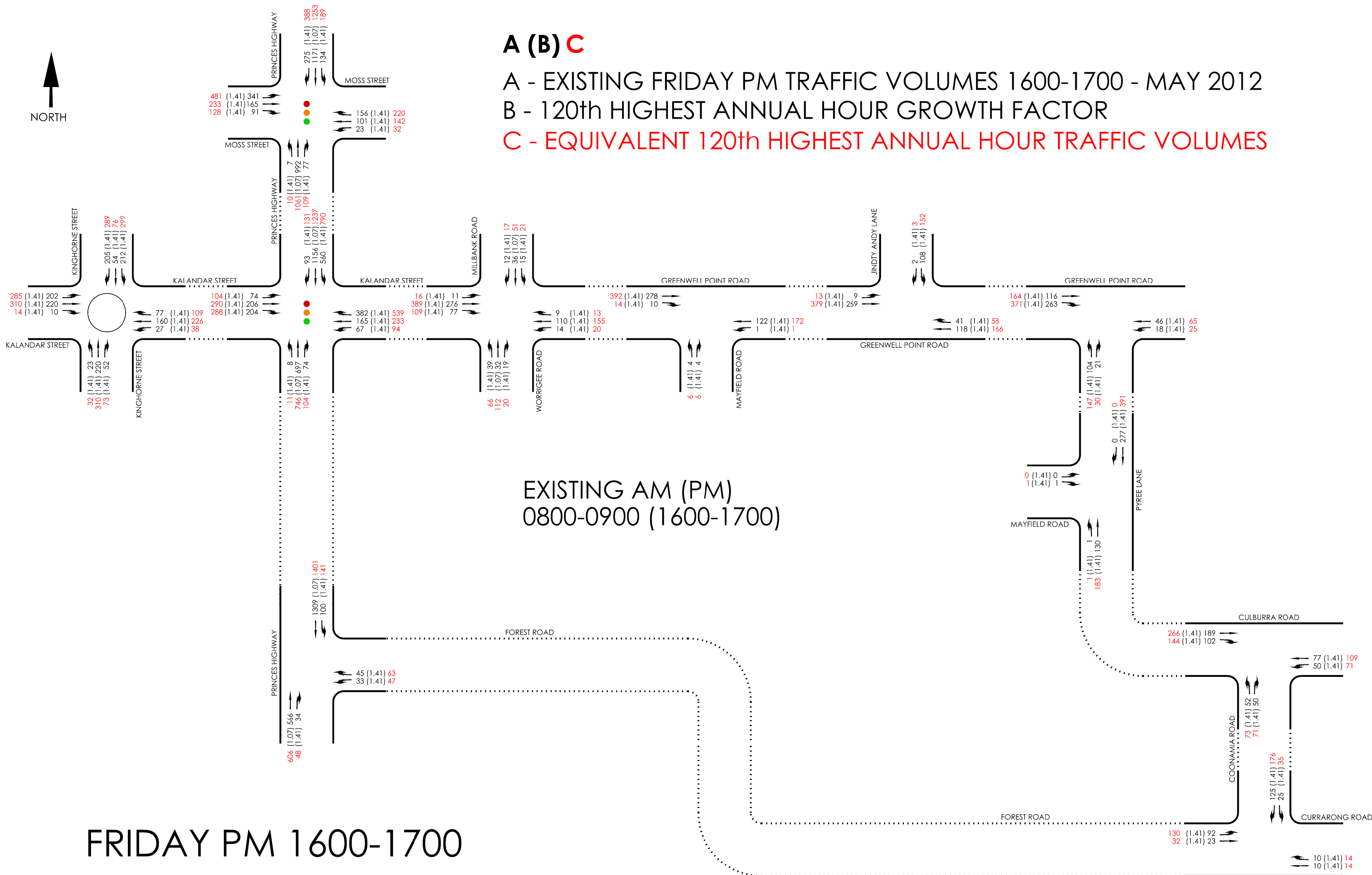


A (B) C

A - EXISTING FRIDAY PM TRAFFIC VOLUMES 1600-1700 - MAY 2012

B - 120th HIGHEST ANNUAL HOUR GROWTH FACTOR

C - EQUIVALENT 120th HIGHEST ANNUAL HOUR TRAFFIC VOLUMES



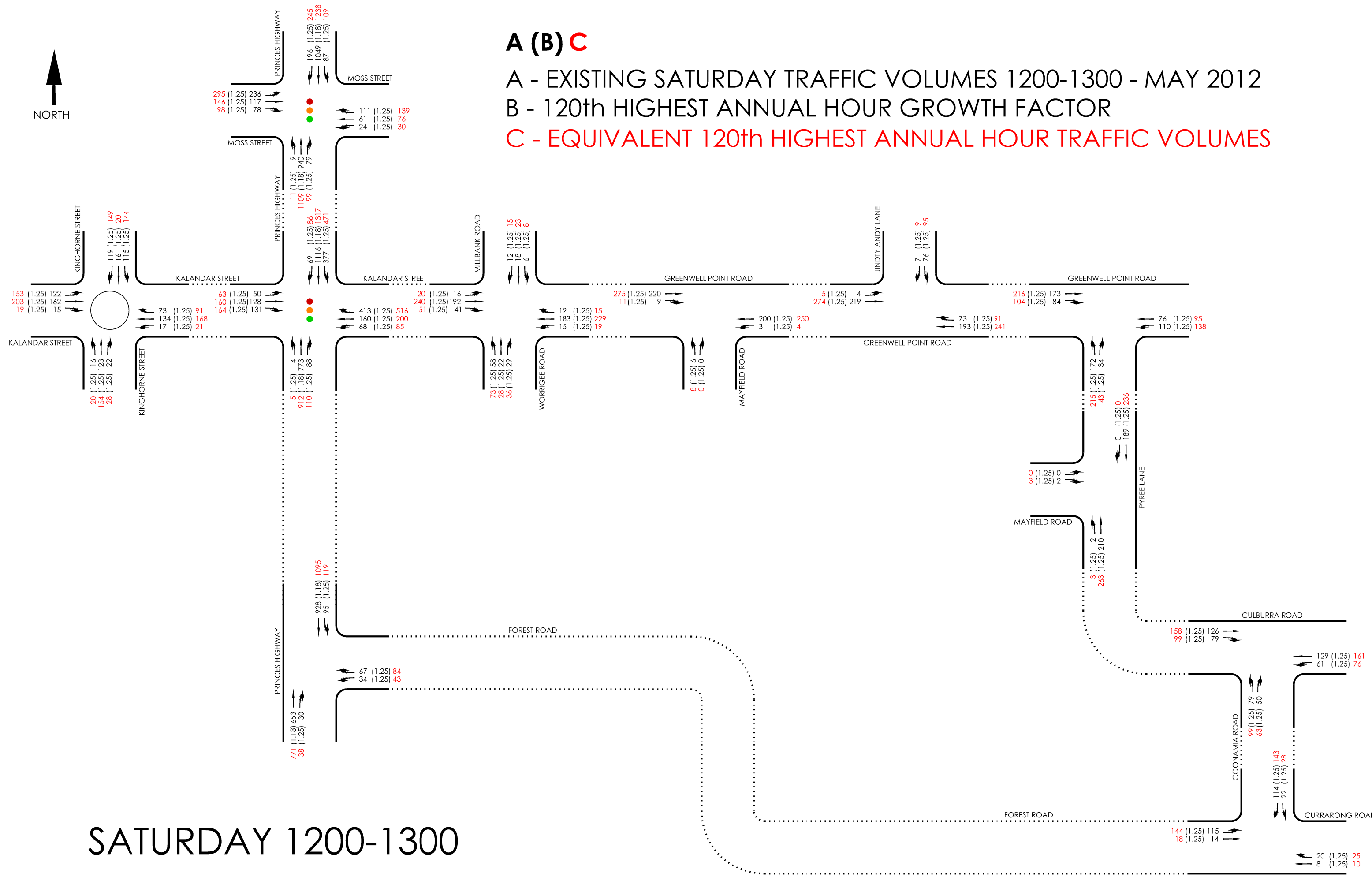


A (B) C

A - EXISTING SATURDAY TRAFFIC VOLUMES 1200-1300 - MAY 2012

B - 120th HIGHEST ANNUAL HOUR GROWTH FACTOR

C - EQUIVALENT 120th HIGHEST ANNUAL HOUR TRAFFIC VOLUMES



SATURDAY 1200-1300

Table 2.6: Existing Operating Conditions (Equivalent 120th Highest Annual Hour)

Intersection	Peak	Degree of Saturation (DOS)	Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Culburra Road/ Coonamia Road	Friday AM	0.223	6.8	5	NA
	Friday PM	0.145	6.4	4	NA
	Saturday	0.140	6.7	3	NA
Culburra Road/ Mayfield Road	Friday AM	0.198	0.6	4	NA
	Friday PM	0.214	0.8	11	NA
	Saturday	0.144	0.8	7	NA
Greenwell Point Road/ Pyree Lane	Friday AM	0.224	8.9	7	NA
	Friday PM	0.558	10.0	37	NA
	Saturday	0.212	7.5	6	NA
Greenwell Point Road/ Jindy Andy Lane	Friday AM	0.227	3.5	7	NA
	Friday PM	0.215	4.1	6	NA
	Saturday	0.181	3.6	5	NA
Greenwell Point Road/ Mayfield Road	Friday AM	0.200	1.8	9	NA
	Friday PM	0.235	2.3	21	NA
	Saturday	0.170	2.3	15	NA
Greenwell Point Road/ Millbank Road/ Worrigea Road	Friday AM	0.391	7.5	15	NA
	Friday PM	0.235	6.2	7	NA
	Saturday	0.153	5.6	4	NA
Princes Highway/ Kalandar Street	Friday AM	1.049	86.4	403	F
	Friday PM	1.101	119.6	558	F
	Saturday	0.968	63.3	389	E
Coonamia Road/ Currarong Road/ Forest Road	Friday AM	0.117	11.9	3	NA
	Friday PM	0.249	12.1	8	NA
	Saturday	0.202	12.2	6	NA
Kalandar Street/ Kingham Street	Friday AM	0.729	15.4	69	B
	Friday PM	0.774	15.7	78	B
	Saturday	0.373	9.8	18	A
Princes Highway/ Forest Road	Friday AM	0.739	2.0	5	NA
	Friday PM	0.766	4.7	17	NA
	Saturday	0.598	3.2	13	NA
Princes Highway/ Moss Street	Friday AM	1.025	89.2	388	F
	Friday PM	1.237	199.9	796	F
	Saturday	0.887	49.5	200	D

On the basis of the above assessment, under equivalent 120th HH traffic volumes:

- the priority controlled intersections operate well during the three respective peak periods with minimal delays and queues on all approaches

- it is clear from this analysis that the existing Princes Highway intersections at Kalandar Street and Moss Street experience significant delays during these peak periods, particularly during the Friday AM and Friday PM peak periods. The other intersections in the study area currently operate satisfactorily.

2.9 Performance of Rural Road Network

GTA Consultants undertook an assessment of the existing local road network surrounding the development site to assess road design aspects (cross-section parameters) for compliance with AUSTROADS Standards and RMS Guidelines in relation to:

- Lane widths
- Rural turning lanes
- Intersection configurations
- Warrants for overtaking lanes.

As advised in correspondence from Scott Wells dated 19th February 2013, this assessment was to be limited to the local road network surrounding the site as a similar assessment of the State Road network in the vicinity of the site (i.e. the Princes Highway) was not required.

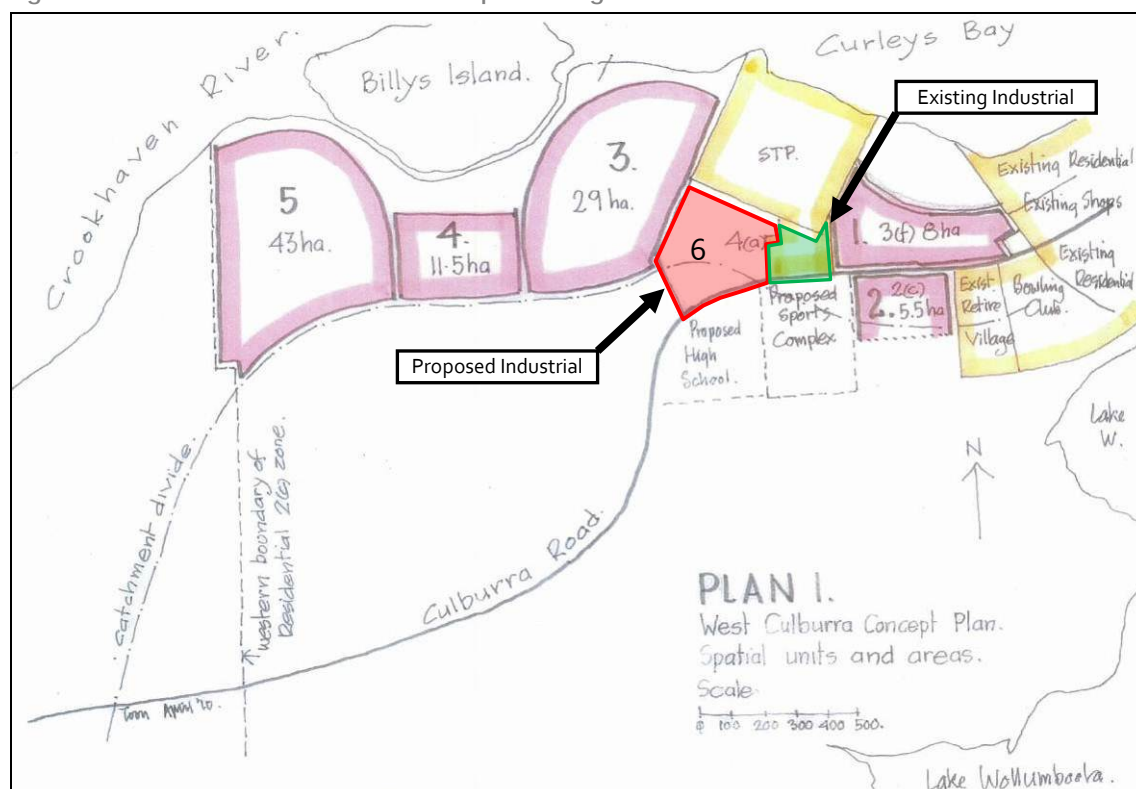
This issue is considered in detail at Section 8.

3. Development Proposal

3.1 Land Uses

The proposed mixed use subdivision development is comprised of six stages as shown in Figure 3.1.

Figure 3.1: West Culburra Subdivision - Proposed Stages



Background Image Source: John Toon Pty Ltd, 2010

As GTA Consultants understands it, the main areas to be developed are Stages 3, 4 and 5 which have an indicative capacity of approximately 800 dwellings and units on lots ranging from 550m² to 900m². It is anticipated that these areas will be constructed and sold in about an eight years period from 2014.

Stage 1 is proposed for 60 small-lot housing units for the 55 plus aged group and three five-storey apartment buildings as well as commercial and tourist-orientated uses. It is anticipated that this development will commence at the end of 2013 and be completed within three years.

Stage 2, south of Culburra Road, is proposed as the site for 80 small-lot housing units for the 55 plus aged group, six five-storey apartment blocks with each block estimated to contain 40 two bedroom apartments. It is anticipated that the development of the five-storey apartments will be developed over a 20 year period.

It is understood that 26 industrial lots are also proposed as part of the development over an area of 6.8ha (approx.) in Stage 6. This area is located on the northern side of Culburra Road, east of the existing industrial area as shown in Figure 3.1.

An indicative development schedule is summarised in Table 3.1.

Table 3.1: Indicative Development Schedule

Stage	Area (approx)	Zoning (LEP 1985)	Zoning (Draft LEP 2009)	Land Use/ Capacity
1	1 ha	3(f) Business Zone	B2 Local Centre	Tourist/ commercial use
2	1.6 ha	2(c) Residential	R1 General Residential E2 Environmental Conservation	48 x 2 bedroom apartments 21 x small-lot 2 bedroom single storey villas for the 55+ aged group
3-5	83.5 ha	2(c) Residential	R1 General Residential	500 x dwelling houses 30 x mixed-use, 3 bedroom town houses (The Circus) 26 x 2 bedroom small lot dwellings for the 55+ aged group (behind The Circus) 10 x 1 bedroom units 35 x 2 bedroom units 15 x 3 bedroom units 3 x tourist sites (1.25 ha total area) – motel, cafe, gift shop and restaurant
6	6.8 ha	4(a) Industrial	IN1 General Industrial	28 industrial lots
Total				Tourist/ commercial use 83 x 2 bedroom apartments 47 x small-lot 2 bedroom single storey villas for the 55+ aged group 500 x dwelling houses 30 x mixed-use, 3 bedroom town houses (The Circus) 10 x 1 bedroom units 15 x 3 bedroom units 3 x tourist sites (1.25 ha total area) – motel, cafe, gift shop and restaurant 28 industrial lots

As shown in Table 3.1 following full site development, Stage 2 to 5 will contain 685 residential dwellings and Stage 6 will contain 28 industrial lots. The development will be phased with Stages 3-5 developed over a period of approx. 8 years.

An indicative concept layout of the West Culburra subdivision is shown in Figure 3.2.

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SHEETS			

3.2 Vehicle Access

It is anticipated that vehicle access to Stage 1 will be via Canal Street East and the extension of Brighton Parade. Access to Stage 2 will be via Culburra Road. Access to the new industrial area is anticipated to be direct from Culburra Road or via Regmoore Close, in the adjacent existing industrial area which currently has access to Culburra Road via Strathstone Street.

A new Collector Road is proposed as part of the development to provide access to Stages 3, 4 and 5 with two connections to Culburra Road as shown in Figure 3.3.

Figure 3.3: Proposed Collector Road and Access Locations

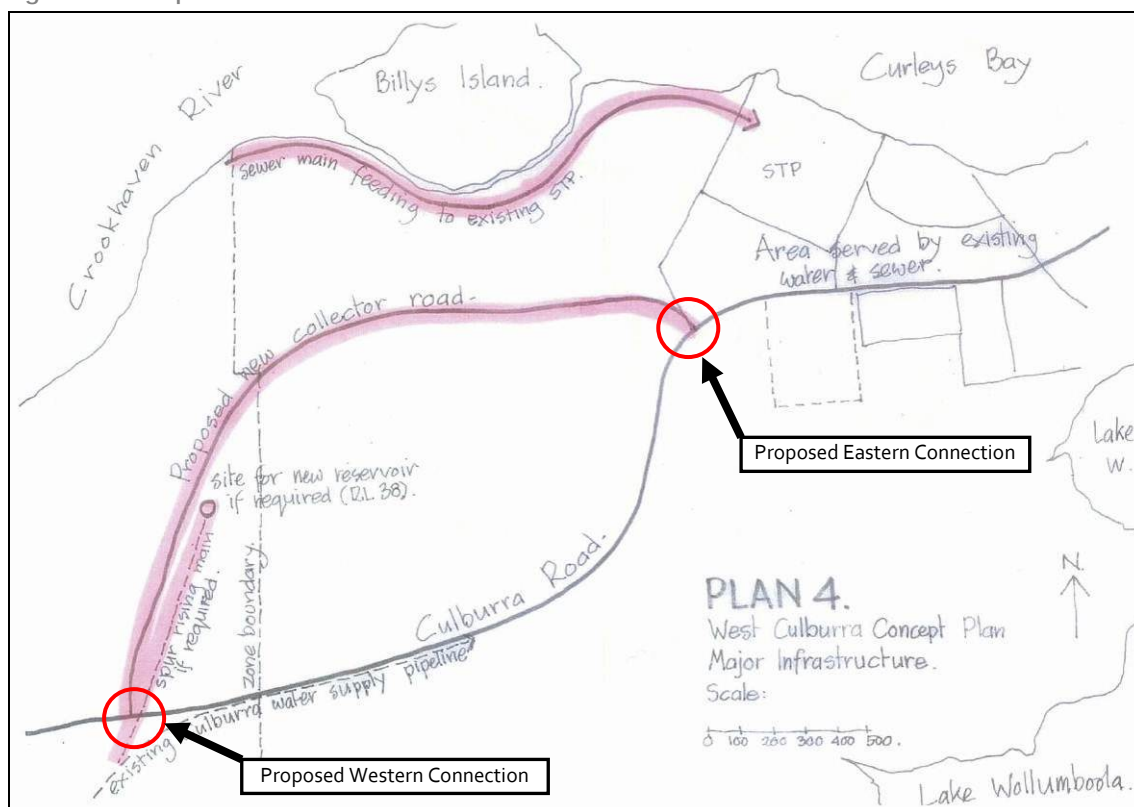


Image Source: John Toon Pty Ltd, 2010

As GTA Consultants understands it, the eastern access will be the primary means of accessing Stages 3, 4 and 5. Plans prepared by Allen, Price and Associates propose the new Collector Road to be set within a 25 metre wide road reserve. It is understood that the western access to the development will not be provided at this stage. The location of the western access is anticipated to be in the vicinity of the existing unsealed access track.

Further discussion on vehicle access arrangements are contained in Section 4 of this report.

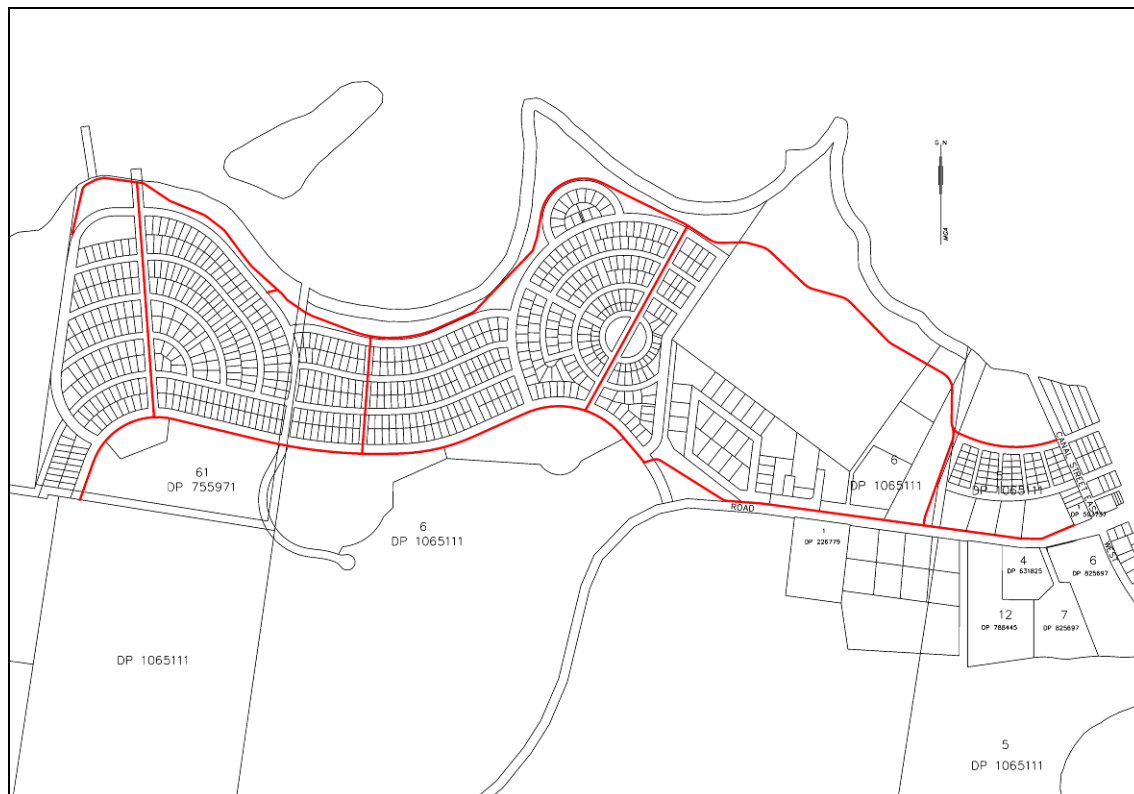
3.3 Pedestrian and Bicycle Facilities

The new Collector Road is considered to be the optimal alignment for a cycleway connecting the development Stages 3, 4 and 5 to Culburra shops in the established area of Culburra to the east of the

development. A cycleway following the alignment of the foreshore adjacent to Stages 3, 4 and 5 is also proposed as part of the development.

The indicative alignment of cycleways proposed as part of the development is shown in Figure 3.4.

Figure 3.4: Proposed Cycleways



Source: Modified from Allen, Price & Associates (July, 2012)

It is anticipated that the proposed cycleway shown in Figure 3.4 will operate as off-road shared pedestrian and cyclist paths or as separated off-road paths.

Further discussion on pedestrian and bicycle facilities are contained in Section 5 of this report.

3.4 Parking

The car parking requirements for different development types are contained in Shoalhaven City Council Car Parking Code (DCP 18). It is anticipated that car parking for the development will be provided in accordance with the requirements of DCP 18.

4. Vehicle Access

4.1 Introduction

It is proposed that access to the site is provided by means of a roundabout at the proposed eastern intersection of the new Collector Road with Culburra Road. Ultimately a western access to the development will be provided which will also form an intersection at Culburra Road.

4.2 Intersection Assessment and Concept Design

GTA Consultants undertook an assessment of the proposed eastern intersection of the new Collector Road with Culburra Road to determine the most appropriate location, layout and dimensional requirements with consideration of the topography, sight distances and road geometry. Based on this assessment, GTA Consultants produced an indicative concept design of the intersection consisting of a four arm single lane roundabout layout as shown in Figure 4.1.

The roundabout has been sketched to be generally in accordance with *Austroads Guide to Road Design, Part 4B: Roundabouts* (second edition, 2011) and has an island diameter of 28m and a circulating carriageway width of 7.2m. The roundabout has been designed to accommodate an Austroads standard 19 metre long articulated semi-trailer. GTA Consultants undertook a swept path assessment of the proposed layout to confirm vehicle manoeuvrability.

Figure 4.1: Eastern Access Preliminary Concept Layout



The southern leg of the roundabout has been included in the concept design to show an alternative access point to the proposed Long Bow Point golf course described in Section 2.3. This location is approximately 350 metres north of the golf course access proposed on the straight section of Culburra Road shown in Figure 2.5. An unsealed access road to the land on which the Long Bow Golf Point golf

course is proposed is located on the inside of the bend, where the southern leg of the roundabout is proposed.

Combining the eastern access of the Collector Road with an access for the proposed Long Bow golf course would offer safety advantages over an independent, priority controlled intersection for the golf course, particularly on a rural road within a 100km/hr speed limit zone. It is understood that the golf course development is subject to consent by Shoalhaven City Council.

DCP 100 requires the subdivision road network to connect with the external road network in a manner which maximises movement efficiency for all traffic routes. A roundabout will offer the most effective means of managing traffic at the intersection, minimising the average delay on all approaches.

The preliminary concept design of the proposed roundabout, including long sections is contained in Appendix F.

4.2.1 Speed Zonings

It is anticipated that the existing 50km/hr speed limit in place on Culburra Road, approximately 350 metres east of Strathstone Street, will be extended to a point west of the roundabout intersection to provide a 50km/hr speed limit on the western approach in line with the *NSW Speed Zoning Guidelines* (RMS, 2011). It is also anticipated that the proposed Collector Road will be subject to a 50km/hr speed limit in line with the *NSW Speed Zoning Guidelines* and *Shoalhaven City Council Subdivision Code – DCP 100* (2002).

The proposed roundabout will form the entrance to the largest section of the development within Stages 3, 4 and 5, providing access to 800 dwellings. It is considered appropriate for the 50km/hr speed zone to be extended westwards beyond the proposed roundabout to provide a 50km/hr speed limit on all approaches to the intersection. Such a speed zoning is considered appropriate to the proposed road environment and conducive to a safer environment for pedestrians, cyclists and vehicles. The lowering of vehicle speeds along Culburra Road will result in intersection spacing becoming more appropriate to road speed.

5. Sustainable Transport Infrastructure

5.1 Policy and Planning Guidelines

5.1.1 NSW 2021: A Plan to Make NSW Number One (2011)

NSW 2021: A Plan to Make NSW Number One, Illawarra Regional Action Plan (2011) sets out priorities for the Illawarra subregion which is comprised of Wingecarribee, Wollongong, Shellharbour, Kiama and Shoalhaven LGA's in line with the State plan; *NSW 2021*. The *Regional Action Plan* states that to provide effective and integrated regional transport, 'whole of region' transport planning is required to improve:

- Public transport links
- Patronage on public transport
- Public transport access to key employment areas
- Planning for local and regional road infrastructure.

These local priorities relate to the following *NSW 2021* goals:

- Goal 7: Reduce travel times
- Goal 8: Grow patronage on public transport by making it a more attractive choice
- Goal 10: Improve road safety.

The *Illawarra Regional Action Plan* contains a priority action to develop an Illawarra transport strategy in line with the *NSW Long Term Master Plan* to provide a clear direction for all transport modes.

5.1.2 Integrating Land Use and Transport (2001)

The NSW Department of Urban Affairs and Planning's *Integrating Land Use and Transport* (2001) policy package provides guidelines for planning and development which aim to encourage development that:

- increases access to public transport, walking and cycling
- encourages people to travel shorter distances and make fewer trips
- reduces car dependency.

The aim of integrating land use and transport is to ensure that urban structures, building forms, land use locations, development designs, subdivisions and street layouts achieve the following planning objectives:

- improving access to housing, jobs and services by walking, cycling and public transport
- increasing the choice of available transport and reducing dependence on cars
- reducing travel demand including the number of trips generated by development and the distances travelled, especially by car
- supporting the efficient and viable operation of public transport services.

Integrating Land Use and Transport identifies the following key transport planning concepts which recognise people's basic travel needs:

- **Convenience** — the transport mode needs to be easy to find and use, and to transfer from one mode to another.

- **Information** — reliable information at accessible locations is essential to encourage use of various travel alternatives.
- **Proximity** — transport facilities and services, such as cycle paths and bus services, need to be in close, convenient and obvious locations to people's trip origins and destinations.
- **Destination choice** — the more destinations that can be linked on a public transport route, the more attractive it will be.
- **Directness** — routes should take the shortest and least deviating course, with priority to achieve fast travel times for walking, cycling and public transport (e.g. pedestrian links, dedicated bus lanes, and bikeways).
- **Security** — the environment for walking and waiting needs to be comfortable and safe from personal attack or conflicts with traffic (e.g. waiting areas sheltered from the elements, natural surveillance, good lighting, bike lanes on major roads).

5.1.3 NSW Planning Guidelines for Walking and Cycling (2004)

The *NSW Planning Guidelines for Walking and Cycling* (2004) aims to assist land-use planners and related professionals to improve consideration of walking and cycling in their work. The guidelines have been designed to provide a walking and cycling focus to the NSW Government's *Integrating Land Use & Transport Planning* policy package.

5.1.4 Shoalhaven Integrated Transport Strategy (2000)

The *Shoalhaven Integrated Transport Strategy* (2000) aims to promote the Shoalhaven as a place where:

- Public transport is readily available, safe, efficient and regarded as a viable alternative to private car use
- Alternative forms of transport, other than motor car are promoted and encouraged.

The Transport Strategy highlights that the difficulties of public bus transport provision in Shoalhaven LGA, given the dispersed coastal communities and population:

"At the moment the bus operators are providing services that are generally only just viable. This does not include the school routes. The bus operators would provide improved services (frequencies and destinations) if the patronage justified it".

The *Transport Strategy* notes the issues raised by residents related to public transport around the Shoalhaven as:

- Lack of timetable integration for bus to bus and bus to train
- Door to door journey time
- Fare structure; both cost and lack of a single ticket system
- Safety
- Comfort and convenience
- Lack of transport after hours and during weekends, public holidays and school holidays.

The Transport Strategy contains the following critical implementation actions:

- **Action 11** – Require the provision of bus routes, footpaths and cycleways in all new housing development areas.

5.1.5 Shoalhaven Subdivision Code - DCP 100 (2002)

DCP 100 contains the following objectives to promote sustainable transport as part of subdivision developments in the Shoalhaven LGA:

- *All residents should have the opportunity to walk or cycle to the nearest community facilities, such as shops and schools. They should also be provided with safe and convenient links to other major destinations external to the neighbourhood. The design of the street network should encourage walking and cycling along quieter local streets, reducing the need for separate rights of way for cycle and pedestrian linkages.*
- *Increase opportunities for choice in mode of transport and provide cost effective and energy efficient public transport services that are accessible and convenient to the community.*

5.2 Bus Routes

Culburra and the adjoining village of Orient Point currently have very limited public transport with only five weekday bus services between Nowra and no weekend or public holiday services.

It is envisaged that the proposed Collector Road through Stages 3, 4 and 5 will serve as the key route for the Culburra-Nowra public bus service and for school bus services. Given this, all access points to the development from Culburra Road must be designed to accommodate bus turning manoeuvres. As a result, the concept layout for the eastern Collector Road/ Culburra Road intersection described in Section 4 has been designed to accommodate bus turning movements.

DCP 67 states that the road network should be designed so that generally all residential development is within 400 metres of the bus network and possible bus stops. *Integrating Land Use and Transport* states that 400 metres is a desirable walking distance to access a bus route as it is within a 5 minute walk. DCP 100 suggests that 85% of dwellings within a subdivision be within 500 metres safe walking distance from an existing or potential bus route. Approximately 90% of the lots in Stages 3, 4 and 5 are within 400 metre walking distance of the proposed Collector Road, the likely key bus route through the development. All lots within Stages 1 and 2, as well as the industrial area, are proposed to be located within 200 metres of Culburra Road.

Following full site development it is anticipated that the Culburra to Nowra bus services will deviate from Culburra Road into the proposed development at the eastern access, travel the new Collector Road and return to Culburra Road at the western access, with the reverse scenario occurring for Nowra to Culburra services. In the interim, Stages 3, 4 and 5 will be accessible solely by the eastern access. As such, it is anticipated that bus services both to and from Culburra will travel a 'loop' route, entering and exiting the development at the eastern access.

The key destinations for residents of the development are likely to be similar to destinations for current Culburra and Orient Point residents; Nowra town centre, Bomaderry Railway Station and Culburra shops.

The development offers the opportunity to provide improved public transport services to all residents of Culburra and Orient Point through higher frequency weekday services and the provision of weekend and public holiday services. It is anticipated that increased residential density attributed to the development will improve the economic viability of increased public transport provision and justify significant improvements in public transport infrastructure for Culburra and Orient Point.

5.2.1 Consultation with Bus Operator

Shoalhaven Integrated Transport Strategy highlights the importance of early consultation with bus operators to ensure early provision of bus services in new residential developments which offers advantages for:

- The vendor – the availability of public transport can be a strong selling point
- The bus operator – if new families move into a new development and have a service available immediately it is likely that the operator will have regular patrons. Once a family has to purchase a second car it is unlikely that the family will use the bus again.

GTA Consultants liaised with the current bus service provider of the Culburra-Nowra service, Kennedy's Bus and Coach to discuss future bus service provision in light of the proposed development. Initial consultation with David Tagg of Kennedy's has indicated that the operator welcomes additional patronage within their normal bus operations and would be happy to extend their current service arrangements.

The operator highlighted the road geometry requirements for the development to allow for a minimum 12.5 to 13.5 metre long bus and noted that consideration needs to be given to the provision of disabled access for low floor wheelchair buses which will be compulsory on all route services by 2020.

Correspondence with Kennedy's Coaches is contained in Appendix G.

5.3 Bus Stops

Integrating Land Use and Transport outlines that public transport stops should be designed and managed to provide the following:

- good pedestrian access from surrounding areas, including direct, safe and well-lit street connections or pedestrian links, safe pedestrian crossings and clear lines of sight to the stop
- safe, well-lit and comfortable waiting areas with shelter and information on available services
- direct and convenient connections from the footpath to the shelter/ waiting area and from the shelter/ waiting area to the doors of the public transport vehicle, and vice versa
- clear identification of the public transport nodes and access points by attractive design and signage
- access for all users, including appropriate provision for people with disabilities
- bus stops with adequate lighting, shelter and passive security.

DCP 100 contains the requirements for the location and design of bus stops within subdivision developments:

- Public transport stops provide for pedestrian safety, security, comfort and convenience
- Bus stops are designed to prevent vehicles from overtaking a stationary bus, or vehicle speeds are reduced to ensure safe pedestrian crossing
- Bus stops are located and designed to provide shelter, seats, adequate lighting and timetable information, are overlooked from nearby buildings, and are located to minimise adverse impact on the amenity of nearby dwellings.

DCP 100 suggests the following measures are considered as part of the development:

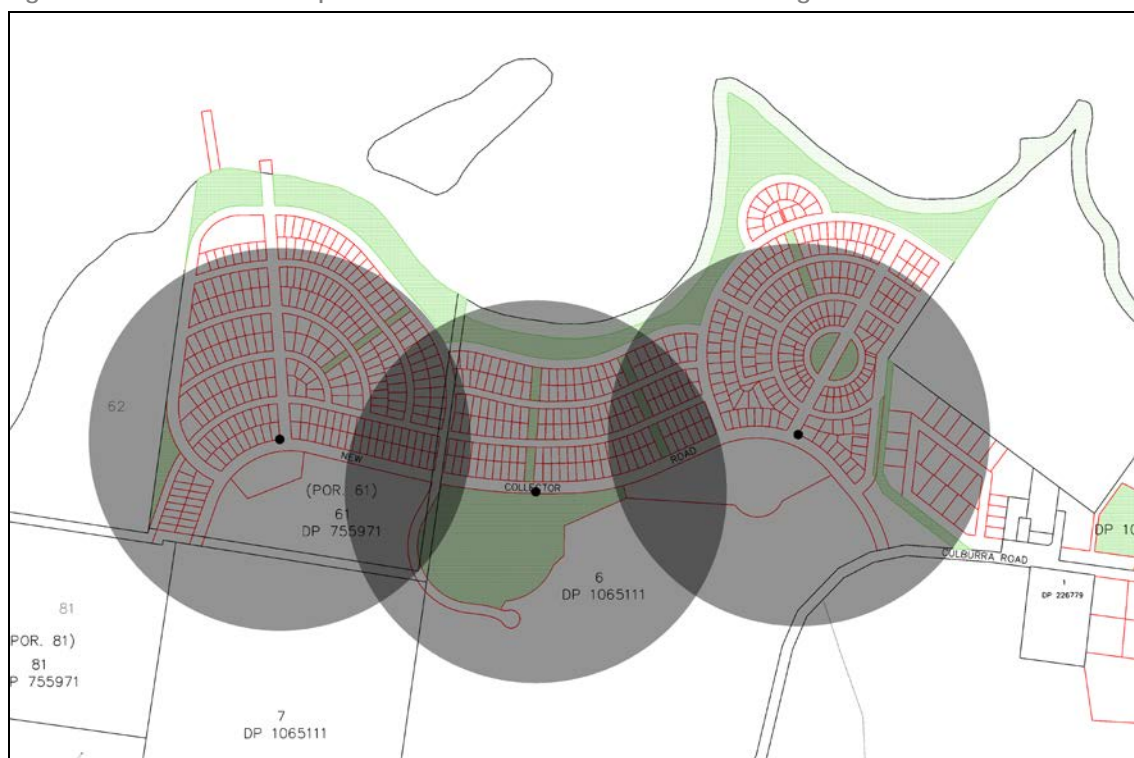
- Routes for regular bus services are designed for a minimum pavement width of 9.0 metres
- Bus stops are, or are planned for 400 metre spacings where the route serves residential development
- The siting of bus stops is related to the pedestrian path network.

Given the proximity of Stages 3, 4 and 5 to the proposed Collector Road, the location of bus stops is crucial to ensure ease of access for residents and in turn encourage the use of sustainable transport. Figure 5.1 has been prepared to show indicative locations of three possible bus stops along the Collector Road and to show the residential and industrial lots within a 400 metre/ 5 minute walking catchment of each stop. It is anticipated that new bus stops will also be provided on Culburra Road adjacent to Stages 1 and 2 to encourage public transport usage by residents.

It is recommended that all new bus stops provide the following as a minimum:

- Shelter
- Seating
- Lighting
- Timetable information.

Figure 5.1: Potential bus stop locations and indicative 400 metre walking catchment



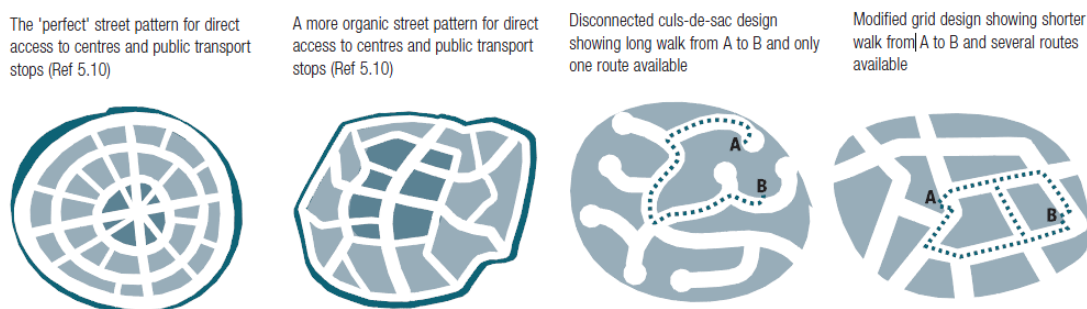
5.4 Walking and Cycling Network

5.4.1 Street Pattern

The *NSW Planning Guidelines for Walking and Cycling* highlights the importance of street pattern as a determinant of walkability and cycleability. Street pattern determines how far a person can travel by foot or by bicycle within a set timeframe, as well as the feel of a neighbourhood from a pedestrian's or

cyclist's perspective. Local streets such as those within Stages 3, 4 and 5 should be highly interconnected with many junctions onto main road making walking and cycling trips short and direct. In contrast, layouts with unconnected cul-de-sacs make walking and cycling trips longer and less interesting as sight lines are limited and there are few (if any) alternative route options available for any one trip as shown in Figure 5.2.

Figure 5.2: Street Patterns and Accessibility



Source: NSW Planning Guidelines for Walking and Cycling

The indicative street layout for development Stages 3, 4 and 5 shown in Figure 3.2 has many similarities to the 'perfect' street pattern shown in Figure 5.2, offering many options for access through the development. This through site permeability is vital for encouraging walking and cycling for short trips within these stages and to key destinations.

5.4.2 Key Destinations

The key walking and cycling destinations in proximity of development areas are likely to be:

- Culburra shops – east of the development area
- Crookhaven River foreshore area – north of the development area
- Beaches – east of the established urban area of Culburra.

Providing direct and easy walking and cycling access to these locations via dedicated, high quality facilities is imperative to promote walking. The indicative street layout for Stages 3, 4 and 5 shown in Figure 3.2 has numerous streets aligned in a north-south direction enabling direct walking access to the Crookhaven River foreshore area from within the development. The proposed public reserves shown as green in Figure 3.2 provide further options for direct walking and cycling access to the foreshore area.

5.4.3 Walking and Cycling Infrastructure

The *Shoalhaven Integrated Transport Strategy* lists the following as a critical implementation action:

- **Action 4** – Build a network of cycleways and footpaths which link schools, shops, employment areas, bus interchanges and also link outlying villages to Park and Ride interchanges along the trunk corridor.

The cycle network proposed as part of the development (Figure 3.4) includes two key routes:

- i East-west route along the foreshore area providing access to Culburra shops
- ii East-west route along the proposed Collector Road and the northern side of Culburra Road providing access to Culburra shops and the sports oval.

As stated previously, it is anticipated that these key routes will be either a shared pedestrian/ cyclist paths or as separate pedestrian and cyclist paths. The foreshore route offers an excellent opportunity as a recreational walking and cycling route and to promote cycle tourism. The connection of both of these routes to the established areas of Culburra and in particular to Culburra shops is crucial in discouraging private car use for short trips within the area. The connection of these proposed routes to the existing footpath network requires further consideration. It is recommended that the walking and cycling network within the established areas of Culburra be upgraded to provide a consistent standard of facility and in particular to improve access to the beaches, east of the town as shown in Figure 2.7 and Figure 3.4.

The provision of a dedicated, high quality facility adjacent to the proposed Collector Road is imperative to improve accessibility within the development area. As stated previously, approximately 80% of the land in spatial units 3, 4 and 5 are within 400 metre walking distance of the Collector Road and as such a dedicated facility aligned along the Collector will serve as the key route for cycling and walking within the development area.

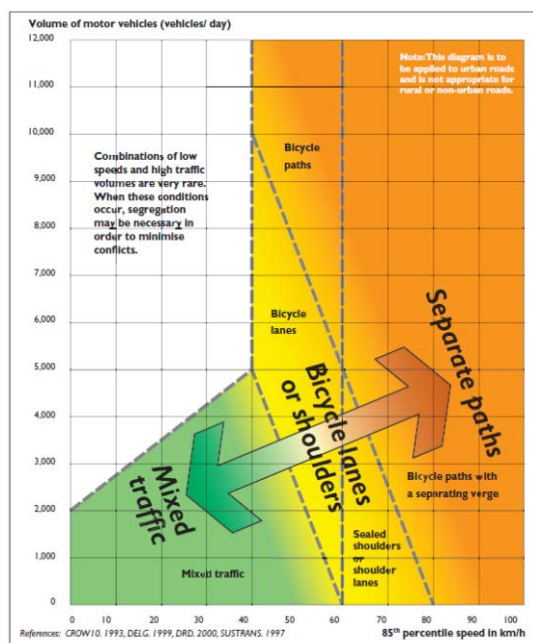
Bicycle Infrastructure Selection

The NSW Bicycle Guidelines (RMS, 2005) derive appropriate cycling facilities based on vehicle speeds and volumes as shown in Figure 5.3 with the different methods of separation shown in Figure 5.4.

The traffic generation of the development is discussed in Section 7, where it is estimated that Stages 3, 4 and 5 will generate in the order of 6,480 vehicle movements (two-way) per day along the proposed Collector Road. Given this, and assuming a 50km/hr speed limit along the Collector Road, Figure 5.3 indicates that bicycle lanes or shoulders would likely be inappropriate for the Collector Road. As such it is recommended that a separated facility be provided along this alignment.

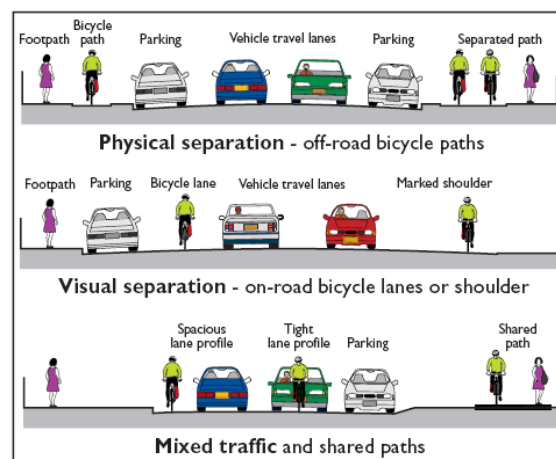
Given the higher traffic volumes along Culburra Road, it is recommended to provide a separated facility along the northern side of Culburra Road to provide access between Stages 3, 4 and 5, Culburra shops and Stage 1.

Figure 5.3: Appropriate cycling facilities based on vehicle speeds and volumes



Source: NSW Bicycle Guidelines (RMS)

Figure 5.4: Methods of Separation



Source: NSW Bicycle Guidelines (RMS)

Separated and Shared Paths

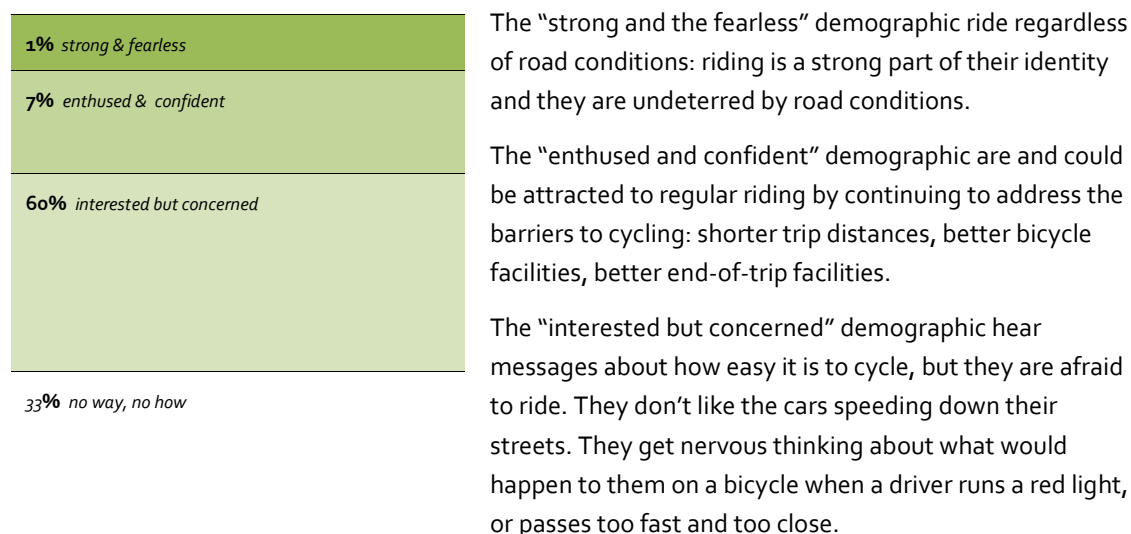
There are advantages and disadvantages associated with shared and separated paths as summarised in Table 5.1.

Table 5.1: Pros and Cons for Shared and Separated Paths

Type of Path	Pros	Cons
Shared	<ul style="list-style-type: none"> Suitable for most users Lower construction cost than separated paths Require less road reserve space 	<ul style="list-style-type: none"> Not satisfactory in high usage areas – may discourage walking amongst the young, seniors and people with disabilities May be ineffective if thorough planning (consultation, observation and demand estimation) has not been carried out
Separated	<ul style="list-style-type: none"> Eliminates conflicts occurring between different user types Will allow the bicycle path to operate at a higher speed than in the case of shared paths, which may make it more desirable for commuter cyclists 	<ul style="list-style-type: none"> Ineffective if pedestrian movement along or across the bicycle path is not minimised Ineffective if both paths are not of a comparable standard relative to the requirements of each type of user

The provision of separated cycleways is an important element in creating an attractive cycling environment. As shown in Figure 5.5, the general population fit into four categories of cyclists: strong and fearless, enthused and confident, interested but concerned and no way, no how.

Figure 5.5: Four Types of Cyclists



The “no Way, no How” group is not interested in cycling at all, for reasons of topography, inability, or simply a complete and utter lack of interest (PBT, 2010).

For NSW, 2006 Census data indicates that less than 1% of work trips were made by bicycles – the cyclists that are “strong and fearless”. To achieve the *NSW 2021* target to more than double the mode share of all bicycle trips, the occasional or non-riders of the “enthused and confident” and “interested but concerned” demographic must take up cycling.

Australian research conducted in 2008 by RACQ Market and Communications Research (December 2008) revealed 85% of people support the provision of off-road bicycle paths and 69% of males and 74% of females would bicycle more regularly if dedicated lanes and off-road routes were more readily available (refer to Table 5.2). Recent bicycle counts in the City of Sydney show increases of 60% and 48% in the AM and PM periods, respectively, over the past year on routes where separated cycleways have been constructed. Dedicated cycling lanes and off-road routes must connect to all popular destinations to encourage high levels of uptake.

Table 5.2: Non-regular cyclists preference for separation from vehicles

What would make you bicycle more regularly?	Male	Female
Availability of bicycle dedicated lanes and off road routes	69%	74%
Increased driver awareness of bicycle safety and sharing the road	49%	56%
Availability of bicycle parking or bicycle lockers	33%	41%
Having more cyclists on the road	31%	36%
Increased knowledge of the road rules	12%	22%

Source: Environmetrics Pty Ltd (2006) Sydney Cycleway Research: Internet survey for the City of Sydney

Implementing safe cycling routes, separated from vehicles, is more likely to encourage this group and increase levels of cycling.

5.4.4 Design Requirements

DCP 100 outlines the design requirements for walking and cycling infrastructure within subdivision developments. A minimum of a 1.2 metre wide footpath is required on local and collector streets within

a subdivision. As such it is anticipated that footpaths will be provided on both sides of all local streets within the subdivision at a minimum 1.2 metres wide.

The design requirements for bicycle facilities are included in the *NSW Bicycle Guidelines* and *Austrroads Part 6A: Pedestrian and Cyclist Paths* (2009). The width requirements for shared paths are summarised in Table 5.3.

Table 5.3: Separated Path Widths

	Path width (m)		
	Local access path	Commuter path	Recreational path
Desirable minimum width	2.5	3.0	3.5
Minimum width – typical maximum	2.5 ¹ – 3.0 ²	2.5 ¹ – 4.0 ²	3.0 ¹ – 4.0 ²

1. A lesser width should only to be adopted where cyclist volumes and operational speeds will remain low.

2. A greater width may be required where the numbers of cyclists and pedestrians are very high or there is a high probability of conflict between users (e.g. people walking dogs, roller bladders and skaters etc.).

Source: Austrroads Part 6A: Pedestrian and Cyclist Paths

If the cycleways proposed as part of the development are determined to be shared paths, it is recommended to provide a minimum 3 metre width given their potential as recreational routes.

5.5 Sustainable Transport Infrastructure Summary

- The development offers the opportunity to provide improved public transport services to all residents of Culburra and Orient Point through higher frequency weekday bus services and the provision of weekend and public holiday services.
- The early provision of bus services for the development areas is considered paramount in promoting public transport usage. Initial consultation with the bus operator indicates that the operator welcomes additional patronage within their normal bus operations and would be happy to extend their current service arrangements.
- The indicative street layout for Stages 3, 4 and 5 offers many options for access through the development area, providing vital through site permeability. The street layout is consistent with the aims of the *NSW Planning Guidelines for Walking and Cycling* to promote walking and cycling, particularly for short trips.
- A minimum of a 1.2 metre wide footpath is required on local and collector streets within a subdivision in line with DCP 100.
- The proposed alignment of cycleways; adjacent to the foreshore and Collector Road, and also providing access to Culburra shops is considered conducive to promoting pedestrian and cyclist access, particularly for short trips.
- The foreshore route is considered to be an excellent opportunity as a recreational cycle route and to promote cycle tourism in the region.
- With consideration of likely vehicle speeds and volumes along the Collector Road, it is recommended that a separated cycle facility be provided along this alignment in line with the *NSW Bicycle Guidelines*.
- For shared pedestrian and cycle paths associated within the development, it is recommended to provide a minimum 3 metre width given their potential as recreational routes.

- Given the traffic volumes along Culburra Road, it is recommended to provide a separated facility along the northern side of Culburra Road to provide access between Stages 3, 4 and 5, Culburra shops and Stage 1.

6. Loading Facilities

It is understood that refuse collection for the residential areas of the subdivision will involve kerbside collection by a 12.5 metre long Council garbage vehicle and as such the eastern and western accesses from Culburra Road to Stages 3, 4 and 5 must be able to accommodate such a vehicle.

The concept roundabout layout at the eastern access of the Collector Road and Culburra Road has been designed to accommodate a 12.5m long rigid vehicle and subject to a swept path assessment.

7. Traffic Impact Assessment

7.1 Traffic Generation

7.1.1 Design Rates

Traffic generation estimates for the proposed development would usually be sourced from the *Guide to Traffic Generating Developments* (RMS, 2002). Estimates of peak hour and daily traffic volumes using this guide are set out in Table 7.1.

Table 7.1: Estimated Development Traffic Generation (RMS Rates)

Stage	Land Use	Design Generation Rates		Traffic Generation Estimates (vehicles)	
		Peak Hour	Daily	Peak Hour	Daily
2	Residential (48 x 2 bedroom apartments)	0.4-0.5 vehicle movements/dwelling	4-5 vehicle movements/dwelling	20-24 vehicle movements/hour	192-240 vehicle movements/day
	Residential 55+ aged group (21 x small-lot 2 bedroom single storey villas)	0.2 vehicle movements/dwelling	1-2 vehicle movements/dwelling	5 vehicle movements/hour	21-44 vehicle movements/day
3-5	Residential 500 dwelling houses	0.85 vehicle movements/dwelling	9 vehicle movements/dwelling	425 vehicle movements/hour	4,500 vehicle movements/day
	Residential 30 x mixed-use, 3 bedroom town houses (The Circus)	0.5-0.65 vehicle movements/dwelling	5-6.5 vehicle movements/dwelling	15-20 vehicle movements/hour	150-195 vehicle movements/day
	Residential 26 x 2 bedroom small lot dwellings for the 55+ aged group (behind The Circus)	0.2 vehicle movements/dwelling	1-2 vehicle movements/dwelling	3-6 vehicle movements/hour	26-52 vehicle movements/day
	Residential 10 x 1 bedroom units	0.4-0.5 vehicle movements/dwelling	4-5 vehicle movements/dwelling	4-5 vehicle movements/hour	40-50 vehicle movements/day
	Residential 35 x 2 bedroom units	0.4-0.5 vehicle movements/dwelling	4-5 vehicle movements/dwelling	14-18 vehicle movements/hour	140-175 vehicle movements/day
	Residential 15 x 3 bedroom units	0.5-0.65 vehicle movements/dwelling	5-6.5 vehicle movements/dwelling	8-10 vehicle movements/hour	75-98 vehicle movements/day
Sub-Total				494-513 vehicle movements/hour	5,144-5,354 vehicle movements/day
6	Industrial (6.8 hectares)	8.9 vehicle movements/per hectare	-	60 vehicle movements/hour	-
			Total	554-573 vehicle movements/hour	-

Table 7.1 indicates that based on the adoption of the traffic generation rates contained in the RMS' *Guide to Traffic Generating Developments*:

- the residential component of the proposed development (Stages 2 to 5) could be expected to generate up to 513 vehicle movements (two-way) and the industrial component of the development (Stage 6) up to 60 vehicle movements (two-way) during a typical weekday peak hour.
- Following full-site development, the west Culburra subdivision development could be expected to generate up to 573 vehicle movements (two-way) during a typical weekday peak hour.

7.1.2 Empirical Traffic Generation Leaving the Culburra Area

The Traffic and Transport Unit of Shoalhaven City Council provided empirical traffic generation rates for the established area of Culburra. The trip rates were calculated by using traffic volume data from 2008 annual hourly counts on Greenwell Point Road and Forest Road and residential occupancy data from the 2011 census to determine the number of vehicle trips entering the regional road network (west of Culburra) per occupied dwelling in the relevant peak hours. Table 7.2 summarises the empirical traffic generation rates with further details contained in Appendix C.

Table 7.2: Empirical Traffic Generation Rates (Shoalhaven City Council)

Peak Hour Scenario	Traffic Generation Rate (vehicles per occupied dwelling per peak hour)
Friday AM	0.22
Friday PM	0.21
Saturday	0.23

Source: Shoalhaven City Council (Appendix C)

As shown in Table 7.2, based on analysis of the existing traffic generating characteristics of the established urban area of Culburra, it is anticipated that the proposed development would generate 0.22, 0.21 and 0.23 vehicle trips per dwelling during the respective Friday AM, Friday PM and Saturday peak hours. As advised by Shoalhaven City Council these rates are based on detached dwellings and reductions could be justified for semi-detached or non-detached dwellings.

Application of the empirical traffic generation rates provided by Shoalhaven City Council to the proposed development results in an estimated traffic generation estimates as summarised in Table 7.3.

Table 7.3: Estimated Development Traffic Generation (Shoalhaven City Council Empirical Traffic Generation Rates)

Peak Hour Scenario	Traffic Generation Rate (Shoalhaven City Council)	Proposed Residential Dwellings (Stages 2-5)	Traffic Generation Estimates (vehicles)
Friday AM	0.22	685	151
Friday PM	0.21		144
Saturday	0.23		158

As shown in Table 7.3, based on the adoption of the traffic generation rates provided by Shoalhaven City Council the proposed development is expected to generate 151, 144 and 158 vehicle trips per occupied dwelling during the respective Friday AM, Friday PM and Saturday peak hours on the regional road network (west of Culburra).

It is noted that approx one quarter of the residential dwellings proposed as part of the development are either semi-detached or non-detached (160 of the 685 total dwellings proposed). As such the traffic generation estimates contained in Table 7.3 represents a conservative estimate of the traffic that is likely to be generated by the development (i.e. greater than what could be expected).

Given the existing traffic generating characteristics of the established area of Culburra on the regional road network (west of Culburra) and the proportion of dedicated housing for the over 55 aged group proposed as part of the development, the adoption of the empirical traffic generation estimate is considered appropriate.

Council did however indicate that the remainder of the peak hour traffic generation (that is the RMS rate of 0.85 per dwelling minus the 0.22 leaving Culburra) would travel to the village of Culburra, This is discussed later in Section 7.4.

7.2 Distribution and Assignment

The directional distribution and assignment of traffic generated by the proposed development will be influenced by a number of factors, including the:

- i configuration of the arterial road network in the immediate vicinity of the site
- ii existing operation of intersections providing access between the local and arterial road network
- iii distribution of households in the vicinity of the site
- iv surrounding employment centres, retail centres and schools in relation to the site
- v configuration of access points to the site.

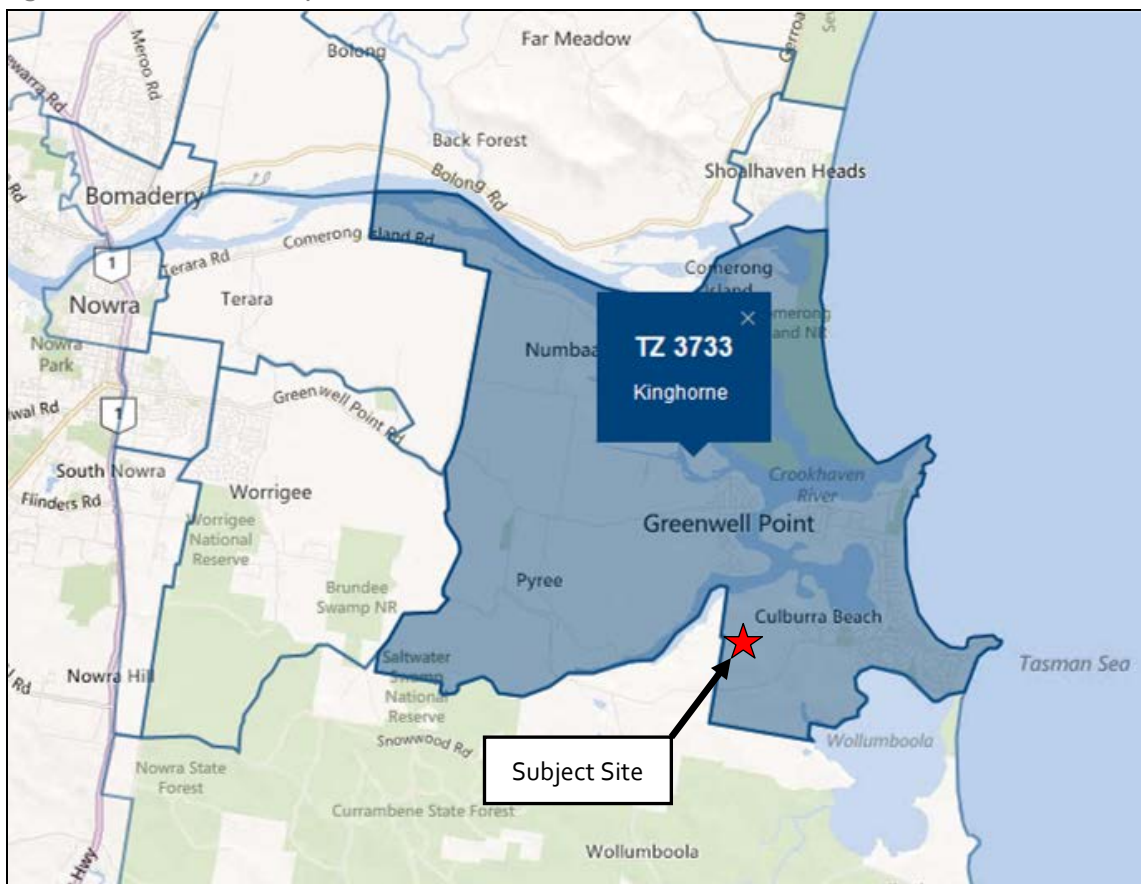
The distribution and assignment of traffic generated by the proposed development has been informed by the following:

- Analysis 2006 Census Journey to Work Data
- Analysis of the May 2012 Traffic Count Data
- Consultation with Shoalhaven City Council's Traffic and Transport Unit.

7.2.1 2006 Census Journey to Work Data

To determine the distribution of development traffic on the surrounding road network, 2006 Census Journey to Work (JTW) data (Bureau of Transport Statistics, 2001) has been analysed to provide an understanding of the existing travel patterns of residents of the area. JTW data provides information relating to the origin and destination of journeys to work and includes the mode of travel. The smallest geographical area for which Journey to Work data is available is a Travel Zone. The development areas are located in Travel Zone 3733; Kinghorne, as shown in Figure 7.1.

Figure 7.1: Bureau of Transport Statistics Travel Zone

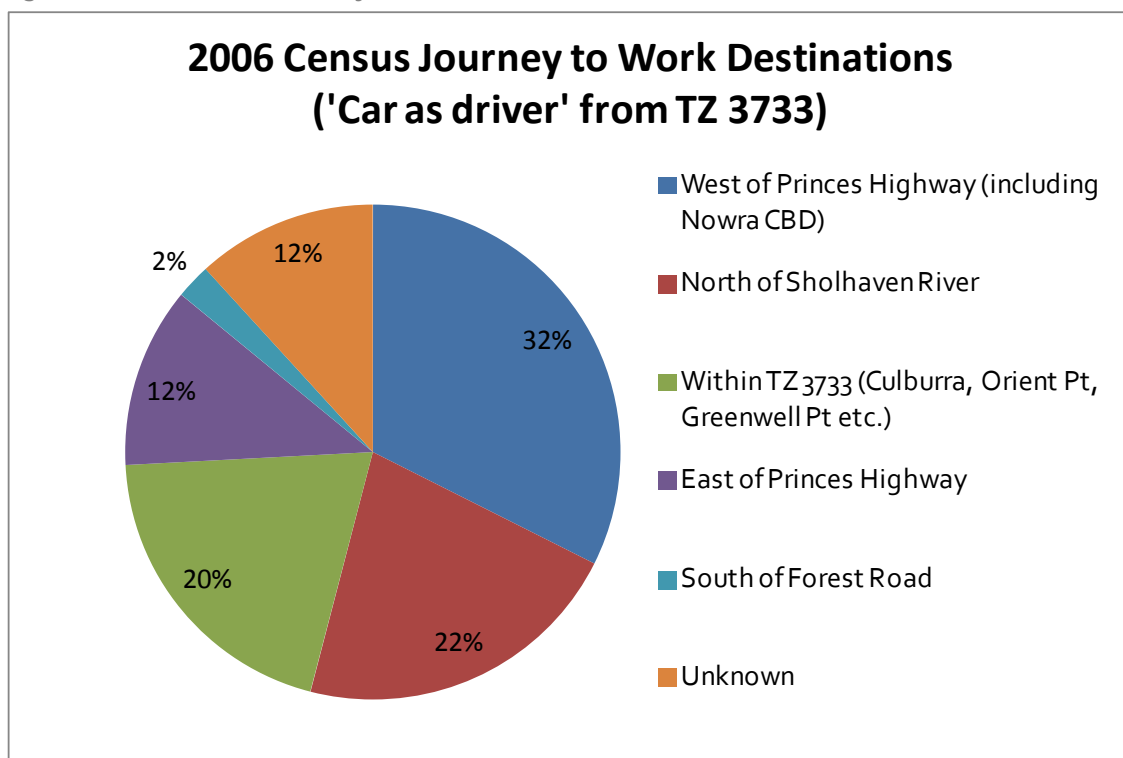


Source: Bureau of Transport Statistics website: <http://www.bts.nsw.gov.au/> (accessed 12 September 2012)

GTA Consultants undertook analysis of all trips made from Travel Zone 3733 by the JTW mode of 'Car as Driver (including 'Truck and Motorbike'), which represented 65% of all journeys to work in the travel zone. Destinations of these trips were grouped into four broad geographical categories; north, south, east of Princes Highway and west of Princes Highway. There were also a number of trips that were classified as 'Unknown', 'Sydney Undefined', 'NSW Undefined' or 'No Fixed Address' in the data. These results have been grouped together into a category referred to as 'Unknown'.

The results of the 2006 Census JTW data for residents of Travel Zone 3733 travelling by a mode of car/truck /motorcycle as driver is summarised in Figure 7.2 below.

Figure 7.2: 2006 Census Journey to Work Destinations



Data Source: Bureau of Transport Statistics website: <http://www.bts.nsw.gov.au/> (accessed 12 September 2012)

Further analysis of the JTW data revealed the following:

- Approximately 26% of all journeys to work made from travel zone 3733 had a destination within the same travel zone
- Approximately 30% of all journeys to work made from travel zone 3733 were to destinations east of the Princes Highway, i.e. they did not cross the Princes Highway.

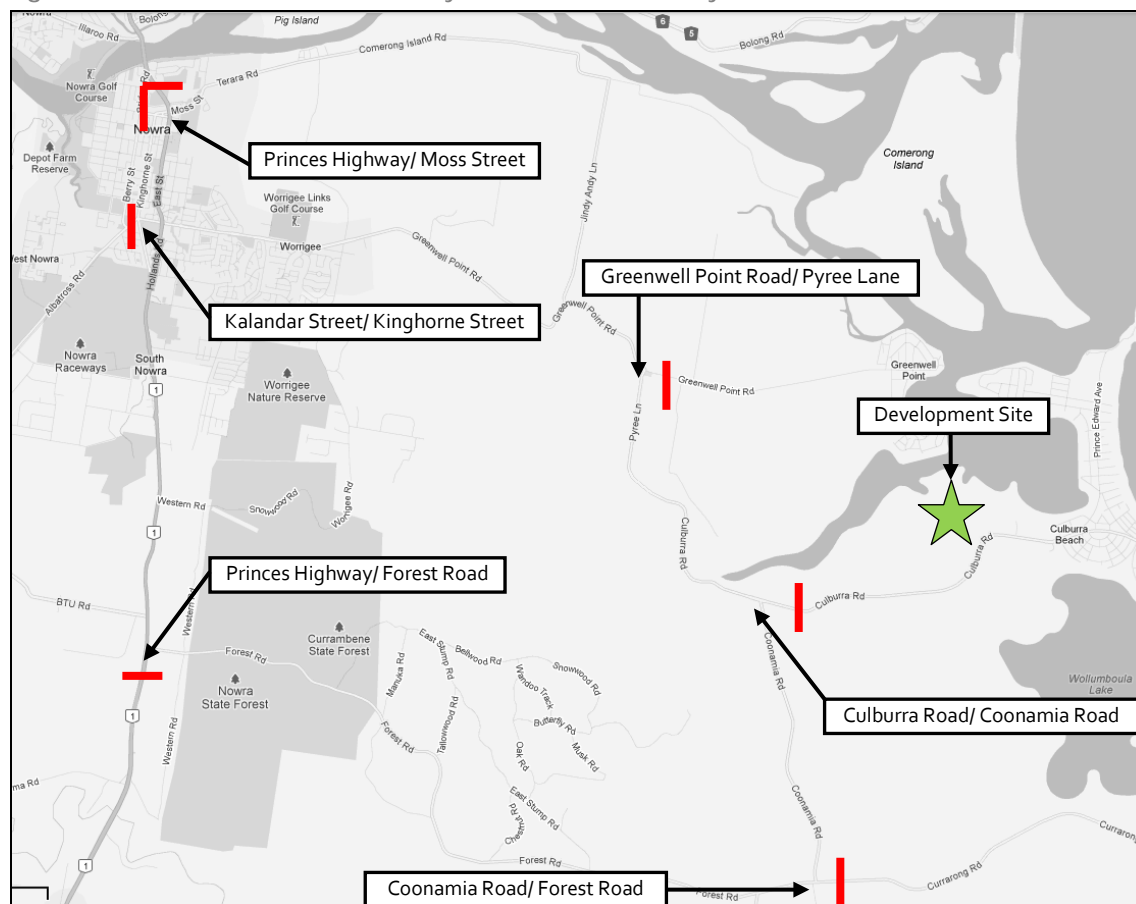
It is noted that whilst a high proportion of existing residents have work destinations within travel zone 3733, new residents are more likely to work further afield and as such are likely to travel to Nowra and beyond for work.

7.2.2 May 2012 Traffic Count Data

The May 2012 traffic count data was analysed to determine the relative distribution of vehicles into and out of the road network under consideration. This was determined by calculating the percentage of vehicles entering or exiting this network during the respective peak hours based on the May 2012 intersection traffic counts. The six entry/exit points to the network are shown graphically in Figure 7.3 and includes the following intersections:

- NORTH – Princes Highway/ Moss Street
- WEST – Princes Highway/ Moss Street, Kalandar Street/ Kinghorne Street
- SOUTH – Princes Highway/ Forest Road
- EAST – Greenwell Point/ Pyree, Culburra Road/ Coonamia Road and the Coonamia Road/ Currarong Road.

Figure 7.3: Directional Distribution Analysis – Road Network Entry/Exit Locations



Background Image Source: Google Maps

While this area does not represent a 'closed' network, whereby there are other entry and exit points to the road network, the analysis was undertaken to provide an indication of the existing directional distribution of vehicles into and out of the road network under consideration. The existing directional distribution of vehicles into and out of this road network during the Friday AM, Friday PM and Saturday peak hours is summarised in Table 7.4, Table 7.5 and Table 7.6 respectively.

Table 7.4: Existing Directional Distribution – Friday AM Peak Hour (May 2012 Traffic Counts)

Direction	Entry/Exit Location	Outbound		Inbound	
West	Moss Street	518	19%	260	7%
	Kinghorne Street	417	15%	405	10%
North	North of Moss Street	1085	40%	1680	42%
South	South of Forest Road	468	17%	1211	30%
East	Culburra Road	143	6%	225	6%
	Curarong Road	22	1%	45	1%
	Greenwell Point Road	66	2%	142	4%
Total		2719	100%	3968	100%

Table 7.5: Existing Directional Distribution – Friday PM Peak Hour (May 2012 Traffic Counts)

Direction	Entry/Exit Location	Outbound		Inbound	
West	Moss Street	383	10%	597	17%
	Kinghorne Street	388	10%	432	13%
North	North of Moss Street	1489	37%	1580	46%
South	South of Forest Road	1342	33%	600	17%
East	Culburra Road	239	6%	127	4%
	Curarong Road	48	1%	20	1%
	Greenwell Point Road	137	3%	64	2%
Total		4026	100%	3420	100%

Table 7.6: Existing Directional Distribution – Saturday Peak Hour (May 2012 Traffic Counts)
Development Traffic Distribution

Direction	Entry/Exit Location	Outbound		Inbound	
West	Moss Street	266	8%	431	14%
	Kinghorne Street	269	8%	299	9%
North	North of Moss Street	1287	40%	1332	42%
South	South of Forest Road	962	30%	683	22%
East	Culburra Road	176	6%	190	6%
	Curarong Road	36	1%	28	1%
	Greenwell Point Road	207	7%	186	6%
Total		3203	100%	3149	100%

7.2.3 Consultation with Shoalhaven City Council

Shoalhaven City Council's Traffic and Transport Unit was consulted extensively in relation to the directional distribution of traffic generated by the proposed development in an effort to gain an understanding of known local traffic patterns and key trip generators. In addition to the empirical traffic generation rates shown in Table 7.3, Council's Traffic and Transport Unit provided directional splits for traffic generated by the development in the relevant peak hours as shown in Table 7.7.

Table 7.7: Empirical Traffic Generation Rates and 120th HH Directional Splits (Shoalhaven City Council)

Peak Hour Scenario	Traffic Generation Rate (Shoalhaven City Council)	Directional Split – 120 th HH	
		Outbound (westbound)	Inbound (eastbound)
Friday AM	0.22	76%	24%
Friday PM	0.21	25%	75%
Saturday	0.23	50%	50%

Source: Shoalhaven City Council (Appendix C)

On the basis of the above, the directional distribution of traffic generated by the development on the road network west of Culburra during the Friday AM, Friday PM and Saturday peak hours are summarised in Table 7.8, Table 7.9 and Table 7.10 respectively (the numbers in brackets in the 'Outbound' and 'Inbound' columns represent the corresponding number of vehicles).

This distribution is also shown graphically in Figure 7.4, Figure 7.5 and Figure 7.6.

Figure 7.7, Figure 7.8 and Figure 7.9 have been prepared to show the estimated increase in turning movements on the surrounding road network following full site development.

Table 7.8: Proposed Directional Distribution – Friday AM Peak Hour

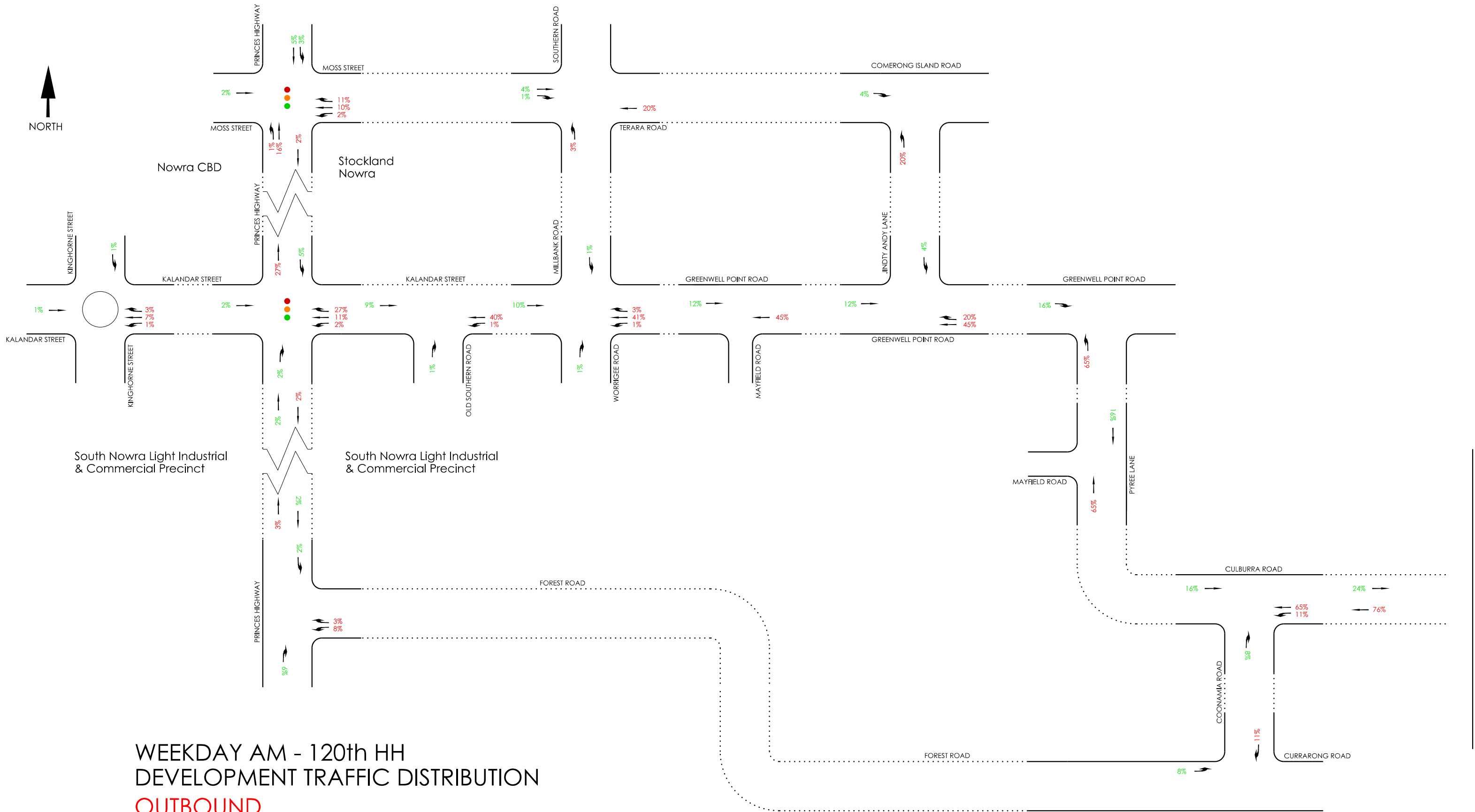
Direction	Route	Outbound	Inbound
West	West of Princes Highway (via Jindy Andy Lane)	10% (15)	2% (3)
	West of Princes Highway (via Millbank Road)		
	West of Princes Highway (via Kalandar Street)	11% (17)	2% (3)
North	North of the Shoalhaven River (via Jindy Andy Lane)	11% (17)	3% (5)
	North of the Shoalhaven River (via Millbank Road)		
	North of the Shoalhaven River (via Kalandar Street)	16% (23)	5% (7)
South	South of Forest Road	8% (12)	6% (9)
East	East of Princes Highway (via Jindy Andy Lane)	2% (3)	0% (0)
	East of Princes Highway (via Millbank Road)		
	East of Princes Highway (via Kalandar Street)	13% (20)	2% (3)
	East of Princes Highway (via Worrigeer Road or Old Southern Road)	2% (3)	2% (3)
	East of Princes Highway (via Forest Road)	3% (5)	2% (3)
Total		76% (115)	24% (36)

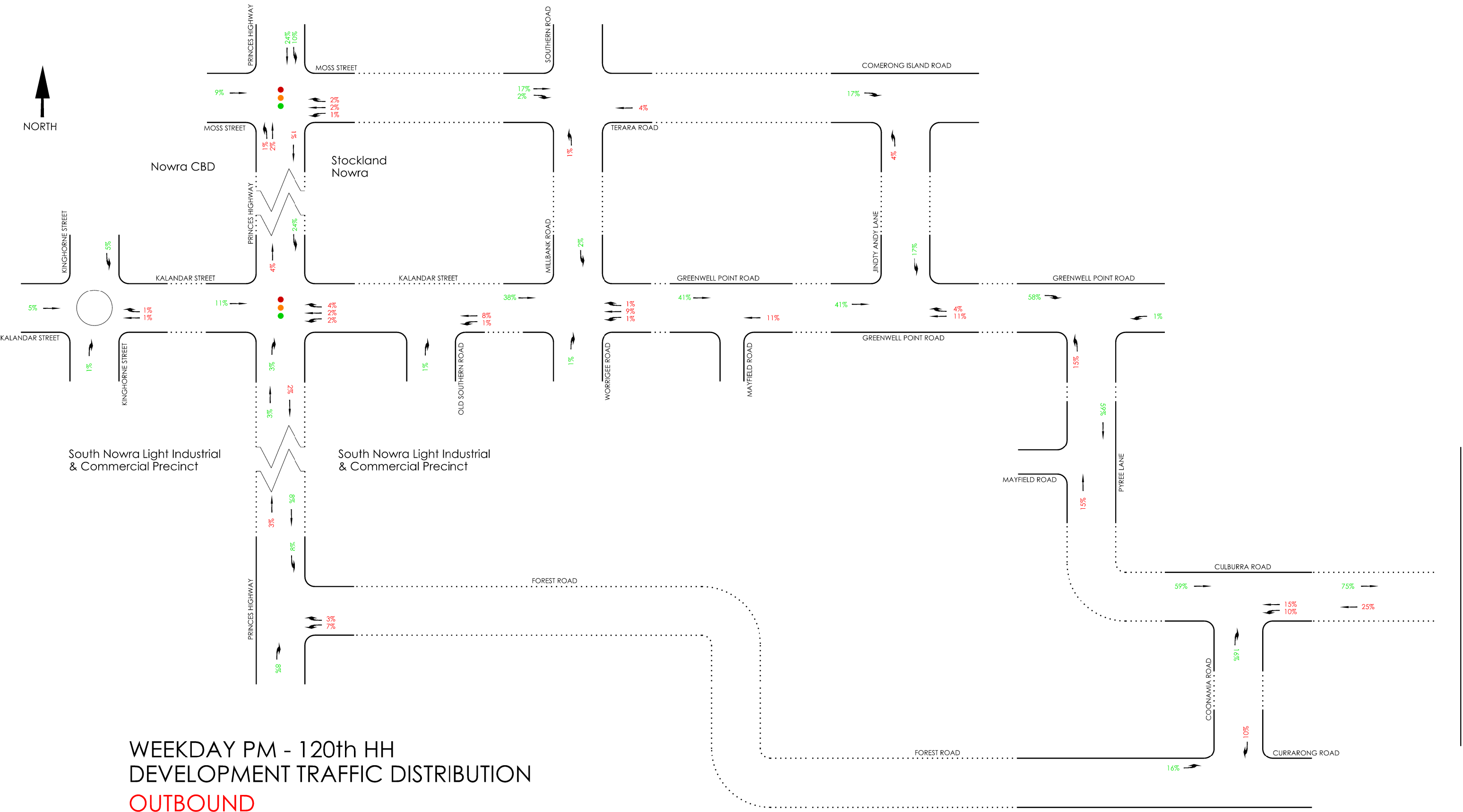
Table 7.9: Proposed Directional Distribution – Friday PM Peak Hour

Direction	Route	Outbound	Inbound
West	West of Princes Highway (via Jindy Andy Lane)	2% (3)	9% (13)
	West of Princes Highway (via Millbank Road)		
	West of Princes Highway (via Kalandar Street)	3% (4)	11% (16)
North	North of the Shoalhaven River (via Jindy Andy Lane)	2% (3)	10% (14)
	North of the Shoalhaven River (via Millbank Road)		
	North of the Shoalhaven River (via Kalandar Street)	2% (3)	24% (35)
South	South of Forest Road	7% (10)	8% (12)
East	East of Princes Highway (via Jindy Andy Lane)	1% (2)	0% (0)
	East of Princes Highway (via Millbank Road)		
	East of Princes Highway (via Kalandar Street)	3% (4)	3% (4)
	East of Princes Highway (via Worrigeer Road or Old Southern Road)	2% (3)	2% (3)
	East of Princes Highway (via Forest Road)	3% (4)	8% (11)
Total		25% (36)	75% (108)

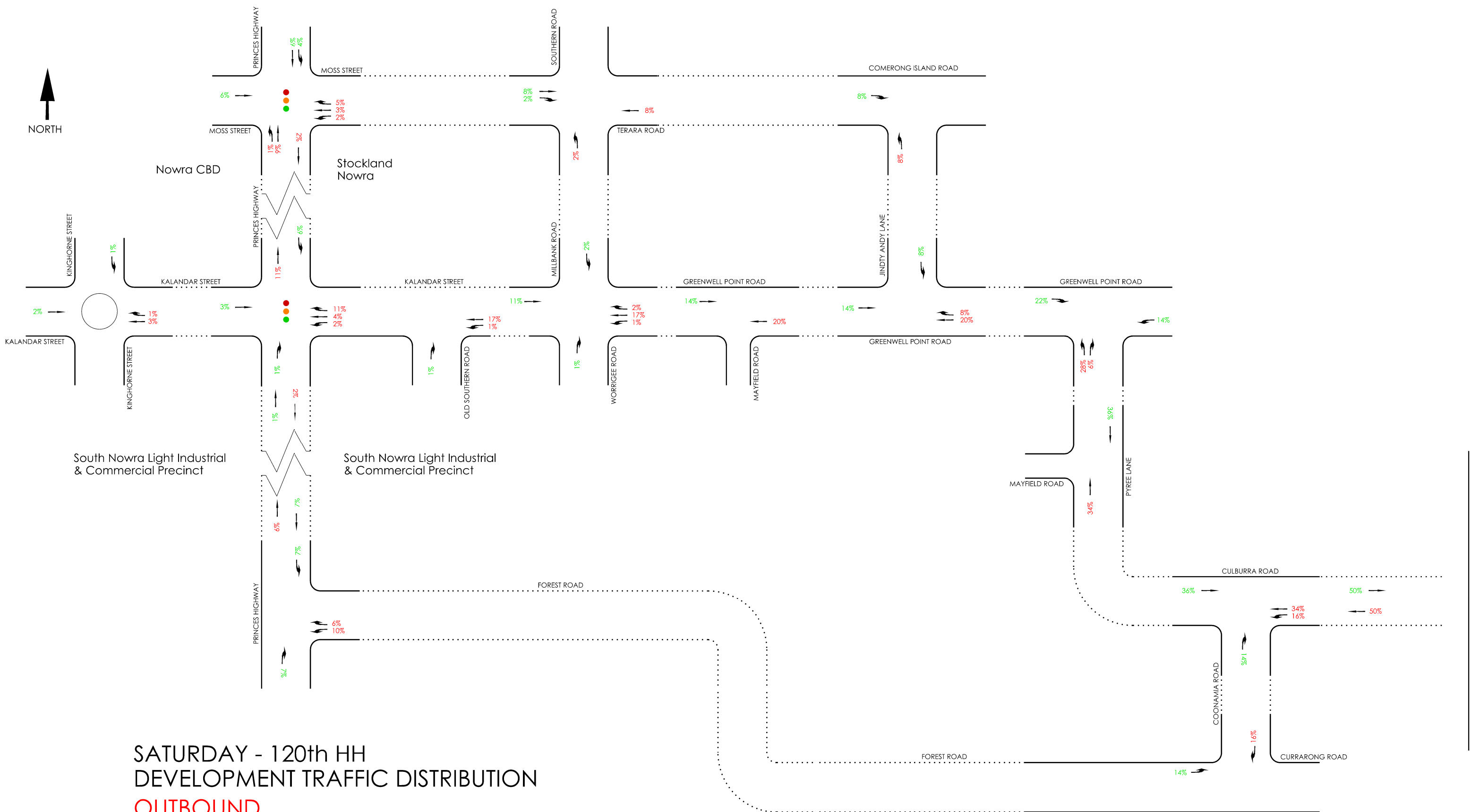
Table 7.10: Proposed Directional Distribution – Saturday Peak Hour

Direction	Route	Outbound	Inbound
West	West of Princes Highway (via Jindy Andy Lane)	3% (5)	6% (9)
	West of Princes Highway (via Millbank Road)		
	West of Princes Highway (via Kalandar Street)	5% (8)	3% (5)
North	North of the Shoalhaven River (via Jindy Andy Lane)	5% (8)	4% (6)
	North of the Shoalhaven River (via Millbank Road)		
	North of the Shoalhaven River (via Kalandar Street)	9% (15)	6% (9)
South	South of Forest Road	10% (16)	7% (11)
East	East of Princes Highway (via Jindy Andy Lane)	2% (3)	0% (0)
	East of Princes Highway (via Millbank Road)		
	East of Princes Highway (via Kalandar Street)	2% (3)	1% (2)
	East of Princes Highway (via Worrigeer Road or Old Southern Road)	2% (3)	2% (3)
	East of Princes Highway (via Forest Road)	6% (9)	7% (11)
	Greenwell Point	6% (9)	14% (23)
Total		50% (79)	50% (79)

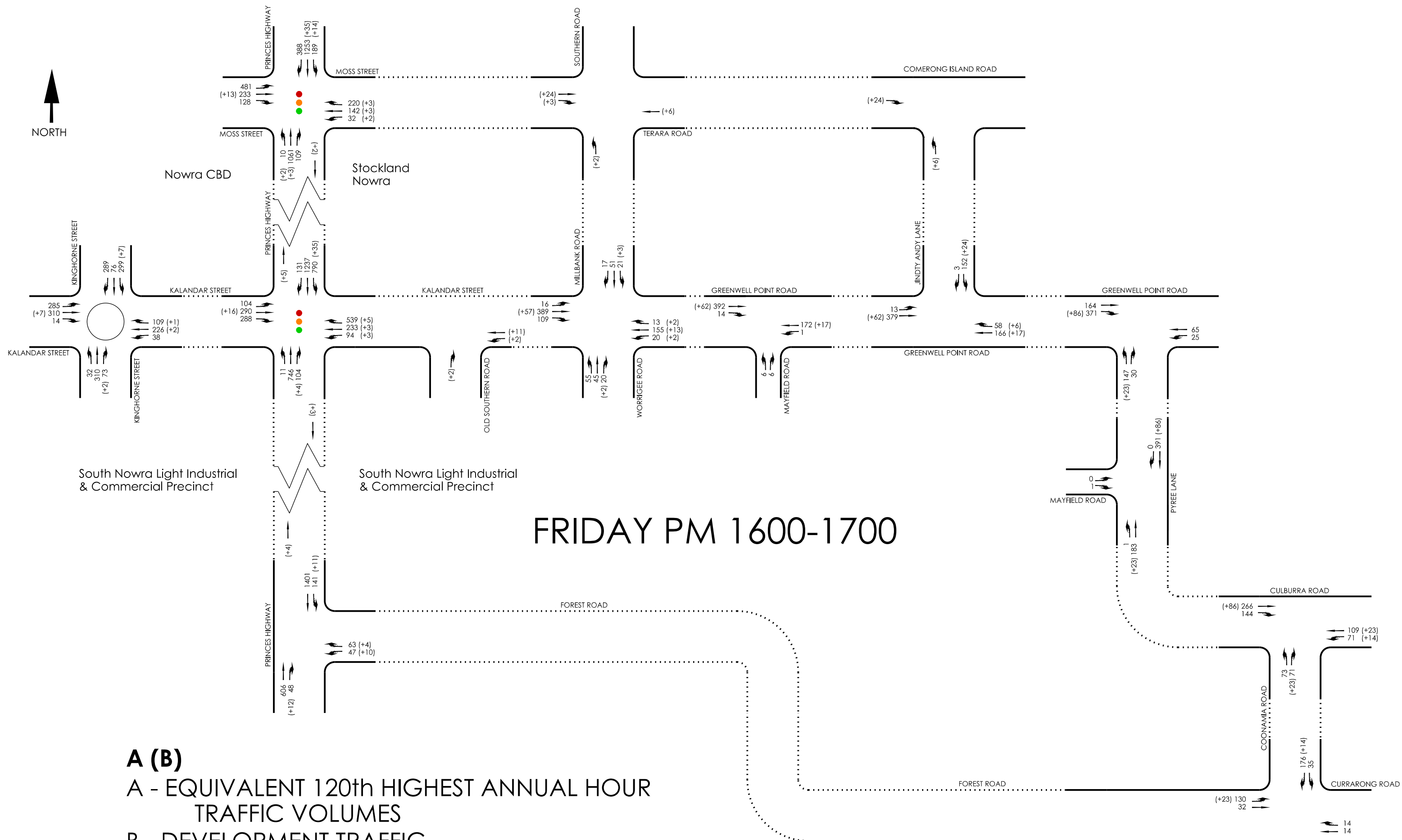




WEEKDAY PM - 120th HH
DEVELOPMENT TRAFFIC DISTRIBUTION
OUTBOUND
INBOUND



SATURDAY - 120th HH
DEVELOPMENT TRAFFIC DISTRIBUTION
OUTBOUND
INBOUND



A (B)

A - EQUIVALENT 120th HIGHEST ANNUAL HOUR TRAFFIC VOLUMES

B - DEVELOPMENT TRAFFIC

7.3 Traffic Impact

The West Culburra subdivision development will be the major source of growth in the Culburra area over the next 10 years. It is anticipated that the development will be completed in stages, with full site development reached approx. 8 years after commencement.

An assessment of the impacts that the anticipated development traffic would have on the surrounding road network can be made by comparing intersection performance prior to and following full site development.

The proposed development is anticipated to generate an additional 151, 144 and 158 vehicle movements (two-way) on the road network west of Culburra during the respective Friday AM, Friday PM and Saturday peak hours.

Table 7.11 presents a summary of intersection operating conditions following full site development while full results are contained in Appendix D.

Table 7.11: Future Operating Conditions (Equivalent 120th HH plus Development Traffic)

Intersection	Peak	Degree of Saturation (DOS)	Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Culburra Road/ Coonamia Road	Friday AM	0.234	6.3	6	NA
	Friday PM	0.191	6.0	5	NA
	Saturday	0.177	6.4	5	NA
Culburra Road/ Mayfield Road	Friday AM	0.251	0.8	5	NA
	Friday PM	0.261	1.0	15	NA
	Saturday	0.173	1.0	9	NA
Greenwell Point Road/ Pyree Lane	Friday AM	0.306	9.7	11	NA
	Friday PM	0.701	12.1	68	NA
	Saturday	0.307	8.4	10	NA
Greenwell Point Road/ Jindy Andy Lane	Friday AM	0.283	3.7	9	NA
	Friday PM	0.273	4.4	8	NA
	Saturday	0.218	3.8	6	NA
Greenwell Point Road/ Mayfield Road	Friday AM	0.237	2.1	11	NA
	Friday PM	0.270	2.6	25	NA
	Saturday	0.183	2.5	18	NA
Greenwell Point Road/ Millbank Road/ Worrigee Road	Friday AM	0.448	7.6	18	NA
	Friday PM	0.270	6.3	8	NA
	Saturday	0.163	5.6	4	NA
Princes Highway/ Kalandar Street	Friday AM	1.082	100.2	461	F
	Friday PM	1.109	129.3	539	F
	Saturday	0.983	67.6	415	E
Coonamia Road/ Currarong Road/ Forest Road	Friday AM	0.124	12.1	4	NA
	Friday PM	0.274	12.3	9	NA
	Saturday	0.238	12.4	8	NA
Kalandar Street/ Kinghorne Street	Friday AM	0.738	15.8	73	B
	Friday PM	0.786	16.2	82	B
	Saturday	0.377	9.9	18	A
Princes Highway/ Forest Road	Friday AM	0.739	2.1	6	NA
	Friday PM	0.766	5.7	20	NA
	Saturday	0.598	3.8	15	NA
Princes Highway/ Moss Street	Friday AM	1.066	109.1	472	F
	Friday PM	1.243	223.2	795	F
	Saturday	0.873	48.3	199	D

On the basis of the above assessment, under equivalent 120th HH traffic volumes with the addition of traffic generated by the development:

- the priority controlled intersections operate well with minimal delays and queues on all approaches during the three respective peak periods

- As stated earlier, the Princes Highway intersections at Kalandar Street and Moss Street experience significant delays particularly during the Friday AM and Friday PM peak periods. However there is no significant change to the intersection Level of Service with the addition of development traffic.

7.3.1 Princes Highway/ Forest Road Intersection

It is noted that the Princes Highway/ Forest Road intersection will be upgraded as part of the upgrade of the Princes Highway between Kinghorne Street and Forest Road. No detailed plans of the upgraded intersection were available for this assessment but it is understood that a kerbed seagull arrangement will be provided allowing all turning movements as shown in the concept intersection layout shown in Figure 2.14. Given this, the SIDRA assessment with the addition of development traffic was undertaken using the existing intersection arrangement. In reality the new intersection will be upgraded prior to the development being completed.

7.3.2 Princes Highway Signalised Intersections

Table 7.12 provides a summary of the increase in traffic volumes from development traffic at the key Princes Highway signalised intersections of Kalandar Street and Moss Street. Unfortunately no detailed

Table 7.12: Signalised Intersection Traffic Volume Comparison

Intersection	Existing Equivalent 120 th HH Traffic Volumes through Intersection (vehicles)			Development Traffic Increase through Intersection		
	Friday AM	Friday PM	Saturday	Friday AM	Friday PM	Saturday
Princes Highway/ Kalandar Street	3,611	4,463	4,089	73 (%2)	66 (2%)	41 (1%)
Princes Highway/ Moss Street	3,690	4,246	3,595	75 (2%)	75 (2%)	57 (2%)

As shown in Table 7.12 the addition of development traffic at the Princes Highway intersections of Kalandar Street and Moss Street represents only a marginal increase in the total volume of traffic travelling through the intersections following full site development. During the three peak hours examined, a maximum increase of 2% on existing traffic volumes is anticipated.

The impact of this additional traffic on intersections on the wider road network has been assessed using SIDRA INTERSECTION. Table 7.11 presents a summary of the anticipated future operation of the intersections following the full development of the site under 120th HH equivalent traffic volumes, with full results included in Appendix D.

7.3.3 Culburra Road/ new Collector Road intersection

GTA Consultants assessed the operation of the proposed eastern roundabout intersection of the new Collector Road with Culburra Road following full site development using SIDRA under equivalent 120th HH traffic volumes.

For the purposes of assessment a 28 metre wide roundabout was modelled without a southern arm to the golf course (notwithstanding this, a sensitivity test was undertaken using the predicted golf club traffic). A 1% linear growth rate was applied to the existing Culburra Road through traffic for full site development around 2032.

Table 7.13 presents a summary of the operation of a roundabout at the intersection following full site development, with full results presented in Appendix D of this report.

Table 7.13: Post-Development Intersection Operating Conditions – Three Arm Roundabout

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Culburra Road Road/ Collector Road (east)	AM	East	0.212	4.1	9	A
		North	0.254	4.8	11	A
		West	0.155	2.9	6	A
	PM	East	0.285	6.4	14	A
		North	0.099	5.4	4	A
		West	0.319	4.3	14	A
	Sat	East	0.255	5.3	12	A
		North	0.171	4.8	7	A
		West	0.194	3.5	7	A

On the basis of the above assessment, it is clear that a roundabout at the intersection of Culburra Road and the eastern access to the new Collector Road would be expected to operate well with minimal delays on all approaches.

Furthermore, a sensitivity test was undertaken to assess the additional effect of a fourth, southern arm roundabout to access the proposed Long Bow Point Golf Course. Traffic volumes for the golf club development were used in the assessment were taken from the Traffic and Parking Assessment of the golf course development prepared by Traffic Solutions Pty Ltd (Section 2.3.1). Table 7.14 presents a summary of the operation of a four arm roundabout at the intersection following full site development, with full results presented in Appendix D of this report.

Table 7.14: Post-Development Intersection Operating Conditions – Four Arm Roundabout

Intersection	Peak	Leg	Degree of Saturation (DOS)	Average Delay (sec)	95th Percentile Queue (m)	Level of Service (LOS)
Culburra Road/ Collector Road (east)/ Golf Course	AM	South	0.009	9.5	0	A
		East	0.237	4.3	10	A
		North	0.259	4.9	11	A
		West	0.166	3.5	6	A
	PM	South	0.047	10.6	2	A
		East	0.298	6.4	14	A
		North	0.103	5.5	4	A
		West	0.331	4.6	14	A
	Sat	South	0.036	10.2	1	A
		East	0.286	5.4	13	A
		North	0.177	5.0	7	A
		West	0.212	4.2	8	A

On the basis of the above assessment, it is clear that with the addition of a four arm roundabout to provide access to the proposed Long Bow Point Golf Course, the intersection would be expected to operate well with minimal delays on all approaches.

7.4 Possible Traffic Impact In Culburra

As stated in Section 7.1.1, Council believe that the traffic generation from the site to Culburra would be 0.63 trips per dwelling in a Friday AM peak based on the premise that one dwelling generates 0.85 trips.

GTA undertook a survey of 3 residential areas in Culburra which appeared fully occupied on 26 February 2013. The traffic entering Glenhouse Way, Eastwood Avenue and Wentworth Street was recorded on a weekday AM & PM peak. These 71 dwellings generated 45 trips which equates to 0.64 trips per dwelling. Assuming 0.22 of these head to destinations west of Culburra, the proposed development could generate 0.42 trips per dwelling to/within Culburra. This equates to 288 trips per hour, which is 4/5 per minute in the busiest hour.

The intersections in Culburra are very lightly trafficked and most are observed to operate at Level of Service A/B. The addition of the development traffic will not cause any significant changes in their operational performance.

8. Rural Road Assessment

As part of the assessment, Shoalhaven City Council has requested that GTA Consultants consider the following:

- i Austroads cross-section warrants based on existing road characteristics.
- ii Annual Average Daily Traffic (AADT) of study roads to understand the expected impact on an average day.
- iii Peak Seasonal Daily Traffic (PSDT) to understand the expected impact during peak seasonal times of the year such as school holidays and across the summer period. This is based on the 120th highest hour.
- iv Warrants for overtaking lanes on roads in the study area.

GTA Consultants has responded to each assessment criteria as requested and they are set out in the following sections.

8.1 Austroads Cross-Section Warrants

Guidance on single land rural road cross-sections have been sourced from Austroads Guide to Road Design Part 3: Geometric Design Table 4.5 which is reproduced in Figure 8.1.

Figure 8.1: Austroads Table 4.5: Single carriageway rural road widths (m)

Element	Design AADT				
	1 – 150	150 – 500	500 – 1,000	1,000 – 3,000	> 3,000
Traffic lanes ⁽¹⁾	3.7 (1 x 3.7)	6.2 (2 x 3.1)	6.2 – 7.0 (2 x 3.1/3.5)	7.0 (2 x 3.5)	7.0 (2 x 3.5)
Total shoulder	2.5	1.5	1.5	2.0	2.5
Minimum shoulder seal ^{(2),(3),(4),(5),(6)}	0	0.5	0.5	1.0	1.5
Total carriageway	8.7	9.2	9.2 – 10.0	11.0	12.0

1. Traffic lane widths include centre-lines but are exclusive of edge-lines.

2. Where significant numbers of cyclists use the roadway, consideration should be given to fully sealing the shoulders. Suggest use of a maximum size 10mm seal within a 20 km radius of towns.

3. Wider shoulder seals may be appropriate depending on requirements for maintenance costs, soil and climatic conditions or to accommodate the tracked width requirements for Large Combination Vehicles.

4. Short lengths of wider shoulder seal or lay-bys to be provided at suitable locations to provide for discretionary stops.

5. Full width shoulder seals may be appropriate adjacent to safety barriers and on the high side of superelevation.

6. A minimum 7.0 m seal should be provided on designated heavy vehicle routes (or where the AADT contains more than 15% heavy vehicles).

GTA Consultants has reviewed each of the study area roads identified in Figure 8.2 based on information from aerial photography (Nearmap, Six Maps, Google), Google Streetview and our previous site inspections of the study area, to categorise each section of road according to Figure 8.1. The results for rural sections of roads are summarised in Table 8.1 with the urban roads summarised in Table 8.2.

A rural road was considered any road without a formal kerb and an urban road was considered as any of those roads with a formal kerb passing through residential areas.

Table 8.1: Summary of Existing Rural Road Characteristics

Road	From	To	Urban / Rural	Speed Limit	Carriageway Width (m)	Average Sealed Shoulder (N/W)	Average Sealed Shoulder (S/E)	Average Gravel Shoulder (N/W)	Average Gravel Shoulder (S/E)	Total Carriageway Width	Rural Design AADT
Forest Road	Coonamia Road	Callala Beach Road	Rural	80	6	0	0	0.5	0.5	7	150 to 500
Forest Road	Callala Beach Road	East Stump Road	Rural	80/90/100	6	1	1	0	0	8	150 to 500
Forest Road	East Stump Road	Chesnut Road	Rural	100	6	0.5	0.5	1	1	9	150 to 500
Forest Road	Chesnut Road	Manuka Road	Rural	100	6	1	1	0.5	0.5	9	150 to 500
Forest Road	Manuka Road	Gimlet Road	Rural	100/90	6	1	1	1	1	10	150 to 500
Forest Road	Gimlet Road	Vineyard Road	Rural	90	6	1	1	1	1	10	150 to 500
Forest Road	Vineyard Road	Western Road	Rural	90	6	1	1	1	1	10	150 to 500
Forest Road	Western Road	Princes Highway	Rural	60	6	0	0	0	0	6	150 to 500
Comerong Island Road	Jindy Andy Lane	90 degree left turn	Rural	60	6	0	0	0	0	6	150 to 500
Comerong Island Road	90 degree left turn	Milbank Road	Rural	60/80	6	0	0	0	0	6	150 to 500
Terara Road	Milbank Road	Wondalga Crescent	Rural	50/60	6	0	0	0	0	6	150 to 500
Greenwell Point Road	West Street	Pyree Lane	Rural	100/80/50	5.4	0 to 0.3	0 to 0.3	0	0	5.4 to 6	150 to 500
Greenwell Point Road	Pyree Lane	Jindy Andy Lane	Rural	80	6.4	0.3 to 0.5	0.3 to 0.5	0	0	7 to 8.4	500 to 1000
Greenwell Point Road	Jindy Andy Lane	Apperleys Lane	Rural	80	6.2	0 to 0.3	0 to 0.3	0	0	6.2 to 6.8	150 to 500
Greenwell Point Road	Apperleys Lane	Worrigee Road	Rural	60/80	7	0.5 to 1	0.5 to 1	0	0	8 to 9	1000 to 3000
Greenwell Point Road	Worrigee Road	Old Southern Road	Rural	60	6.2	0 to 3m	0 to 2m	0	0	6.2 to 11.2	500 to 1000
Greenwell Point Road	Old Southern Road	Clipper Road	Rural	60	6.7	0.3	0.3	0	0	7.3	150 to 500

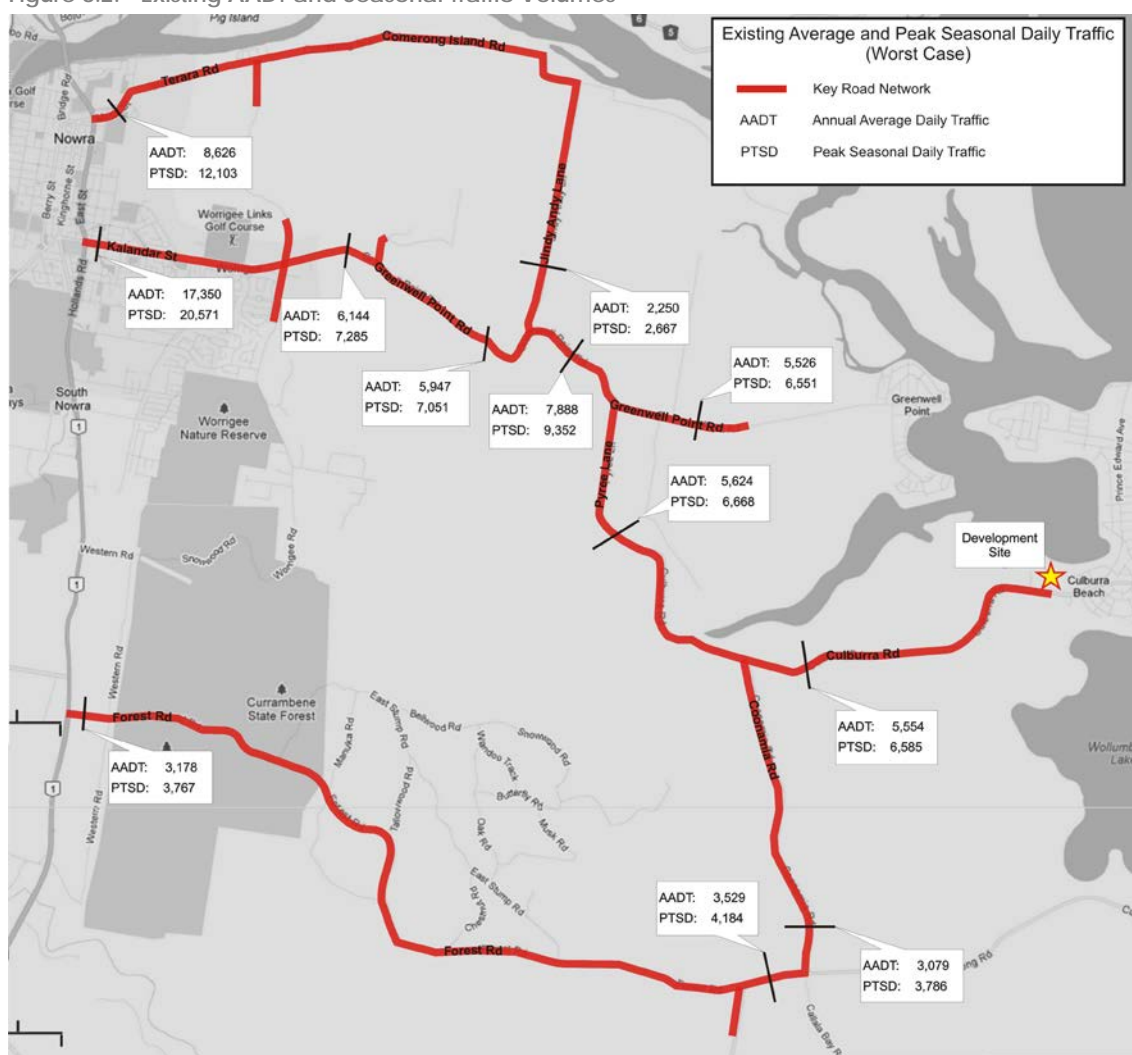
Table 8.2: Summary of Existing Rural Road Characteristics

Road	From	To	Urban / Rural	Speed Limit	Carriageway Width (m)	Average Sealed Shoulder (N/W)	Average Sealed Shoulder (S/E)	Average Gravel Shoulder (N/W)	Average Gravel Shoulder (S/E)	Total Carriageway Width	Rural Design AADT
Moss Street	Wondalga Crescent	Princes Highway	Urban	50	12	Kerb	Kerb	N/A	N/A	12	N/A
Greenwell Point Road	Clipper Road	McKay Street	Urban	60	12	Kerb	Kerb	N/A	N/A	12	N/A
Kalandar Street	McKay Street	Stuart Street	Urban	60	10.4	Kerb	Kerb	N/A	N/A	10.4	N/A
Kalandar Street	Stuart Street	Wallace Street	Urban	60	10.8	Kerb	Kerb	N/A	N/A	10.8	N/A
Kalandar Street	Wallace Street	Princes Highway	Urban	60	12	Kerb	Kerb	N/A	N/A	12	N/A

8.2 Existing Daily Traffic

Shoalhaven City Council provided GTA Consultants with peak to daily traffic conversion factors to apply to the May 2012 volumes counted at the study intersections to determine AADT and PSDT. These factors have been applied to the existing May 2012 turning movement volumes, and are shown in Figure 8.2. Shoalhaven City Council provided two conversion factors for both AADT and PSDT, and each were based on the Friday (8-9am) or Saturday (12-1pm) peak hours. When applied to the turning volumes, in some cases the factors yielded different daily volumes. In these cases, as requested by Council, the higher or 'worst case' value has been selected for assessment.

Figure 8.2: Existing AADT and Seasonal Traffic Volumes



Base Map Source: maps.google.com.au

The existing daily traffic based on the factors provided by Shoalhaven City Council has been compared to the design capacity based on Austroads requirements. The comparison is provided in Table 8.3.

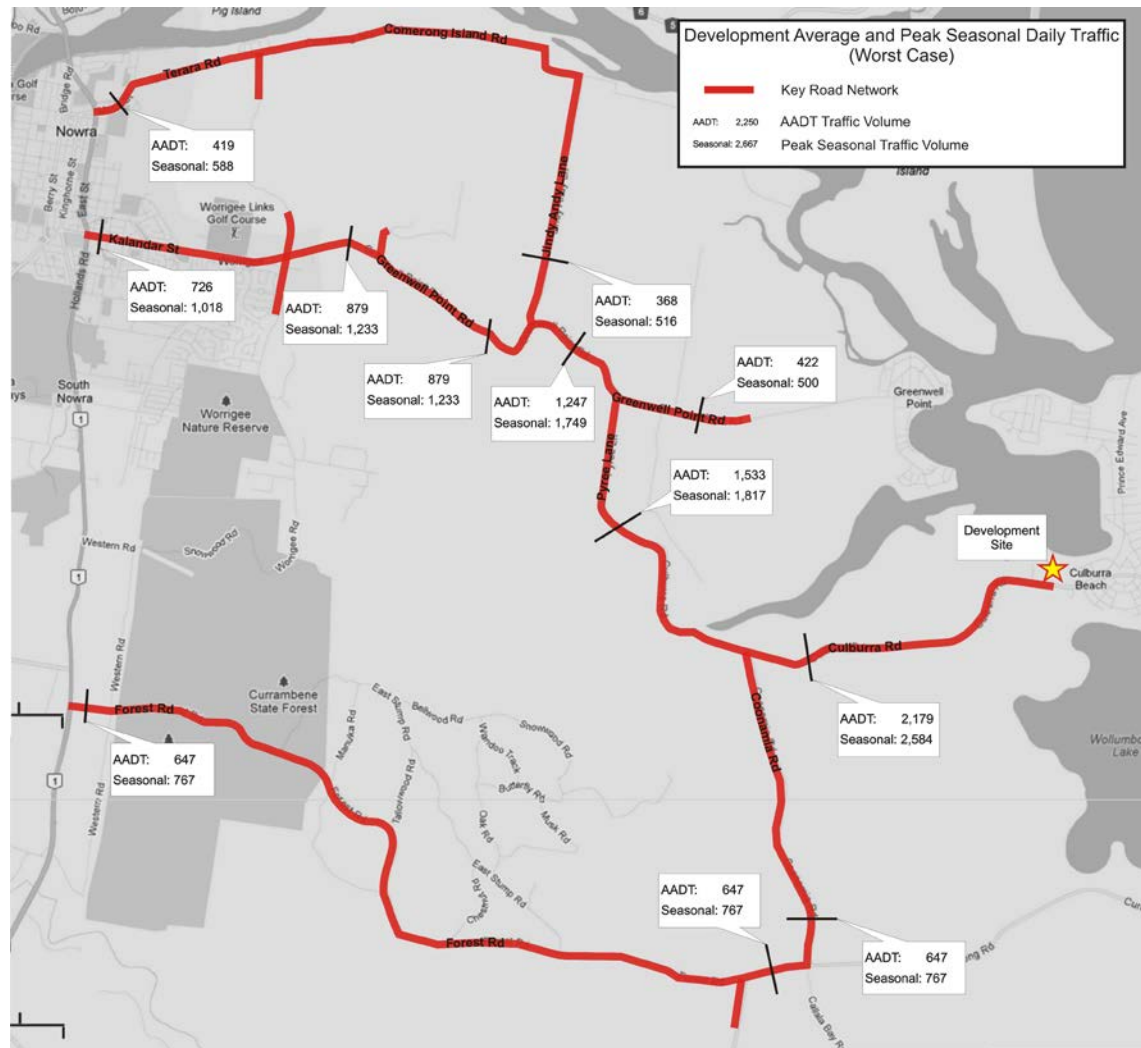
Table 8.3: Design AADT and Existing Daily Traffic

Road	From	To	Rural Design AADT	Existing AADT	Existing PSDT
Coonamia Road	Culburra Road	Forest Road	150 to 500	3,079	3,786
Forest Road	Coonamia Road	Callala Beach Road	150 to 500	3,529	4,184
Forest Road	Callala Beach Road	Princes Highway	150 to 500	3,178	3,767
Greenwell Point Road	West Street	Pyree Lane	150 to 500	5,526	6,551
Greenwell Point Road	Pyree Lane	Jindy Andy Lane	500 to 1000	7,888	9,352
Greenwell Point Road	Jindy Andy Lane	Apperleys Lane	150 to 1000	5,947	7,051
Greenwell Point Road	Apperleys Lane	Worrigee Road	1,000 to 3,000	6,144	7,285
Jindy Andy Lane	Greenwell Point Road	Comerong Island Road	150 to 500	2,250	2,667
Pyree Lane	Coonamia Road	Jindy Andy Lane	150 to 500	5,624	6,668

8.3 Anticipated Daily Development Traffic

The anticipated average and peak seasonal daily traffic has been estimated based on discussions with Council and investigations by GTA Consultants. The additional development traffic and expected future traffic post development is summarised in Figure 8.3 and Figure 8.4 respectively.

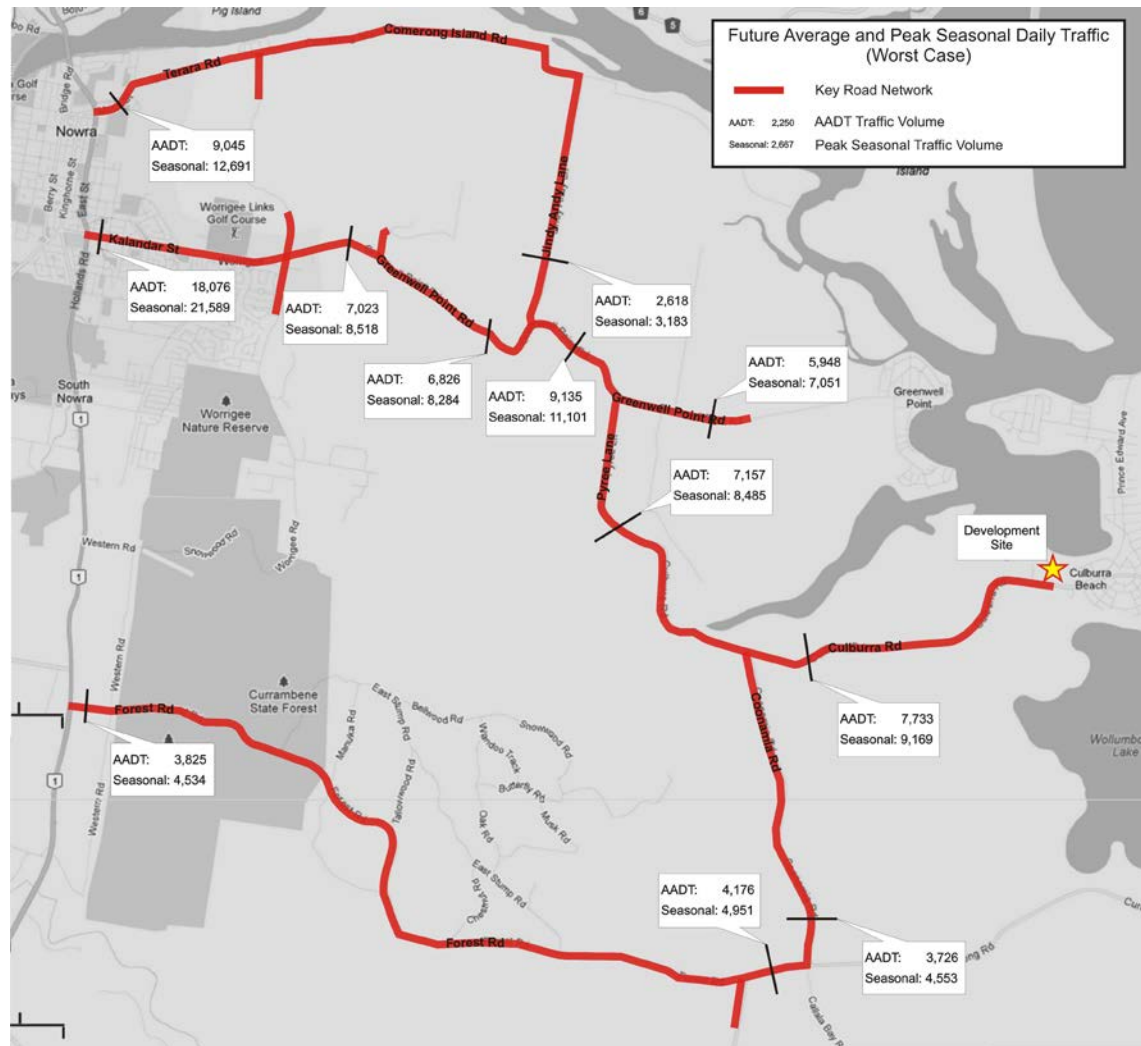
Figure 8.3: Anticipated Development Daily Traffic



Base Map Source: maps.google.com.au

The methods for calculating the traffic volumes generated by the development are explained in Section 7. According to GTA calculations, the worst case day for peak hour traffic generation onto the road network west of Culburra was found to be Saturday and traffic distribution was assigned accordingly.

Figure 8.4: Anticipated Post Development Daily Traffic



Base Map Source: maps.google.com.au

Figure 8.3 and Figure 8.4 indicate that the rural road network surrounding Culburra is expected to experience increases of between 368 and 2,179 vehicles on an average day, and between 500 and 2,584 vehicles at seasonal peaks. Culburra Road is expected to experience the greatest increases, originating directly from the development at 2,179 vpd (AADT) and 2,584 vpd (PSDT). Greenwell Point Road, Pyree Lane and Forest Road are also expected to see increased volumes.

However, it is also recognised that the performance of the road is more likely to be dictated by the peak hour performance of the intersections along its length. As shown in Section 7 the surveyed intersections Level of Service is unchanged with the addition of development traffic under 120th HH conditions.

8.4 S94 Requirements

Council currently has a Section 94 Plan which will raise funding towards parts of the roadway network which are considered deficient. This includes the following road related works:

- Pyree Lane Improvements \$129.86 per dwelling
- Greenwell Point Road \$34.44 per dwelling

- Culburra Road/ Prince Highway \$213.69 per dwelling.

The developer will pay these S94 contributions to help address Councils concerns about the deficiencies of certain sections of the road to the site.

8.5 Warrants for Overtaking Lanes

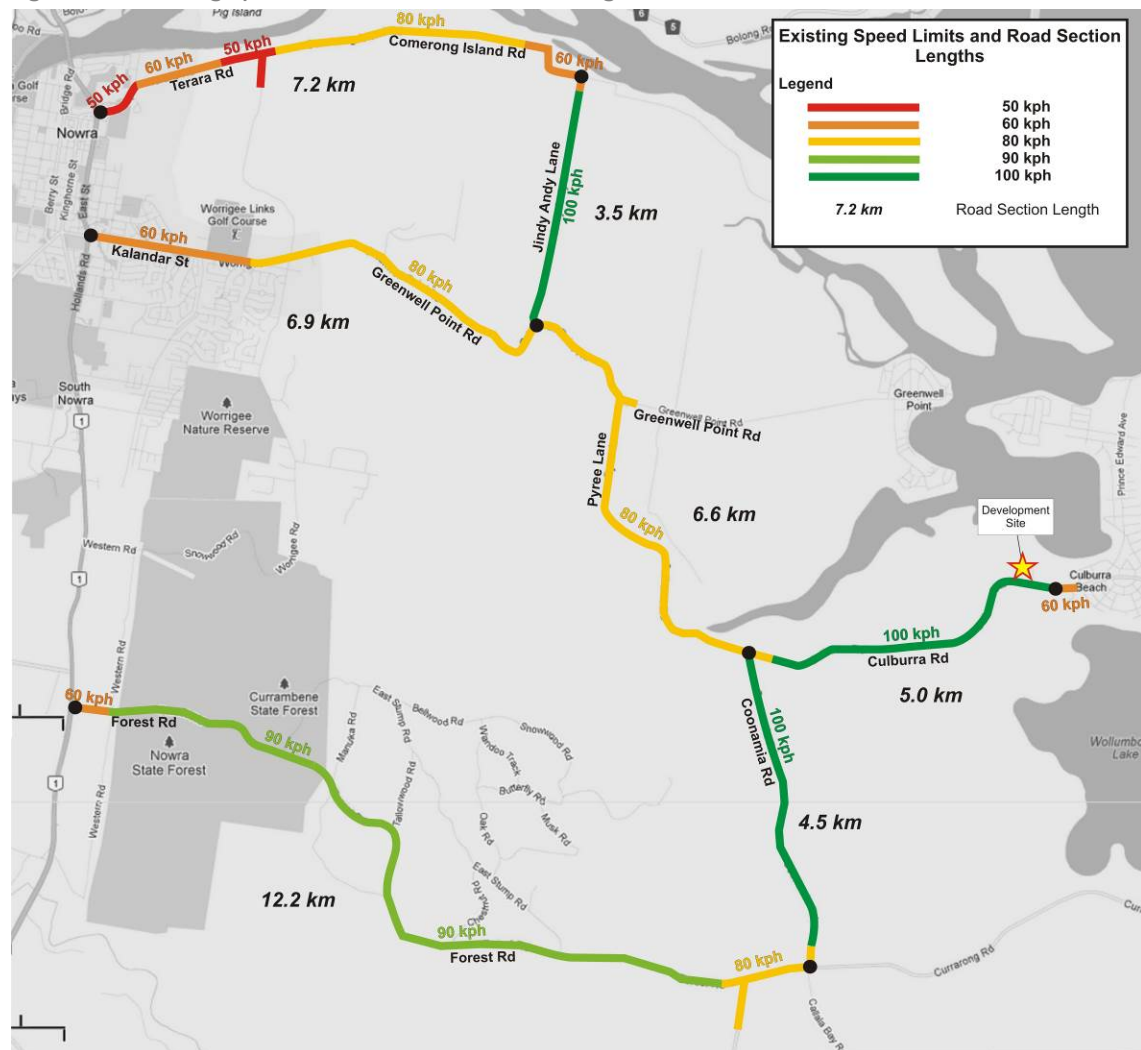
GTA Consultants has also investigated the warrants for overtaking lanes for the study roads identified in Figure 8.5. Guidance on the warrants and installation of overtaking lanes is provided in Austroads Guide to Road Design Part 3: Geometric Design Section 9.4 and Section 5.6.4.

Section 9.4 notes that *"in deciding whether an overtaking lane is warranted, the evaluation needs to be carried out over a significant route length and not be isolated to the particular length over which the additional lane may be constructed."*

Table 9.1 of Austroads Guide to Road Design Part 3: Geometric Design provides the traffic volume guidelines for providing overtaking lanes. The document also states that *"Table 9.1 gives the current-year design volumes (AADT) at which overtaking lanes would normally be justified. These guidelines apply for short low-cost overtaking lanes at spacings of 10 to 15 km or more along a road in a given direction. If spacing is less than this, a specific cost benefit analysis will need to justify the construction at the shorter spacing."*

The existing speed limits and road section lengths are provided in Figure 8.5.

Figure 8.5: Existing Speed Limit and Road Section Lengths



Base Map Source: maps.google.com.au

Figure 8.5 shows that study roads contain a mixture of 50, 60, 80 and 100km/h speed limits. Speed limits on all roads reduce as they approach the Princes Highway from the proposed development.

Typically, overtaking lanes are provided on high speed rural roads or where there are significant grades that could result in slow moving vehicles. The routes to and from the development from Princes Highway are mostly flat with minor grades with a single lane in each direction.

The longest stretch of existing rural road is 12.2 km and that is through a recently upgraded section of Forest Road. For the vast majority of this road, double barrier lines are in place and sight distance is not sufficient for any overtaking.

The longest stretch of 100 km/h speed limit on Culburra Road is 5 km and a review of that stretch shows there are only a couple of short sections (approximately 500m long) without barrier lines. None of those sections of Culburra Road is considered appropriate to provide an overtaking lane on.

Jindy Andy Lane and Coonemia Road are also 100km/h roads but their length is not considered long enough to warrant overtaking lanes.

Given the existing geometry and speed zones on the study roads, and the typical guidelines which suggest providing overtaking lanes every 10 to 15km, overtaking lanes are not considered necessary for any of the study roads and are not proposed to be provided.

8.6 Summary

The following conclusions from this rural road analysis can be drawn:

- The existing shoulder widths, including sealed shoulders, of the rural roads assessed do not accord with current Austroads guidance.
- Notwithstanding this, the road and the intersections along it are operating satisfactorily (this reports shows that the intersections will continue to operate adequately following completion of the development).
- Council has a Section 94 Plan to address a number of the existing deficiencies. The development will contribute the requisite financial sums to address the identified issues.
- GTA believe there are no locations where overtaking lanes could be easily introduced and does not believe they are necessary.

9. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- i The West Culburra subdivision development involves approximately 110 ha on land west of the established area of Culburra.
- ii The subdivision is comprised of six key stages, proposed to be developed in phases over a period of approximately 8 years. On completion, the West Culburra Development will include a mixture of medium density housing types, ranging from small lots 2 bedroom villas for the 55+ aged group to multi-storey units.
- iii The overall development includes a total of 685 dwellings consisting of:
 - 500 dwelling houses
 - 47 x small-lot two bedroom, single storey villas for the 55+ aged group
 - 30 x mixed-use, 3 bedroom town houses
 - 10 x 1 bedroom units
 - 83 x 2 bedroom apartments
 - 15 x 3 bedroom units
- iv The majority of development will be concentrated in Stages 3, 4 and 5 which will include:
 - 500 dwelling houses
 - 30 x mixed-use, 3 bedroom town houses (The Circus)
 - 26 x 2 bedroom small lot dwellings for the 55+ aged group
 - 10 x 1 bedroom units
 - 35 x 2 bedroom units
 - 15 x 3 bedroom units.
- v A new Collector Road within a 25 metre wide road reserve is proposed through Stages 3, 4 and 5 which will have two connections to Culburra Road. The eastern access will be the primary means of accessing these areas, as the western access will not be provided until a later stage of the development.
- vi GTA Consultants undertook an assessment of the proposed eastern intersection of the Collector Road with Culburra Road to determine the most appropriate location, layout and dimensional requirements of the intersection. Based on this assessment, GTA Consultants produced an indicative concept design of the intersection consisting of a four arm single lane roundabout layout. The southern leg of the roundabout has been included in the concept design to show an alternative access point to the proposed Long Bow Point golf course.
- vii It is anticipated that the existing 50km/hr speed limit in place on Culburra Road, approximately 350 metres east of Strathstone Street, will be extended west of the intersection to provide a 50km/hr speed limit on the western approach in line with the *NSW Speed Zoning Guidelines* (RMS, 2011).
- viii The cycle network proposed as part of the development includes two key routes:
 - East-west route along the foreshore area providing access to Culburra shops
 - East-west route along the proposed Collector Road and the northern side of Culburra Road providing access to Culburra shops.

The foreshore route is considered to be an excellent opportunity for a recreational cycle route and to promote cycle tourism in the region. The new Collector Road is considered to be the optimum alignment for a cycleway through Stages 3, 4 and 5 to connect with Culburra shops to the east.

- ix The Collector Road through Stages 3, 4 and 5 will serve as the key route for the Culburra-Nowra public bus service and for school bus services and as such all accesses to the Collector Road are required to accommodate bus turning movements.
- x It is recommended that the existing bus stops within Culburra and Orient Point be upgraded as part of the development to improve amenity and promote the use of public transport for existing residents outside the development areas.
- xi It is recommended that all new bus stops provide shelter, seating, lighting, timetable information as a minimum.
- xii A minimum of a 1.2 metre wide footpath is required on local and collector streets within a subdivision in line with DCP 100.
- xiii With consideration of likely vehicle speeds and volumes along the Collector Road, it is recommended that a separated cycle facility be provided along this alignment in line with the NSW Bicycle Guidelines.
- xiv For shared pedestrian and cycle paths associated within the development, it is recommended to provide a minimum 3 metre width given their potential as recreational routes.
- xv Given the traffic volumes along Culburra Road, it is recommended to provide a separated facility along the northern side of Culburra Road to provide access between Stages 3, 4 and 5, Culburra shops and Stage 1.
- xvi Further consideration is required for the connection of footways and cycleways constructed as part of the development with the existing cycling network to provide a consistent standard of facility.
- xvii It is anticipated that refuse collection for the new development areas will be undertaken by a standard 12.5 metre long Council garbage vehicle.
- xviii Based on empirical traffic generation rates calculated from analysis of historical traffic volume data and residential occupancy data, the proposed development is expected to generate 151, 144 and 158 vehicle trips per occupied dwelling during the respective Friday AM, Friday PM and Saturday peak hours on the regional road network (west of Culburra).
- xix In assessing intersection performance on the road network surrounding the site, growth factors were applied to the recorded traffic volumes (May 2012) to represent the equivalent 120th Highest Annual Hour (HH). This was done to reflect the significant seasonal increases in traffic volumes in the region.
- xx Under equivalent 120th HH traffic volumes the performance of intersections surrounding the site was not significantly changed with the addition of development traffic
- xxi Under equivalent 120th HH traffic volumes the Princes Highway intersections at Kalandar Street and Moss Street currently experience significant delays, particularly during the Friday AM and Friday PM peak periods. The addition of development traffic at these intersections (which would compromise only 2% of the flow at these intersections) would not result in any discernible change in intersection performance.
- xxii There would be traffic increases in Culburra but the additional traffic generated by the development would not cause any existing roads/intersections to experience any operational problems.

- xxiii The existing shoulder widths, including sealed shoulders, of the rural roads assessed do not accord with current Austroads guidance.
- xxiv Notwithstanding this, the road and the intersections along it are operating satisfactorily (this reports shows that the intersections will continue to operate adequately following completion of the development).
- xxv Council has a Section 94 Plan to address a number of the existing deficiencies. The development will contribute the requisite financial sums to address the identified issues.
- xxvi GTA believe there are no locations where overtaking lanes could be easily introduced and does not believe they are necessary.

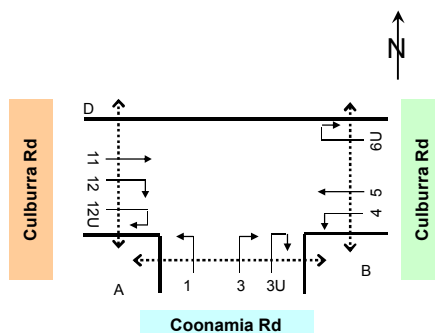
In conclusion, provided that the developer provides the roundabout access into the site and pays the requisite S94 contributions to upgrade deficiencies in the road network, the traffic generated by the development can be successfully accommodated.

Appendix A

Survey Results

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 1. Culburra Rd / Coonamia Rd

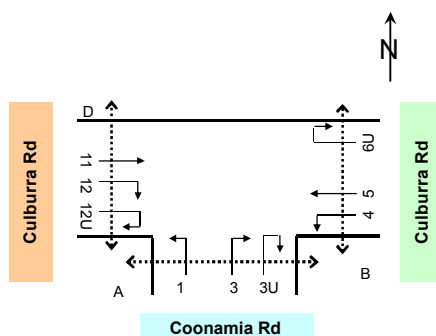
Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data



Approach	Coonamia Rd									Culburra Rd								
Direction	Direction 1 (Left Turn)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	14	1	15	3	0	3	0	0	0	12	0	12	29	3	32	0	0	0
7:15 to 7:30	19	0	19	8	1	9	0	0	0	14	1	15	39	0	39	0	0	0
7:30 to 7:45	24	4	28	7	0	7	0	0	0	8	1	9	57	2	59	0	0	0
7:45 to 8:00	34	1	35	8	1	9	0	0	0	4	1	5	52	3	55	0	0	0
8:00 to 8:15	45	0	45	13	1	14	0	0	0	10	1	11	52	1	53	0	0	0
8:15 to 8:30	34	0	34	14	1	15	0	0	0	11	0	11	44	2	46	0	0	0
8:30 to 8:45	32	0	32	17	1	18	0	0	0	5	0	5	53	3	56	0	0	0
8:45 to 9:00	29	0	29	14	1	15	0	0	0	7	0	7	35	1	36	0	0	0
AM Totals	231	6	237	84	6	90	0	0	0	71	4	75	361	15	376	0	0	0
16:00 to 16:15	20	2	22	16	0	16	0	0	0	15	0	15	26	1	27	0	0	0
16:15 to 16:30	16	1	17	10	0	10	0	0	0	14	1	15	13	0	13	0	0	0
16:30 to 16:45	5	0	5	12	1	13	0	0	0	11	0	11	17	1	18	0	0	0
16:45 to 17:00	7	1	8	11	0	11	0	0	0	9	0	9	19	0	19	0	0	0
17:00 to 17:15	8	0	8	10	0	10	0	0	0	13	0	13	26	0	26	1	0	1
17:15 to 17:30	15	0	15	8	0	8	0	0	0	10	0	10	22	0	22	0	0	0
17:30 to 17:45	10	0	10	8	0	8	0	0	0	7	0	7	15	0	15	0	0	0
17:45 to 18:00	7	1	8	11	0	11	0	0	0	9	0	9	12	0	12	0	0	0
PM Totals	88	5	93	86	1	87	0	0	0	88	1	89	150	2	152	1	0	1

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 1. Culburra Rd / Coonamia Rd

Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data

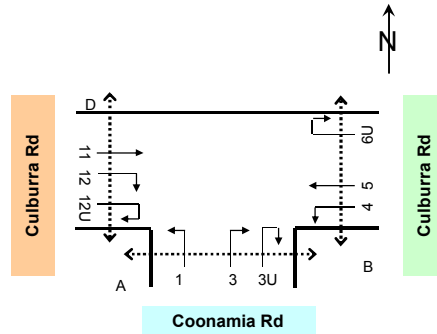


Approach	Culburra Rd								
Direction	Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	7	7	14	3	1	4	0	0	0
7:15 to 7:30	6	4	10	3	3	6	0	0	0
7:30 to 7:45	13	4	17	4	2	6	0	0	0
7:45 to 8:00	15	0	15	2	0	2	0	0	0
8:00 to 8:15	10	2	12	6	1	7	0	0	0
8:15 to 8:30	18	5	23	6	0	6	0	0	0
8:30 to 8:45	21	0	21	8	0	8	0	0	0
8:45 to 9:00	22	3	25	7	0	7	0	0	0
AM Totals	112	25	137	39	7	46	0	0	0

16:00 to 16:15		42	1	43	25	2	27	0	0	0
16:15 to 16:30		41	1	42	30	1	31	0	0	0
16:30 to 16:45		56	0	56	23	1	24	0	0	0
16:45 to 17:00		48	0	48	20	0	20	0	0	0
17:00 to 17:15		44	0	44	31	0	31	0	0	0
17:15 to 17:30		55	0	55	32	0	32	0	0	0
17:30 to 17:45		58	1	59	29	0	29	0	0	0
17:45 to 18:00		50	2	52	32	0	32	0	0	0
PM Totals		394	5	399	222	4	226	0	0	0

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 1. Culburra Rd / Coonamia Rd

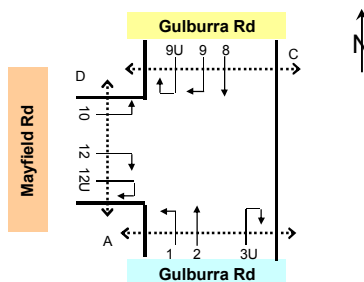
Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



Approach	Coonamia Rd									Culburra Rd										
Direction	Direction 1 (Left Turn)				Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)				Direction 6U (U Turn)		
Time Period	Light	Heavy	Total		Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total		Light	Heavy	Total
7:00 to 8:00	91	6	97		26	2	28	0	0	0	38	3	41	177	8	185		0	0	0
7:15 to 8:15	122	5	127		36	3	39	0	0	0	36	4	40	200	6	206		0	0	0
7:30 to 8:30	137	5	142		42	3	45	0	0	0	33	3	36	205	8	213		0	0	0
7:45 to 8:45	145	1	146		52	4	56	0	0	0	30	2	32	201	9	210		0	0	0
8:00 to 9:00	140	0	140		58	4	62	0	0	0	33	1	34	184	7	191		0	0	0
AM Totals	231	6	237		84	6	90	0	0	0	71	4	75	361	15	376		0	0	0
16:00 to 17:00	48	4	52		49	1	50	0	0	0	49	1	50	75	2	77		0	0	0
16:15 to 17:15	36	2	38		43	1	44	0	0	0	47	1	48	75	1	76		1	0	1
16:30 to 17:30	35	1	36	41	1	42	0	0	0	43	0	43	84	1	85	1	0	1		
16:45 to 17:45	40	1	41	37	0	37	0	0	0	39	0	39	82	0	82	1	0	1		
17:00 to 18:00	40	1	41	37	0	37	0	0	0	39	0	39	75	0	75	1	0	1		
PM Totals	88	5	93	86	1	87	0	0	0	88	1	89	150	2	152	1	0	1		

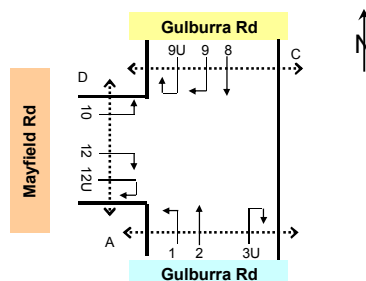
Approach	Culburra Rd								
Direction	Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	41	15	56	12	6	18	0	0	0
7:15 to 8:15	44	10	54	15	6	21	0	0	0
7:30 to 8:30	56	11	67	18	3	21	0	0	0
7:45 to 8:45	64	7	71	22	1	23	0	0	0
8:00 to 9:00	71	10	81	27	1	28	0	0	0
AM Totals	112	25	137	39	7	46	0	0	0
16:00 to 17:00	187	2	189	98	4	102	0	0	0
16:15 to 17:15	189	1	190	104	2	106	0	0	0
16:30 to 17:30	203	0	203	106	1	107	0	0	0
16:45 to 17:45	205	1	206	112	0	112	0	0	0
17:00 to 18:00	207	3	210	124	0	124	0	0	0
PM Totals	394	5	399	222	4	226	0	0	0

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 2. Gulburra Rd / Mayfield Rd
Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data



Approach	Gulburra Rd								
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	0	0	0	43	4	47	0	0	0
7:15 to 7:30	0	0	0	58	0	58	0	0	0
7:30 to 7:45	0	1	1	83	5	88	0	0	0
7:45 to 8:00	0	0	0	86	4	90	0	0	0
8:00 to 8:15	0	0	0	92	2	94	0	0	0
8:15 to 8:30	1	0	1	81	1	82	0	0	0
8:30 to 8:45	0	0	0	85	3	88	0	0	0
8:45 to 9:00	1	0	1	60	1	61	0	0	0
AM Totals	2	1	3	588	20	608	0	0	0
16:00 to 16:15	0	0	0	46	3	49	0	0	0
16:15 to 16:30	1	0	1	28	1	29	0	0	0
16:30 to 16:45	0	0	0	22	1	23	0	0	0
16:45 to 17:00	0	0	0	28	1	29	0	0	0
17:00 to 17:15	0	0	0	32	0	32	1	0	1
17:15 to 17:30	0	0	0	38	0	38	0	0	0
17:30 to 17:45	0	0	0	25	0	25	0	0	0
17:45 to 18:00	0	0	0	20	0	20	0	0	0
PM Totals	1	0	1	239	6	245	1	0	1

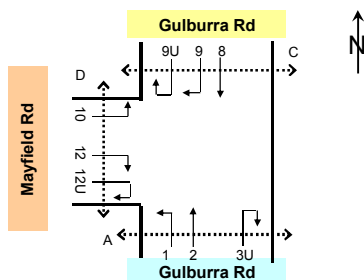
Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 2. Gulburra Rd / Mayfield Rd
Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data



Approach	Gulburra Rd												Mayfield Rd					
Direction	Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	11	9	20	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0
7:15 to 7:30	16	10	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 to 7:45	12	1	13	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
7:45 to 8:00	18	1	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 to 8:15	18	4	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 to 8:30	28	1	29	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
8:30 to 8:45	34	1	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 to 9:00	20	1	21	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0
AM Totals	157	28	185	0	0	0	0	0	0	2	2	4	3	0	3	0	0	0
16:00 to 16:15	62	3	65	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
16:15 to 16:30	71	1	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30 to 16:45	76	1	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45 to 17:00	63	0	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00 to 17:15	84	0	84	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0

17:15 to 17:30	89	0	89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30 to 17:45	83	1	84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45 to 18:00	76	1	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM Totals	604	7	611	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 2. Gulburra Rd / Mayfield Rd
Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
Hourly Summary

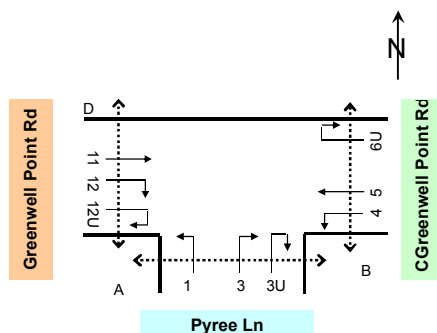


Approach	Gulburra Rd																	
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3U (U Turn)											
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total									
7:00 to 8:00	0	1	1	270	13	283	0	0	0									
7:15 to 8:15	0	1	1	319	11	330	0	0	0									
7:30 to 8:30	1	1	2	342	12	354	0	0	0									
7:45 to 8:45	1	0	1	344	10	354	0	0	0									
8:00 to 9:00	2	0	2	318	7	325	0	0	0									
AM Totals	2	1	3	588	20	608	0	0	0									
16:00 to 17:00	1	0	1	124	6	130	0	0	0									
16:15 to 17:15	1	0	1	110	3	113	1	0	1									
16:30 to 17:30	0	0	0	120	2	122	1	0	1									
16:45 to 17:45	0	0	0	123	1	124	1	0	1									
17:00 to 18:00	0	0	0	115	0	115	1	0	1									
PM Totals	1	0	1	239	6	245	1	0	1									

Approach	Gulburra Rd												Mayfield Rd					
Direction	Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	57	21	78	0	0	0	0	0	0	1	2	3	1	0	1	0	0	0
7:15 to 8:15	64	16	80	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
7:30 to 8:30	76	7	83	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0
7:45 to 8:45	98	7	105	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
8:00 to 9:00	100	7	107	0	0	0	0	0	0	1	0	1	2	0	2	0	0	0
AM Totals	157	28	185	0	0	0	0	0	0	2	2	4	3	0	3	0	0	0
16:00 to 17:00	272	5	277	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
16:15 to 17:15	294	2	296	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
16:30 to 17:30	312	1	313	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
16:45 to 17:45	319	1	320	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0
17:00 to 18:00	332	2	334	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0
PM Totals	604	7	611	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 3. Greenwell Point Rd / Pyree Ln

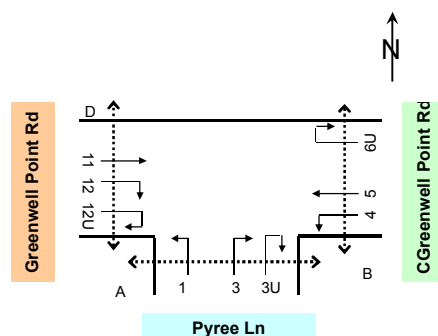
Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data



Approach	Pyree Ln									CGreenwell Point Rd								
Direction	Direction 1 (Left Turn)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	43	2	45	1	5	6	0	0	0	1	0	1	26	0	26	0	0	0
7:15 to 7:30	58	0	58	2	0	2	0	0	0	4	1	5	12	1	13	0	0	0
7:30 to 7:45	81	4	85	2	0	2	0	0	0	3	0	3	33	0	33	0	0	0
7:45 to 8:00	79	5	84	2	0	2	0	0	0	3	1	4	24	2	26	0	0	0
8:00 to 8:15	100	1	101	2	0	2	0	0	0	7	2	9	37	2	39	0	0	0
8:15 to 8:30	76	2	78	2	0	2	0	0	0	1	0	1	24	3	27	0	0	0
8:30 to 8:45	76	2	78	4	1	5	0	0	0	5	0	5	27	1	28	0	0	0
8:45 to 9:00	61	1	62	3	0	3	0	0	0	2	0	2	30	1	31	0	0	0
AM Totals	574	17	591	18	6	24	0	0	0	26	4	30	213	10	223	0	0	0
16:00 to 16:15	42	3	45	5	0	5	0	0	0	7	0	7	13	0	13	0	0	0
16:15 to 16:30	18	1	19	7	0	7	0	0	0	4	0	4	12	1	13	0	0	0
16:30 to 16:45	18	1	19	3	0	3	0	0	0	7	0	7	10	0	10	0	0	0
16:45 to 17:00	20	1	21	6	0	6	0	0	0	0	0	0	9	1	10	0	0	0
17:00 to 17:15	30	3	33	0	0	0	0	0	0	4	0	4	12	0	12	0	0	0
17:15 to 17:30	34	0	34	3	0	3	0	0	0	3	0	3	12	0	12	0	0	0
17:30 to 17:45	22	0	22	5	0	5	0	0	0	5	1	6	13	0	13	0	0	0
17:45 to 18:00	14	1	15	4	0	4	0	0	0	1	0	1	8	0	8	0	0	0
PM Totals	198	10	208	33	0	33	0	0	0	31	1	32	89	2	91	0	0	0

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 3. Greenwell Point Rd / Pyree Ln

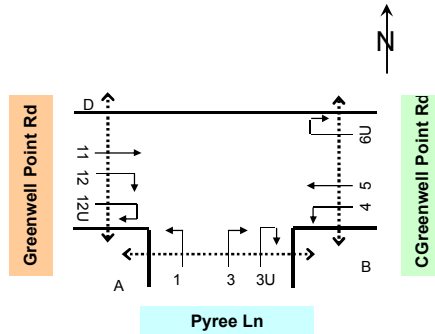
Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data



Approach	Greenwell Point Rd								
Direction	Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	10	6	16	11	11	22	0	0	0
7:15 to 7:30	15	2	17	11	8	19	0	0	0
7:30 to 7:45	7	2	9	10	0	10	0	0	0
7:45 to 8:00	10	1	11	15	1	16	0	0	0
8:00 to 8:15	10	1	11	17	5	22	0	0	0
8:15 to 8:30	13	0	13	26	0	26	0	0	0
8:30 to 8:45	13	0	13	28	1	29	0	0	0
8:45 to 9:00	15	2	17	16	1	17	0	0	0
AM Totals	93	14	107	134	27	161	0	0	0

16:00 to 16:15	30	1	31	62	2	64	0	0	0
16:15 to 16:30	25	0	25	67	1	68	0	0	0
16:30 to 16:45	32	1	33	68	1	69	0	0	0
16:45 to 17:00	27	0	27	62	0	62	0	0	0
17:00 to 17:15	25	0	25	84	0	84	0	0	0
17:15 to 17:30	22	0	22	84	0	84	0	0	0
17:30 to 17:45	25	0	25	82	0	82	0	0	0
17:45 to 18:00	19	1	20	61	2	63	0	0	0
PM Totals	205	3	208	570	6	576	0	0	0

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 3. Greenwell Point Rd / Pyree Ln
Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



Approach	Pyree Ln									CGreenwell Point Rd								
Direction	Direction 1 (Left Turn)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	261	11	272	7	5	12	0	0	0	11	2	13	95	3	98	0	0	0
7:15 to 8:15	318	10	328	8	0	8	0	0	0	17	4	21	106	5	111	0	0	0
7:30 to 8:30	336	12	348	8	0	8	0	0	0	14	3	17	118	7	125	0	0	0
7:45 to 8:45	331	10	341	10	1	11	0	0	0	16	3	19	112	8	120	0	0	0
8:00 to 9:00	313	6	319	11	1	12	0	0	0	15	2	17	118	7	125	0	0	0
AM Totals	574	17	591	18	6	24	0	0	0	26	4	30	213	10	223	0	0	0
16:00 to 17:00	98	6	104	21	0	21	0	0	0	18	0	18	44	2	46	0	0	0
16:15 to 17:15	86	6	92	16	0	16	0	0	0	15	0	15	43	2	45	0	0	0
16:30 to 17:30	102	5	107	12	0	12	0	0	0	14	0	14	43	1	44	0	0	0
16:45 to 17:45	106	4	110	14	0	14	0	0	0	12	1	13	46	1	47	0	0	0
17:00 to 18:00	100	4	104	12	0	12	0	0	0	13	1	14	45	0	45	0	0	0
PM Totals	198	10	208	33	0	33	0	0	0	31	1	32	89	2	91	0	0	0

Approach	Greenwell Point Rd								
Direction	Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	42	11	53	47	20	67	0	0	0
7:15 to 8:15	42	6	48	53	14	67	0	0	0
7:30 to 8:30	40	4	44	68	6	74	0	0	0
7:45 to 8:45	46	2	48	86	7	93	0	0	0
8:00 to 9:00	51	3	54	87	7	94	0	0	0
AM Totals	93	14	107	134	27	161	0	0	0
16:00 to 17:00	114	2	116	259	4	263	0	0	0
16:15 to 17:15	109	1	110	281	2	283	0	0	0
16:30 to 17:30	106	1	107	298	1	299	0	0	0
16:45 to 17:45	99	0	99	312	0	312	0	0	0
17:00 to 18:00	91	1	92	311	2	313	0	0	0
PM Totals	205	3	208	570	6	576	0	0	0



Approach	Greenwell Point Rd									
Direction	Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)			
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	
7:00 to 7:15	53	1	54	13	0	13	0	0	0	
7:15 to 7:30	43	2	45	16	0	16	0	0	0	
7:30 to 7:45	81	4	85	25	0	25	0	0	0	
7:45 to 8:00	77	6	83	32	1	33	0	0	0	
8:00 to 8:15	92	6	98	38	0	38	0	0	0	
8:15 to 8:30	74	4	78	33	0	33	0	0	0	
8:30 to 8:45	65	2	67	36	1	37	0	0	0	
8:45 to 9:00	68	3	71	27	0	27	0	0	0	
AM Totals	553	28	581	220	2	222	0	0	0	
16:00 to 16:15	36	3	39	11	1	12	0	0	0	
16:15 to 16:30	31	2	33	15	0	15	0	0	0	
16:30 to 16:45	22	1	23	8	0	8	0	0	0	
16:45 to 17:00	22	1	23	6	0	6	0	0	0	
17:00 to 17:15	29	1	30	4	0	4	1	0	1	
17:15 to 17:30	38	0	38	14	0	14	0	0	0	
17:30 to 17:45	27	0	27	7	0	7	0	0	0	
17:45 to 18:00	24	1	25	7	0	7	0	0	0	
PM Totals	229	9	238	72	1	73	1	0	1	

Diagram of Jindy Andy Ln showing lane markings and traffic flow. The road has a central dashed line and solid lines on the sides. Lane numbers 5, 6, 6U, 7, 9, 9U, 10, 11, and 12U are marked. Arrows indicate traffic flow: right for lanes 5, 6, 6U, 7, 9, 9U, and left for lanes 10, 11, 12U. A north arrow points up.



Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data

Approach	Jindy Andy Ln									Greenwell Point Rd											
Direction	Direction 7 (Left Turn)				Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)				Direction 12U (U Turn)			
Time Period	Light	Heavy	Total		Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total		Light	Heavy	Total	
7:00 to 7:15	3	0	3		1	0	1	0	0	0	1	1	2	15	17	32		0	0	0	
7:15 to 7:30	5	0	5		0	0	0	0	0	0	1	1	2	20	14	34		0	0	0	
7:30 to 7:45	1	1	2		0	0	0	0	0	0	0	1	1	16	3	19		0	0	0	
7:45 to 8:00	3	0	3		0	1	1	0	0	0	1	0	1	22	5	27		0	0	0	
8:00 to 8:15	8	0	8		3	1	4	0	0	0	2	0	2	19	5	24		0	0	0	
8:15 to 8:30	5	0	5		0	0	0	0	0	0	0	0	0	32	0	32		0	0	0	
8:30 to 8:45	10	1	11		1	0	1	0	0	0	2	2	4	33	2	35		0	0	0	
8:45 to 9:00	9	0	9		3	2	5	1	0	1	0	1	1	21	3	24		0	0	0	
AM Totals	44	2	46	8	4	12	1	0	1	7	6	13	178	49	227	0	0	0			

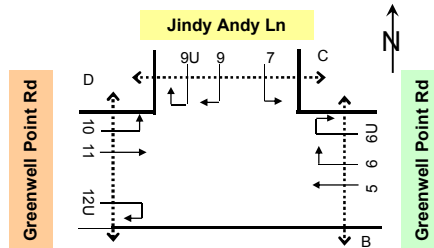
16:00 to 16:15	27	1	28
16:15 to 16:30	24	1	25
16:30 to 16:45	28	0	28
16:45 to 17:00	27	0	27
17:00 to 17:15	32	0	32
17:15 to 17:30	37	0	37
17:30 to 17:45	26	0	26
17:45 to 18:00	23	1	24
PM Totals	224	3	227

0	0	0	0	0	0	3	0	3	65	2	67
1	0	1	0	0	0	1	1	2	67	0	67
0	0	0	0	0	0	3	0	3	73	3	76
1	0	1	0	0	0	1	0	1	59	0	59
3	0	3	0	0	0	1	0	1	77	0	77
2	0	2	0	0	0	1	0	1	79	0	79
1	0	1	0	0	0	3	0	3	77	0	77
1	0	1	0	0	0	1	0	1	64	2	66
9	0	9	0	0	0	14	1	15	561	7	568

0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 4. Greenwell Point Rd / Jindy Andy Ln

Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary

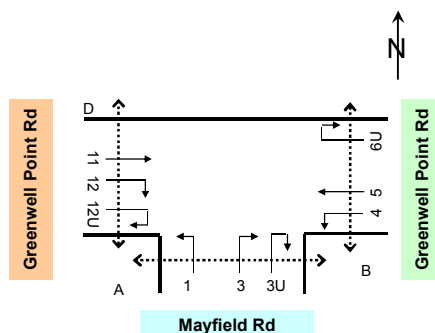


Approach	Greenwell Point Rd								
Direction									
Time Period									
7:00 to 8:00	Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
7:15 to 8:15	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:30 to 8:30	254	13	267	86	1	87	0	0	0
7:45 to 8:45	293	18	311	111	1	112	0	0	0
8:00 to 9:00	324	20	344	128	1	129	0	0	0
AM Totals	308	18	326	139	2	141	0	0	0
16:00 to 17:00	299	15	314	134	1	135	0	0	0
16:15 to 17:15	553	28	581	220	2	222	0	0	0
16:30 to 17:30	111	7	118	40	1	41	0	0	0
16:45 to 17:45	104	5	109	33	0	33	1	0	1
17:00 to 18:00	111	3	114	32	0	32	1	0	1
PM Totals	116	2	118	31	0	31	1	0	1
	118	2	120	32	0	32	1	0	1
	229	9	238	72	1	73	1	0	1

Approach	Jindy Andy Ln						Greenwell Point Rd					
Direction	Direction 7 (Left Turn)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	12	1	13	1	1	2	0	0	0	3	3	6
7:15 to 8:15	17	1	18	3	2	5	0	0	0	4	2	6
7:30 to 8:30	17	1	18	3	2	5	0	0	0	3	1	4
7:45 to 8:45	26	1	27	4	2	6	0	0	0	5	2	7
8:00 to 9:00	32	1	33	7	3	10	1	0	1	4	3	7
AM Totals	44	2	46	8	4	12	1	0	1	7	6	13
16:00 to 17:00	106	2	108	2	0	2	0	0	0	8	1	9
16:15 to 17:15	111	1	112	5	0	5	0	0	0	6	1	7
16:30 to 17:30	124	0	124	6	0	6	0	0	0	6	0	6
16:45 to 17:45	122	0	122	7	0	7	0	0	0	6	0	6
17:00 to 18:00	118	1	119	7	0	7	0	0	0	6	0	6
PM Totals	224	3	227	9	0	9	0	0	0	14	1	15

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 5. Greenwell Point Rd / Mayfield Rd

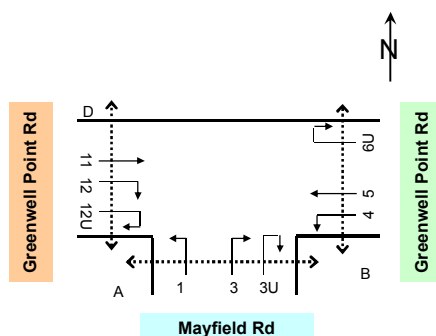
Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data



Approach	Mayfield Rd									Greenwell Point Rd								
Direction	Direction 1 (Left Turn)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	0	0	0	0	0	0	0	0	0	0	0	0	52	1	53	0	0	0
7:15 to 7:30	0	0	0	0	0	0	0	0	0	0	0	0	44	2	46	0	0	0
7:30 to 7:45	1	1	2	0	1	1	0	0	0	0	0	0	80	3	83	0	0	0
7:45 to 8:00	7	0	7	0	0	0	0	0	0	0	0	0	73	7	80	0	0	0
8:00 to 8:15	2	0	2	0	0	0	0	0	0	1	0	1	100	4	104	0	2	2
8:15 to 8:30	3	0	3	0	0	0	0	0	0	0	0	0	73	3	76	0	0	0
8:30 to 8:45	2	0	2	0	0	0	0	0	0	0	0	0	63	1	64	0	0	0
8:45 to 9:00	3	0	3	0	0	0	0	0	0	2	0	2	72	4	76	0	0	0
AM Totals	18	1	19	0	1	1	0	0	0	3	0	3	557	25	582	0	2	2
16:00 to 16:15	1	0	1	1	0	1	0	0	0	0	0	0	36	3	39	1	0	1
16:15 to 16:30	1	0	1	0	1	1	0	0	0	1	0	1	31	2	33	0	0	0
16:30 to 16:45	1	0	1	2	0	2	0	0	0	0	0	0	23	1	24	0	0	0
16:45 to 17:00	1	0	1	0	0	0	0	0	0	0	0	0	25	1	26	0	0	0
17:00 to 17:15	0	0	0	0	0	0	0	0	0	1	0	1	30	1	31	0	0	0
17:15 to 17:30	5	0	5	0	0	0	0	0	0	1	0	1	42	0	42	0	0	0
17:30 to 17:45	0	0	0	0	0	0	0	0	0	0	0	0	27	0	27	0	0	0
17:45 to 18:00	5	0	5	0	0	0	0	0	0	0	0	0	28	1	29	0	0	0
PM Totals	14	0	14	3	1	4	0	0	0	3	0	3	242	9	251	1	0	1

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 5. Greenwell Point Rd / Mayfield Rd

Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data

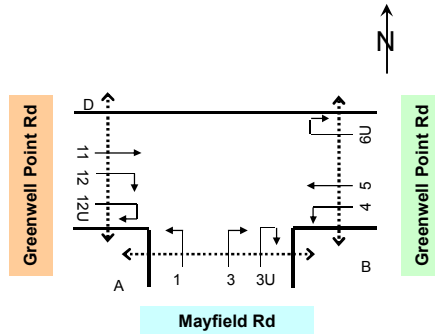


Approach	Greenwell Point Rd								
Direction	Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	16	18	34	1	0	1	0	0	0
7:15 to 7:30	21	15	36	1	0	1	0	0	0
7:30 to 7:45	15	4	19	0	0	0	0	0	0
7:45 to 8:00	23	4	27	1	0	1	0	0	0
8:00 to 8:15	20	5	25	1	0	1	0	0	0
8:15 to 8:30	34	0	34	0	0	0	0	0	0
8:30 to 8:45	33	3	36	2	0	2	0	0	0
8:45 to 9:00	22	3	25	2	0	2	0	0	0
AM Totals	184	52	236	8	0	8	0	0	0

16:00 to 16:15	65	2	67	0	0	0	0	0	0
16:15 to 16:30	72	0	72	4	0	4	0	0	0
16:30 to 16:45	73	2	75	3	0	3	0	0	0
16:45 to 17:00	64	0	64	3	0	3	0	0	0
17:00 to 17:15	76	0	76	2	0	2	0	0	0
17:15 to 17:30	79	0	79	1	0	1	0	0	0
17:30 to 17:45	83	0	83	4	0	4	0	0	0
17:45 to 18:00	62	2	64	3	0	3	0	0	0
PM Totals	574	6	580	20	0	20	0	0	0

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 5. Greenwell Point Rd / Mayfield Rd

Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary

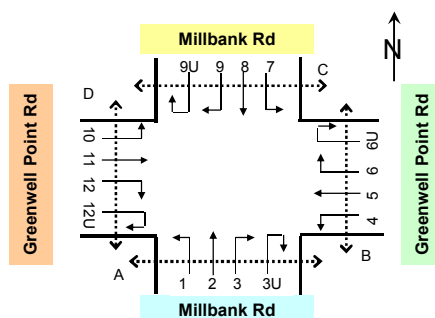


Approach	Mayfield Rd									Greenwell Point Rd										
Direction	Direction 1 (Left Turn)				Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)				Direction 6U (U Turn)		
Time Period	Light	Heavy	Total		Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total		Light	Heavy	Total
7:00 to 8:00	8	1	9		0	1	1	0	0	0	0	0	0	249	13	262		0	0	0
7:15 to 8:15	10	1	11		0	1	1	0	0	0	1	0	1	297	16	313		0	2	2
7:30 to 8:30	13	1	14		0	1	1	0	0	0	1	0	1	326	17	343		0	2	2
7:45 to 8:45	14	0	14		0	0	0	0	0	0	1	0	1	309	15	324		0	2	2
8:00 to 9:00	10	0	10		0	0	0	0	0	0	3	0	3	308	12	320		0	2	2
AM Totals	18	1	19		0	1	1	0	0	0	3	0	3	557	25	582		0	2	2
16:00 to 17:00	4	0	4		3	1	4	0	0	0	1	0	1	115	7	122		1	0	1
16:15 to 17:15	3	0	3		2	1	3	0	0	0	2	0	2	109	5	114		0	0	0
16:30 to 17:30	7	0	7	2	0	2	0	0	0	2	0	2	120	3	123	0	0	0		
16:45 to 17:45	6	0	6	0	0	0	0	0	0	2	0	2	124	2	126	0	0	0		
17:00 to 18:00	10	0	10	0	0	0	0	0	0	2	0	2	127	2	129	0	0	0		
PM Totals	14	0	14	3	1	4	0	0	0	3	0	3	242	9	251	1	0	1		

Approach	Greenwell Point Rd								
Direction	Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	75	41	116	3	0	3	0	0	0
7:15 to 8:15	79	28	107	3	0	3	0	0	0
7:30 to 8:30	92	13	105	2	0	2	0	0	0
7:45 to 8:45	110	12	122	4	0	4	0	0	0
8:00 to 9:00	109	11	120	5	0	5	0	0	0
AM Totals	184	52	236	8	0	8	0	0	0
16:00 to 17:00	274	4	278	10	0	10	0	0	0
16:15 to 17:15	285	2	287	12	0	12	0	0	0
16:30 to 17:30	292	2	294	9	0	9	0	0	0
16:45 to 17:45	302	0	302	10	0	10	0	0	0
17:00 to 18:00	300	2	302	10	0	10	0	0	0
PM Totals	574	6	580	20	0	20	0	0	0

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 6. Greenwell Point Rd / Millbank Rd

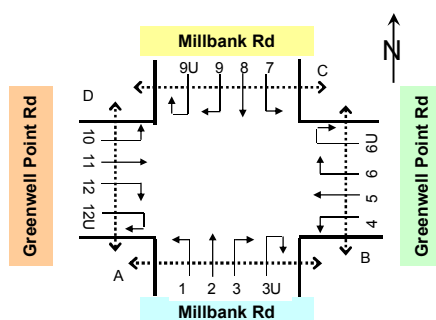
Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data



Approach	Millbank Rd												Greenwell Point Rd											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	6	0	6	4	2	6	0	2	2	0	0	0	5	0	5	47	2	49	7	0	7	0	0	0
7:15 to 7:30	7	1	8	4	0	4	1	1	2	0	0	0	5	0	5	43	0	43	8	1	9	0	0	0
7:30 to 7:45	9	1	10	2	0	2	3	0	3	0	0	0	3	0	3	81	6	87	7	0	7	0	0	0
7:45 to 8:00	21	1	22	9	0	9	2	0	2	0	0	0	4	3	7	73	4	77	3	1	4	0	0	0
8:00 to 8:15	18	2	20	19	3	22	4	0	4	0	0	0	3	0	3	100	1	101	4	2	6	0	0	0
8:15 to 8:30	15	1	16	30	0	30	8	0	8	0	0	0	1	0	1	59	2	61	5	0	5	0	0	0
8:30 to 8:45	8	0	8	35	0	35	4	0	4	0	0	0	2	0	2	70	3	73	13	0	13	0	0	0
8:45 to 9:00	15	0	15	13	0	13	2	0	2	0	0	0	4	0	4	65	3	68	3	0	3	0	0	0
AM Totals	99	6	105	116	5	121	24	3	27	0	0	0	27	3	30	538	21	559	50	4	54	0	0	0
16:00 to 16:15	10	0	10	4	0	4	2	0	2	0	0	0	5	0	5	38	3	41	2	0	2	0	0	0
16:15 to 16:30	9	0	9	12	0	12	6	0	6	0	0	0	3	0	3	21	2	23	3	0	3	0	0	0
16:30 to 16:45	7	0	7	7	0	7	7	1	8	0	0	0	4	0	4	22	1	23	2	0	2	0	0	0
16:45 to 17:00	13	0	13	9	0	9	3	0	3	0	0	0	1	1	2	23	0	23	2	0	2	0	0	0
17:00 to 17:15	9	1	10	7	0	7	10	0	10	0	0	0	8	0	8	26	0	26	4	0	4	0	0	0
17:15 to 17:30	5	0	5	4	0	4	6	0	6	0	0	0	3	0	3	32	0	32	3	0	3	0	0	0
17:30 to 17:45	9	0	9	7	0	7	6	0	6	0	0	0	3	0	3	32	0	32	1	1	2	0	0	0
17:45 to 18:00	11	0	11	6	0	6	5	0	5	0	0	0	2	0	2	20	1	21	6	0	6	0	0	0
PM Totals	73	1	74	56	0	56	45	1	46	0	0	0	29	1	30	214	7	221	23	1	24	0	0	0

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 6. Greenwell Point Rd / Millbank Rd

Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data

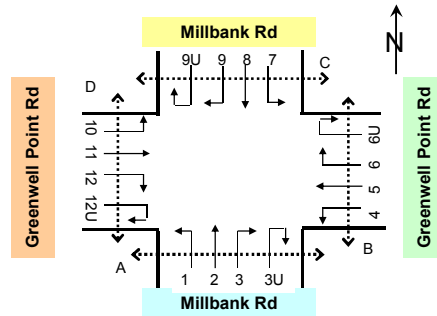


Approach	Millbank Rd												Greenwell Point Rd											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	2	1	3	1	0	1	1	1	2	0	0	0	3	0	3	20	8	28	2	0	2	0	0	0
7:15 to 7:30	0	0	0	0	1	1	1	0	1	0	0	0	0	0	0	16	6	22	1	1	2	0	0	0
7:30 to 7:45	3	0	3	0	0	0	4	0	4	0	0	0	2	0	2	16	4	20	6	1	7	0	0	0
7:45 to 8:00	3	0	3	2	0	2	0	0	0	0	0	0	2	0	2	20	4	24	5	0	5	0	0	0
8:00 to 8:15	4	0	4	3	1	4	2	0	2	0	0	0	11	1	12	23	2	25	3	0	3	0	0	0
8:15 to 8:30	1	0	1	8	1	9	2	0	2	0	0	0	14	0	14	32	4	36	5	0	5	0	0	0
8:30 to 8:45	3	0	3	6	1	7	3	0	3	0	0	0	9	0	9	23	1	24	5	1	6	0	0	0
8:45 to 9:00	2	2	4	2	0	2	3	0	3	0	0	0	3	2	5	32	4	36	36	2	38	0	0	0
AM Totals	18	3	21	22	4	26	16	1	17	0	0	0	44	3	47	182	33	215	63	5	68	0	0	0

16:00 to 16:15	2	0	2	9	1	10	4	0	4	0	0	4	0	4	72	0	72	21	0	21	0	0	0
16:15 to 16:30	5	0	5	9	0	9	3	0	3	0	0	3	0	3	69	1	70	17	1	18	0	0	0
16:30 to 16:45	2	0	2	8	0	8	3	0	3	0	0	3	0	3	67	1	68	19	0	19	0	0	0
16:45 to 17:00	6	0	6	9	0	9	2	0	2	0	0	1	0	1	66	0	66	19	0	19	0	0	0
17:00 to 17:15	4	0	4	8	0	8	2	0	2	0	0	4	0	4	64	1	65	21	0	21	0	0	0
17:15 to 17:30	2	0	2	8	0	8	4	0	4	0	0	2	0	2	83	0	83	22	1	23	0	0	0
17:30 to 17:45	2	0	2	8	0	8	4	0	4	0	0	1	0	1	71	5	76	15	0	15	0	0	0
17:45 to 18:00	4	0	4	6	0	6	0	0	0	0	0	3	0	3	57	0	57	17	0	17	0	0	0
PM Totals	27	0	27	65	1	66	22	0	22	0	0	21	0	21	549	8	557	151	2	153	0	0	0

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 6. Greenwell Point Rd / Millbank Rd

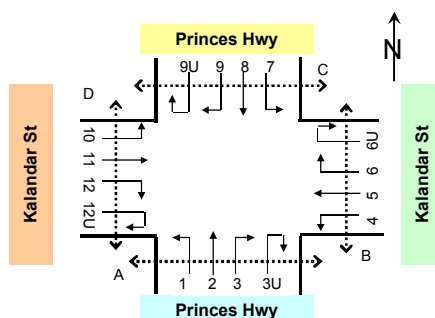
Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



Approach	Millbank Rd												Greenwell Point Rd											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	43	3	46	19	2	21	6	3	9	0	0	0	17	3	20	244	12	256	25	2	27	0	0	0
7:15 to 8:15	55	5	60	34	3	37	10	1	11	0	0	0	15	3	18	297	11	308	22	4	26	0	0	0
7:30 to 8:30	63	5	68	60	3	63	17	0	17	0	0	0	11	3	14	313	13	326	19	3	22	0	0	0
7:45 to 8:45	62	4	66	93	3	96	18	0	18	0	0	0	10	3	13	302	10	312	25	3	28	0	0	0
8:00 to 9:00	56	3	59	97	3	100	18	0	18	0	0	0	10	0	10	294	9	303	25	2	27	0	0	0
AM Totals	99	6	105	116	5	121	24	3	27	0	0	0	27	3	30	538	21	559	50	4	54	0	0	0
16:00 to 17:00	39	0	39	32	0	32	18	1	19	0	0	0	13	1	14	104	6	110	9	0	9	0	0	0
16:15 to 17:15	38	1	39	35	0	35	26	1	27	0	0	0	16	1	17	92	3	95	11	0	11	0	0	0
16:30 to 17:30	34	1	35	27	0	27	26	1	27	0	0	0	16	1	17	103	1	104	11	0	11	0	0	0
16:45 to 17:45	36	1	37	27	0	27	25	0	25	0	0	0	15	1	16	113	0	113	10	1	11	0	0	0
17:00 to 18:00	34	1	35	24	0	24	27	0	27	0	0	0	16	0	16	110	1	111	14	1	15	0	0	0
PM Totals	73	1	74	56	0	56	45	1	46	0	0	0	29	1	30	214	7	221	23	1	24	0	0	0

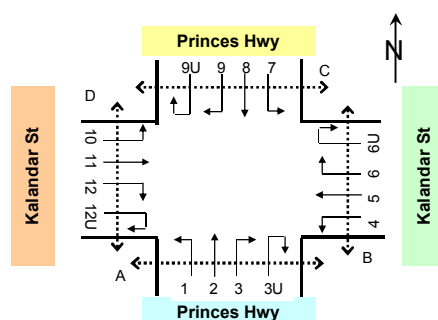
Approach	Millbank Rd												Greenwell Point Rd											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	8	1	9	3	1	4	6	1	7	0	0	0	7	0	7	72	22	94	14	2	16	0	0	0
7:15 to 8:15	10	0	10	5	2	7	7	0	7	0	0	0	15	1	16	75	16	91	15	2	17	0	0	0
7:30 to 8:30	11	0	11	13	2	15	8	0	8	0	0	0	29	1	30	91	14	105	19	1	20	0	0	0
7:45 to 8:45	11	0	11	19	3	22	7	0	7	0	0	0	36	1	37	98	11	109	18	1	19	0	0	0
8:00 to 9:00	10	2	12	19	3	22	10	0	10	0	0	0	37	3	40	110	11	121	49	3	52	0	0	0
AM Totals	18	3	21	22	4	26	16	1	17	0	0	0	44	3	47	182	33	215	63	5	68	0	0	0
16:00 to 17:00	15	0	15	35	1	36	12	0	12	0	0	0	11	0	11	274	2	276	76	1	77	0	0	0
16:15 to 17:15	17	0	17	34	0	34	10	0	10	0	0	0	11	0	11	266	3	269	76	1	77	0	0	0
16:30 to 17:30	14	0	14	33	0	33	11	0	11	0	0	0	10	0	10	280	2	282	81	1	82	0	0	0
16:45 to 17:45	14	0	14	33	0	33	12	0	12	0	0	0	8	0	8	284	6	290	77	1	78	0	0	0
17:00 to 18:00	12	0	12	30	0	30	10	0	10	0	0	0	10	0	10	275	6	281	75	1	76	0	0	0
PM Totals	27	0	27	65	1	66	22	0	22	0	0	0	21	0	21	549	8	557	151	2	153	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 7. Kalandar St / Princes Hwy
 Day/Date : Fri, 4th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



Approach	Princes Hwy												Kalandar St											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	0	0	0	67	23	90	5	2	7	0	0	0	9	1	10	35	0	35	47	2	49	0	0	0
7:15 to 7:30	0	0	0	120	4	124	9	0	9	0	0	0	6	1	7	36	2	38	78	0	78	0	0	0
7:30 to 7:45	1	0	1	136	20	156	6	0	6	0	0	0	8	0	8	29	0	29	83	3	86	0	0	0
7:45 to 8:00	0	0	0	164	7	171	6	1	7	0	0	0	13	1	14	62	0	62	114	0	114	0	0	0
8:00 to 8:15	1	0	1	184	15	199	9	0	9	0	0	0	5	0	5	47	1	48	130	5	135	0	0	0
8:15 to 8:30	1	0	1	185	8	193	4	0	4	0	0	0	7	0	7	75	2	77	172	6	178	0	0	0
8:30 to 8:45	1	0	1	200	10	210	11	0	11	0	0	0	8	2	10	64	0	64	182	5	187	0	0	0
8:45 to 9:00	0	0	0	195	12	207	8	0	8	0	0	0	9	1	10	66	5	71	160	3	163	0	0	0
AM Totals	4	0	4	1251	99	1350	58	3	61	0	0	0	65	6	71	414	10	424	966	24	990	0	0	0
16:00 to 16:15	5	0	5	163	6	169	18	0	18	0	0	0	18	1	19	44	0	44	101	3	104	0	0	0
16:15 to 16:30	0	0	0	184	4	188	22	1	23	0	0	0	15	0	15	42	1	43	88	1	89	0	0	0
16:30 to 16:45	1	0	1	161	2	163	22	0	22	0	0	0	18	0	18	35	2	37	98	3	101	0	0	0
16:45 to 17:00	2	0	2	171	6	177	11	0	11	0	0	0	15	0	15	40	1	41	88	0	88	0	0	0
17:00 to 17:15	1	0	1	156	4	160	16	2	18	0	0	0	20	1	21	44	1	45	99	0	99	0	0	0
17:15 to 17:30	0	0	0	130	2	132	14	0	14	0	0	0	19	0	19	47	1	48	110	1	111	0	0	0
17:30 to 17:45	1	0	1	162	5	167	15	0	15	0	0	0	13	0	13	38	0	38	91	1	92	0	0	0
17:45 to 18:00	3	0	3	126	4	130	10	0	10	0	0	0	15	0	15	51	0	51	100	0	100	0	0	0
PM Totals	13	0	13	1253	33	1286	128	3	131	0	0	0	133	2	135	341	6	347	775	9	784	0	0	0

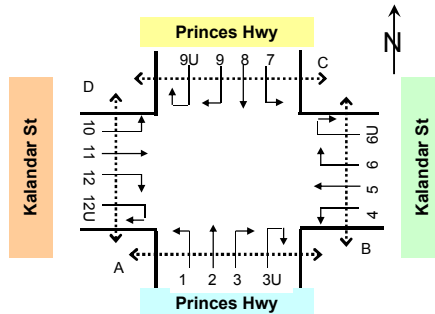
Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 7. Kalandar St / Princes Hwy
 Day/Date : Fri, 4th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



Approach	Princes Hwy												Kalandar St											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	22	5	27	101	15	116	18	2	20	0	0	0	2	2	4	11	5	16	19	0	19	0	0	0
7:15 to 7:30	29	4	33	118	17	135	9	1	10	0	0	0	3	2	5	12	1	13	19	0	19	0	0	0
7:30 to 7:45	21	2	23	151	15	166	18	3	21	0	0	0	11	1	12	11	3	14	14	1	15	0	0	0
7:45 to 8:00	41	2	43	178	12	190	21	0	21	0	0	0	6	2	8	14	1	15	28	0	28	0	0	0
8:00 to 8:15	49	2	51	195	10	205	27	4	31	0	0	0	8	2	10	20	1	21	34	4	38	0	0	0
8:15 to 8:30	40	2	42	185	12	197	35	5	40	0	0	0	10	2	12	26	0	26	33	1	34	0	0	0
8:30 to 8:45	46	5	51	150	16	166	33	2	35	0	0	0	12	1	13	27	0	27	30	0	30	0	0	0
8:45 to 9:00	69	7	76	170	17	187	23	4	27	0	0	0	8	1	9	52	1	53	28	2	30	0	0	0
AM Totals	317	29	346	1248	114	1362	184	21	205	0	0	0	60	13	73	173	12	185	205	8	213	0	0	0

16:00 to 16:15	150	6	156	289	8	297	29	2	31	0	0	0	15	3	18	55	0	55	61	1	62	0	0	0
16:15 to 16:30	128	0	128	259	8	267	20	1	21	0	0	0	24	1	25	49	0	49	53	0	53	0	0	0
16:30 to 16:45	128	0	128	268	7	275	22	2	24	0	0	0	15	3	18	50	0	50	50	1	51	0	0	0
16:45 to 17:00	148	0	148	304	13	317	17	0	17	0	0	0	13	0	13	52	0	52	38	0	38	0	0	0
17:00 to 17:15	149	1	150	284	4	288	15	1	16	0	0	0	16	0	16	67	0	67	45	0	45	0	0	0
17:15 to 17:30	156	2	158	282	6	288	12	0	12	0	0	0	8	0	8	47	1	48	44	0	44	0	0	0
17:30 to 17:45	157	4	161	280	7	287	22	1	23	0	0	0	8	0	8	51	2	53	38	0	38	0	0	0
17:45 to 18:00	127	3	130	258	7	265	10	1	11	0	0	0	10	2	12	52	0	52	41	0	41	0	0	0
PM Totals	1143	16	1159	2224	60	2284	147	8	155	0	0	0	109	9	118	423	3	426	370	2	372	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 7. Kalandar St / Princes Hwy
 Day/Date : Fri, 4th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary



Approach	Princes Hwy												Kalandar St											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	1	0	1	487	54	541	26	3	29	0	0	0	36	3	39	162	2	164	322	5	327	0	0	0
7:15 to 8:15	2	0	2	604	46	650	30	1	31	0	0	0	32	2	34	174	3	177	405	8	413	0	0	0
7:30 to 8:30	3	0	3	669	50	719	25	1	26	0	0	0	33	1	34	213	3	216	499	14	513	0	0	0
7:45 to 8:45	3	0	3	733	40	773	30	1	31	0	0	0	33	3	36	248	3	251	598	16	614	0	0	0
8:00 to 9:00	3	0	3	764	45	809	32	0	32	0	0	0	29	3	32	252	8	260	644	19	663	0	0	0
AM Totals	4	0	4	1251	99	1350	58	3	61	0	0	0	65	6	71	414	10	424	966	24	990	0	0	0
16:00 to 17:00	8	0	8	679	18	697	73	1	74	0	0	0	66	1	67	161	4	165	375	7	382	0	0	0
16:15 to 17:15	4	0	4	672	16	688	71	3	74	0	0	0	68	1	69	161	5	166	373	4	377	0	0	0
16:30 to 17:30	4	0	4	618	14	632	63	2	65	0	0	0	72	1	73	166	5	171	395	4	399	0	0	0
16:45 to 17:45	4	0	4	619	17	636	56	2	58	0	0	0	67	1	68	169	3	172	388	2	390	0	0	0
17:00 to 18:00	5	0	5	574	15	589	55	2	57	0	0	0	67	1	68	180	2	182	400	2	402	0	0	0
PM Totals	13	0	13	1253	33	1286	128	3	131	0	0	0	133	2	135	341	6	347	775	9	784	0	0	0

Approach	Princes Hwy												Kalandar St											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	113	13	126	548	59	607	66	6	72	0	0	0	22	7	29	48	10	58	80	1	81	0	0	0
7:15 to 8:15	140	10	150	642	54	696	75	8	83	0	0	0	28	7	35	57	6	63	95	5	100	0	0	0
7:30 to 8:30	151	8	159	709	49	758	101	12	113	0	0	0	35	7	42	71	5	76	109	6	115	0	0	0
7:45 to 8:45	176	11	187	708	50	758	116	11	127	0	0	0	36	7	43	87	2	89	125	5	130	0	0	0
8:00 to 9:00	204	16	220	700	55	755	118	15	133	0	0	0	38	6	44	125	2	127	125	7	132	0	0	0
AM Totals	317	29	346	1248	114	1362	184	21	205	0	0	0	60	13	73	173	12	185	205	8	213	0	0	0
16:00 to 17:00	554	6	560	1120	36	1156	88	5	93	0	0	0	67	7	74	206	0	206	202	2	204	0	0	0
16:15 to 17:15	553	1	554	1115	32	1147	74	4	78	0	0	0	68	4	72	218	0	218	186	1	187	0	0	0
16:30 to 17:30	581	3	584	1138	30	1168	66	3	69	0	0	0	52	3	55	216	1	217	177	1	178	0	0	0
16:45 to 17:45	610	7	617	1150	30	1180	66	2	68	0	0	0	45	0	45	217	3	220	165	0	165	0	0	0
17:00 to 18:00	589	10	599	1104	24	1128	59	3	62	0	0	0	42	2	44	217	3	220	168	0	168	0	0	0
PM Totals	1143	16	1159	2224	60	2284	147	8	155	0	0	0	109	9	118	423	3	426	370	2	372	0	0	0

[illegible]

Approach		Currarong Rd								
Direction		Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period		Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15		3	0	3	5	0	5	0	0	0
7:15 to 7:30		5	0	5	4	0	4	0	0	0
7:30 to 7:45		6	0	6	6	0	6	0	0	0
7:45 to 8:00		2	0	2	5	0	5	0	0	0
8:00 to 8:15		6	0	6	8	0	8	0	0	0
8:15 to 8:30		2	0	2	8	0	8	0	0	0
8:30 to 8:45		2	0	2	10	0	10	0	0	0
8:45 to 9:00		1	0	1	8	0	8	0	0	0
AM Totals		27	0	27	54	0	54	0	0	0
16:00 to 16:15		4	0	4	2	0	2	0	0	0
16:15 to 16:30		2	0	2	2	0	2	0	0	0
16:30 to 16:45		2	0	2	2	0	2	0	0	0
16:45 to 17:00		2	0	2	4	0	4	0	0	0
17:00 to 17:15		2	0	2	3	0	3	0	0	0
17:15 to 17:30		2	0	2	5	0	5	0	0	0
17:30 to 17:45		1	0	1	2	0	2	0	0	0
17:45 to 18:00		3	0	3	4	0	4	0	0	0
PM Totals	18	0	18	24	0	24	0	0	0	



SKYHIGH - THE TRAFFIC SURVEY COMPANY

Approach	Coonamia Rd									Forest Rd										
Direction	Direction 7 (Left Turn)				Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)				Direction 12U (U Turn)		
Time Period	Light	Heavy	Total		Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total		Light	Heavy	Total
7:00 to 7:15	2	0	2		13	0	13	0	0	0	12	1	13	3	0	3		0	0	0
7:15 to 7:30	4	0	4		12	0	12	0	0	0	27	1	28	2	0	2		0	0	0
7:30 to 7:45	3	0	3		10	0	10	0	0	0	25	3	28	2	0	2		0	0	0
7:45 to 8:00	1	0	1		7	0	7	0	0	0	38	1	39	4	0	4		0	0	0
8:00 to 8:15	0	0	0		13	0	13	0	0	0	48	1	49	1	1	2		0	0	0
8:15 to 8:30	1	0	1		14	1	15	0	0	0	41	1	42	4	0	4		0	0	0
8:30 to 8:45	2	0	2		16	0	16	0	0	0	39	1	40	6	0	6		0	0	0
8:45 to 9:00	3	0	3		13	0	13	0	0	0	36	0	36	4	0	4		0	0	0
AM Totals	16	0	16	98	1	99	0	0	0	266	9	275	26	1	27	0	0	0		

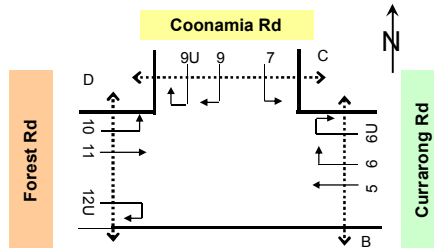
16:00 to 16:15	9	0	9
16:15 to 16:30	9	0	9
16:30 to 16:45	4	0	4
16:45 to 17:00	3	0	3
17:00 to 17:15	6	0	6
17:15 to 17:30	4	0	4
17:30 to 17:45	9	0	9
17:45 to 18:00	5	0	5
PM Totals	49	0	49

32	2	34	0	0	0	32	2	34	9	0	9
32	2	34	0	0	0	26	1	27	7	1	8
28	0	28	0	0	0	15	1	16	3	0	3
28	1	29	0	0	0	14	1	15	3	0	3
35	0	35	0	0	0	18	0	18	2	0	2
42	0	42	0	0	0	19	0	19	4	0	4
25	0	25	0	0	0	16	1	17	4	0	4
33	0	33	0	0	0	15	0	15	5	0	5
255	5	260	0	0	0	155	6	161	37	1	38

0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

Job No. : N790
Client : Realty Realizations
Suburb : Nowra
Location : 8. Forest Rd / Coonamia Rd

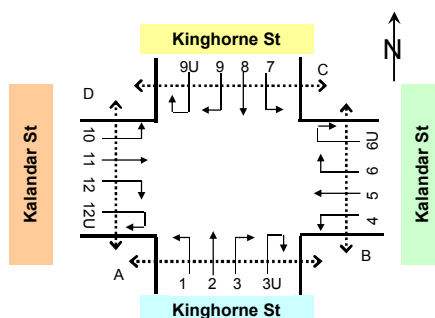
Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



Approach	Currarong Rd								
Direction									
Time Period	Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	16	0	16	20	0	20	0	0	0
7:15 to 8:15	19	0	19	23	0	23	0	0	0
7:30 to 8:30	16	0	16	27	0	27	0	0	0
7:45 to 8:45	12	0	12	31	0	31	0	0	0
8:00 to 9:00	11	0	11	34	0	34	0	0	0
AM Totals	27	0	27	54	0	54	0	0	0
16:00 to 17:00	10	0	10	10	0	10	0	0	0
16:15 to 17:15	8	0	8	11	0	11	0	0	0
16:30 to 17:30	8	0	8	14	0	14	0	0	0
16:45 to 17:45	7	0	7	14	0	14	0	0	0
17:00 to 18:00	8	0	8	14	0	14	0	0	0
PM Totals	18	0	18	24	0	24	0	0	0

Approach	Coonamia Rd						Forest Rd					
Direction	Direction 7 (Left Turn)			Direction 9 (Right Turn)			Direction 10 (Left Turn)			Direction 11 (Through)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	10	0	10	42	0	42	102	6	108	11	0	11
7:15 to 8:15	8	0	8	42	0	42	138	6	144	9	1	10
7:30 to 8:30	5	0	5	44	1	45	152	6	158	11	1	12
7:45 to 8:45	4	0	4	50	1	51	166	4	170	15	1	16
8:00 to 9:00	6	0	6	56	1	57	164	3	167	15	1	16
AM Totals	16	0	16	98	1	99	266	9	275	26	1	27
16:00 to 17:00	25	0	25	120	5	125	87	5	92	22	1	23
16:15 to 17:15	22	0	22	123	3	126	73	3	76	15	1	16
16:30 to 17:30	17	0	17	133	1	134	66	2	68	12	0	12
16:45 to 17:45	22	0	22	130	1	131	67	2	69	13	0	13
17:00 to 18:00	24	0	24	135	0	135	68	1	69	15	0	15
PM Totals	49	0	49	255	5	260	155	6	161	37	1	38

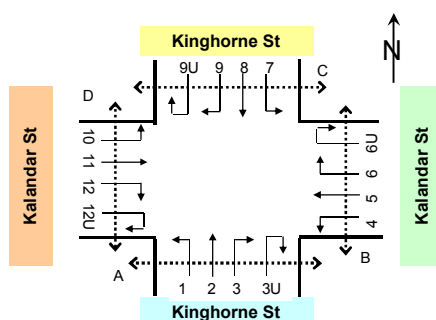
Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 9. Kalandar St / Kinghorne St
 Day/Date : Fri, 4th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



SKYHIGH - THE TRAFFIC SURVEY COMPANY

Approach	Kinghorne St												Kalandar St											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	3	2	5	21	1	22	6	1	7	0	0	0	1	0	1	47	2	49	4	0	4	0	0	0
7:15 to 7:30	5	3	8	37	0	37	8	0	8	0	0	0	2	0	2	34	2	36	11	1	12	0	0	0
7:30 to 7:45	6	0	6	55	1	56	4	1	5	0	0	0	8	0	8	28	3	31	11	0	11	0	0	0
7:45 to 8:00	6	0	6	71	2	73	5	1	6	0	0	0	6	0	6	49	0	49	27	0	27	0	0	0
8:00 to 8:15	3	1	4	87	3	90	11	0	11	0	0	0	5	0	5	49	4	53	21	1	22	0	0	0
8:15 to 8:30	7	0	7	106	4	110	10	0	10	0	0	0	5	0	5	70	5	75	41	1	42	0	0	0
8:30 to 8:45	7	1	8	109	2	111	14	0	14	0	0	0	3	0	3	54	2	56	41	0	41	0	0	0
8:45 to 9:00	7	0	7	94	5	99	15	0	15	0	0	0	12	0	12	49	9	58	26	1	27	0	0	0
AM Totals	44	7	51	580	18	598	73	3	76	0	0	0	42	0	42	380	27	407	182	4	186	0	0	0
16:00 to 16:15	3	0	3	69	0	69	15	0	15	0	0	0	9	0	9	43	4	47	24	0	24	0	0	0
16:15 to 16:30	7	1	8	73	1	74	21	0	21	0	0	0	8	0	8	35	2	37	20	0	20	0	0	0
16:30 to 16:45	4	0	4	44	0	44	9	0	9	1	0	1	5	1	6	39	2	41	13	0	13	0	0	0
16:45 to 17:00	8	0	8	33	0	33	7	0	7	0	0	0	4	0	4	35	0	35	19	1	20	1	0	1
17:00 to 17:15	3	1	4	40	1	41	10	0	10	0	0	0	5	0	5	27	2	29	23	0	23	0	0	0
17:15 to 17:30	8	0	8	43	0	43	10	0	10	0	0	0	7	0	7	32	2	34	15	0	15	0	0	0
17:30 to 17:45	3	0	3	32	0	32	13	1	14	0	0	0	14	0	14	36	1	37	18	0	18	1	0	1
17:45 to 18:00	1	0	1	32	0	32	15	0	15	0	0	0	6	0	6	30	1	31	23	0	23	1	0	1
PM Totals	37	2	39	366	2	368	100	1	101	1	0	1	58	1	59	277	14	291	155	1	156	3	0	3

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 9. Kalandar St / Kinghorne St
 Day/Date : Fri, 4th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data

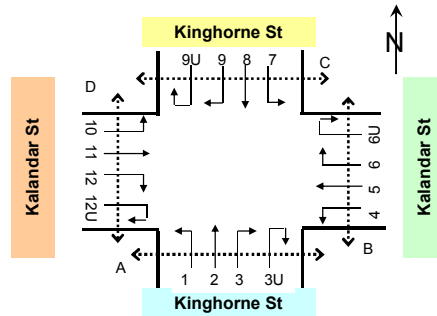


SKYHIGH - THE TRAFFIC SURVEY COMPANY

Approach	Kinghorne St												Kalandar St											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	9	1	10	2	0	2	110	1	111	0	0	0	19	0	19	15	5	20	0	1	1	0	0	0
7:15 to 7:30	15	1	16	2	0	2	101	1	102	0	0	0	27	1	28	10	2	12	2	0	2	0	0	0
7:30 to 7:45	12	1	13	4	0	4	42	1	43	0	0	0	27	2	29	21	3	24	1	0	1	0	0	0
7:45 to 8:00	18	0	18	6	0	6	52	2	54	0	0	0	33	0	33	21	3	24	0	0	0	0	0	0
8:00 to 8:15	19	1	20	7	0	7	35	1	36	0	0	0	43	1	44	45	7	52	1	1	2	0	0	0
8:15 to 8:30	16	0	16	3	0	3	39	2	41	2	0	2	54	3	57	35	3	38	1	0	1	0	0	0
8:30 to 8:45	20	0	20	7	0	7	38	1	39	1	0	1	63	3	66	38	1	39	3	0	3	0	0	0
8:45 to 9:00	49	3	52	9	0	9	32	1	33	2	0	2	51	3	54	44	2	46	2	1	3	0	0	0
AM Totals	158	7	165	40	0	40	449	10	459	5	0	5	317	13	330	229	26	255	10	3	13	0	0	0

16:00 to 16:15	60	1	61	14	1	15	52	2	54	1	0	1	65	0	65	53	2	55	2	0	2	0	0	0
16:15 to 16:30	48	0	48	15	0	15	49	3	52	1	0	1	58	1	59	61	1	62	3	0	3	0	0	0
16:30 to 16:45	47	1	48	16	1	17	45	2	47	0	0	0	42	1	43	61	1	62	4	0	4	0	0	0
16:45 to 17:00	55	0	55	7	0	7	52	0	52	0	0	0	35	0	35	41	0	41	1	0	1	0	0	0
17:00 to 17:15	75	0	75	16	0	16	42	2	44	0	0	0	50	2	52	56	1	57	3	0	3	0	0	0
17:15 to 17:30	46	0	46	12	0	12	53	2	55	2	0	2	40	0	40	42	0	42	4	0	4	0	0	0
17:30 to 17:45	49	0	49	9	0	9	53	1	54	0	0	0	31	1	32	50	1	51	0	0	0	0	0	0
17:45 to 18:00	39	0	39	10	0	10	35	1	36	0	0	0	46	1	47	37	1	38	1	0	1	0	0	0
PM Totals	419	2	421	99	2	101	381	13	394	4	0	4	367	6	373	401	7	408	18	0	18	0	0	0

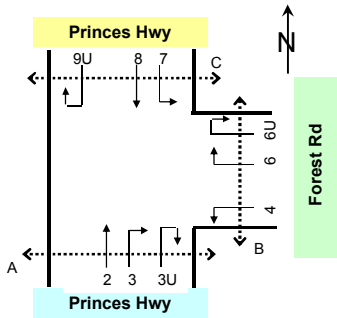
Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 9. Kalandar St / Kinghorne St
 Day/Date : Fri, 4th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary



Approach	Kinghorne St												Kalandar St											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	20	5	25	184	4	188	23	3	26	0	0	0	17	0	17	158	7	165	53	1	54	0	0	0
7:15 to 8:15	20	4	24	250	6	256	28	2	30	0	0	0	21	0	21	160	9	169	70	2	72	0	0	0
7:30 to 8:30	22	1	23	319	10	329	30	2	32	0	0	0	24	0	24	196	12	208	100	2	102	0	0	0
7:45 to 8:45	23	2	25	373	11	384	40	1	41	0	0	0	19	0	19	222	11	233	130	2	132	0	0	0
8:00 to 9:00	24	2	26	396	14	410	50	0	50	0	0	0	25	0	25	222	20	242	129	3	132	0	0	0
AM Totals	44	7	51	580	18	598	73	3	76	0	0	0	42	0	42	380	27	407	182	4	186	0	0	0
16:00 to 17:00	22	1	23	219	1	220	52	0	52	1	0	1	26	1	27	152	8	160	76	1	77	1	0	1
16:15 to 17:15	22	2	24	190	2	192	47	0	47	1	0	1	22	1	23	136	6	142	75	1	76	1	0	1
16:30 to 17:30	23	1	24	160	1	161	36	0	36	1	0	1	21	1	22	133	6	139	70	1	71	1	0	1
16:45 to 17:45	22	1	23	148	1	149	40	1	41	0	0	0	30	0	30	130	5	135	75	1	76	2	0	2
17:00 to 18:00	15	1	16	147	1	148	48	1	49	0	0	0	32	0	32	125	6	131	79	0	79	2	0	2
PM Totals	37	2	39	366	2	368	100	1	101	1	0	1	58	1	59	277	14	291	155	1	156	3	0	3

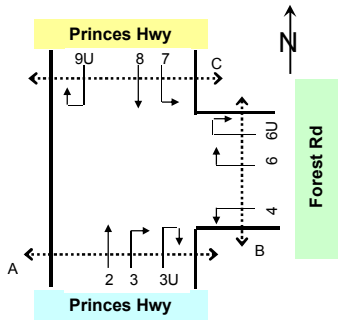
Approach	Kinghorne St												Kalandar St											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	54	3	57	14	0	14	305	5	310	0	0	0	106	3	109	67	13	80	3	1	4	0	0	0
7:15 to 8:15	64	3	67	19	0	19	230	5	235	0	0	0	130	4	134	97	15	112	4	1	5	0	0	0
7:30 to 8:30	65	2	67	20	0	20	168	6	174	2	0	2	157	6	163	122	16	138	3	1	4	0	0	0
7:45 to 8:45	73	1	74	23	0	23	164	6	170	3	0	3	193	7	200	139	14	153	5	1	6	0	0	0
8:00 to 9:00	104	4	108	26	0	26	144	5	149	5	0	5	211	10	221	162	13	175	7	2	9	0	0	0
AM Totals	158	7	165	40	0	40	449	10	459	5	0	5	317	13	330	229	26	255	10	3	13	0	0	0
16:00 to 17:00	210	2	212	52	2	54	198	7	205	2	0	2	200	2	202	216	4	220	10	0	10	0	0	0
16:15 to 17:15	225	1	226	54	1	55	188	7	195	1	0	1	185	4	189	219	3	222	11	0	11	0	0	0
16:30 to 17:30	223	1	224	51	1	52	192	6	198	2	0	2	167	3	170	200	2	202	12	0	12	0	0	0
16:45 to 17:45	225	0	225	44	0	44	200	5	205	2	0	2	156	3	159	189	2	191	8	0	8	0	0	0
17:00 to 18:00	209	0	209	47	0	47	183	6	189	2	0	2	167	4	171	185	3	188	8	0	8	0	0	0
PM Totals	419	2	421	99	2	101	381	13	394	4	0	4	367	6	373	401	7	408	18	0	18	0	0	0

Job No.	: N790
Client	: Realty Realizations
Suburb	: Nowra
Location	: 10. Forest Rd / Princes Hwy
Day/Date	: Fri, 4th May 2012
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data



Approach	Princes Hwy										Forest Rd									
Direction	Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 6 (Right Turn)			Direction 6U (U Turn)				
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total		
7:00 to 7:15	211	10	221	4	0	4	0	0	0	5	0	5	22	0	22	0	0	0		
7:15 to 7:30	248	10	258	5	0	5	0	0	0	9	0	9	34	0	34	0	0	0		
7:30 to 7:45	287	11	298	5	0	5	1	0	1	10	0	10	26	0	26	0	0	0		
7:45 to 8:00	334	16	350	6	1	7	0	0	0	7	3	10	29	1	30	0	0	0		
8:00 to 8:15	342	9	351	5	1	6	0	0	0	8	0	8	26	0	26	0	0	0		
8:15 to 8:30	285	10	295	3	0	3	0	0	0	10	0	10	21	0	21	0	0	0		
8:30 to 8:45	277	8	285	8	2	10	0	0	0	8	1	9	24	1	25	0	0	0		
8:45 to 9:00	247	10	257	4	0	4	0	0	0	3	0	3	14	1	15	0	0	0		
AM Totals	2231	84	2315	40	4	44	1	0	1	60	4	64	196	3	199	0	0	0		
16:00 to 16:15	125	10	135	8	1	9	0	0	0	10	0	10	9	0	9	0	0	0		
16:15 to 16:30	157	12	169	11	0	11	0	0	0	10	0	10	12	1	13	0	0	0		
16:30 to 16:45	139	6	145	6	0	6	0	0	0	6	0	6	5	0	5	0	0	0		
16:45 to 17:00	111	6	117	8	0	8	0	0	0	7	0	7	18	0	18	0	0	0		
17:00 to 17:15	107	6	113	5	0	5	0	0	0	6	1	7	6	0	6	0	0	0		
17:15 to 17:30	122	5	127	7	0	7	0	0	0	7	0	7	7	0	7	0	0	0		
17:30 to 17:45	120	4	124	5	0	5	0	0	0	3	0	3	13	0	13	0	0	0		
17:45 to 18:00	82	4	86	3	0	3	0	0	0	4	0	4	12	0	12	0	0	0		
PM Totals	963	53	1016	53	1	54	0	0	0	53	1	54	82	1	83	0	0	0		

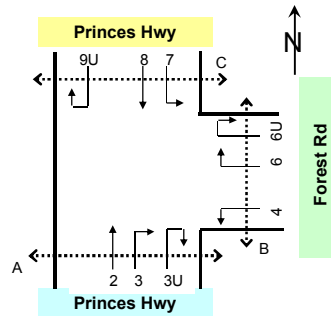
Job No.	: N790
Client	: Realty Realizations
Suburb	: Nowra
Location	: 10. Forest Rd / Princes Hwy
Day/Date	: Fri, 4th May 2012
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data



Approach	Princes Hwy									
Direction	Direction 7 (Left Turn)			Direction 8 (Through)				Direction 9U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total		Light	Heavy	Total
7:00 to 7:15	8	2	10	69	25	94		0	0	0
7:15 to 7:30	9	2	11	73	22	95		0	0	0
7:30 to 7:45	12	3	15	84	18	102		0	0	0
7:45 to 8:00	15	1	16	90	9	99		0	0	0
8:00 to 8:15	12	2	14	102	18	120		0	0	0
8:15 to 8:30	13	2	15	77	16	93		0	0	0
8:30 to 8:45	11	0	11	99	17	116		0	0	0
8:45 to 9:00	8	0	8	90	19	109		0	0	0
AM Totals	88	12	100	684	144	828		0	0	0

[illegible]

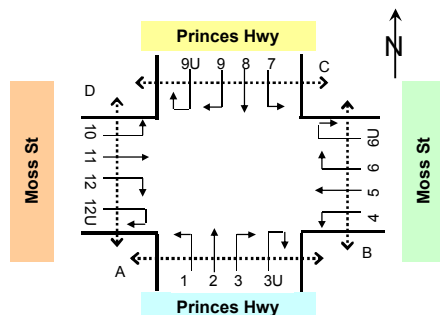
Day/Date : Fri, 4th May 2012
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



Approach	Princes Hwy									Forest Rd								
Direction	Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total				Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	1080	47	1127	20	1	21	1	0	1	31	3	34	111	1	112	0	0	0
7:15 to 8:15	1211	46	1257	21	2	23	1	0	1	34	3	37	115	1	116	0	0	0
7:30 to 8:30	1248	46	1294	19	2	21	1	0	1	35	3	38	102	1	103	0	0	0
7:45 to 8:45	1238	43	1281	22	4	26	0	0	0	33	4	37	100	2	102	0	0	0
8:00 to 9:00	1151	37	1188	20	3	23	0	0	0	29	1	30	85	2	87	0	0	0
AM Totals	2231	84	2315	40	4	44	1	0	1	60	4	64	196	3	199	0	0	0
16:00 to 17:00	532	34	566	33	1	34	0	0	0	33	0	33	44	1	45	0	0	0
16:15 to 17:15	514	30	544	30	0	30	0	0	0	29	1	30	41	1	42	0	0	0
16:30 to 17:30	479	23	502	26	0	26	0	0	0	26	1	27	36	0	36	0	0	0
16:45 to 17:45	460	21	481	25	0	25	0	0	0	23	1	24	44	0	44	0	0	0
17:00 to 18:00	431	19	450	20	0	20	0	0	0	20	1	21	38	0	38	0	0	0
PM Totals	963	53	1016	53	1	54	0	0	0	53	1	54	82	1	83	0	0	0

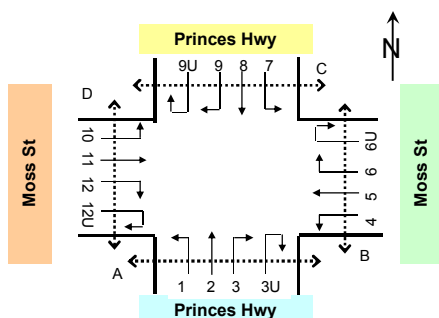
Approach	Princes Hwy								
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	44	8	52	316	74	390	0	0	0
7:15 to 8:15	48	8	56	349	67	416	0	0	0
7:30 to 8:30	52	8	60	353	61	414	0	0	0
7:45 to 8:45	51	5	56	368	60	428	0	0	0
8:00 to 9:00	44	4	48	368	70	438	0	0	0
AM Totals	88	12	100	684	144	828	0	0	0
16:00 to 17:00	98	2	100	1283	26	1309	1	0	1
16:15 to 17:15	110	3	113	1264	24	1288	1	0	1
16:30 to 17:30	111	1	112	1282	21	1303	1	0	1
16:45 to 17:45	112	1	113	1297	21	1318	0	0	0
17:00 to 18:00	107	2	109	1221	24	1245	0	0	0
PM Totals	205	4	209	2504	50	2554	1	0	1

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 11. Moss St / Princes Hwy
 Day/Date : Fri, 4th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



Approach	Princes Hwy												Moss St											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	0	0	0	95	26	121	3	0	3	0	0	0	3	0	3	13	0	13	6	0	6	0	0	0
7:15 to 7:30	2	0	2	138	11	149	5	1	6	0	0	0	2	0	2	5	0	5	19	5	24	0	0	0
7:30 to 7:45	0	0	0	145	22	167	4	1	5	0	0	0	4	0	4	18	0	18	36	0	36	0	0	0
7:45 to 8:00	0	0	0	153	12	165	9	0	9	0	0	0	1	0	1	33	0	33	23	0	23	0	0	0
8:00 to 8:15	0	0	0	143	16	159	12	2	14	0	0	0	5	0	5	37	3	40	42	1	43	0	0	0
8:15 to 8:30	0	0	0	188	15	203	22	3	25	0	0	0	4	1	5	41	2	43	42	4	46	0	0	0
8:30 to 8:45	3	0	3	202	13	215	47	0	47	0	0	0	8	0	8	48	3	51	66	5	71	0	0	0
8:45 to 9:00	0	0	0	169	14	183	48	0	48	0	0	0	11	0	11	59	0	59	58	0	58	0	0	0
AM Totals	5	0	5	1233	129	1362	150	7	157	0	0	0	38	1	39	254	8	262	292	15	307	0	0	0
16:00 to 16:15	2	0	2	250	8	258	21	0	21	1	0	1	5	0	5	28	0	28	51	2	53	0	0	0
16:15 to 16:30	1	0	1	216	8	224	22	0	22	0	0	0	6	1	7	31	0	31	37	0	37	0	0	0
16:30 to 16:45	0	0	0	273	11	284	21	0	21	0	0	0	5	0	5	23	0	23	34	1	35	0	0	0
16:45 to 17:00	4	0	4	222	4	226	13	0	13	0	0	0	6	0	6	19	0	19	31	0	31	0	0	0
17:00 to 17:15	0	0	0	272	4	276	9	0	9	0	0	0	2	0	2	18	0	18	28	1	29	0	0	0
17:15 to 17:30	1	0	1	239	3	242	21	0	21	0	0	0	1	0	1	11	0	11	27	0	27	0	0	0
17:30 to 17:45	1	0	1	217	6	223	11	0	11	1	0	1	2	0	2	25	0	25	32	0	32	0	0	0
17:45 to 18:00	1	0	1	194	6	200	7	0	7	0	0	0	0	0	0	15	0	15	25	0	25	0	0	0
PM Totals	10	0	10	1883	50	1933	125	0	125	2	0	2	27	1	28	170	0	170	265	4	269	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 11. Moss St / Princes Hwy
 Day/Date : Fri, 4th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data

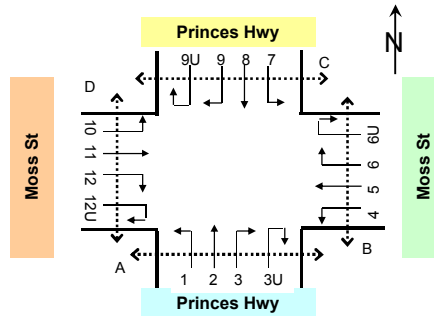


Approach	Princes Hwy												Moss St											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 7:15	9	1	10	214	22	236	34	2	36	0	0	0	10	0	10	0	0	0	2	1	3	0	0	0
7:15 to 7:30	6	1	7	220	16	236	27	2	29	0	0	0	13	1	14	7	1	8	5	1	6	0	0	0
7:30 to 7:45	14	1	15	247	15	262	57	3	60	0	0	0	16	2	18	7	0	7	5	2	7	0	0	0
7:45 to 8:00	23	1	24	282	19	301	82	4	86	0	0	0	16	0	16	10	1	11	7	0	7	0	0	0
8:00 to 8:15	27	0	27	271	17	288	72	0	72	0	0	0	21	4	25	20	0	20	6	2	8	0	0	0
8:15 to 8:30	43	2	45	289	23	312	74	3	77	0	0	0	30	3	33	25	2	27	9	1	10	0	0	0
8:30 to 8:45	39	4	43	261	15	276	73	5	78	0	0	0	20	2	22	34	2	36	14	2	16	0	0	0
8:45 to 9:00	42	2	44	296	27	323	91	4	95	0	0	0	25	2	27	28	0	28	8	0	8	0	0	0
AM Totals	203	12	215	2080	154	2234	510	23	533	0	0	0	151	14	165	131	6	137	56	9	65	0	0	0

16:00 to 16:15	28	1	29	267	15	282	81	1	82	0	0	0	85	0	85	40	0	40	20	0	20	0	0	0
16:15 to 16:30	36	2	38	273	6	279	69	1	70	0	0	0	91	2	93	42	0	42	28	1	29	0	0	0
16:30 to 16:45	31	1	32	343	13	356	62	0	62	0	0	0	65	2	67	27	0	27	14	0	14	0	0	0
16:45 to 17:00	34	1	35	247	7	254	61	0	61	0	0	0	96	0	96	56	0	56	28	0	28	1	0	1
17:00 to 17:15	35	1	36	308	7	315	74	0	74	0	0	0	83	0	83	51	0	51	35	1	36	0	0	0
17:15 to 17:30	25	0	25	273	10	283	48	1	49	0	0	0	70	1	71	32	0	32	17	0	17	0	0	0
17:30 to 17:45	33	0	33	280	7	287	58	1	59	0	0	0	78	0	78	32	0	32	25	0	25	0	0	0
17:45 to 18:00	19	0	19	268	10	278	47	0	47	0	0	0	60	0	60	26	0	26	15	0	15	0	0	0
PM Totals	241	6	247	2259	75	2334	500	4	504	0	0	0	628	5	633	306	0	306	182	2	184	1	0	1

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 11. Moss St / Princes Hwy

Day/Date : Fri, 4th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary

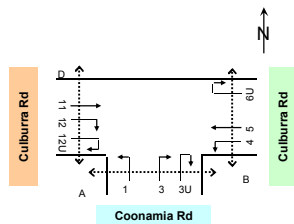


SKYHIGH - THE TRAFFIC SURVEY COMPANY

Approach	Princes Hwy												Moss St											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	2	0	2	531	71	602	21	2	23	0	0	0	10	0	10	69	0	69	84	5	89	0	0	0
7:15 to 8:15	2	0	2	579	61	640	30	4	34	0	0	0	12	0	12	93	3	96	120	6	126	0	0	0
7:30 to 8:30	0	0	0	629	65	694	47	6	53	0	0	0	14	1	15	129	5	134	143	5	148	0	0	0
7:45 to 8:45	3	0	3	686	56	742	90	5	95	0	0	0	18	1	19	159	8	167	173	10	183	0	0	0
8:00 to 9:00	3	0	3	702	58	760	129	5	134	0	0	0	28	1	29	185	8	193	208	10	218	0	0	0
AM Totals	5	0	5	1233	129	1362	150	7	157	0	0	0	38	1	39	254	8	262	292	15	307	0	0	0
16:00 to 17:00	7	0	7	961	31	992	77	0	77	1	0	1	22	1	23	101	0	101	153	3	156	0	0	0
16:15 to 17:15	5	0	5	983	27	1010	65	0	65	0	0	0	19	1	20	91	0	91	130	2	132	0	0	0
16:30 to 17:30	5	0	5	1006	22	1028	64	0	64	0	0	0	14	0	14	71	0	71	120	2	122	0	0	0
16:45 to 17:45	6	0	6	950	17	967	54	0	54	1	0	1	11	0	11	73	0	73	118	1	119	0	0	0
17:00 to 18:00	3	0	3	922	19	941	48	0	48	1	0	1	5	0	5	69	0	69	112	1	113	0	0	0
PM Totals	10	0	10	1883	50	1933	125	0	125	2	0	2	27	1	28	170	0	170	265	4	269	0	0	0

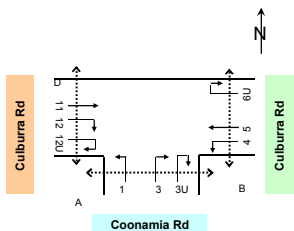
Approach	Princes Hwy												Moss St											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
7:00 to 8:00	52	4	56	963	72	1035	200	11	211	0	0	0	55	3	58	24	2	26	19	4	23	0	0	0
7:15 to 8:15	70	3	73	1020	67	1087	238	9	247	0	0	0	66	7	73	44	2	46	23	5	28	0	0	0
7:30 to 8:30	107	4	111	1089	74	1163	285	10	295	0	0	0	83	9	92	62	3	65	27	5	32	0	0	0
7:45 to 8:45	132	7	139	1103	74	1177	301	12	313	0	0	0	87	9	96	89	5	94	36	5	41	0	0	0
8:00 to 9:00	151	8	159	1117	82	1199	310	12	322	0	0	0	96	11	107	107	4	111	37	5	42	0	0	0
AM Totals	203	12	215	2080	154	2234	510	23	533	0	0	0	151	14	165	131	6	137	56	9	65	0	0	0
16:00 to 17:00	129	5	134	1130	41	1171	273	2	275	0	0	0	337	4	341	165	0	165	90	1	91	1	0	1
16:15 to 17:15	136	5	141	1171	33	1204	266	1	267	0	0	0	335	4	339	176	0	176	105	2	107	1	0	1
16:30 to 17:30	125	3	128	1171	37	1208	245	1	246	0	0	0	314	3	317	166	0	166	94	1	95	1	0	1
16:45 to 17:45	127	2	129	1108	31	1139	241	2	243	0	0	0	327	1	328	171	0	171	105	1	106	1	0	1
17:00 to 18:00	112	1	113	1129	34	1163	227	2	229	0	0	0	291	1	292	141	0	141	92	1	93	0	0	0
PM Totals	241	6	247	2259	75	2334	500	4	504	0	0	0	628	5	633	306	0	306	182	2	184	1	0	1

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 1. Culburra Rd / Coonamia Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



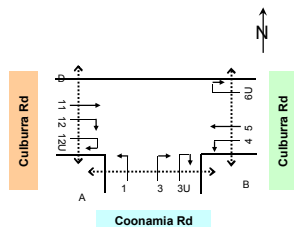
Approach	Coonamia Rd									Culburra Rd								
Direction	Direction 1 (Left Turn)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	16	0	16	10	0	10	0	0	0	18	0	18	22	1	23	0	0	0
12:15 to 12:30	25	0	25	12	0	12	0	0	0	12	0	12	25	0	25	0	0	0
12:30 to 12:45	26	1	27	13	0	13	0	0	0	17	0	17	50	0	50	0	0	0
12:45 to 13:00	11	0	11	15	0	15	0	0	0	14	0	14	31	0	31	0	0	0
13:00 to 13:15	14	0	14	10	0	10	0	0	0	9	0	9	22	0	22	0	0	0
13:15 to 13:30	12	0	12	12	0	12	0	0	0	10	1	11	10	0	10	0	0	0
13:30 to 13:45	19	1	20	16	0	16	0	0	0	8	0	8	21	0	21	0	0	0
13:45 to 14:00	15	0	15	15	0	15	0	0	0	13	0	13	30	0	30	0	0	0
Totals	138	2	140	103	0	103	0	0	0	101	1	102	211	1	212	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 1. Culburra Rd / Coonamia Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



Approach	Culburra Rd								
Direction	Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	30	1	31	19	1	20	0	0	0
12:15 to 12:30	27	0	27	22	0	22	0	0	0
12:30 to 12:45	33	0	33	13	0	13	0	0	0
12:45 to 13:00	35	0	35	23	1	24	0	0	0
13:00 to 13:15	28	0	28	14	0	14	0	0	0
13:15 to 13:30	32	2	34	17	0	17	0	0	0
13:30 to 13:45	35	0	35	12	0	12	0	0	0
13:45 to 14:00	40	0	40	18	0	18	0	0	0
Totals	260	3	263	138	2	140	0	0	0

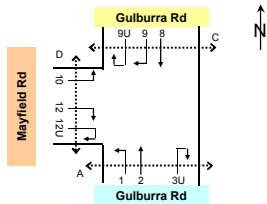
Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 1. Culburra Rd / Coonamia Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary



Approach	Coonamia Rd									Culburra Rd								
Direction	Direction 1 (Left Turn)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	78	1	79	50	0	50	0	0	0	61	0	61	128	1	129	0	0	0
12:15 to 13:15	76	1	77	50	0	50	0	0	0	52	0	52	128	0	128	0	0	0
12:30 to 13:30	63	1	64	50	0	50	0	0	0	50	1	51	113	0	113	0	0	0
12:45 to 13:45	56	1	57	53	0	53	0	0	0	41	1	42	84	0	84	0	0	0
13:00 to 14:00	60	1	61	53	0	53	0	0	0	40	1	41	83	0	83	0	0	0
Totals	138	2	140	103	0	103	0	0	0	101	1	102	211	1	212	0	0	0

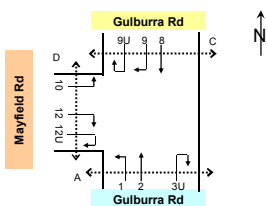
Approach		Culburra Rd								
Direction		Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period		Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00		125	1	126	77	2	79	0	0	0
12:15 to 13:15		123	0	123	72	1	73	0	0	0
12:30 to 13:30		128	2	130	67	1	68	0	0	0
12:45 to 13:45		130	2	132	66	1	67	0	0	0
13:00 to 14:00		135	2	137	61	0	61	0	0	0
Totals		260	3	263	138	2	140	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 2. Gulburra Rd / Mayfield Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



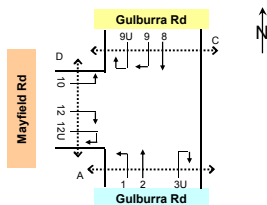
Approach	Gulburra Rd					
Direction	Direction 1 (Left Turn)			Direction 2 (Through)		
Time Period	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	0	0	0	38	1	39
12:15 to 12:30	1	0	1	51	0	51
12:30 to 12:45	1	0	1	75	0	75
12:45 to 13:00	0	0	0	45	0	45
13:00 to 13:15	0	0	0	33	0	33
13:15 to 13:30	1	0	1	21	0	21
13:30 to 13:45	0	0	0	40	1	41
13:45 to 14:00	0	0	0	45	0	45
Totals	3	0	3	348	2	350

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 2. Gulburra Rd / Mayfield Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



Approach	Gulburra Rd						Mayfield Rd					
Direction	Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	47	0	47	0	0	0	0	0	0	0	0	0
12:15 to 12:30	45	0	45	0	0	0	0	0	0	0	0	0
12:30 to 12:45	57	0	57	0	0	0	0	0	0	0	0	0
12:45 to 13:00	39	1	40	0	0	0	0	0	0	0	0	0
13:00 to 13:15	44	1	45	0	1	1	0	0	0	0	0	0
13:15 to 13:30	53	0	53	0	0	0	0	0	0	0	0	0
13:30 to 13:45	60	0	60	0	0	0	0	0	0	0	0	0
13:45 to 14:00	46	0	46	0	0	0	0	0	0	0	0	0
Totals	391	2	393	0	1	1	0	0	0	0	0	0

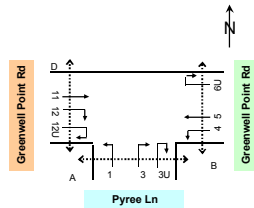
Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 2. Gulburra Rd / Mayfield Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary



Approach	Gulburra Rd					
Direction	Direction 1 (Left Turn)			Direction 2 (Through)		
Time Period	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	2	0	2	209	1	210
12:15 to 13:15	2	0	2	204	0	204
12:30 to 13:30	2	0	2	174	0	174
12:45 to 13:45	1	0	1	139	1	140
13:00 to 14:00	1	0	1	139	1	140
Totals	3	0	3	348	2	350

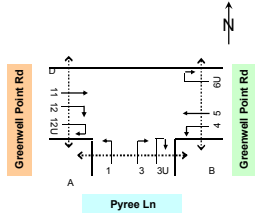
Approach	Gulburra Rd						Mayfield Rd					
Direction	Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	188	1	189	0	0	0	0	0	0	0	0	0
12:15 to 13:15	185	2	187	0	1	1	0	0	0	0	0	0
12:30 to 13:30	193	2	195	0	1	1	0	0	0	0	0	0
12:45 to 13:45	196	2	198	0	1	1	0	0	0	0	0	0
13:00 to 14:00	203	1	204	0	1	1	0	0	0	0	0	0
Totals	391	2	393	0	1	1	0	0	0	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 3. Greenwell Point Rd / Pyree Ln
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



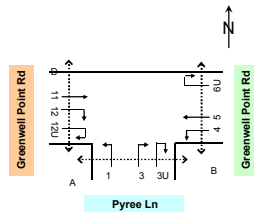
Approach	Pyree Ln						Greenwell Point Rd					
Direction	Direction 1 (Left Turn)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	38	1	39	2	0	2	0	0	0	23	0	23
12:15 to 12:30	38	0	38	9	0	9	0	0	0	31	1	32
12:30 to 12:45	80	1	81	16	0	16	0	0	0	26	1	27
12:45 to 13:00	34	0	34	7	0	7	0	0	0	27	1	28
13:00 to 13:15	27	0	27	10	0	10	0	0	0	17	1	18
13:15 to 13:30	19	0	19	2	0	2	0	0	0	19	1	20
13:30 to 13:45	35	1	36	5	0	5	0	0	0	23	0	23
13:45 to 14:00	46	0	46	1	0	1	0	0	0	23	1	24
Totals	297	3	300	82	0	82	0	0	0	189	6	195

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 3. Greenwell Point Rd / Pyree Ln
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



Approach	Greenwell Point Rd					
Direction	Direction 11 (Through)			Direction 12 (Right Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	45	1	46	21	0	21
12:15 to 12:30	39	0	39	21	0	21
12:30 to 12:45	54	0	54	20	0	20
12:45 to 13:00	33	1	34	21	1	22
13:00 to 13:15	39	0	39	38	1	39
13:15 to 13:30	41	0	41	30	1	31
13:30 to 13:45	52	0	52	26	0	26
13:45 to 14:00	38	0	38	24	0	24
Totals	341	2	343	201	3	204

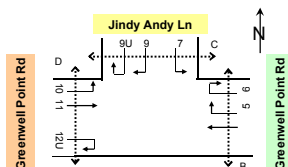
Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 3. Greenwell Point Rd / Pyree Ln
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary



Approach	Pyree Ln						Greenwell Point Rd					
Direction	Direction 1 (Left Turn)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	370	2	372	34	0	34	0	0	0	107	3	110
12:15 to 13:15	159	1	160	42	0	42	0	0	0	101	4	105
12:30 to 13:30	740	1	741	35	0	35	0	0	0	89	4	93
12:45 to 13:45	115	1	116	24	0	24	0	0	0	86	3	89
13:00 to 14:00	127	1	128	18	0	18	0	0	0	82	3	85
Totals	297	3	300	82	0	82	0	0	0	189	6	195

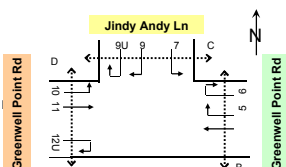
Approach	Greenwell Point Rd					
Direction	Direction 11 (Through)			Direction 12 (Right Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	171	1	172	83	1	84
12:15 to 13:15	165	1	166	100	2	102
12:30 to 13:30	167	1	168	109	3	112
12:45 to 13:45	165	1	166	115	3	118
13:00 to 14:00	170	0	170	118	2	120
Totals	341	2	343	201	3	204

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 4. Greenwell Point Rd / Jindy Andy Ln
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



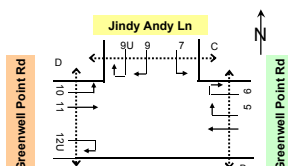
Approach	Greenwell Point Rd								
Direction	Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	42	3	45	23	0	23	0	0	0
12:15 to 12:30	42	0	42	18	1	19	0	0	0
12:30 to 12:45	49	1	50	14	0	14	0	0	0
12:45 to 13:00	54	2	56	17	0	17	0	0	0
13:00 to 13:15	34	0	34	20	0	20	0	0	0
13:15 to 13:30	23	0	23	8	0	8	0	0	0
13:30 to 13:45	34	1	35	16	0	16	0	0	0
13:45 to 14:00	51	0	51	14	0	14	0	0	0
Totals	329	7	336	130	1	131	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 4. Greenwell Point Rd / Jindy Andy Ln
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



Approach	Jindy Andy Ln						Greenwell Point Rd					
Direction	Direction 7 (Left Turn)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	17	0	17	1	0	1	0	0	0	46	2	48
12:15 to 12:30	17	0	17	2	0	2	0	0	0	59	1	60
12:30 to 12:45	22	0	22	2	0	2	0	0	0	54	0	54
12:45 to 13:00	20	0	20	2	0	2	0	0	0	53	4	57
13:00 to 13:15	18	0	18	1	0	1	0	0	0	42	0	42
13:15 to 13:30	19	0	19	1	0	1	0	0	0	48	1	49
13:30 to 13:45	11	0	11	0	0	0	0	0	0	57	1	58
13:45 to 14:00	18	0	18	1	0	1	0	0	0	53	1	54
Totals	142	0	142	10	0	10	0	0	0	412	10	422

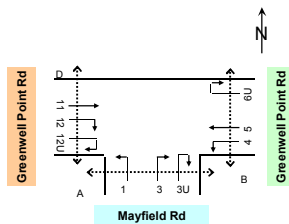
Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 4. Greenwell Point Rd / Jindy Andy Ln
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary



Approach	Greenwell Point Rd								
Direction	Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	187	6	193	72	1	73	0	0	0
12:15 to 13:15	179	3	182	69	1	70	0	0	0
12:30 to 13:30	160	3	163	59	0	59	0	0	0
12:45 to 13:45	145	3	148	61	0	61	0	0	0
13:00 to 14:00	142	1	143	58	0	58	0	0	0
Totals	329	7	336	130	1	131	0	0	0

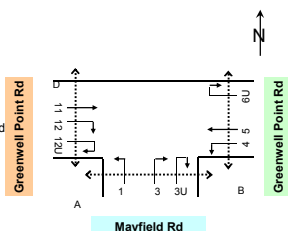
Approach	Jindy Andy Ln						Greenwell Point Rd					
Direction	Direction 7 (Left Turn)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	76	0	76	7	0	7	0	0	0	4	0	4
12:15 to 13:15	77	0	77	7	0	7	0	0	0	6	0	6
12:30 to 13:30	79	0	79	6	0	6	0	0	0	6	0	6
12:45 to 13:45	68	0	68	4	0	4	0	0	0	7	0	7
13:00 to 14:00	66	0	66	3	0	3	0	0	0	7	0	7
Totals	142	0	142	10	0	10	0	0	0	11	0	11

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 5. Greenwell Point Rd / Mayfield Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



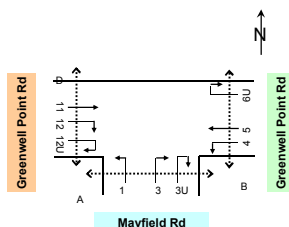
Approach	Mayfield Rd									Greenwell Point Rd										
Direction	Direction 1 (Left Turn)				Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)				Direction 6U (U Turn)		
Time Period	Light	Heavy	Total		Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total		Light	Heavy	Total
12:00 to 12:15	1	0	1		0	0	0	0	0	0	0	0	0	46	1	47		0	0	0
12:15 to 12:30	1	0	1		0	0	0	0	0	0	0	0	0	44	0	44		0	0	0
12:30 to 12:45	1	0	1		0	0	0	0	0	0	0	1	1	62	0	62		0	0	0
12:45 to 13:00	3	0	3		0	0	0	0	0	0	1	1	2	46	1	47		0	0	0
13:00 to 13:15	2	0	2		3	0	3	0	0	0	1	1	2	34	0	34		0	0	0
13:15 to 13:30	4	0	4		0	0	0	0	0	0	0	0	0	25	0	25		0	0	0
13:30 to 13:45	0	0	0		0	0	0	0	0	0	1	0	1	38	1	39		0	0	0
13:45 to 14:00	0	0	0		0	0	0	0	0	0	2	0	2	49	0	49		0	0	0
Totals	12	0	12	3	0	3	0	0	0	5	3	8	344	3	347	0	0	0		

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 5. Greenwell Point Rd / Mayfield Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



Approach	Greenwell Point Rd									
Direction	Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)			
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	
12:00 to 12:15	53	1	54	0	0	0	0	0	0	
12:15 to 12:30	58	0	58	5	0	5	0	0	0	
12:30 to 12:45	58	1	59	1	0	1	0	0	0	
12:45 to 13:00	47	2	49	3	0	3	0	0	0	
13:00 to 13:15	46	1	47	1	0	1	0	0	0	
13:15 to 13:30	45	1	46	2	0	2	0	0	0	
13:30 to 13:45	67	0	67	0	0	0	0	0	0	
13:45 to 14:00	46	2	48	1	0	1	0	0	0	
Totals	420	8	428	13	0	13	0	0	0	

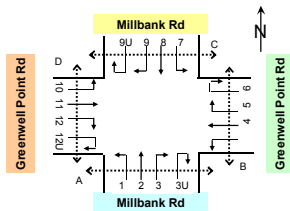
Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 5. Greenwell Point Rd / Mayfield Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary



Approach	Mayfield Rd									Greenwell Point Rd								
Direction	Direction 1 (Left Turn)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	6	0	6	0	0	0	0	0	0	1	2	3	198	2	200	0	0	0
12:15 to 13:15	7	0	7	3	0	3	0	0	0	2	3	5	186	1	187	0	0	0
12:30 to 13:30	10	0	10	3	0	3	0	0	0	2	3	5	167	1	168	0	0	0
12:45 to 13:45	9	0	9	3	0	3	0	0	0	3	2	5	143	2	145	0	0	0
13:00 to 14:00	6	0	6	3	0	3	0	0	0	4	1	5	146	1	147	0	0	0
Totals	12	0	12	3	0	3	0	0	0	5	3	8	344	3	347	0	0	0

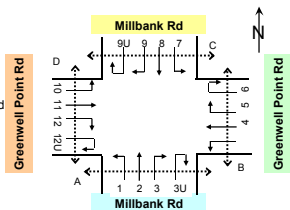
Approach	Greenwell Point Rd									
Direction	Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)			
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	
12:00 to 13:00	216	4	220	9	0	9	0	0	0	
12:15 to 13:15	209	4	213	10	0	10	0	0	0	
12:30 to 13:30	196	5	201	7	0	7	0	0	0	
12:45 to 13:45	205	4	209	6	0	6	0	0	0	
13:00 to 14:00	204	4	208	4	0	4	0	0	0	
Totals	420	8	428	13	0	13	0	0	0	

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 6. Greenwell Point Rd / Millbank Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



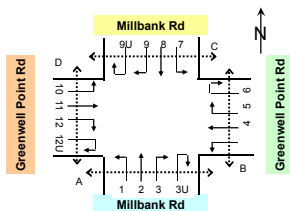
Approach	Millbank Rd												Greenwell Point Rd											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	19	0	19	7	0	7	6	0	6	0	0	0	3	0	3	37	2	39	2	0	2	0	0	0
12:15 to 12:30	9	0	9	2	0	2	8	1	9	0	0	0	3	0	3	48	0	48	8	0	8	0	0	0
12:30 to 12:45	15	0	15	6	0	6	11	0	11	0	0	0	4	1	5	60	0	60	0	0	0	0	0	0
12:45 to 13:00	15	0	15	6	1	7	3	0	3	0	0	0	4	0	4	36	0	36	2	0	2	0	0	0
13:00 to 13:15	6	0	6	7	0	7	6	0	6	0	0	0	4	0	4	33	0	33	3	0	3	0	0	0
13:15 to 13:30	5	0	5	8	0	8	10	1	11	0	0	0	3	0	3	26	1	27	1	0	1	0	0	0
13:30 to 13:45	9	0	9	7	1	8	6	0	6	0	0	0	5	0	5	35	1	36	1	1	2	0	0	0
13:45 to 14:00	11	1	12	6	0	6	3	0	3	0	0	0	3	14	17	45	0	45	2	0	2	0	0	0
Totals	89	1	90	49	2	51	53	2	55	0	0	0	29	15	44	320	4	324	19	1	20	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 6. Greenwell Point Rd / Millbank Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



Approach	Millbank Rd												Greenwell Point Rd											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	0	0	0	5	2	7	5	0	5	0	0	0	4	0	4	55	0	55	14	0	14	0	0	0
12:15 to 12:30	2	0	2	2	0	2	4	0	4	0	0	0	1	0	1	52	0	52	7	0	7	0	0	0
12:30 to 12:45	0	0	0	3	0	3	2	0	2	0	0	0	3	1	4	47	2	49	8	0	8	0	0	0
12:45 to 13:00	3	1	4	6	0	6	1	0	1	0	0	0	7	0	7	36	0	36	12	0	12	0	0	0
13:00 to 13:15	1	0	1	2	0	2	2	0	2	0	0	0	3	0	3	42	1	43	9	0	9	0	0	0
13:15 to 13:30	2	0	2	6	0	6	3	0	3	0	0	0	7	0	7	47	1	48	10	0	10	0	0	0
13:30 to 13:45	1	0	1	2	0	2	2	0	2	0	0	0	8	0	8	57	2	59	11	0	11	0	0	0
13:45 to 14:00	1	0	1	3	0	3	3	0	3	0	0	0	4	0	4	49	1	50	11	0	11	0	0	0
Totals	10	1	11	29	2	31	22	0	22	0	0	0	37	1	38	385	7	392	82	0	82	0	0	0

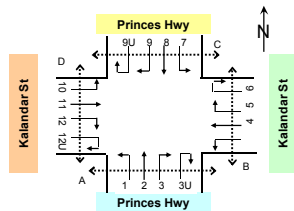
Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 6. Greenwell Point Rd / Millbank Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary



Approach	Millbank Rd												Greenwell Point Rd											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	58	0	58	21	1	22	28	1	29	0	0	0	14	1	15	181	2	183	12	0	12	0	0	0
12:15 to 13:15	45	0	45	21	1	22	28	1	29	0	0	0	15	1	16	177	0	177	13	0	13	0	0	0
12:30 to 13:30	41	0	41	27	1	28	30	1	31	0	0	0	15	1	16	155	1	156	6	0	6	0	0	0
12:45 to 13:45	35	0	35	28	2	30	25	1	26	0	0	0	16	0	16	130	2	132	7	1	8	0	0	0
13:00 to 14:00	31	1	32	28	1	29	25	1	26	0	0	0	15	14	29	139	2	141	7	1	8	0	0	0
Totals	89	1	90	49	2	51	53	2	55	0	0	0	29	15	44	320	4	324	19	1	20	0	0	0

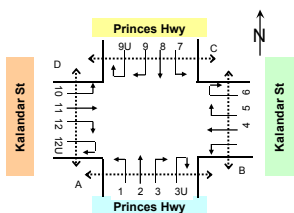
Approach	Millbank Rd												Greenwell Point Rd											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	5	1	6	16	2	18	12	0	12	0	0	0	15	1	16	190	2	192	41	0	41	0	0	0
12:15 to 13:15	6	1	7	13	0	13	9	0	9	0	0	0	14	1	15	177	3	180	36	0	36	0	0	0
12:30 to 13:30	6	1	7	17	0	17	8	0	8	0	0	0	20	1	21	172	4	176	39	0	39	0	0	0
12:45 to 13:45	7	1	8	16	0	16	8	0	8	0	0	0	25	0	25	162	4	166	42	0	42	0	0	0
13:00 to 14:00	5	0	5	13	0	13	10	0	10	0	0	0	22	0	22	195	5	200	41	0	41	0	0	0
Totals	10	1	11	29	2	31	22	0	22	0	0	0	37	1	38	385	7	392	82	0	82	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 7. Kalandar St / Princes Hwy
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



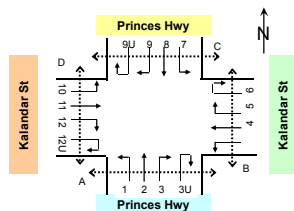
Approach	Princes Hwy												Kalandar St											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	0	0	0	183	5	188	14	1	15	0	0	0	19	0	19	48	0	48	105	1	106	0	0	0
12:15 to 12:30	2	1	3	191	5	196	15	1	16	0	0	0	16	0	16	44	1	45	123	0	123	0	0	0
12:30 to 12:45	0	0	0	190	5	195	28	1	29	0	0	0	15	0	15	28	0	28	81	2	83	0	0	0
12:45 to 13:00	1	0	1	189	5	194	27	1	28	0	0	0	18	0	18	39	0	39	100	1	101	0	0	0
13:00 to 13:15	3	0	3	154	1	155	22	0	22	0	0	0	15	0	15	23	0	23	73	0	73	0	0	0
13:15 to 13:30	0	0	0	166	1	167	18	0	18	0	0	0	13	0	13	32	1	33	78	0	78	0	0	0
13:30 to 13:45	3	0	3	186	2	188	20	0	20	0	0	0	11	0	11	35	0	35	90	0	90	0	0	0
13:45 to 14:00	1	0	1	175	3	178	13	0	13	0	0	0	14	0	14	23	1	24	85	0	85	0	0	0
Totals	10	1	11	1434	27	1461	157	4	161	0	0	0	121	0	121	272	3	275	735	4	739	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 7. Kalandar St / Princes Hwy
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



Approach	Princes Hwy												Kalandar St											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	88	0	88	253	2	255	12	2	14	0	0	0	10	0	10	40	0	40	35	0	35	0	0	0
12:15 to 12:30	95	1	96	298	3	301	10	2	12	0	0	0	20	0	20	19	0	19	24	0	24	0	0	0
12:30 to 12:45	97	0	97	314	4	318	17	4	21	0	0	0	10	1	11	34	0	34	39	1	40	0	0	0
12:45 to 13:00	86	0	86	240	2	242	22	0	22	0	0	0	9	0	9	35	0	35	32	0	32	0	0	0
13:00 to 13:15	112	0	112	231	2	233	24	1	25	0	0	0	6	0	6	42	0	42	26	0	26	0	0	0
13:15 to 13:30	79	0	79	275	8	283	27	0	27	0	0	0	7	1	8	34	0	34	36	2	38	0	0	0
13:30 to 13:45	94	1	95	253	3	256	11	0	11	0	0	0	10	0	10	25	1	26	27	0	27	0	0	0
13:45 to 14:00	84	2	86	271	2	273	17	0	17	0	0	0	7	1	8	21	0	21	29	1	30	0	0	0
Totals	745	4	749	2135	26	2161	140	9	149	0	0	0	79	3	82	250	1	251	248	4	252	0	0	0

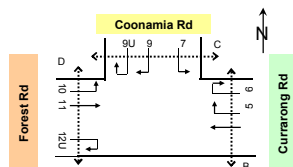
Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 7. Kalandar St / Princes Hwy
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary



Approach	Princes Hwy												Kalandar St											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	3	1	4	753	20	773	84	4	88	0	0	0	68	0	68	159	1	160	409	4	413	0	0	0
12:15 to 13:15	6	1	7	724	16	740	92	3	95	0	0	0	64	0	64	134	1	135	377	3	380	0	0	0
12:30 to 13:30	4	0	4	699	12	711	95	2	97	0	0	0	61	0	61	122	1	123	332	3	335	0	0	0
12:45 to 13:45	7	0	7	695	9	704	87	1	88	0	0	0	57	0	57	129	1	130	341	1	342	0	0	0
13:00 to 14:00	7	0	7	681	7	688	73	0	73	0	0	0	53	0	53	113	2	115	326	0	326	0	0	0
Totals	10	1	11	1434	27	1461	157	4	161	0	0	0	121	0	121	272	3	275	735	4	739	0	0	0

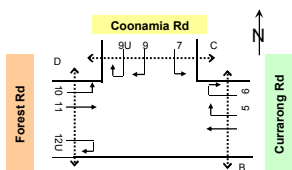
Approach	Princes Hwy												Kalandar St											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	376	1	377	1105	11	1116	61	8	69	0	0	0	49	1	50	128	0	128	130	1	131	0	0	0
12:15 to 13:15	390	1	391	1083	11	1094	73	7	80	0	0	0	45	1	46	130	0	130	121	1	122	0	0	0
12:30 to 13:30	374	0	374	1060	16	1076	90	5	95	0	0	0	32	2	34	145	0	145	133	3	136	0	0	0
12:45 to 13:45	371	1	372	999	15	1014	84	1	85	0	0	0	32	1	33	136	1	137	121	2	123	0	0	0
13:00 to 14:00	369	3	372	1030	15	1045	79	1	80	0	0	0	30	2	32	122	1	123	118	3	121	0	0	0
Totals	745	4	749	2135	26	2161	140	9	149	0	0	0	79	3	82	250	1	251	248	4	252	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 8. Forest Rd / Coonamia Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



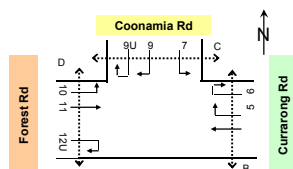
Approach	Currarong Rd								
Direction	Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	1	0	1	5	0	5	0	0	0
12:15 to 12:30	3	0	3	6	0	6	0	0	0
12:30 to 12:45	3	0	3	5	0	5	0	0	0
12:45 to 13:00	1	0	1	4	0	4	0	0	0
13:00 to 13:15	2	0	2	3	0	3	0	0	0
13:15 to 13:30	1	0	1	5	0	5	0	0	0
13:30 to 13:45	2	0	2	7	0	7	0	0	0
13:45 to 14:00	3	0	3	5	0	5	0	0	0
Totals	16	0	16	40	0	40	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 8. Forest Rd / Coonamia Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



Approach	Coonamia Rd						Forest Rd					
Direction	Direction 7 (Left Turn)			Direction 9 (Right Turn)			Direction 10 (Left Turn)			Direction 11 (Through)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	6	0	6	29	1	30	23	0	23	3	0	3
12:15 to 12:30	5	0	5	27	0	27	32	0	32	4	0	4
12:30 to 12:45	5	0	5	25	0	25	34	1	35	5	0	5
12:45 to 13:00	6	0	6	31	1	32	25	0	25	2	0	2
13:00 to 13:15	4	0	4	18	0	18	20	0	20	3	0	3
13:15 to 13:30	4	0	4	22	1	23	20	0	20	2	0	2
13:30 to 13:45	3	0	3	18	0	18	29	1	30	3	0	3
13:45 to 14:00	5	0	5	24	0	24	28	0	28	4	0	4
Totals	38	0	38	194	3	197	211	2	213	26	0	26

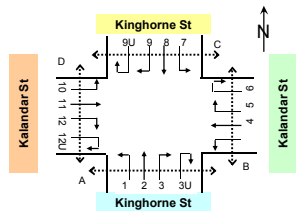
Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 8. Forest Rd / Coonamia Rd
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary



Approach	Currarong Rd								
Direction	Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	8	0	8	20	0	20	0	0	0
12:15 to 13:15	9	0	9	18	0	18	0	0	0
12:30 to 13:30	7	0	7	17	0	17	0	0	0
12:45 to 13:45	6	0	6	19	0	19	0	0	0
13:00 to 14:00	8	0	8	20	0	20	0	0	0
Totals	16	0	16	40	0	40	0	0	0

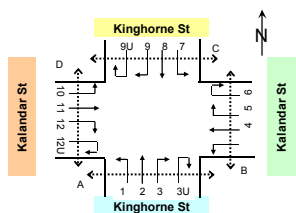
Approach	Coonamia Rd						Forest Rd					
Direction	Direction 7 (Left Turn)			Direction 9 (Right Turn)			Direction 10 (Left Turn)			Direction 11 (Through)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	22	0	22	112	2	114	114	1	115	14	0	14
12:15 to 13:15	20	0	20	101	1	102	111	1	112	14	0	14
12:30 to 13:30	19	0	19	96	2	98	99	1	100	12	0	12
12:45 to 13:45	17	0	17	89	2	91	94	1	95	10	0	10
13:00 to 14:00	16	0	16	82	1	83	97	1	98	12	0	12
Totals	38	0	38	194	3	197	211	2	213	26	0	26

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 9. Kalandar St / Kinghorn St
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



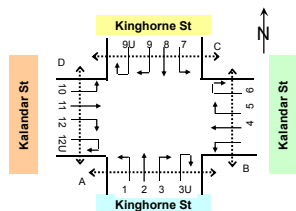
Approach	Kinghorn St												Kalandar St											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	3	1	4	27	1	28	6	0	6	0	0	0	3	0	3	35	2	37	18	0	18	1	0	1
12:15 to 12:30	3	0	3	33	1	34	5	0	5	0	0	0	4	0	4	32	3	35	17	0	17	2	0	2
12:30 to 12:45	5	0	5	25	0	25	8	0	8	0	0	0	4	0	4	25	3	28	16	1	17	0	0	0
12:45 to 13:00	3	1	4	36	0	36	3	0	3	0	0	0	6	0	6	33	1	34	21	0	21	1	0	1
13:00 to 13:15	4	0	4	23	1	24	6	0	6	0	0	0	2	0	2	30	1	31	19	1	20	0	0	0
13:15 to 13:30	3	0	3	34	0	34	11	1	12	0	0	0	5	1	6	32	0	32	15	0	15	3	1	4
13:30 to 13:45	3	0	3	31	1	32	7	0	7	0	0	0	4	0	4	26	0	26	16	0	16	1	0	1
13:45 to 14:00	6	0	6	29	0	29	3	0	3	0	0	0	3	0	3	28	1	29	13	0	13	1	0	1
Totals	30	2	32	238	4	242	49	1	50	0	0	0	31	1	32	241	11	252	135	2	137	9	1	10

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 9. Kalandar St / Kinghorn St
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



Approach	Kinghorn St												Kalandar St											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	32	1	33	3	0	3	21	1	22	1	0	1	24	0	24	41	0	41	2	1	3	1	0	1
12:15 to 12:30	28	0	28	4	0	4	27	0	27	0	0	0	28	1	29	34	0	34	3	0	3	0	0	0
12:30 to 12:45	27	0	27	6	0	6	29	2	31	1	1	2	32	0	32	45	1	46	5	0	5	1	1	2
12:45 to 13:00	31	0	31	3	0	3	35	0	35	0	0	0	36	1	37	41	0	41	3	1	4	0	0	0
13:00 to 13:15	27	0	27	2	0	2	26	1	27	2	0	2	27	1	28	40	1	41	5	0	5	2	0	2
13:15 to 13:30	26	0	26	5	0	5	28	2	30	0	1	1	26	0	26	33	1	34	4	0	4	0	1	1
13:30 to 13:45	26	0	26	3	0	3	33	0	33	2	0	2	25	1	26	29	1	30	3	0	3	2	0	2
13:45 to 14:00	27	1	28	3	0	3	29	1	30	1	0	1	30	1	31	27	1	28	5	1	6	1	0	1
Totals	224	2	226	29	0	29	228	7	235	7	2	9	228	5	233	290	5	295	30	3	33	7	2	9

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 9. Kalandar St / Kinghorn St
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary



Approach	Kinghorn St												Kalandar St											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	14	2	16	121	2	123	22	0	22	0	0	0	17	0	17	125	9	134	72	1	73	4	0	4
12:15 to 13:15	15	1	16	117	2	119	22	0	22	0	0	0	16	0	16	120	8	128	73	2	75	3	0	3
12:30 to 13:30	15	1	16	118	1	119	28	1	29	0	0	0	17	1	18	120	5	125	71	2	73	4	1	5
12:45 to 13:45	13	1	14	124	2	126	27	1	28	0	0	0	17	1	18	121	2	123	71	1	72	5	1	6
13:00 to 14:00	16	0	16	117	2	119	27	1	28	0	0	0	14	1	15	116	2	118	63	1	64	5	1	6
Totals	30	2	32	238	4	242	49	1	50	0	0	0	31	1	32	241	11	252	135	2	137	9	1	10

Approach	Kinghorn St												Kalandar St											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	118	1	119	16	0	16	112	3	115	2	1	3	120	2	122	161	1	162	13	2	15	2	1	3
12:15 to 13:15	113	0	113	15	0	15	117	3	120	3	1	4	123	3	126	160	2	162	16	1	17	3	1	4
12:30 to 13:30	111	0	111	16	0	16	118	5	123	3	2	5	121	2	123	159	3	162	17	1	18	3	2	5
12:45 to 13:45	110	0	110	13	0	13	122	3	125	4	1	5	114	3	117	143	3	146	15	1	16	4	1	5
13:00 to 14:00	106	1	107	13	0	13	116	4	120	5	1	6	108	3	111	129	4	133	17	1	18	5	1	6
Totals	224	2	226	29	0	29	228	7	235	7	2	9	228	5	233	290	5	295	30	3	33	7	2	9



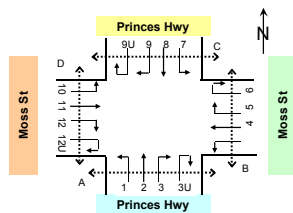
Approach	Princes Hwy											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)					Direction 9U (U Turn)			
Time Period	Light	Heavy	Total	Light	Heavy	Total			Light	Heavy	Total	
12:00 to 12:15	17	0	17	206	0	210			0	0	0	
12:15 to 12:30	22	0	22	242	0	246			0	0	0	
12:30 to 12:45	34	0	34	249	0	253			0	0	0	
12:45 to 13:00	22	0	22	215	0	219			0	0	0	
13:00 to 13:15	25	0	25	197	2	199			0	0	0	
13:15 to 13:30	19	0	19	203	0	207			0	0	0	
13:30 to 13:45	19	0	19	234	0	238			0	0	0	
13:45 to 14:00	22	0	22	239	2	241			0	0	0	
Totals	180	0	180	1785	28	1813			0	0	0	



Approach	Princes Hwy									Forest Rd								
Direction	Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12.00 to 13.00	642	11	653	30	0	30	0	0	0	34	0	34	65	2	67	0	0	0
12.15 to 13.15	629	10	639	26	0	26	0	0	0	36	0	36	70	2	72	0	0	0
12.30 to 13.30	621	11	632	31	0	31	0	0	0	28	0	28	59	0	59	0	0	0
12.45 to 13.45	618	12	630	31	0	31	0	0	0	32	1	33	59	0	59	0	0	0
13.00 to 14.00	604	18	622	29	0	29	0	0	0	41	2	43	70	0	70	0	0	0
Totals	1246	29	1275	99	0	99	0	0	0	75	2	77	135	2	137	0	0	0

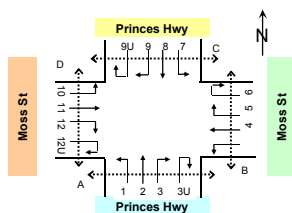
Approach	Princes Hwy								
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	95	0	95	912	16	928	0	0	0
12:15 to 13:15	103	0	103	803	14	917	0	0	0
12:30 to 13:30	100	0	100	864	14	878	0	0	0
12:45 to 13:45	85	0	85	849	14	863	0	0	0
13:00 to 14:00	85	0	85	873	12	885	0	0	0
Totals	199	0	199	1788	28	1813	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 11. Moss St / Princes Hwy
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



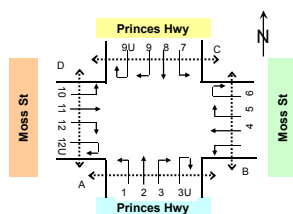
Approach	Princes Hwy												Moss St											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	5	0	5	232	9	241	25	0	25	0	0	0	6	0	6	12	0	12	24	1	25	0	0	0
12:15 to 12:30	3	0	3	210	3	213	24	0	24	0	0	0	10	0	10	29	0	29	24	0	24	0	0	0
12:30 to 12:45	0	0	0	242	6	248	14	0	14	0	0	0	5	0	5	12	0	12	27	0	27	0	0	0
12:45 to 13:00	1	0	1	231	7	238	16	0	16	0	0	0	3	0	3	8	0	8	34	1	35	0	0	0
13:00 to 13:15	3	0	3	173	1	174	20	0	20	0	0	0	6	0	6	14	0	14	24	1	25	0	0	0
13:15 to 13:30	2	0	2	177	2	179	17	1	18	1	0	1	7	0	7	13	0	13	26	0	26	0	0	0
13:30 to 13:45	3	0	3	230	5	235	12	0	12	1	0	1	7	0	7	12	0	12	22	0	22	0	0	0
13:45 to 14:00	1	0	1	184	4	188	18	0	18	0	0	0	6	0	6	10	0	10	30	1	31	0	0	0
Totals	18	0	18	1679	37	1716	146	1	147	2	0	2	50	0	50	110	0	110	211	4	215	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 11. Moss St / Princes Hwy
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data



Approach	Princes Hwy												Moss St											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 12:15	26	2	28	288	6	294	47	0	47	0	0	0	51	0	51	41	0	41	21	0	21	0	0	0
12:15 to 12:30	21	0	21	245	5	250	65	2	67	0	0	0	58	0	58	35	0	35	22	0	22	0	0	0
12:30 to 12:45	20	0	20	271	2	273	44	0	44	0	0	0	57	0	57	17	0	17	15	1	16	0	0	0
12:45 to 13:00	18	0	18	229	3	232	38	0	38	0	0	0	60	0	60	24	0	24	19	0	19	0	0	0
13:00 to 13:15	27	0	27	234	2	236	58	1	59	0	0	0	73	0	73	34	0	34	23	1	24	0	0	0
13:15 to 13:30	17	0	17	271	6	277	54	0	54	0	0	0	57	0	57	18	0	18	13	2	15	0	0	0
13:30 to 13:45	25	0	25	277	4	281	37	0	37	0	0	0	46	0	46	20	0	20	10	1	11	0	0	0
13:45 to 14:00	25	0	25	271	3	274	58	0	58	0	0	0	51	0	51	34	0	34	11	0	11	0	0	0
Totals	179	2	181	2086	31	2117	401	3	404	0	0	0	463	0	463	223	0	223	134	5	139	0	0	0

Job No. : N790
 Client : Realty Realizations
 Suburb : Nowra
 Location : 11. Moss St / Princes Hwy
 Day/Date : Sat, 5th May 2012
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary



Approach	Princes Hwy												Moss St											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	9	0	9	915	25	940	79	0	79	0	0	0	24	0	24	61	0	61	109	2	111	0	0	0
12:15 to 13:15	7	0	7	856	17	873	74	0	74	0	0	0	24	0	24	63	0	63	109	2	111	0	0	0
12:30 to 13:30	6	0	6	823	16	839	67	1	68	1	0	1	21	0	21	47	0	47	111	2	113	0	0	0
12:45 to 13:45	9	0	9	811	15	826	65	1	66	2	0	2	23	0	23	47	0	47	106	2	108	0	0	0
13:00 to 14:00	9	0	9	764	12	776	67	1	68	2	0	2	26	0	26	49	0	49	102	2	104	0	0	0
Totals	18	0	18	1679	37	1716	146	1	147	2	0	2	50	0	50	110	0	110	211	4	215	0	0	0

Approach	Princes Hwy												Moss St											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
12:00 to 13:00	85	2	87	1033	16	1049	194	2	196	0	0	0	236	0	236	117	0	117	77	1	78	0	0	0
12:15 to 13:15	86	0	86	979	12	991	205	3	208	0	0	0	248	0	248	110	0	110	79	2	81	0	0	0
12:30 to 13:30	82	0	82	1005	13	1018	194	1	195	0	0	0	247	0	247	93	0	93	70	4	74	0	0	0
12:45 to 13:45	87	0	87	1011	15	1026	187	1	188	0	0	0	236	0	236	96	0	96	65	4	69	0	0	0
13:00 to 14:00	94	0	94	1053	15	1068	207	1	208	0	0	0	227	0	227	106	0	106	57	4	61	0	0	0
Totals	179	2	181	2086	31	2117	401	3	404	0	0	0	463	0	463	223	0	223	134	5	139	0	0	0

Appendix B

RMS Crash Data

Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors		
AS F																						
Southern Region																						
Shoalhaven City LGA																						
Culburra																						
Coonemia Rd																						
715825	28/05/2010	Fri	16:40		at CULBURRA RD	TJN	STR	Fine	Dry	80	2	CAR	M41	N in COONEMIA RD	20	Turning right	I	0	2			
E41295549						RUM:	13	Right rear				CAR	F75	W in CULBURRA RD	60	Proceeding in lane						
Wollumboola																						
Culburra Rd																						
668769	30/04/2009	Thu	13:20	20 m W	COONAMIA RD	2WY	STR	Raining	Wet	80	2	CAR	M69	W in CULBURRA RD	80	Proceeding in lane	I	0	1			
E38076353						RUM:	32	Right rear				CAR	F70	W in CULBURRA RD	5	Turning right						
Report Totals:			Total Crashes: 2			Fatal Crashes: 0			Injury Crashes: 2			Killed: 0			Injured: 3							
Crashid dataset 1 - Culburra Road - Coonamia Road - July 2007 to June 2012																						

LOCATION
Culburra Rd
Coonamia Road
Wollumboola

Crash Data Period
01/07/2007 to 30/06/2012

Legend

Daily Dataset

Fatal Crash

Injury Crash

Non-casualty Crash

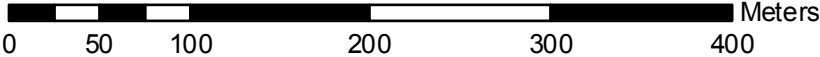
Classified Roads

State Road

Regional Road



Prepared 05/02/2013
Planning & Analysis
Southern Region



Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors		
Southern Region																						
Shoalhaven City LGA																						
Pyree																						
Culburra Rd																						
596512	06/11/2007	Tue	22:20	100 m E	PYREE LANE	2WY	CRV	Raining	Wet	80	1	UTE	F23	W in CULBURRA RD	80	Proceeding in lane	I	0	1	S		
E31755936											RUM:	85	Off rt/lft bnd=>obj Tree/bush									
Mayfield Rd																						
774848	18/11/2011	Fri	17:54	100 m W	PYREE LANE	2WY	CRV	Fine	Dry	60	1	4WD	M19	E in MAYFIELD RD	50	Proceeding in lane	N	0	0			
E46394926											RUM:	82	Off right/right bend									
Report Totals:			Total Crashes: 2			Fatal Crashes: 0			Injury Crashes: 1			Killed: 0			Injured: 1							
Crashid dataset 2 - Culburra Road - Mayfield Road - July 2007 to June 2012																						

LOCATION
Culburra Rd
Mayfield Road
Pyree

Crash Data Period
01/07/2007 to 30/06/2012

Legend

Daily Dataset

Fatal Crash

Injury Crash

Non-casualty Crash

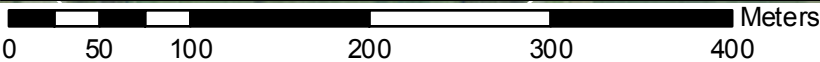
Classified Roads

State Road

Regional Road



Prepared 05/02/2013
Planning & Analysis
Southern Region



Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors
AS F																				
Southern Region																				
Shoalhaven City LGA																				
Pyree																				
Greenwell Pt Rd																				
678982	18/08/2009	Tue	17:34		at PYREE LANE	TJN	CRV	Fine	Dry	80	2	TRK	M23	N in PYREE LANE		10 Turning right	I	0	2	
E38122832						RUM:	13	Right near				CAR	U U	W in GREENWELL PT RD		50 Proceeding in lane				
731681	12/11/2010	Fri	15:10		at PYREE LANE	TJN	CRV	Fine	Dry	80	2	TRK	M57	N in PYREE LANE		10 Proceeding in lane	N	0	0	
E42837550						RUM:	10	Cross traffic				VAN	M44	W in GREENWELL PT RD		70 Proceeding in lane				
Report Totals:		Total Crashes: 2				Fatal Crashes: 0				Injury Crashes: 1				Killed: 0		Injured: 2				
Crashid dataset 3 - Greenwell Point Road - Pyree Lane - July 2007 to June 2012																				

LOCATION
Greenwell Point Road
Pyree Lane
Pyree

Crash Data Period
01/07/2007 to 30/06/2012

Legend

Daily Dataset

Fatal Crash

Injury Crash

Non-casualty Crash

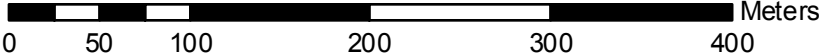
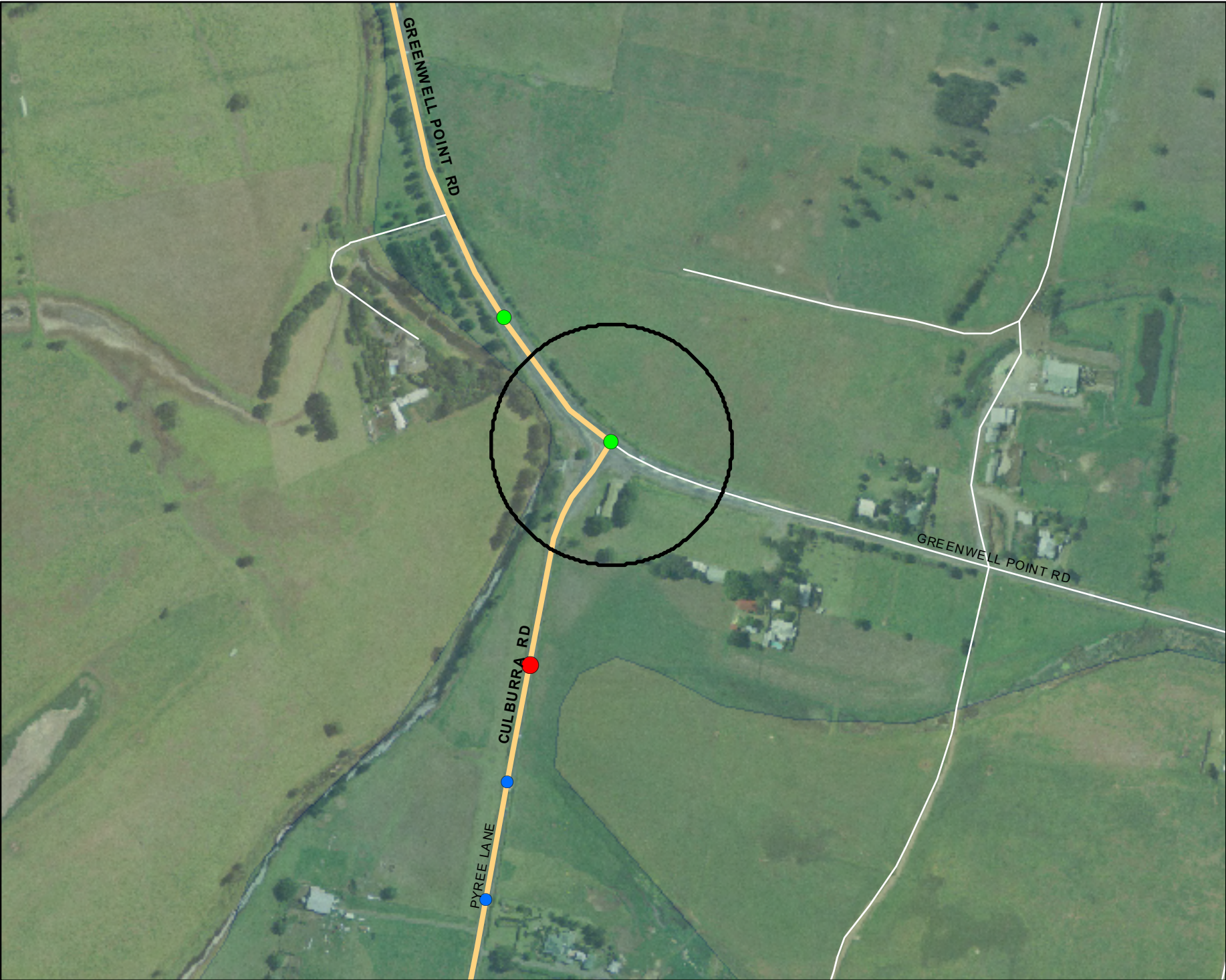
Classified Roads

State Road

Regional Road



Prepared 05/02/2013
Planning & Analysis
Southern Region



Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors		
AS F																						
Southern Region																						
Shoalhaven City LGA																						
Brundee																						
Jindy Andy Lane																						
673504	01/04/2009	Wed	07:00	10 m	N GREENWELL PT RD	TJN	STR	Fine	Dry	60	1	CAR	M23	S in JINDY ANDY LANE	80	Proceeding in lane	N	0	0	S		
E37926468						RUM:	71	Off rd left => obj				Tree/bush										
783361	04/02/2012	Sat	07:50	100 m	N GREENWELL PT RD	2WY	CRV	Fine	Dry	80	2	BDBL	M67	S in JINDY ANDY LANE	40	Incorrect side	N	0	0	S		
E49560686						RUM:	20	Head on				CAR	M47	N in JINDY ANDY LANE	40	Proceeding in lane						
Greenwell Poin																						
Greenwell Pt Rd																						
643614	13/10/2008	Mon	14:50	50 m	E JINDY ANDY LANE	2WY	STR	Fine	Dry	80	1	CAR	F20	E in GREENWELL PT RD	80	Proceeding in lane	N	0	0			
E35835778						RUM:	71	Off rd left => obj				Tree/bush										
Pyree																						
Greenwell Pt Rd																						
675966	19/07/2009	Sun	13:55		at JINDY ANDY LANE	TJN	CRV	Fine	Dry	80	1	CAR	M82	E in GREENWELL PT RD	60	Turning left	N	0	0			
E38038334						RUM:	86	Off left/left bend														
Jindy Andy Lane																						
727428	12/09/2010	Sun	01:00	2 m	N GREENWELL PT RD	TJN	CRV	Fine	Dry	80	1	CAR	M20	S in JINDY ANDY LANE	100	Proceeding in lane	N	0	0	S		
E136305798						RUM:	85	Off rt/lft bnd=>obj				Signpost										
Report Totals:			Total Crashes: 5			Fatal Crashes: 0			Injury Crashes: 0			Killed: 0			Injured: 0							
Crashid dataset 4 - Greenwell Point Road - Jindy Andy Lane - July 2007 to June 2012																						

LOCATION
Greenwell Point Road
Jindy Andy Lane
Pyree

Crash Data Period
01/07/2007 to 30/06/2012

Legend

Daily Dataset

Fatal Crash

Injury Crash

Non-casualty Crash

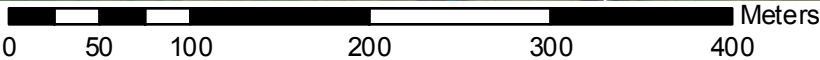
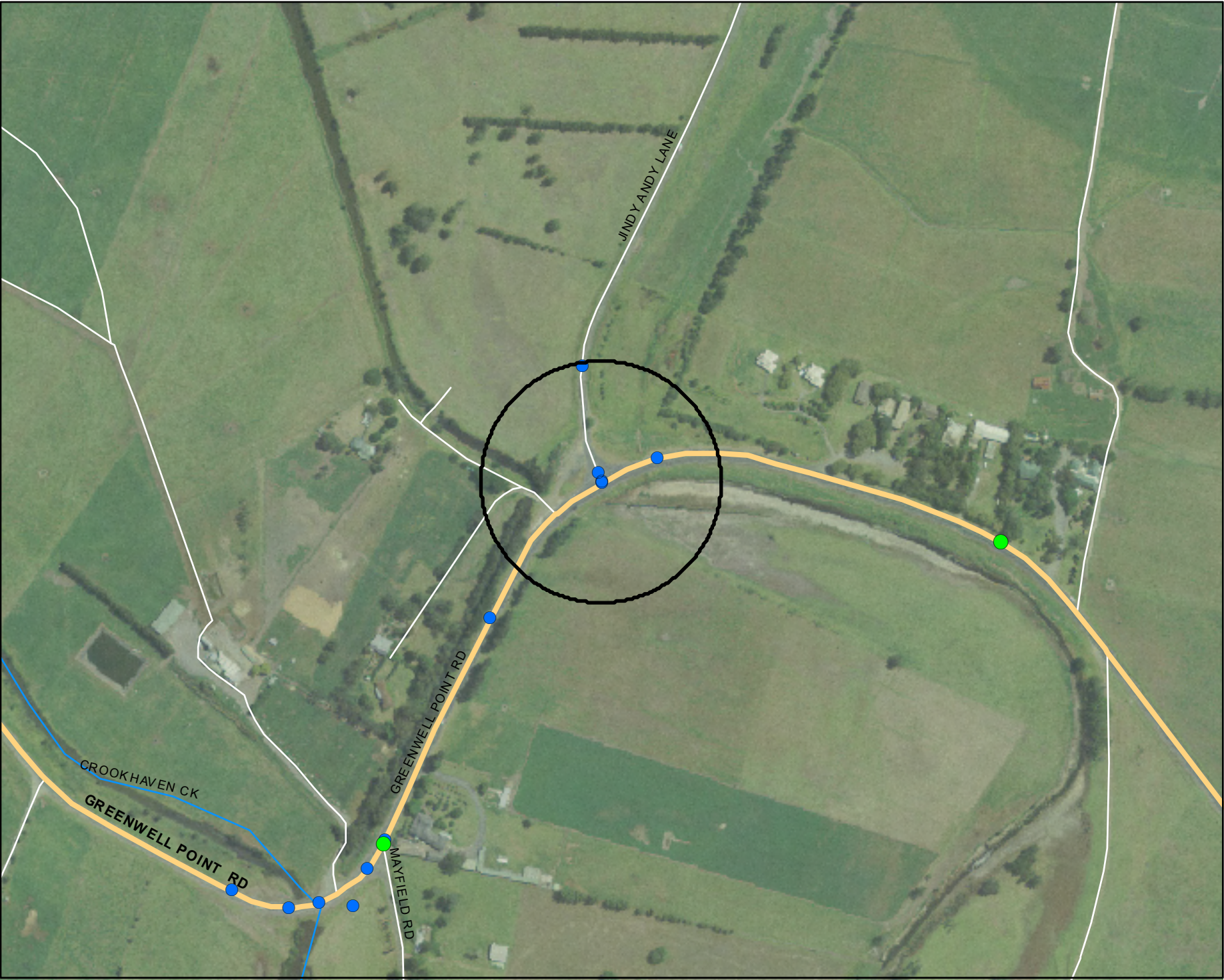
Classified Roads

State Road

Regional Road



Prepared 05/02/2013
Planning & Analysis
Southern Region



Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors	
Southern Region																					
Shoalhaven City LGA																					
Brundee																					
Greenwell Pt Rd																					
641033	04/10/2008	Sat	07:15		at MAYFIELD RD	TJN	CRV	Raining	Wet	80	1	CAR	F53	E in GREENWELL PT RD	60	Proceeding in lane		N	0	0	S
E35320004						RUM:	85	Off rt/lft bnd=>obj					Fence								
651418	24/12/2008	Wed	13:20		at MAYFIELD RD	TJN	CRV	Raining	Wet	80	2	CAR	M20	E in GREENWELL PT RD	75	Incorrect side		N	0	0	S
E36118404						RUM:	20	Head on				CAR	M53	W in GREENWELL PT RD	15	Proceeding in lane					
659105	15/02/2009	Sun	12:40	2 m	E MAYFIELD RD	TJN	STR	Raining	Wet	80	1	CAR	F43	E in GREENWELL PT RD	70	Proceeding in lane		N	0	0	F
E121076898						RUM:	73	Off rd right => obj					Fence								
652318	29/12/2008	Mon	13:45	100 m	W MAYFIELD RD	2WY	STR	Fine	Dry	80	1	CAR	F32	E in GREENWELL PT RD	80	Proceeding in lane		N	0	0	
E36210068						RUM:	71	Off rd left => obj					Fence								
Pyree																					
Greenwell Pt Rd																					
735743	17/12/2010	Fri	20:40		at MAYFIELD RD	TJN	CRV	Fine	Dry	80	1	CAR	M44	E in GREENWELL PT RD	80	Proceeding in lane		I	0	1	
E42674444						RUM:	84	Off right/left bend													
683645	20/09/2009	Sun	14:20	75 m	E MAYFIELD RD	2WY	CRV	Overcast	Wet	80	1	UTE	F20	E in GREENWELL PT RD	50	Proceeding in lane		N	0	0	S
E38233237						RUM:	87	Off lft/lft bnd=>obj					Fence								
621840	19/04/2008	Sat	01:00	60 m	S MAYFIELD RD	2WY	CRV	Raining	Wet	80	1	UTE	M18	N in GREENWELL PT RD	55	Proceeding in lane		N	0	0	S
E33394859						RUM:	85	Off rt/lft bnd=>obj					Utility pole								
692057	26/11/2009	Thu	06:20	2.115 km	W PYREE LANE	2WY	CRV	Fog or mist	Dry	80	1	TRK	M42	W in GREENWELL PT RD	80	Proceeding in lane		N	0	0	
E162083794						RUM:	81	Off left/rt bnd=>obj					Guide Post								
Report Totals:																					
			Total Crashes: 8			Fatal Crashes: 0			Injury Crashes: 1			Killed: 0			Injured: 1						

Crashid dataset 5 - Greenwell Point Road - Mayfield Road - July 2007 to June 2012

LOCATION
Greenwell Point Road
Mayfield Road
Pyree

Crash Data Period
01/07/2007 to 30/06/2012

Legend

Daily Dataset

Fatal Crash

Injury Crash

Non-casualty Crash

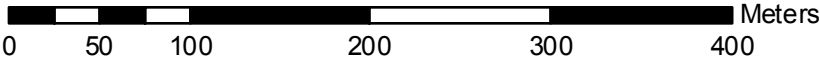
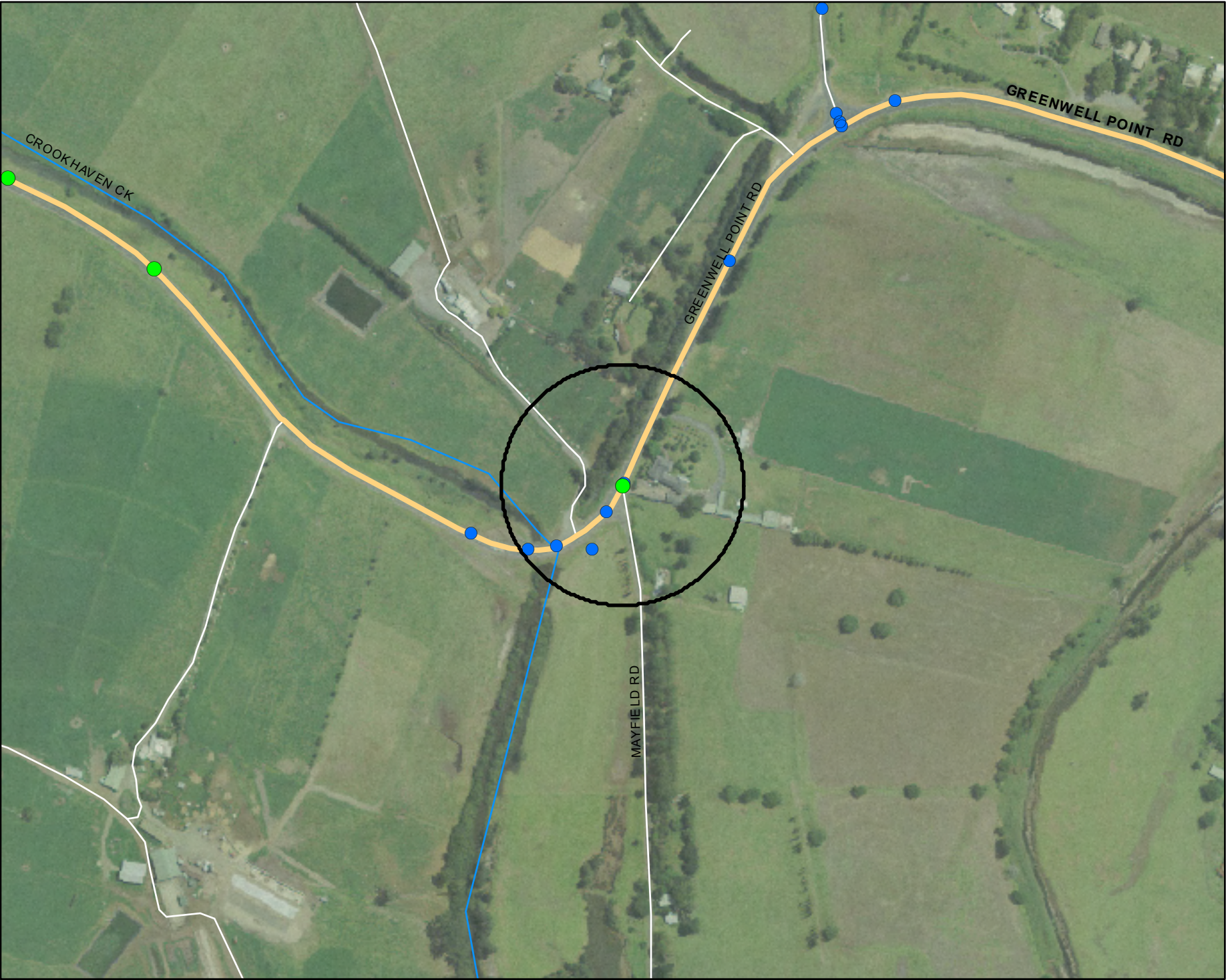
Classified Roads

State Road

Regional Road



Prepared 05/02/2013
Planning & Analysis
Southern Region



Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance		ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors	
AS F																						
Southern Region																						
Shoalhaven City LGA																						
Terara																						
Millbank Rd																						
759631	14/05/2011	Sat	08:00	100 m	N	GREENWELL PT RD	2WY	STR	Fine	Dry	50	2	TRK	M59	E in MILLBANK RD	Unk	Forward from drive	N	0	0		
E44100337							RUM:	47	Emerging from drive				TRK	M66	S in MILLBANK RD	Unk	Proceeding in lane					
Worrigee																						
Greenwell Pt Rd																						
701092	19/02/2010	Fri	10:55		at	MILLBANK RD	XJN	STR	Fine	Dry	80	2	CAR	M69	S in MILLBANK RD	15	Proceeding in lane	I	0	2		
E40060048							RUM:	10	Cross traffic				CAR	F22	W in GREENWELL PT RD	70	Proceeding in lane					
760610	18/07/2011	Mon	07:10		at	MILLBANK RD	XJN	STR	Fine	Dry	80	2	CAR	F19	N in MILLBANK RD	20	Proceeding in lane	I	0	1		
E45064254							RUM:	10	Cross traffic				TRK	M28	E in GREENWELL PT RD	80	Proceeding in lane					
735967	04/10/2010	Mon	07:05		at	WORRIGEE RD	XJN	STR	Overcast	Dry	100	2	M/C	M25	N in WORRIGEE RD	20	Proceeding in lane	I	0	1	A	
E42511179							RUM:	10	Cross traffic				CAR	F29	W in GREENWELL PT RD	70	Proceeding in lane					
Report Totals:			Total Crashes: 4			Fatal Crashes: 0			Injury Crashes: 3			Killed: 0			Injured: 4							
Crashid dataset 6 - Greenwell Point Road - Millbank Road - July 2007 to June 2012																						

LOCATION
Greenwell Point Road
Millbank Road
Worrigeer

Crash Data Period
01/07/2007 to 30/06/2012

Legend

Daily Dataset

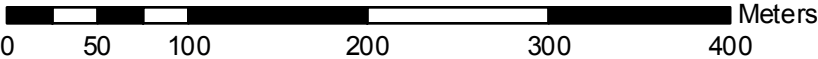
- Fatal Crash
- Injury Crash
- Non-casualty Crash

Classified Roads

- State Road
- Regional Road



Prepared 05/02/2013
Planning & Analysis
Southern Region



Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors
Southern Region																				
Shoalhaven City LGA																				
Nowra																				
Kalandar St																				
604972	07/12/2007	Fri	14:45		at BOULTWOOD AVE	TJN	STR	Raining	Wet	60	2	CAR	F19	W in KALANDAR ST		5 Turning right	N	0	0	
E32643307						RUM:	21	Right through				4WD	M28	E in KALANDAR ST		30 Proceeding in lane				
641126	11/10/2008	Sat	05:30	10 m	E PRINCES HWY	XJN	STR	Fine	Dry	70	2	CAR	F24	S in PRINCES HWY		70 Turning left	I	0	1	A
E34908744						RUM:	12	Left far				CAR	M51	W in KALANDAR ST		5 Proceeding in lane				
776445	21/11/2011	Mon	09:40	20 m	E PRINCES HWY	2WY	STR	Fine	Dry	50	3	4WD	F34	W in KALANDAR ST		10 Proceeding in lane	N	0	0	
E46474807						RUM:	30	Rear end				4WD	F17	W in KALANDAR ST		0 Stationary				
												CAR	M43	W in KALANDAR ST		0 Stationary				
597968	27/09/2007	Thu	09:15	30 m	E PRINCES HWY	2WY	STR	Fine	Dry	60	2	CAR	M46	W in KALANDAR ST		Unk Proceeding in lane	I	0	1	
E31765873						RUM:	30	Rear end				CAR	M49	W in KALANDAR ST		0 Stationary				
664489	10/03/2009	Tue	12:00	40 m	E PRINCES HWY	OTH	CRV	Fine	Dry	70	2	CAR	U U	S in KALANDAR ST		5 Proceeding in lane	I	0	1	
E164890393						RUM:	30	Rear end				CAR	M56	S in KALANDAR ST		5 Proceeding in lane				
709226	18/12/2009	Fri	10:35	100 m	E PRINCES HWY	2WY	STR	Raining	Wet	50	2	CAR	M26	N in KALANDAR ST		5 Forward from drive	I	0	1	
E40295253						RUM:	47	Emerging from drive				CAR	F51	W in KALANDAR ST		40 Proceeding in lane				
704168	04/01/2010	Mon	19:15	100 m	E PRINCES HWY	2WY	STR	Fine	Dry	60	2	TRK	M52	E in KALANDAR ST		50 Proceeding in lane	N	0	0	
E39140730						RUM:	31	Left rear				TRK	M55	E in KALANDAR ST		0 Waiting turn left				
710910	17/05/2010	Mon	23:00	100 m	E PRINCES HWY	2WY	CRV	Raining	Wet	60	1	M/C	M22	N in KALANDAR ST		10 Forward from drive	I	0	1	S
E40276110						RUM:	88	Out of cont on bend												
Kalandar St																				
650450	21/11/2008	Fri	15:00	30 m	E PRINCES HWY	2WY	STR	Fine	Dry	60	3	CAR	F57	E in KALANDER ST		50 Proceeding in lane	N	0	0	
E35462032						RUM:	30	Rear end				4WD	F32	E in KALANDER ST		0 Stationary				
												OMV	U U	E in KALANDER ST		0 Wait turn right				
Princes Hwy																				
600490	28/10/2007	Sun	21:45		at KALANDAR ST	XJN	STR	Fine	Dry	70	2	P/C	M17	E in KALANDAR ST		Proceeding in lane	I	0	1	
E31812748						RUM:	10	Cross traffic				CAR	F63	S in PRINCES HWY		70 Proceeding in lane				
675685	03/07/2009	Fri	01:05		at KALANDAR ST	XJN	STR	Fine	Dry	70	2	VAN	U U	N in PRINCES HWY		Unk Proceeding in lane	N	0	0	
E38276151						RUM:	10	Cross traffic				CAR	M28	E in KALANDAR ST		70 Proceeding in lane				
708189	27/04/2010	Tue	18:18		at KALANDAR ST	XJN	STR	Fine	Dry	50	3	CAR	M22	E in KALANDAR ST		50 Incorrect side	I	0	2	A F
E40679506						RUM:	20	Head on				4WD	F36	W in KALANDAR ST		0 Stationary				
												VAN	F46	W in KALANDAR ST		0 Stationary				

Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors	
ASF																					
713186	08/06/2010	Tue	09:00		at KALANDAR ST	XJN	CRV	Fine	Dry	50	2	CAR	F46	S in PRINCES HWY	20	Proceeding in lane	N	0	0		
E41400862						RUM:	32	Right rear				CAR	M18	S in PRINCES HWY	0	Wait turn right					
736720	28/11/2010	Sun	11:00	10 m	N KALANDAR ST	XJN	CRV	Raining	Wet	70	2	CAR	F69	N in PRINCES HWY	15	Proceeding in lane	I	0	1	S	
E42583075						RUM:	30	Rear end				CAR	F37	N in PRINCES HWY	0	Stationary					
756433	29/05/2011	Sun	21:35	50 m	N KALANDAR ST	DIV	CRV	Raining	Wet	70	1	CAR	M17	N in PRINCES HWY	60	Proceeding in lane	I	0	1	S	
E44756557						RUM:	87	Off lft/lft bnd=>obj				Tree/bush									
798727	28/05/2012	Mon	11:15	50 m	N KALANDAR ST	2WY	CRV	Fine	Dry	70	2	4WD	M52	S in PRINCES HWY	60	Proceeding in lane	N	0	0		
E48396277						RUM:	30	Rear end				4WD	M72	S in PRINCES HWY	0	Stationary					
591790	28/09/2007	Fri	12:37	20 m	S KALANDAR ST	2WY	STR	Fine	Dry	70	2	CAR	F23	S in PRINCES HWY	50	Proceeding in lane	I	0	1		
E31476227						RUM:	30	Rear end				CAR	M39	S in PRINCES HWY	0	Stationary					
621419	07/02/2008	Thu	14:15	80 m	N KALENDAR ST	DIV	CRV	Raining	Wet	70	2	VAN	M45	N in PRINCES HWY	50	Veering right	I	0	2		
E33193828						RUM:	34	Lane change right				TRK	M31	N in PRINCES HWY	40	Proceeding in lane					
Report Totals:			Total Crashes: 18			Fatal Crashes: 0			Injury Crashes: 11			Killed: 0			Injured: 13						

Crashid dataset 7 - Princes Highway - Kalandar Street - July 2007 to June 2012

LOCATION
Princes Highway
Kalander Street
Nowra

Crash Data Period
01/07/2007 to 30/06/2012

Legend

Daily Dataset

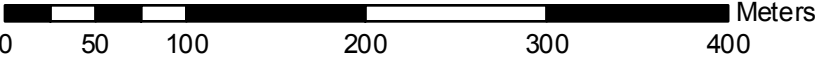
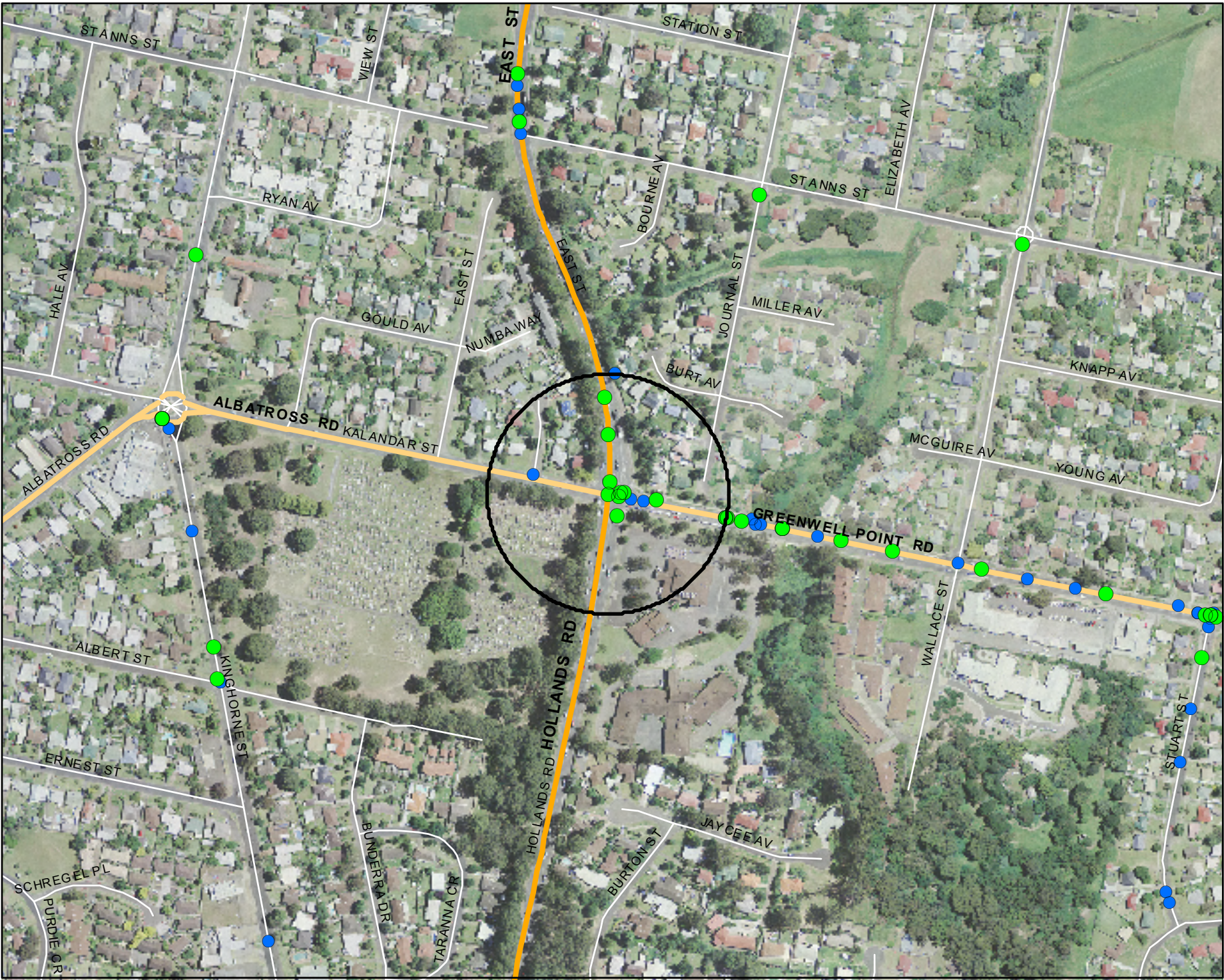
- Fatal Crash
- Injury Crash
- Non-casualty Crash

Classified Roads

- State Road
- Regional Road



Prepared 05/02/2013
Planning & Analysis
Southern Region



Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors	
Southern Region																					
Shoalhaven City LGA																					
Callala Bay																					
Coonemia Rd																					
796984	26/03/2012	Mon	18:15		at CURRARONG RD	TJN	STR	Fine	Dry	Unk	2	CAR	F42	S in COONEMIA RD	5 Turning right		N	0	0		
E47256432						RUM:	11	Right far				CAR	F64	W in CURRARONG RD	80 Proceeding in lane						
Callala Beach																					
Callala Beach Rd																					
586938	27/07/2007	Fri	08:30		at CURRARONG RD	TJN	STR	Fine	Dry	80	3	WAG	M67	N in CALLALA BEACH RD	5 Turning right		N	0	0		
E30618230						RUM:	11	Right far				WAG	U U	W in CURRARONG RD	60 Proceeding in lane						
												CAR	F58	E in CURRARONG RD	60 Proceeding in lane						
Wollumboola																					
Callala Bay Rd																					
743364	01/01/2011	Sat	17:38		at FOREST RD	TJN	STR	Fine	Dry	100	3	4WD	M20	E in FOREST RD	Unk Turning right		N	0	0		
E43542169						RUM:	21	Right through				CAR	M26	W in FOREST RD	70 Proceeding in lane						
												4WD	F41	N in CALLALA BAY RD	0 Stationary						
Coonemia Rd																					
752483	11/03/2011	Fri	23:29		at FOREST RD	TJN	STR	Overcast	Wet	70	2	CAR	F18	S in COONEMIA RD	20 Turning right		I	0	1		
E43638822						RUM:	13	Right near				WAG	M25	E in FOREST RD	70 Proceeding in lane						
Report Totals:				Total Crashes: 4	Fatal Crashes: 0	Injury Crashes: 1				Killed: 0				Injured: 1							
Crashid dataset 8 - Coonamia Road - Currarong Road - Forest Road - July 2007 to June 2012																					

LOCATION
Coonamia Road
Currarong Road
Forest Road
Wollumboola

Crash Data Period
01/07/2007 to 30/06/2012

Legend

Daily Dataset

Fatal Crash

Injury Crash

Non-casualty Crash

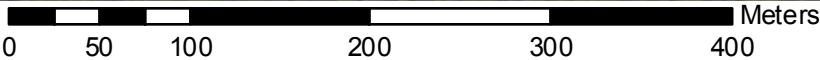
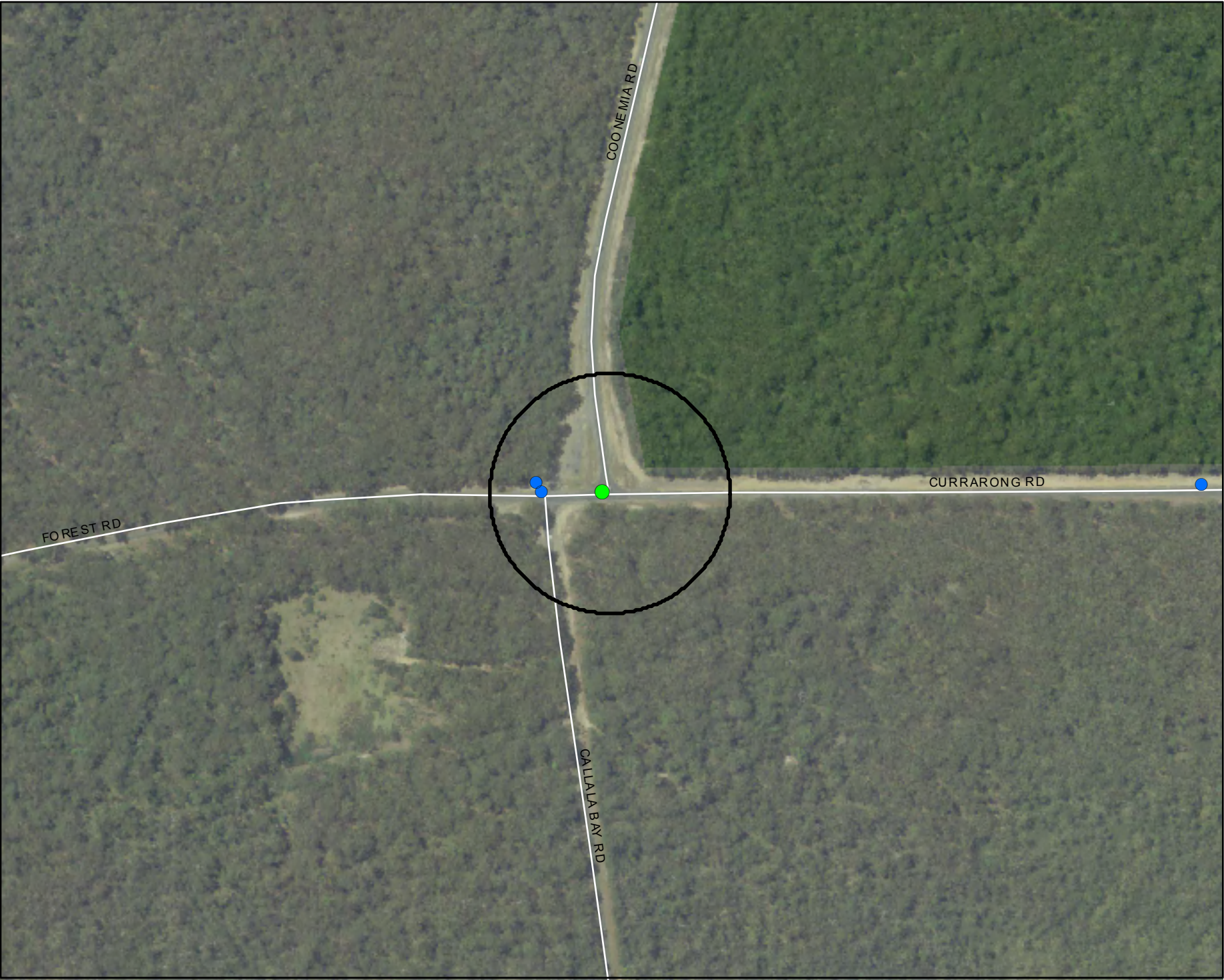
Classified Roads

State Road

Regional Road



Prepared 05/02/2013
Planning & Analysis
Southern Region



Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors
Southern Region																				
Shoalhaven City LGA																				
Nowra																				
Albatross Rd																				
668933	19/05/2009	Tue	08:00		at KINGHORNE ST	RDB	STR	Overcast	Wet	50	2	CAR	F48	N in KINGHORNE ST	30	Proceeding in lane	I	0	1	
E37994942						RUM:	10	Cross traffic				M/C	M35	W in ALBATROSS RD	10	Proceeding in lane				
725541	13/09/2010	Mon	07:15		at KINGHORNE ST	RDB	STR	Fine	Dry	50	2	P/C	M31	S in KINGHORNE ST		Turning right	I	0	1	
E42458229						RUM:	21	Right through				CAR	F28	N in KINGHORNE ST	10	Proceeding in lane				
Kalandar St																				
684279	02/09/2009	Wed	11:26		at KINGHORNE ST	RDB	STR	Fine	Dry	50	2	WAG	F78	N in KINGHORNE ST	15	Proceeding in lane	I	0	1	
E38838374						RUM:	10	Cross traffic				M/C	M65	W in KALANDAR ST	15	Proceeding in lane				
Kinghorne St																				
731597	10/11/2010	Wed	08:00	10 m S	ALBATROSS RD	RDB	STR	Fine	Dry	50	3	CAR	M33	N in KINGHORNE ST	50	Proceeding in lane	N	0	0	
E42296544						RUM:	30	Rear end				CAR	F41	N in KINGHORNE ST	0	Stationary				
												4WD	F25	N in KINGHORNE ST	0	Stationary				
Report Totals:		Total Crashes: 4				Fatal Crashes: 0				Injury Crashes: 3				Killed: 0				Injured: 3		

Crashid dataset 9 - Kalandar Street - Kinghorne Street - July 2007 to June 2012

LOCATION
Kalendar Street
Kinghamne Street
Nowra

Crash Data Period
01/07/2007 to 30/06/2012

Legend

Daily Dataset

Fatal Crash

Injury Crash

Non-casualty Crash

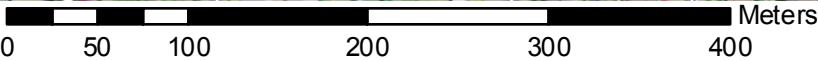
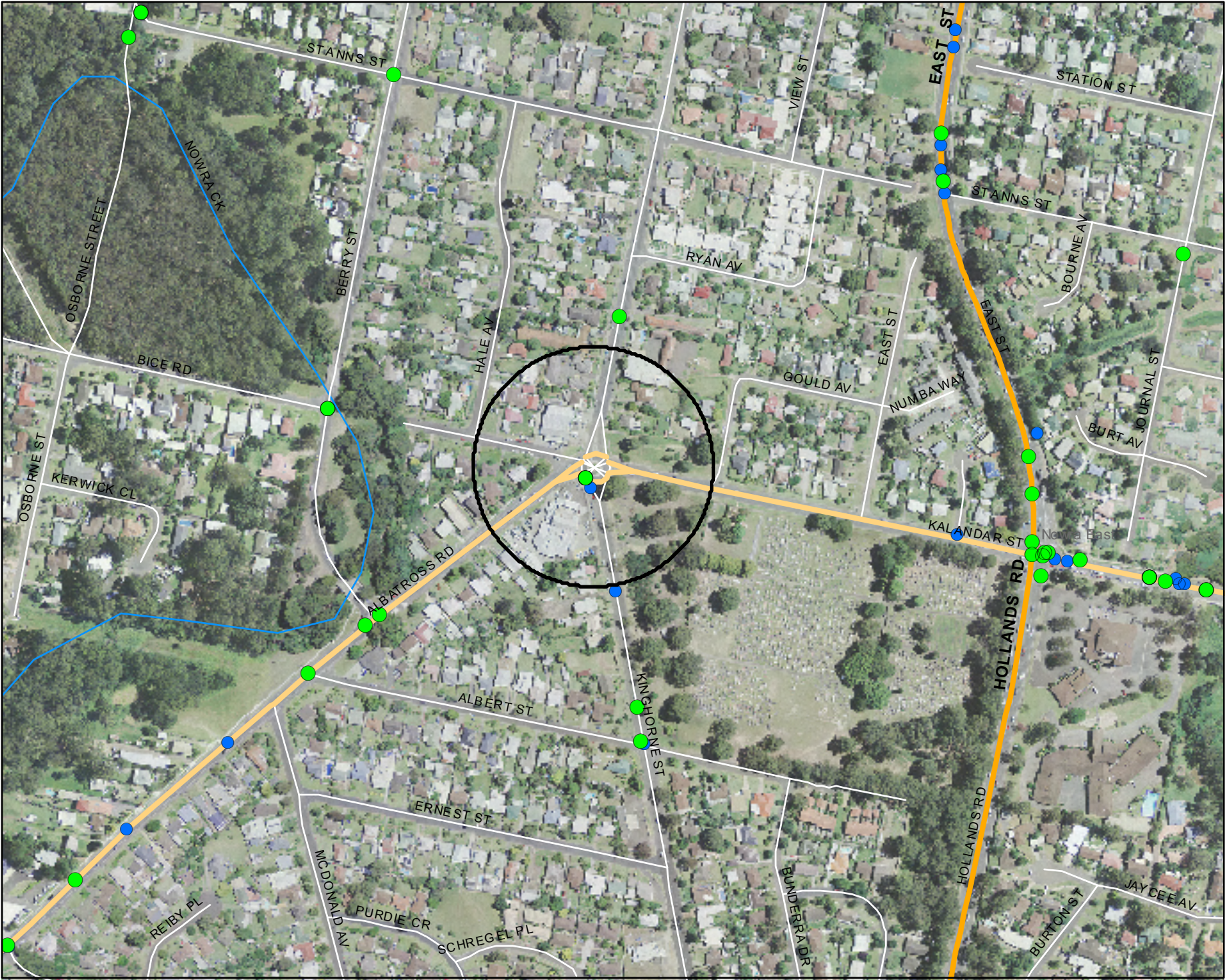
Classified Roads

State Road

Regional Road



Prepared 05/02/2013
Planning & Analysis
Southern Region



Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors
ASF																				
Southern Region																				
Shoalhaven City LGA																				
Falls Creek																				
Princes Hwy																				
761750	21/07/2011	Thu	09:00	400 m	S BTU RD	2WY	CRV	Raining	Wet	100	2	CAR	M21	N in PRINCES HWY	80	Proceeding in lane	N	0	0	
E45355440						RUM:	30	Rear end				CAR	F60	N in PRINCES HWY	80	Proceeding in lane				
592332	02/10/2007	Tue	10:05		at FOREST RD	TJN	STR	Fine	Dry	100	2	TRK	F45	N in PRINCES HWY	65	Proceeding in lane	N	0	0	
E31455472						RUM:	30	Rear end				4WD	F42	N in PRINCES HWY	50	Proceeding in lane				
646005	26/10/2008	Sun	17:15		at FOREST RD	TJN	STR	Overcast	Dry	100	2	M/C	M53	S in PRINCES HWY	80	Proceeding in lane	I	0	1	
E35606150						RUM:	74	On road-out of cont.				TRK	F45	W in FOREST RD	15	Turning right				
677928	11/08/2009	Tue	16:55		at FOREST RD	TJN	CRV	Fine	Dry	100	2	BUS	M U	W in FOREST RD	10	Turning right	I	0	3	
E38331666						RUM:	13	Right near				CAR	F18	S in PRINCES HWY	85	Proceeding in lane				
692953	17/12/2009	Thu	08:00		at FOREST RD	TJN	CRV	Fine	Dry	100	2	CAR	M83	W in FOREST RD	8	Turning right	I	0	1	
E39272232						RUM:	13	Right near				TRK	M55	S in PRINCES HWY	80	Proceeding in lane				
766035	23/03/2011	Wed	17:00	100 m	S FOREST RD	2WY	CRV	Fine	Dry	100	2	TRK	M47	S in PRINCES HWY	20	Perform U-turn	I	0	4	
E44183231						RUM:	40	U turn				CAR	F60	S in PRINCES HWY	100	Proceeding in lane				
Nowra Hill																				
Princes Hwy																				
594902	20/10/2007	Sat	09:15		at FOREST RD	TJN	STR	Fine	Dry	80	2	4WD	F54	W in FOREST RD	10	Turning right	N	0	0	
E132417394						RUM:	13	Right near				CAR	M67	S in PRINCES HWY	30	Proceeding in lane				
615468	16/01/2008	Wed	17:32		at FOREST RD	TJN	CRV	Raining	Wet	80	2	CAR	F21	W in FOREST RD	Unk	Turning right	I	0	2	
E32645106						RUM:	13	Right near				CAR	F36	S in PRINCES HWY	80	Proceeding in lane				
646934	05/11/2008	Wed	17:30		at FOREST RD	TJN	CRV	Fine	Dry	80	2	CAR	M19	W in FOREST RD	10	Turning right	N	0	0	
E68611801						RUM:	13	Right near				CAR	F27	S in PRINCES HWY	80	Proceeding in lane				
763500	02/08/2011	Tue	06:10		at FOREST RD	TJN	CRV	Fine	Dry	100	1	TRK	M48	N in PRINCES HWY	100	Proceeding in lane	N	0	0	
E45271948						RUM:	67	Struck animal				Kangaroo								
793882	27/12/2011	Tue	11:00		at FOREST RD	TJN	CRV	Fine	Dry	100	2	CAR	M51	W in FOREST RD	30	Turning right	I	0	5	
E46414811						RUM:	13	Right near				TRK	M79	S in PRINCES HWY	80	Proceeding in lane				
789871	04/03/2012	Sun	10:30		at FOREST RD	TJN	CRV	Unk	Wet	100	2	TRK	M33	W in FOREST RD	5	Turning right	I	0	1	S
E47416866						RUM:	13	Right near				M/C	M52	S in PRINCES HWY	70	Proceeding in lane				
794640	24/04/2012	Tue	19:15		at FOREST RD	TJN	CRV	Fine	Dry	100	2	WAG	M19	W in FOREST RD	Unk	Turning left	I	0	1	
E47860950						RUM:	16	Left near				TRK	M25	S in PRINCES HWY	95	Proceeding in lane				

Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors		
AS F																						
805746	14/05/2012	Mon	15:20		at FOREST RD	TJN	STR	Fine	Dry	70	2	CAR	M21	W in FOREST RD	Unk	Turning right	I	0	1	S		
E48670941						RUM:	13	Right near				M/C	M47	S in PRINCES HWY	80	Proceeding in lane						
798008	17/05/2012	Thu	05:30		at FOREST RD	TJN	CRV	Fine	Dry	100	2	OMV	U U	W in PRINCES HWY	Unk	Proceeding in lane	I	0	1			
E48109766						RUM:	10	Cross traffic				M/C	M28	S in FOREST RD	100	Proceeding in lane						
694842	13/12/2009	Sun	05:14	50 m	N FOREST RD	DIV	STR	Fine	Dry	100	1	OMV	M33	N in PRINCES HWY	80	Proceeding in lane	N	0	0	F		
E76104301						RUM:	73	Off rd right => obj					Fence									
South Nowra																						
Princes Hwy																						
694935	23/12/2009	Wed	11:50		at FOREST RD	TJN	STR	Fine	Dry	100	2	CAR	F21	W in FOREST RD	10	Turning right	I	0	1			
E39922143						RUM:	13	Right near				CAR	M24	S in PRINCES HWY	70	Proceeding in lane						
587473	30/07/2007	Mon	14:45	5 m	N FOREST RD	TJN	STR	Fine	Dry	100	2	SEM	M28	S in PRINCES HWY	80	Proceeding in lane	I	0	1			
E32650587						RUM:	31	Left rear				CAR	F36	S in PRINCES HWY	40	Turning left						
Report Totals:			Total Crashes: 18			Fatal Crashes: 0			Injury Crashes: 12			Killed: 0			Injured: 22							
Crashid dataset 10 - Princes Highway - Forest Road - July 2007 to June 2012																						

LOCATION
Princes Highway
Forest Rd
Nowra Hill

Crash Data Period
01/07/2007 to 30/06/2012

Legend

Daily Dataset

Fatal Crash

Injury Crash

Non-casualty Crash

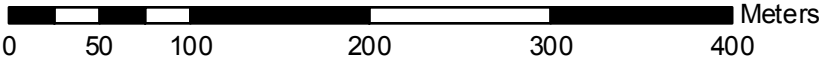
Classified Roads

State Road

Regional Road



Prepared 05/02/2013
Planning & Analysis
Southern Region



Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors
Southern Region																				
Shoalhaven City LGA																				
Nowra																				
Moss St																				
713852	11/06/2010	Fri	15:10	20 m	W PRINCES HWY	2WY	STR	Fine	Dry	50	2	TRK	M51	W in MOSS ST		1 Turning right	N	0	0	
E42025553						RUM:	21	Right through				CAR	M37	E in MOSS ST		20 Proceeding in lane				
731581	09/11/2010	Tue	11:45	50 m	W PRINCES HWY	2WY	STR	Fine	Dry	50	2	LOR	M57	W in MOSS ST		7 Reversing in lane	N	0	0	
E42945471						RUM:	45	Reversing				CAR	F64	E in MOSS ST		0 Stationary				
Princes Hwy																				
583723	18/07/2007	Wed	15:40		at MOSS ST	XJN	STR	Fine	Dry	70	2	CCH	M49	S in PRINCES HWY		20 Turning left	N	0	0	
E30787823						RUM:	37	Left turn sideswipe				CAR	M26	S in PRINCES HWY		30 Proceeding in lane				
587626	24/08/2007	Fri	15:10		at MOSS ST	XJN	STR	Fine	Dry	70	2	CAR	M30	N in PRINCES HWY		40 Proceeding in lane	I	0	1	
E31076117						RUM:	0	Ped nearside				PED	M17	PRINCES HWY		Run across carriageway				
609063	04/02/2008	Mon	07:50		at MOSS ST	XJN	CRV	Raining	Wet	70	1	CAR	M20	S in PRINCES HWY		50 Proceeding in lane	N	0	0	S
E32615033						RUM:	81	Off left/rt bnd=>obj				Signal pole								
609630	07/02/2008	Thu	14:05		at MOSS ST	XJN	STR	Raining	Wet	70	2	TRK	M17	S in PRINCES HWY		60 Proceeding in lane	I	0	1	
E33169929						RUM:	10	Cross traffic				CAR	F32	E in MOSS ST		15 Proceeding in lane				
630665	06/07/2008	Sun	15:00		at MOSS ST	XJN	STR	Overcast	Dry	70	2	CAR	M40	S in PRINCES HWY		40 Proceeding in lane	N	0	0	
E36001082						RUM:	10	Cross traffic				CAR	F57	W in MOSS ST		10 Proceeding in lane				
651142	31/10/2008	Fri	23:19		at MOSS ST	XJN	CRV	Fine	Dry	70	2	CAR	F17	S in PRINCES HWY		40 Turning right	N	0	0	
E35349311						RUM:	21	Right through				CAR	U U	N in PRINCES HWY		60 Proceeding in lane				
645679	11/11/2008	Tue	14:00		at MOSS ST	XJN	CRV	Fine	Dry	70	2	CAR	U U	S in PRINCES HWY		10 Turning left	I	0	1	
E35721962						RUM:	37	Left turn sideswipe				WAG	F18	S in PRINCES HWY		10 Proceeding in lane				
676027	21/07/2009	Tue	07:30		at MOSS ST	XJN	CRV	Fine	Dry	70	2	VAN	M50	E in MOSS ST		40 Turning left	I	0	1	
E38481963						RUM:	16	Left near				TRK	M22	N in PRINCES HWY		70 Proceeding in lane				
687360	05/11/2009	Thu	22:40		at MOSS ST	XJN	STR	Raining	Wet	70	2	CAR	M18	S in PRINCES HWY		35 Turning right	N	0	0	
E39611042						RUM:	21	Right through				CAR	F19	N in PRINCES HWY		65 Proceeding in lane				
716195	29/06/2010	Tue	19:05		at MOSS ST	XJN	CRV	Fine	Dry	70	2	CAR	M22	E in MOSS ST		Unk Proceeding in lane	N	0	0	
E41092152						RUM:	10	Cross traffic				CAR	F62	S in PRINCES HWY		60 Proceeding in lane				
755191	02/06/2011	Thu	20:45		at MOSS ST	XJN	CRV	Fine	Dry	70	2	CAR	M19	N in PRINCES HWY		40 Turning right	N	0	0	
E142468698						RUM:	21	Right through				CAR	M57	S in PRINCES HWY		55 Proceeding in lane				
779872	30/11/2011	Wed	10:20		at MOSS ST	XJN	CRV	Overcast	Dry	70	2	P/C	F38	W in PRINCES HWY		Along footpath	I	0	1	
E46271072						RUM:	48	From footpath				CAR	F34	N in PRINCES HWY		50 Proceeding in lane				

Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors
ASF																				
807368	27/03/2012	Tue	16:25		at MOSS ST	XJN	CRV	Fine	Dry	60	2	4WD	M38	S in PRINCES HWY	50	Proceeding in lane	I	0	1	
E48015874						RUM:	10	Cross traffic				P/C	M19	E in MOSS ST		Proceeding in lane				
803031	25/06/2012	Mon	18:09		at MOSS ST	XJN	CRV	Fine	Dry	70	3	WAG	F49	N in PRINCES HWY	Unk	Turning right	N	0	0	
E47440410						RUM:	21	Right through				4WD	M28	S in PRINCES HWY	70	Proceeding in lane				
												VAN	M46	W in MOSS ST	0	Wait turn right				
626943	28/11/2007	Wed	11:40	5 m	N MOSS ST	XJN	CRV	Fine	Dry	70	2	CAR	M18	S in PRINCES HWY	40	Veering right	N	0	0	
E32187245						RUM:	30	Rear end				CAR	M26	S in PRINCES HWY	0	Stationary				
735985	23/10/2010	Sat	16:00	10 m	N MOSS ST	XJN	CRV	Overcast	Wet	70	3	TRK	M17	S in PRINCES HWY	40	Proceeding in lane	I	0	1	S
E42380113						RUM:	30	Rear end				4WD	M59	S in PRINCES HWY	0	Stationary				
												CAR	F38	S in PRINCES HWY	0	Stationary				
782473	30/11/2011	Wed	14:07	20 m	N MOSS ST	DIV	CRV	Overcast	Dry	70	2	CAR	M79	S in PRINCES HWY	20	Veering left	N	0	0	
E48155887						RUM:	35	Lane change left				4WD	F21	S in PRINCES HWY	50	Proceeding in lane				
779748	31/12/2011	Sat	11:15	50 m	N MOSS ST	DIV	CRV	Fine	Dry	70	3	TRK	M18	N in PRINCES HWY	40	Veering right	N	0	0	
E46977777						RUM:	30	Rear end				CAR	M18	N in PRINCES HWY	40	Proceeding in lane				
												CAR	M44	N in PRINCES HWY	40	Proceeding in lane				
791426	16/04/2012	Mon	18:29	1 m	S MOSS ST	XJN	CRV	Fine	Dry	70	2	M/C	M57	N in PRINCES HWY	65	Proceeding in lane	I	0	1	
E47469227						RUM:	2	Ped far side				TOY	M15	W in PRINCES HWY		Riding skateboard				
694839	12/12/2009	Sat	06:30	2 m	S MOSS ST	XJN	STR	Fine	Dry	70	2	OMV	U U	W in MOSS ST	Unk	Turning left	I	0	1	
E233306692						RUM:	2	Ped far side				PED	M27	E in PRINCES HWY		Walk across carriageway				
594131	06/10/2007	Sat	18:10	5 m	S MOSS ST	XJN	CRV	Raining	Wet	70	2	CAR	F18	N in PRINCES HWY	60	Proceeding in lane	I	0	2	A S
E31911549						RUM:	33	Lane sideswipe				WAG	M U	N in PRINCES HWY	Unk	Proceeding in lane				
687362	02/10/2009	Fri	15:09	5 m	S MOSS ST	XJN	STR	Overcast	Wet	70	2	OMV	U U	N in PRINCES HWY	Unk	Proceeding in lane	I	0	1	
E134752896						RUM:	30	Rear end				VAN	F40	N in PRINCES HWY	0	Stationary				
758674	21/05/2011	Sat	13:35	15 m	S MOSS ST	DIV	STR	Fine	Dry	70	2	WAG	M55	S in PRINCES HWY	30	Proceeding in lane	I	0	1	
E44591534						RUM:	4	Ped walk with				PED	M13	S in PRINCES HWY		With traffic, not edge				
799593	07/06/2012	Thu	15:45	40 m	S MOSS ST	DIV	STR	Fine	Dry	70	2	OMV	F35	N in PRINCES HWY	Unk	Veering right	N	0	0	
E48621043						RUM:	34	Lane change right				CAR	F56	N in PRINCES HWY	Unk	Proceeding in lane				
735971	07/10/2010	Thu	13:00		at NORTH ST	XJN	STR	Fine	Dry	70	3	CAR	M73	E in NORTH ST	10	Proceeding in lane	N	0	0	
E42310048						RUM:	10	Cross traffic				CAR		E in PRINCES HWY	0	Parked other				
												TRK	M34	N in PRINCES HWY	60	Proceeding in lane				
782720	25/01/2012	Wed	16:10		at NORTH ST	XJN	CRV	Overcast	Wet	70	2	CAR	M26	E in NORTH ST	10	Turning left	N	0	0	
E46347009						RUM:	16	Left near				UTE	M30	N in PRINCES HWY	10	Proceeding in lane				
678116	27/05/2009	Wed	14:00	5 m	S NORTH ST	TJN	CRV	Overcast	Dry	70	2	4WD	M83	S in PRINCES HWY	60	Veering left	I	0	1	
E37815107						RUM:	35	Lane change left				CAR	M18	S in PRINCES HWY	60	Proceeding in lane				

Detailed Crash Report

Crash No.	Date	Day of Week	Time	Distance	ID Feature	Loc Type	Alignment	Weather	Surface Condition	Speed Limit	No. of Tus	Tu Type/Obj	Age/Sex	Street Travelling	Speed Travelling	Manoeuvre	Degree of Crash	Killed	Injured	Factors	
Report Totals:																					AS F
		Total Crashes: 29			Fatal Crashes: 0			Injury Crashes: 13			Killed: 0			Injured: 14							
Crashid dataset 11 - Princes Highway - Moss Street - July 2007 to June 2012																					

LOCATION
Princes Highway
Moss Street
Nowra

Crash Data Period
01/07/2007 to 30/06/2012

Legend

Daily Dataset

- Fatal Crash
- Injury Crash
- Non-casualty Crash

Classified Roads

- State Road
- Regional Road



Prepared 05/02/2013
Planning & Analysis
Southern Region



Appendix C

Calculation of Traffic Growth Factors & Trip Generation Rates (Shoalhaven City Council)

Justin Murphy

From: Ken Hollyoak
Sent: Wednesday, 20 February 2013 9:21 AM
To: Wayne Johnson; Justin Murphy
Subject: FW: UPDATED Trip Generation Analysis - Culburra 3A Development - assumptions for traffic study
Attachments: Hourly Data 2004 07053 Falls Creek Correction.xls; Greenwell Point Rd Annual Analysis based on 2008.xlsx; Forest Rd Annual Analysis based on 2008.xlsx; Culburra Traffic Gen Analysis.xlsx

From: Wells, Scott [mailto:WELLSS@shoalhaven.nsw.gov.au]
Sent: Tuesday, 19 February 2013 6:37 PM
To: Ken Hollyoak
Cc: Britton, John; Williams, Brett; 'MILLET Chris P'
Subject: UPDATED Trip Generation Analysis - Culburra 3A Development - assumptions for traffic study

Hi Ken

The following is summary of our analysis of external traffic generation rates to be applied, and what adjustments are required in our view to the May 2012 base survey data you are intending to use as basis for your analysis. The spreadsheet used to base this analysis summary is attached (Culburra Traffic Gen analysis) and the annual traffic data used to derive AADT and 120th HH factors are also attached (Greenwell Pt Rd and Forest Rd for local adjustment factors, Princes Highway Falls Creek for Highway adjustment factors).

The analysis is detailed, undertaken by our Transport Engineer. I have reviewed and support the findings. The impact of the development is likely to be considerable and we have undertaken the analysis to ensure the analysis of the developments impacts is sufficiently detailed, robust and realistic in order for Council and RMS to better understand the developments likely impacts.

As previously stated this area is objected to significant seasonal fluctuations in traffic levels, thus the request to consider an AADT scenario as well as 120th HH scenario in accordance with RMS guidelines and AUSTROADS.

Peak Hour Development Traffic Generation

To be applied to proposed residential development – these rates are based on detached dwellings, reduction may need to be considered for any proposed non-detached dwellings. Note this is for external regional traffic distribution only. Directional split data obtained from examining local road annual data in equivalent AADT & 120th Highest Annual Hour periods.

Peak Hour Scenario	Factor (vehicles per hour per occupied dwelling)	Directional Split – AADT (eastbound / westbound)	Directional Split – 120th HH (eastbound / westbound)
Friday AM	0.22	22% / 78%	24% / 76%
Friday PM	0.21	65% / 35%	75% / 25%
Saturday MD	0.23	53% / 47%	50% / 50%

Note: The balance of peak hour trips per dwelling (in accordance with RTA's Guide to Traffic Generating Developments) must be assigned to/from Culburra to complete the external distribution analysis.

Survey Data Conversion Rates for Peak Hour Traffic Volumes – NON-HIGHWAY DATA – Based on Local Peaks

These factors convert 1-hour data from the applicants May 2012 surveys to theoretical AADT & Seasonal Peak flows for the intersection analysis. These factors apply to all surveyed local road peak hour flows, including all movements to/from the Highway, but not north-south through movements on the Highway (refer factors below for highway analysis). The additional factors for Friday (3-4pm) & Saturday (8-9am) are provided for separate analysis as the local and highway peaks do not coincide at these times. Note the Friday AM peak (8-9am) for local & Highway traffic coincided, therefore separate analysis is not required. Because of the conflicting peak times our recommendation is for all of the following scenarios to be assessed for worst case in each of the AADT and 120th HH scenarios.

Peak Hour Scenario AADT Analysis	Factor (converts 2012 survey data to theoretical AADT values – <u>LOS C</u> target for intersection analysis)
Friday AM (8-9am)	0.92
Friday PM (2-3pm)	1.10*
Saturday MD (12-1pm)	1.11
Friday PM (3-4pm)	1.10
Saturday AM (8-9am)	1.07

Peak Hour Scenario Seasonal Peak (120th HH) Analysis	Factor (converts 2012 survey data to theoretical Seasonal Peak values i.e. 120 th Highest Annual Hour – <u>LOS D</u> target for intersection analysis)
Friday AM (8-9am)	1.12
Friday PM (2-3pm)	1.41*
Saturday MD (12-1pm)	1.25
Friday PM (3-4pm)	1.41
Saturday MD (8-9am)	1.17

* Note: the Friday PM 1-hour analysis has also been factored to account for the actual local peak which occurred between 2-3pm, rather than the 4-5pm peak reported in the 2012 survey data, which was approx 15% lower than the 2-3pm volume (local roads analysis).

* Note: the above factors are derived from the combined analysis of annual traffic data from the Greenwell Point Road and Forest Road data.

Survey Data Conversion Rates for Peak Hour Traffic Volumes – PRINCES HIGHWAY DATA – Based on Local & Highway Peaks

This converts 1-hour data from May 2012 survey to theoretical AADT & Seasonal Peak flows for intersection analysis. These factors apply only to all surveyed north-south through movements on the Highway for analysis based on either local (Coastal Villages) or Highway peak hour flows. The additional factors for Friday (3-4pm) & Saturday (8-9am) are provided for separate analysis as the local and highway peaks do not coincide at these times. Note the Friday AM peak (8-9am) for local & Highway traffic coincided, therefore separate analysis is not required. Because of the conflicting peak times our recommendation is for all of the following scenarios to be assessed for worst case in each of the AADT and 120th HH scenarios.

Peak Hour Scenario AADT Analysis	Factor (converts 2012 survey data to theoretical AADT values – <u>LOS C</u> target for intersection analysis)
Friday AM (8-9am)	0.88
Friday PM (2-3pm)**	0.89
Saturday MD (12-1pm)[†]	1.27
Friday PM (3-4pm)	0.88
Saturday AM (8-9am)	1.32

Peak Hour Scenario Seasonal Peak (120th HH)	Factor (converts 2012 survey data to theoretical Seasonal Peak values i.e. 120 th Highest Annual Hour – <u>LOS D</u> target for intersection analysis)
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Analysis	Peak values i.e. 120th Highest Annual Hour – LOS D target for intersection analysis)
Friday AM (8-9am)	1.25
Friday PM (2-3pm)**	1.13
Saturday MD (12-1pm)[†]	1.37
Friday PM (3-4pm)	1.15
Saturday MD (8-9am)	1.43

Note: The above factors are based on a permanent count station on the Princes Highway at Falls Creek (ie outside of the Nowra Urban Area) which is subject to AADT volumes of approx 20,000 veh/day. As the Princes Highway through the Nowra Urban Area is subject to volumes approximately twice as high (ie 40,000 veh/day), the influence of these factors can be reduced by half for analysis of the urban Princes Highway intersections (ie at Kalandar Street & Moss Street). This results in the following factors (reading down the page): 0.94, 0.95, 1.14, 0.94, 1.16, 1.13, 1.07, 1.18, 1.07 & 1.21 for urban area intersection analysis, and it is our view that it would be appropriate for the latter factors to be applied to all north-south through movements on the Highway to avoid un-justified increases or decreases to through-flows on the Highway for analysis.

*** Note: the Friday PM peak hour on the Princes Highway at Falls Creek was 3-4pm, differed from both the surveyed peak (4-5pm) and the local peak (2-3pm). Accordingly, separate factors for undertaking a “Highway” peak hour analysis are also provided (the actual likely Friday PM peak hour).*

[†] Note: the Saturday peak hour on the Princes Highway at Falls Creek occurred between 8-9am, which was different to the local peak (12-1pm). Accordingly, separate factors for undertaking a “Highway” peak hour analysis are also provided (the actual likely Saturday peak hour).

Survey Data Conversion Rates for “Daily” Traffic Volumes – NON-HIGHWAY DATA

These factors convert the applicant's May 2012 survey data to theoretical daily flows from AADT & Seasonal Peak (120th Highest Annual Hour) equivalent peak hour flow levels. This is required to be undertaken to assess road design aspects (cross-section parameters) ie lane widths, clear zones, overtaking lanes etc for all scenarios including BOTH with / without the development.

This analysis is for local roads only, ie cross section assessment is not required to be undertaken on the Princes Highway.

The factors were determined by combining a peak-to-daily factor for each of the 6 scenarios (determined by analysing 2008 AADT & Seasonal peak-to-daily factors separately) with a conversion factor for either Friday or Saturday, which compared the equivalent survey dates in 2008 (based on proximity to School Holidays) to the AADT & Seasonal (120th HH) volumes accordingly.

Because of the conflicting peak times our recommendation is for all of the following scenarios to be assessed for worst case in each of the AADT and 120th HH daily flow scenarios.

AADT Peak-to-Daily Factors (applies to surveyed 1-hour data from May 2012)	Factor (converts 2012 survey data to theoretical Annual Average Daily volume level)
Friday AM (8-9am)	10.22
Saturday MD (12-1pm)	14.06

Seasonal Peak-to-Daily Factors (applies to surveyed 1-hour data from May 2012)	Factor (converts 2012 survey data to theoretical Seasonal Peak (120 th HH) equivalent daily volume level)
Friday AM (8-9am)	14.34
Saturday MD (12-1pm)	16.67

** Note: the actual Friday PM local peak occurred between 2-3pm, rather than the 4-5pm peak reported in the 2012 survey data, which was approx 15% lower than the 2-3pm volume. Accordingly the adjustment has only been applied to the Friday AM data, although only one daily flow calculation is required for the Friday in any case.*

** Note: the above factors are to be applied direct to the base 2012 May survey data (local roads only).*

** Note: the above factors are to calculate base daily flow levels for the AADT and 120th HH equivalent daily flow scenarios. Your assessment will need to take into account the case with / without the development. To estimate the developments external daily traffic generation, refer to the top table for peak hour generation rates and use the same ratio of (external regional peak hour generation / RMS peak hour generation) to the RMS daily traffic generation rates to estimate external regional daily traffic generation. Similar to the peak hour analysis the balance of daily trips (between the RMS daily rate and the external regional daily development traffic) will then be assigned to/from Culburra Village to assess those more local impacts, in addition to the regional road impact analysis.*

I hope all of that makes sense. We have tried to explain it in as simple terms as possible. We don't want to over complicate the assessment, but we do have an obligation to Council and the local community that the assessment has been undertaken correctly.

In regards to the future analysis scenario Council has adopted an ID forecast data set which provides population and dwelling projections in 5 year increments to 2036.

In addition to the above we will review this forecast data to provide our best advice in regards to an appropriate background traffic growth rate to apply for your assessment of future impacts. Ie as previously advised your analysis will need to consider a more realistic future time upon which the development will fully impact the surrounding road network. A ten year assessment is supported as industry practice however the growth rate to be applied needs to be agreed. We will review our ID data and provide advice in the coming days.

We will also provide our advice regarding external traffic distribution when you can clarify some of the points raised in my previous email and accordingly provide the additional information required.

Hope all of this helps, and I apologise for the delay.

I would expect the RMS will now review this advice and indicate whether they concur to this component of the study assumptions, as they will need to do for the distribution assumptions.

**Kind Regards,
Scott Wells**

**Traffic & Transport Unit Manager
Shoalhaven City Council**

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From 2008 Annual Counts on Forest Rd & Greenwell Point Rd

Forest Rd AADT: 2131 (FOREST ROAD 550m EAST OF PRINCES HIGHWAY)
Greenwell Point Rd AADT: 6003 (GREENWELL POINT ROAD 737m WEST OF PYREE LANE)
Combined Data AADT: 8134
Combined Equivalent Census Day: 7576 (occurred on Tuesday 12th Aug 2008 - equivalent day to 2011 Census day on 9th Aug 2011)

Forest Rd 120th HH: 232 2008-04-29 16:00:00 Tuesday
Greenwell Point Rd 120th HH: 669 2008-03-24 13:00:00 Monday
Combined Data 120th HH: 885 2008-01-25 13:00:00 Friday (based on combining hourly data from each site to determine total 120th HH)

Equivalent Census Night Occupied Dwellings: 3324 (based on 2011 Census Enumerated population - where people were on Census night)
Note: see separate tab for methodology to calculate number of "equivalent" dwellings

Equivalent 2011 Combined AADT: 8632 (2% compound growth assumed)
Equivalent 2011 Combined Census Day Volume: 8040 (2% compound growth assumed)

External Traffic Generation: 2.4 Average Daily Trips per Occupied Dwelling
Equivalent 2011 AADT Occupied Dwellings: 3569 Theoretical number of occupied dwellings for AADT traffic rates

Fri AADT AM Peak to Daily Factor: 9.0% (based on Fridays with volumes close to AADT volume of 8,134 veh/day)
Fri AADT PM Peak to Daily Factor: 8.5% (based on Fridays with volumes close to AADT volume of 8,134 veh/day)
Sat AADT MD Peak to Daily Factor: 9.6% (based on Saturdays with volumes close to AADT volume of 8,134 veh/day)

Fri Seasonal Peak AM Peak to Daily Factor: 7.6% (based on Friday 25th Jan - date of 120th HH and 2nd highest Friday observed in 2008)
Fri Seasonal Peak PM Peak to Daily Factor: 7.8% (based on Friday 25th Jan - date of 120th HH and 2nd highest Friday observed in 2008)
Sat Seasonal Peak MD Peak to Daily Factor: 9.6% (based on Saturday 26th Jan - 3rd highest Saturday observed in 2008)

Fri AADT AM External Traffic Generation: 0.22 Vehicles per Hour per Occupied Dwelling
Fri AADT PM External Traffic Generation: 0.21 Vehicles per Hour per Occupied Dwelling
Sat AADT MD External Traffic Generation: 0.23 Vehicles per Hour per Occupied Dwelling

Daily volume Friday 9th May 2008: 8826 Vehicles
9th May 2008 to 2008 AADT Conversion Factor: 0.92 This factor should be applied to the survey data from Fri 4th May 2012
9th May 2008 to Seasonal Peak Conversion Factor: 1.35 This factor should be applied to the survey data from Fri 4th May 2012
Daily volume Saturday 10th May 2008: 7438 Vehicles
10th May 2008 to 2008 AADT Conversion Factor: 1.09 This factor should be applied to the survey data from Sat 5th May 2012
10th May 2008 to Seasonal Peak Conversion Factor: 1.60 This factor should be applied to the survey data from Sat 5th May 2012

AM Peak Friday 9th May 2008: 792 8-9am (equivalent day to date of survey Friday 4th May 2012 - based on proximity to school holidays)
PM Peak Friday 9th May 2008: 741 2-3pm (equivalent day to date of survey Friday 4th May 2012 - based on proximity to school holidays)
MD Peak Saturday 10th May 2008: 706 12-1pm (equivalent day to date of survey Saturday 5th May 2012 - based on proximity to school holidays)

3-4pm volume Fri 9th May 2008: 738 3-4pm **HW1 Peak Hour**
4-5pm volume Fri 9th May 2008: 628 4-5pm (equivalent peak hour to survey data 4-5pm - lower than actual 2-3pm peak)
PM Peak Hour Conversion Factor: 1.18 (converts reported 4-5pm data to actual 2-3pm local peak)

HW1 Peak 8-9am Sat 8th May 2004: 487 8-9am **HW1 Peak Hour**

Fri AM Peak Conversion Factor for AADT Analysis: 0.92 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)
Fri PM Peak Conversion Factor for AADT Analysis: 1.10 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)
Sat MD Peak Conversion Factor for AADT Analysis: 1.11 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)

Daily volume on Friday 25th January 2008: 11885 (Day that 120th Highest Annual Hour Occurred)
120th Highest Annual Hour to Daily Traffic Ratio: 7.4% Use this figure to convert 2012 120th HH to Daily Volumes for cross-section design analysis

Fri AM Peak Conversion Factor for Seasonal Peak Analysis: 1.12 (Converts consultant's 2012 survey data to Seasonal Peak values for LOS D analysis)
Fri PM Peak Conversion Factor for Seasonal Peak Analysis: 1.41 (Converts consultant's 2012 survey data to Seasonal Peak values for LOS D analysis)
Sat MD Peak Conversion Factor for Seasonal Peak Analysis: 1.25 (Converts consultant's 2012 survey data to Seasonal Peak values for LOS D analysis)

HW1 Analysis

Falls Creek 2004 Data
2004 AADT: 18845 (Count Station 07053 at Falls Creek North of Jervis Bay Road)
2004 Average Fridays: 22373 (Better comparison due to wide daily variation)
2004 Average Saturdays: 17181 (Better comparison due to wide daily variation)

Falls Creek 120th HH: 1965 Thursday 8th Jan, 2004 12pm-1pm

HW1 Fri AADT AM Peak to Daily Factor: 7.3% (based on Fridays with volumes close to the Average Friday volume of 22,373 veh/day)
HW1 Fri AADT PM Peak to Daily Factor: 8.2% (based on Fridays with volumes close to the Average Friday volume of 22,373 veh/day)
HW1 Sat AADT MD Peak to Daily Factor: 9.7% (based on Saturdays with volumes close to Average Saturday volume of 17,181 veh/day)

Daily Volume Friday 7th May 2004: 21007 Vehicles (equivalent day to Friday 4th May 2012 survey date)
7th May 2004 to 2004 AADT Conversion Factor: 0.90 This factor should be applied to the survey data from Fri 4th May 2012
Daily volume Saturday 8th May 2004: 16561 Vehicles
8th May 2004 to 2004 AADT Conversion Factor: 1.14 This factor should be applied to the survey data from Sat 5th May 2012

AM Local Culburra Peak Friday 7th May 2004: 1567 8-9am (Same as **HW1 peak**)
PM Local Culburra Peak Friday 7th May 2004: 1603 2-3pm (HW1 peak occurred 3-4pm - see below)
MD Local Culburra Peak Saturday 8th May 2004: 1436 12-1pm (HW1 peak occurred 8-9am - see below)

HW1 Peak 3-4pm Fri 7th May 2004: 1759 3-4pm **HW1 Peak Hour**
HW1 4-5pm volume Fri 7th May 2004: 1732 4-5pm (To compare to collected data)
PM Peak Hour Conversion Factor: 0.93 (converts reported 4-5pm data to actual 2-3pm local peak)

HW1 Peak 8-9am Sat 8th May 2004: 1671 8-9am **HW1 Peak** Hour

Fri AM Peak Conversion Factor for AADT Analysis: 0.88 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)
Fri PM Peak Conversion Factor for AADT Analysis: 0.89 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)
Sat MD Peak Conversion Factor for AADT Analysis: 1.27 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)

Daily volume on Thursday 8th January 2004: 23295 (Day that 120th Highest Annual Hour Occurred)
120th Highest Annual Hour to Daily Traffic Ratio: 8.4% Use this figure to convert 2012 120th HH to Daily Volumes for cross-section design analysis

Fri AM Peak Conversion Factor for Seasonal Peak Analysis: 1.25 (Converts consultant's 2012 survey data to Seasonal Peak values for LOS D analysis)
Fri PM Peak Conversion Factor for Seasonal Peak Analysis: 1.13 (Converts consultant's 2012 survey data to Seasonal Peak values for LOS D analysis)
Sat MD Peak Conversion Factor for Seasonal Peak Analysis: 1.37 (Converts consultant's 2012 survey data to Seasonal Peak values for LOS D analysis)

HW1 Analysis - factors for Different Highway Peaks

Local Road (i.e. Non-Highway) Flows

Fri PM Highway 3-4pm Conversion Factor for AADT Analysis: 1.10 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)
Sat AM Highway 8-9am Conversion Factor for AADT Analysis: 1.07 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)

Fri PM Highway 3-4pm Conversion Factor for 120th HH Analysis: 1.41 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)
Sat AM Highway 8-9am Conversion Factor for 120th HH Analysis: 1.17 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)

Highway North-South Flows

Fri PM Highway 3-4pm Conversion Factor for AADT Analysis: 0.88 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)
Sat AM Highway 8-9am Conversion Factor for AADT Analysis: 1.32 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)

Fri PM Highway 3-4pm Conversion Factor for 120th HH Analysis: 1.15 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)
Sat AM Highway 8-9am Conversion Factor for 120th HH Analysis: 1.43 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)

Local Peak Comparison to HW1 Peak

Forest Rd + Greenwell Point Rd Friday AM 792 (8-9am) Forest Rd + Greenwell Point Rd LOCAL Fri AM Peak (SAME AS HW1 PEAK)

Forest Rd + Greenwell Point Rd Friday PM 741 (2-3pm) Forest Rd + Greenwell Point Rd LOCAL Fri PM Peak
738 (3-4pm) Forest Rd + Greenwell Point Rd 3-4pm volume

Local to HW1 peak Conversion Factor: 1.00 (Converts LOCAL Peak data to HW1 peak for Highway intersection analysis)

Forest Rd + Greenwell Point Rd Saturday MD 706 (12-1pm) Forest Rd + Greenwell Point Rd LOCAL Sat MD Peak
487 (8-9am) Forest Rd + Greenwell Point Rd 8-9am volume

Local to HW1 peak Conversion Factor: 0.69 (Converts LOCAL Peak data to HW1 peak for Highway intersection analysis)

50% Reduction Factor for HW1 intersections in Nowra Urban Area - ie at Kalandar St & Moss St

Fri AM Peak Conversion Factor for AADT Analysis: 0.94 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)
Fri PM Peak Conversion Factor for AADT Analysis: 0.95 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)
Sat MD Peak Conversion Factor for AADT Analysis: 1.14 (Converts consultant's 2012 survey data to AADT values for LOS C analysis)

Fri AM Peak Conversion Factor for Seasonal Peak Analysis: 1.13 (Converts consultant's 2012 survey data to Seasonal Peak values for LOS D analysis)
Fri PM Peak Conversion Factor for Seasonal Peak Analysis: 1.07 (Converts consultant's 2012 survey data to Seasonal Peak values for LOS D analysis)
Sat MD Peak Conversion Factor for Seasonal Peak Analysis: 1.18 (Converts consultant's 2012 survey data to Seasonal Peak values for LOS D analysis)

Date	Forest Rd			Greenwell Point Road			Combined		
	Combined	E-bound W-bound	% E % W	Combined	E-bound W-bound	% E % W	Combined	E-bound W-bound	% E % W
Fri 29-Aug-08 AM Peak	180	54 126	30% 70%	556	105 451	19% 81%	736	159 577	22% 78%
Fri 29-Aug-08 PM Peak	167	112 55	67% 33%	562	364 198	65% 35%	729	476 253	65% 35%
Sat 30-Aug-08 MD Peak	186	94 92	51% 49%	490	261 229	53% 47%	676	355 321	53% 47%
Fri 25-Jan-08 AM Peak	204	61 143	30% 70%	561	121 440	22% 78%	765	182 583	24% 76%
Fri 25-Jan-08 PM Peak	226	160 66	71% 29%	700	530 170	76% 24%	926	690 236	75% 25%
Sat 26-Jan-08 MD Peak	239	125 114	52% 48%	764	380 384	50% 50%	1003	505 498	50% 50%

Note: Split data obtained directly from MetroCount data files

region_id	Occupied_	Occupied_	Occupied_	Occupied_	Occupied_	Occupied_	Occupied_	Occupied_	Occupied_	Unoccupied	Total_private_dwellings_Dwellings
1127301	27	3	0	0	0	0	0	0	0	30	41
1127302	171	0	6	0	0	0	0	0	0	177	529
1127303	155	0	4	0	0	0	0	0	0	159	411
1127304	118	0	0	0	0	0	0	0	0	118	177
1127305	153	4	0	0	0	0	0	0	0	157	261
1127306	141	0	8	0	0	0	0	0	0	149	243
1127307	190	0	0	0	0	0	0	0	0	190	237
1127308	169	0	0	0	0	0	0	0	0	169	213
1127309	55	0	0	0	0	0	0	0	0	55	157
1127310	141	0	0	0	0	0	0	0	0	141	396
1127311	0	0	0	0	0	0	0	0	0	0	0
1127312	49	0	0	3	0	0	3	0	0	52	84
1127401	112	0	0	0	0	0	0	0	0	112	150
1127402	27	0	0	0	0	0	0	0	0	27	27
1127403	121	7	0	0	0	3	3	0	0	131	317
1127404	127	3	0	0	0	0	0	0	0	130	240
1127405	91	3	0	0	0	0	0	0	0	94	202
1127406	109	35	11	0	0	4	4	0	0	159	248
1127407	152	0	0	0	0	0	0	0	0	152	294
1127408	212	0	0	3	0	0	3	0	0	215	370
1127409	85	3	0	17	0	0	17	0	0	105	128
1127410	121	5	17	0	0	0	0	0	0	143	188
1127411	146	0	4	6	0	0	6	0	0	156	189
1127412	126	0	5	3	0	0	3	0	0	134	215
1127413	122	0	0	0	0	0	0	0	0	122	196
1127415	0	0	0	0	0	0	0	0	0	0	0
1127416	229	40	0	0	0	0	0	0	0	269	415
	3149	103	55	32	0	7	39	0	0	3346	5928

Census (enumerated) total Occupied Private Dwellings:

3379

57%

Census (enumerated) total Vacant Private Dwellings:

2582

43%

TOTAL (enumerated) Private Dwellings:

5961

Detached Occupied Dwellings:

3182

94%

Occupied Medium Density Dwellings:

197

6%

Equivalent Occupied Dwellings:

3324 (Determined by multiplying MD dwellings by ratio of daily traffic generation rates)

Equivalent Vacant Dwellings:

2431

Total Equivalent Dwellings:

5755

98.645th percentile Dwelling Occupancy:

5723 Equivalent to 120th Highest Hour seasonal peak

← Note: 3,379 includes the net addition of 33 dwellings which was determined by adding the number of rural dwellings that were part of another SA1 zone but still serviced by Greenwell Point Rd (+42), and subtracting the number of rural dwellings included within tallied SA1 zones but not serviced by either Greenwell Point Rd or Forest Rd (-9).

Appendix D

SIDRA INTERSECTION Results

MOVEMENT SUMMARY

Site: 1.Culburra -Coonamia (Ex Fri
AM-120th HH)

13S1231000 - West Culburra Subdivision
Culburra Road-Coonamia Road
Friday AM (0800-0900) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonamia Rd											
1	L	165	0.0	0.223	13.6	LOS A	0.7	4.9	0.37	0.74	62.3
3	R	73	6.5	0.124	15.7	LOS B	0.5	3.6	0.46	0.78	59.9
Approach		238	2.0	0.223	14.3	LOS A	0.7	4.9	0.40	0.75	61.5
East: Culburra Rd (E)											
4	L	40	2.9	0.022	11.5	LOS A	0.0	0.0	0.00	0.74	63.3
5	T	225	3.7	0.118	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		265	3.6	0.118	1.7	NA	0.0	0.0	0.00	0.11	76.6
West: Culburra Rd (W)											
11	T	96	12.3	0.053	0.0	X	X	X	X	0.00	80.0
12	R	33	3.6	0.029	12.5	LOS A	0.1	0.8	0.35	0.69	61.6
Approach		128	10.1	0.053	3.2	NA	0.1	0.8	0.09	0.17	73.9
All Vehicles		632	4.3	0.223	6.8	NA	0.7	4.9	0.17	0.37	69.8

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:25 AM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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INTERSECTION

MOVEMENT SUMMARY

Site: 1.Culburra -Coonamia (Ex Fri
PM-120th HH)

13S1231000 - West Culburra Subdivision
Culburra Road-Coonamia Road
Friday PM (1600-1700) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonamia Rd											
1	L	77	7.7	0.106	13.5	LOS A	0.3	2.1	0.27	0.70	62.9
3	R	75	2.0	0.130	15.7	LOS B	0.5	3.7	0.48	0.79	59.5
Approach		152	4.9	0.130	14.6	LOS B	0.5	3.7	0.37	0.75	61.2
East: Culburra Rd (E)											
4	L	75	2.0	0.041	11.5	LOS A	0.0	0.0	0.00	0.74	63.3
5	T	115	2.6	0.060	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		189	2.4	0.060	4.5	NA	0.0	0.0	0.00	0.29	71.9
West: Culburra Rd (W)											
11	T	280	1.1	0.145	0.0	X	X	X	X	0.00	80.0
12	R	152	3.9	0.133	12.3	LOS A	0.5	3.8	0.31	0.70	61.8
Approach		432	2.1	0.145	4.3	NA	0.5	3.8	0.11	0.24	71.9
All Vehicles		773	2.7	0.145	6.4	NA	0.5	3.8	0.13	0.35	69.7

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:25 AM

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Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 1.Culburra -Coonamia (Ex
Sat-120th HH)

13S1231000 - West Culburra Subdivision
Culburra Road-Coonamia Road
Saturday - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonamia Rd											
1	L	104	1.3	0.140	13.4	LOS A	0.4	2.9	0.32	0.72	62.6
3	R	66	0.0	0.117	15.6	LOS B	0.5	3.2	0.48	0.79	59.4
Approach		171	0.8	0.140	14.3	LOS A	0.5	3.2	0.38	0.75	61.3
East: Culburra Rd (E)											
4	L	80	0.0	0.043	11.3	LOS A	0.0	0.0	0.00	0.73	63.3
5	T	169	0.8	0.087	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		249	0.5	0.087	3.6	NA	0.0	0.0	0.00	0.24	73.3
West: Culburra Rd (W)											
11	T	166	0.8	0.086	0.0	X	X	X	X	0.00	80.0
12	R	104	2.5	0.092	12.4	LOS A	0.4	2.7	0.35	0.71	61.6
Approach		271	1.5	0.092	4.8	NA	0.4	2.7	0.13	0.27	71.2
All Vehicles		691	1.0	0.140	6.7	NA	0.5	3.2	0.15	0.38	69.3

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:25 AM

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Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 2. Culburra-Mayfield (Ex Fri
AM-120th HH)

Culburra Road-Mayfield Road
Friday AM (0800-0900) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Culburra Road (S)											
1	L	2	0.0	0.198	10.1	LOS A	0.0	0.0	0.00	1.73	57.1
2	T	383	0.0	0.198	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		385	0.0	0.198	0.1	NA	0.0	0.0	0.00	0.01	79.8
North: Culburra Road (N)											
8	T	126	0.0	0.066	1.9	LOS A	0.5	3.6	0.50	0.00	64.7
9	R	1	0.0	0.066	12.0	LOS A	0.5	3.6	0.50	1.34	60.6
Approach		127	0.0	0.066	1.9	NA	0.5	3.6	0.50	0.01	64.7
West: Mayfield Road											
10	L	1	0.0	0.007	14.0	LOS A	0.0	0.2	0.53	0.65	46.2
12	R	2	0.0	0.007	14.0	LOS A	0.0	0.2	0.53	0.74	46.4
Approach		3	0.0	0.007	14.0	LOS A	0.0	0.2	0.53	0.71	46.3
All Vehicles		516	0.0	0.198	0.6	NA	0.5	3.6	0.13	0.01	75.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:26 AM

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MOVEMENT SUMMARY

Site: 2. Culburra-Mayfield (Ex Fri
PM-120th HH)

Culburra Road-Mayfield Road
Friday PM (1600-1700) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Culburra Road (S)											
1	L	1	0.0	0.102	10.1	LOS A	0.0	0.0	0.00	1.73	57.1
2	T	193	4.6	0.102	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		194	4.6	0.102	0.1	NA	0.0	0.0	0.00	0.01	79.8
North: Culburra Road (N)											
8	T	412	1.8	0.214	1.0	LOS A	1.6	11.4	0.39	0.00	67.7
9	R	1	0.0	0.214	11.1	LOS A	1.6	11.4	0.39	1.45	60.0
Approach		413	1.8	0.214	1.0	NA	1.6	11.4	0.39	0.00	67.6
West: Mayfield Road											
10	L	1	0.0	0.019	38.1	LOS C	0.1	0.6	0.71	0.58	31.7
12	R	1	100.0	0.019	43.5	LOS D	0.1	0.6	0.71	0.93	33.8
Approach		2	50.0	0.019	40.8	LOS C	0.1	0.6	0.71	0.75	32.9
All Vehicles		608	2.9	0.214	0.8	NA	1.6	11.4	0.27	0.01	70.8

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:26 AM

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MOVEMENT SUMMARY

Site: 2. Culburra-Mayfield (Ex
Sat-120th HH)

Culburra Road-Mayfield Road
Saturday - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Culburra Road (S)											
1	L	3	0.0	0.144	10.1	LOS A	0.0	0.0	0.00	1.71	57.1
2	T	277	0.5	0.144	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		280	0.5	0.144	0.1	NA	0.0	0.0	0.00	0.02	79.7
North: Culburra Road (N)											
8	T	248	0.5	0.129	1.3	LOS A	1.0	6.8	0.44	0.00	66.2
9	R	1	0.0	0.129	11.5	LOS A	1.0	6.8	0.44	1.40	60.4
Approach		249	0.5	0.129	1.4	NA	1.0	6.8	0.44	0.01	66.2
West: Mayfield Road											
10	L	1	0.0	0.009	14.5	LOS B	0.0	0.2	0.53	0.62	45.8
12	R	3	0.0	0.009	14.5	LOS B	0.0	0.2	0.53	0.75	46.0
Approach		4	0.0	0.009	14.5	LOS B	0.0	0.2	0.53	0.72	45.9
All Vehicles		534	0.5	0.144	0.8	NA	1.0	6.8	0.21	0.02	72.4

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:26 AM

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Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 3. Greenwell Pt-Pyree (Ex Fri
AM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Pyree Lane
Friday AM (0800-0900) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Pyreen Ln											
1	L	376	1.9	0.205	11.2	X	X	X	X	0.69	58.8
3	R	14	8.3	0.020	13.0	LOS A	0.1	0.6	0.34	0.69	56.9
Approach		389	2.1	0.205	11.2	LOS A	0.1	0.6	0.01	0.69	58.8
East: Greenwell Pt Rd (E)											
4	L	20	66.7	0.094	14.9	LOS B	0.0	0.0	0.00	1.42	58.9
5	T	147	5.6	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		167	12.9	0.094	1.8	NA	0.0	0.0	0.00	0.17	76.8
West: Greenwell Pt Rd (W)											
11	T	63	5.6	0.034	0.0	X	X	X	X	0.00	80.0
12	R	111	7.4	0.224	16.4	LOS B	0.9	6.8	0.56	0.85	52.5
Approach		174	6.8	0.224	10.4	LOS A	0.9	6.8	0.35	0.54	60.1
All Vehicles		731	5.7	0.224	8.9	NA	0.9	6.8	0.09	0.54	62.5

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:26 AM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 3. Greenwell Pt-Pyree (Ex Fri
PM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Pyree Lane
Friday PM (1600-1700) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Pyreen Ln											
1	L	155	5.8	0.087	11.3	X	X	X	X	0.69	58.9
3	R	32	0.0	0.039	11.5	LOS A	0.2	1.1	0.23	0.68	58.0
Approach		186	4.8	0.087	11.4	LOS A	0.2	1.1	0.04	0.69	58.7
East: Greenwell Pt Rd (E)											
4	L	26	0.0	0.050	10.9	LOS A	0.0	0.0	0.00	1.07	58.9
5	T	68	4.3	0.050	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		95	3.1	0.050	3.0	NA	0.0	0.0	0.00	0.30	72.9
West: Greenwell Pt Rd (W)											
11	T	173	1.7	0.090	0.0	X	X	X	X	0.00	80.0
12	R	391	1.5	0.558	15.5	LOS B	5.2	36.6	0.56	0.82	53.1
Approach		563	1.6	0.558	10.8	LOS A	5.2	36.6	0.39	0.57	59.3
All Vehicles		844	2.5	0.558	10.0	NA	5.2	36.6	0.27	0.56	60.4

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:27 AM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 3. Greenwell Pt-Pyree (Ex
Sat-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Pyree Lane
Friday AM (0800-0900) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Pyreen Ln											
1	L	226	1.2	0.123	11.1	X	X	X	X	0.69	58.9
3	R	45	0.0	0.065	12.5	LOS A	0.3	1.8	0.35	0.71	56.7
Approach		272	1.0	0.123	11.3	LOS A	0.3	1.8	0.06	0.69	58.5
East: Greenwell Pt Rd (E)											
4	L	145	2.7	0.132	11.1	LOS A	0.0	0.0	0.00	0.89	58.9
5	T	100	3.9	0.132	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		245	3.2	0.132	6.6	NA	0.0	0.0	0.00	0.53	66.1
West: Greenwell Pt Rd (W)											
11	T	227	1.2	0.117	0.0	X	X	X	X	0.00	80.0
12	R	109	1.2	0.212	15.6	LOS B	0.9	6.1	0.54	0.84	53.0
Approach		337	1.2	0.212	5.1	LOS A	0.9	6.1	0.18	0.27	68.7
All Vehicles		854	1.7	0.212	7.5	NA	0.9	6.1	0.09	0.48	64.4

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 4. Greenwell Pt-Jindy Andy
(Ex Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Jindy Andy Lane
Friday AM (0800-0900) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
North East: Greenwell Point Road (NE)											
25	T	371	4.8	0.196	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
26	R	159	0.7	0.227	10.3	LOS A	1.0	7.1	0.39	0.70	46.7
Approach		529	3.6	0.227	3.1	NA	1.0	7.1	0.12	0.21	67.0
North West: Jindy Andy Lane											
27	L	39	3.0	0.038	11.8	LOS A	0.1	1.0	0.25	0.67	57.5
29	R	12	30.0	0.077	30.3	LOS C	0.2	1.8	0.76	0.94	41.4
Approach		51	9.2	0.077	16.0	LOS B	0.2	1.8	0.37	0.74	52.8
South West: Greenwell Point Road (SW)											
30	L	8	42.9	0.079	13.5	LOS A	0.0	0.0	0.00	1.45	58.9
31	T	136	8.7	0.079	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		144	10.7	0.079	0.8	NA	0.0	0.0	0.00	0.08	78.4
All Vehicles		724	5.4	0.227	3.5	NA	1.0	7.1	0.11	0.22	67.7

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:27 AM

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MOVEMENT SUMMARY

Site: 4. Greenwell Pt-Jindy Andy
(Ex Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Jindy Andy Lane
Friday AM (1600-1700) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
North East: Greenwell Point Road (NE)											
25	T	175	5.9	0.093	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
26	R	61	2.4	0.150	15.2	LOS B	0.6	4.0	0.59	0.87	42.3
Approach		236	5.0	0.150	3.9	NA	0.6	4.0	0.15	0.23	66.2
North West: Jindy Andy Lane											
27	L	160	1.9	0.214	13.8	LOS A	0.8	5.8	0.50	0.82	55.2
29	R	3	0.0	0.011	19.3	LOS B	0.0	0.2	0.64	0.80	49.0
Approach		163	1.8	0.214	13.9	LOS A	0.8	5.8	0.50	0.82	55.0
South West: Greenwell Point Road (SW)											
30	L	14	11.1	0.215	11.6	LOS A	0.0	0.0	0.00	1.36	58.9
31	T	399	1.9	0.215	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		413	2.2	0.215	0.4	NA	0.0	0.0	0.00	0.05	79.1
All Vehicles		812	2.9	0.215	4.1	NA	0.8	5.8	0.15	0.25	69.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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MOVEMENT SUMMARY

Site: 4. Greenwell Pt-Jindy Andy
(Ex Sat-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Jindy Andy Lane
Saturday - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
North East: Greenwell Point Road (NE)											
25	T	254	3.1	0.133	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
26	R	96	1.4	0.181	12.6	LOS A	0.7	5.1	0.53	0.80	44.5
Approach		349	2.6	0.181	3.5	NA	0.7	5.1	0.14	0.22	66.8
North West: Jindy Andy Lane											
27	L	100	0.0	0.115	12.6	LOS A	0.4	3.0	0.39	0.74	56.6
29	R	9	0.0	0.034	19.5	LOS B	0.1	0.7	0.65	0.86	48.7
Approach		109	0.0	0.115	13.2	LOS A	0.4	3.0	0.41	0.75	55.8
South West: Greenwell Point Road (SW)											
30	L	5	0.0	0.154	10.9	LOS A	0.0	0.0	0.00	1.33	58.9
31	T	288	3.2	0.154	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		294	3.1	0.154	0.2	NA	0.0	0.0	0.00	0.02	79.5
All Vehicles		753	2.4	0.181	3.6	NA	0.7	5.1	0.13	0.22	69.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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MOVEMENT SUMMARY

Site: 5. Greenwell Pt-Mayfield (Ex
Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Mayfield Road
Friday AM (0800-0900) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Mayfield Road											
21	L	12	0.0	0.018	11.6	LOS A	0.1	0.4	0.45	0.69	48.6
23	R	1	0.0	0.018	11.6	LOS A	0.1	0.4	0.45	0.78	48.7
Approach		13	0.0	0.018	11.6	LOS A	0.1	0.4	0.45	0.70	48.6
North East: Greenwell Point Road (NE)											
24	L	3	0.0	0.200	10.1	LOS A	0.0	0.0	0.00	1.72	57.1
25	T	377	3.8	0.200	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		380	3.7	0.200	0.1	NA	0.0	0.0	0.00	0.01	79.8
South West: Greenwell Point Road (SW)											
31	T	141	9.2	0.089	4.9	LOS A	1.2	8.7	0.68	0.00	60.3
32	R	6	0.0	0.089	15.1	LOS B	1.2	8.7	0.68	1.17	57.6
Approach		147	8.8	0.089	5.4	NA	1.2	8.7	0.68	0.05	60.2
All Vehicles		540	5.0	0.200	1.8	NA	1.2	8.7	0.20	0.04	72.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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MOVEMENT SUMMARY

Site: 5. Greenwell Pt-Mayfield (Ex
Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Mayfield Road
Friday PM (1600-1700) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Mayfield Road											
21	L	6	0.0	0.035	16.7	LOS B	0.1	0.9	0.50	0.62	44.0
23	R	6	25.0	0.035	18.0	LOS B	0.1	0.9	0.50	0.86	44.2
Approach		13	12.5	0.035	17.4	LOS B	0.1	0.9	0.50	0.74	44.1
North East: Greenwell Point Road (NE)											
24	L	1	0.0	0.097	10.1	LOS A	0.0	0.0	0.00	1.73	57.1
25	T	181	5.7	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		182	5.7	0.097	0.1	NA	0.0	0.0	0.00	0.01	79.8
South West: Greenwell Point Road (SW)											
31	T	413	1.4	0.235	2.4	LOS A	2.9	20.6	0.57	0.00	63.0
32	R	15	0.0	0.235	12.6	LOS A	2.9	20.6	0.57	1.21	60.3
Approach		427	1.4	0.235	2.8	NA	2.9	20.6	0.57	0.04	62.9
All Vehicles		622	2.9	0.235	2.3	NA	2.9	20.6	0.40	0.05	66.5

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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MOVEMENT SUMMARY

Site: 5. Greenwell Pt-Mayfield (Ex
Sat-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Mayfield Road
Saturday - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Mayfield Road											
21	L	8	0.0	0.012	11.1	LOS A	0.0	0.3	0.38	0.65	49.0
23	R	1	0.0	0.012	11.1	LOS A	0.0	0.3	0.38	0.77	49.2
Approach		9	0.0	0.012	11.1	LOS A	0.0	0.3	0.38	0.66	49.0
North East: Greenwell Point Road (NE)											
24	L	4	66.7	0.139	13.0	LOS A	0.0	0.0	0.00	2.24	57.1
25	T	263	1.0	0.139	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		267	2.0	0.139	0.2	NA	0.0	0.0	0.00	0.04	79.6
South West: Greenwell Point Road (SW)											
31	T	289	1.8	0.170	3.5	LOS A	2.2	15.4	0.64	0.00	61.3
32	R	12	0.0	0.170	13.6	LOS A	2.2	15.4	0.64	1.18	59.4
Approach		301	1.7	0.170	3.9	NA	2.2	15.4	0.64	0.05	61.2
All Vehicles		578	1.9	0.170	2.3	NA	2.2	15.4	0.34	0.05	68.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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MOVEMENT SUMMARY

Site: 6. Greenwell Pt-Millbank-Worrigeer (Ex Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Millbank Road-Worrigeer Road
Friday AM (0800-0900) - Equivalent 120th HH
Existing
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Worrigeer Road											
1	L	69	5.1	0.391	20.4	LOS B	2.1	14.9	0.66	1.04	42.6
2	T	118	3.0	0.391	19.0	LOS B	2.1	14.9	0.66	1.07	40.5
3	R	21	0.0	0.076	20.6	LOS B	0.2	1.6	0.66	1.00	42.1
Approach		208	3.4	0.391	19.6	LOS B	2.1	14.9	0.66	1.05	41.4
East: Greenwell Point Road (E)											
4	L	12	0.0	0.193	10.1	LOS A	0.0	0.0	0.00	1.65	57.1
5	T	357	3.0	0.193	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
6	R	32	7.4	0.027	11.2	LOS A	0.1	0.8	0.30	0.66	55.3
Approach		400	3.2	0.193	1.2	NA	0.1	0.8	0.02	0.10	76.8
North: Millbank Road											
7	L	14	16.7	0.027	13.8	LOS A	0.1	0.4	0.29	0.86	48.2
8	T	26	13.6	0.126	22.0	LOS B	0.5	3.5	0.70	1.00	38.8
9	R	12	0.0	0.126	22.2	LOS B	0.5	3.5	0.70	1.00	41.1
Approach		52	11.4	0.126	19.9	LOS B	0.5	3.5	0.59	0.96	41.6
West: Greenwell Point Road (W)											
10	L	47	7.5	0.105	10.4	LOS A	0.0	0.0	0.00	1.24	57.1
11	T	143	9.1	0.105	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
12	R	61	5.8	0.063	12.1	LOS A	0.2	1.8	0.43	0.73	54.6
Approach		252	8.0	0.105	4.9	NA	0.2	1.8	0.10	0.41	68.1
All Vehicles		912	5.0	0.391	7.5	NA	2.1	14.9	0.22	0.45	60.5

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:29 AM

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MOVEMENT SUMMARY

Site: 6. Greenwell Pt-Millbank-Worrigee (Ex Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Millbank Road-Worrigee Road
Friday PM (1600-1700) - Equivalent 120th HH
Existing
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Worrigee Road											
1	L	58	0.0	0.197	16.8	LOS B	0.8	5.3	0.46	0.84	44.8
2	T	47	0.0	0.197	15.6	LOS B	0.8	5.3	0.46	1.00	42.7
3	R	21	5.3	0.086	25.1	LOS B	0.3	2.1	0.74	1.00	39.4
Approach		126	0.9	0.197	17.7	LOS B	0.8	5.3	0.51	0.93	43.0
East: Greenwell Point Road (E)											
4	L	21	7.1	0.099	10.4	LOS A	0.0	0.0	0.00	1.48	57.1
5	T	163	5.5	0.099	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
6	R	14	0.0	0.015	12.0	LOS A	0.1	0.4	0.45	0.70	54.3
Approach		198	5.3	0.099	1.9	NA	0.1	0.4	0.03	0.21	75.0
North: Millbank Road											
7	L	22	0.0	0.042	14.1	LOS A	0.1	0.7	0.45	0.89	47.2
8	T	54	2.8	0.235	22.5	LOS B	0.9	6.6	0.74	1.02	38.0
9	R	18	0.0	0.235	23.4	LOS B	0.9	6.6	0.74	1.02	40.3
Approach		94	1.6	0.235	20.7	LOS B	0.9	6.6	0.67	0.99	40.5
West: Greenwell Point Road (W)											
10	L	17	0.0	0.220	10.1	LOS A	0.0	0.0	0.00	1.62	57.1
11	T	409	0.7	0.220	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
12	R	115	1.3	0.095	10.9	LOS A	0.4	2.8	0.30	0.68	55.3
Approach		541	0.8	0.220	2.6	NA	0.4	2.8	0.06	0.19	73.0
All Vehicles		959	1.8	0.235	6.2	NA	0.9	6.6	0.18	0.37	63.0

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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INTERSECTION

MOVEMENT SUMMARY

Site: 6. Greenwell Pt-Millbank-Worrigee (Ex Sat-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Millbank Road-Worrigee Road
Saturday - Equivalent 120th HH
Existing
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Worrigee Road											
1	L	77	0.0	0.153	14.7	LOS B	0.6	4.2	0.45	0.88	46.6
2	T	29	4.5	0.153	13.8	LOS A	0.6	4.2	0.45	1.00	44.5
3	R	38	3.4	0.133	20.3	LOS B	0.4	2.8	0.64	1.00	42.5
Approach		144	1.8	0.153	16.0	LOS B	0.6	4.2	0.50	0.94	45.0
East: Greenwell Point Road (E)											
4	L	20	6.7	0.136	10.4	LOS A	0.0	0.0	0.00	1.57	57.1
5	T	241	1.1	0.136	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
6	R	16	0.0	0.014	11.2	LOS A	0.1	0.4	0.35	0.67	55.0
Approach		277	1.4	0.136	1.4	NA	0.1	0.4	0.02	0.15	76.3
North: Millbank Road											
7	L	8	16.7	0.018	14.4	LOS A	0.0	0.3	0.37	0.85	47.7
8	T	24	11.1	0.116	20.0	LOS B	0.4	3.2	0.66	1.00	40.0
9	R	16	0.0	0.116	20.4	LOS B	0.4	3.2	0.66	1.00	42.3
Approach		48	8.5	0.116	19.2	LOS B	0.4	3.2	0.61	0.97	42.1
West: Greenwell Point Road (W)											
10	L	21	6.2	0.142	10.3	LOS A	0.0	0.0	0.00	1.56	57.1
11	T	253	1.0	0.142	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
12	R	54	0.0	0.048	11.2	LOS A	0.2	1.3	0.35	0.68	55.0
Approach		327	1.2	0.142	2.5	NA	0.2	1.3	0.06	0.21	73.4
All Vehicles		797	1.8	0.153	5.6	NA	0.6	4.2	0.16	0.37	64.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:30 AM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 7. Princes Hwy-Kalandar (Ex
Fri AM-120th HH)

13S1231000 - West Culburra Subdivision

Princes Highway-Kalandar Street

Friday AM (0800-0900) - Equivalent 120th HH

Existing

Signals - Fixed Time Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
1	L	3	0.0	1.049	103.7	LOS F	39.3	288.0	1.00	1.17	16.8
2	T	962	5.6	1.049	111.7	LOS F	49.4	362.6	1.00	1.25	15.6
3	R	38	0.0	0.459	81.6	LOS F	2.6	18.3	1.00	0.73	19.2
Approach		1003	5.3	1.049	110.6	LOS F	49.4	362.6	1.00	1.23	15.7
East: Kalandar St (E)											
4	L	38	9.4	1.039	115.9	LOS F	51.4	370.2	1.00	1.23	10.7
5	T	306	3.1	1.039	106.6	LOS F	51.4	370.2	1.00	1.23	10.1
6	R	782	2.9	1.039	129.2	LOS F	56.2	403.3	1.00	1.21	9.7
Approach		1126	3.1	1.039	122.6	LOS F	56.2	403.3	1.00	1.22	9.8
North: Princes Hwy (N)											
7	L	259	7.3	0.261	9.2	LOS A	0.8	5.7	0.07	0.64	53.4
8	T	898	7.3	0.734	40.8	LOS C	24.3	180.8	0.88	0.78	29.9
9	R	157	11.3	1.042	112.3	LOS F	12.0	91.7	1.00	1.09	15.2
Approach		1314	7.8	1.042	43.1	LOS D	24.3	180.8	0.74	0.79	29.1
West: Kalandar St (W)											
10	L	52	13.6	0.700	65.8	LOS E	9.0	66.1	0.95	0.90	19.0
11	T	149	1.6	0.700	57.2	LOS E	12.8	92.9	0.97	0.86	18.0
12	R	156	5.3	0.700	69.3	LOS E	12.8	92.9	1.00	0.85	17.9
Approach		357	4.9	0.700	63.7	LOS E	12.8	92.9	0.98	0.86	18.1
All Vehicles		3800	5.5	1.049	86.4	LOS F	56.2	403.3	0.91	1.04	16.8

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	45.6	LOS E	0.2	0.2	0.82	0.82
P3	Across E approach	53	37.0	LOS D	0.2	0.2	0.74	0.74
P5	Across N approach	53	61.6	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		159	48.1	LOS E			0.84	0.84

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 7. Princes Hwy-Kalandar (Ex
Fri PM-120th HH)

13S1231000 - West Culburra Subdivision

Princes Highway-Kalandar Street

Friday PM (1600-1700) - Equivalent 120th HH

Existing

Signals - Fixed Time Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
1	L	12	0.0	1.038	100.6	LOS F	29.4	210.2	1.00	1.12	17.2
2	T	785	2.6	1.038	107.4	LOS F	39.3	281.0	1.00	1.20	16.1
3	R	109	1.4	1.004	120.5	LOS F	9.8	69.4	1.00	1.08	14.3
Approach		906	2.4	1.038	108.9	LOS F	39.3	281.0	1.00	1.18	15.8
East: Kalandar St (E)											
4	L	99	1.5	1.065	132.7	LOS F	42.9	306.0	1.00	1.27	9.5
5	T	245	2.4	1.065	123.7	LOS F	42.9	306.0	1.00	1.27	8.9
6	R	567	1.8	1.065	151.3	LOS F	47.2	335.4	1.00	1.26	8.5
Approach		912	2.0	1.065	141.9	LOS F	47.2	335.4	1.00	1.26	8.7
North: Princes Hwy (N)											
7	L	815	1.1	1.000 ³	35.7	LOS C	18.5	130.6	0.21	0.77	32.5
8	T	1318	3.1	1.100	162.7	LOS F	77.6	557.9	1.00	1.54	11.6
9	R	138	5.4	0.587	44.5	LOS D	6.1	44.8	0.99	0.79	28.6
Approach		2272	2.5	1.100	109.9	LOS F	77.6	557.9	0.71	1.22	15.7
West: Kalandar St (W)											
10	L	109	9.5	1.000 ³	56.8	LOS E	13.7	99.1	0.93	0.90	21.0
11	T	305	0.0	1.101	113.6	LOS F	55.2	388.8	0.97	1.13	11.0
12	R	303	1.0	1.101	185.3	LOS F	55.2	388.8	1.00	1.41	8.1
Approach		718	1.9	1.101	135.2	LOS F	55.2	388.8	0.97	1.22	10.2
All Vehicles		4807	2.3	1.101	119.6	LOS F	77.6	557.9	0.86	1.22	13.4

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

³ x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	53.3	LOS E	0.2	0.2	0.89	0.89
P3	Across E approach	53	38.5	LOS D	0.2	0.2	0.76	0.76
P5	Across N approach	53	53.3	LOS E	0.2	0.2	0.89	0.89
All Pedestrians		159	48.4	LOS E			0.84	0.84

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 7. Princes Hwy-Kalandar (Ex Sat-120th HH)

13S1231000 - West Culburra Subdivision

Princes Highway-Kalandar Street

Saturday - Equivalent 120th HH

Existing

Signals - Fixed Time Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
1	L	5	25.0	0.872	74.6	LOS F	32.0	229.4	0.99	0.98	21.9
2	T	960	2.6	0.872	60.0	LOS E	32.0	229.4	0.99	0.96	23.9
3	R	116	4.5	0.966	104.3	LOS F	9.6	69.5	1.00	1.03	16.0
Approach		1081	2.9	0.966	64.8	LOS E	32.0	229.4	0.99	0.97	22.8
East: Kalandar St (E)											
4	L	89	0.0	0.968	87.7	LOS F	35.3	248.4	1.00	1.15	13.4
5	T	211	0.6	0.968	78.7	LOS F	35.3	248.4	1.00	1.15	12.6
6	R	543	1.0	0.968	95.1	LOS F	35.3	248.4	1.00	1.09	12.5
Approach		843	0.8	0.968	90.3	LOS F	35.3	248.4	1.00	1.12	12.6
North: Princes Hwy (N)											
7	L	496	0.3	0.507	9.3	LOS A	2.0	14.2	0.08	0.65	53.1
8	T	1386	1.0	0.961	65.3	LOS E	55.2	389.4	1.00	1.11	22.6
9	R	91	11.6	0.482	42.7	LOS D	3.4	26.4	0.98	0.77	29.4
Approach		1973	1.3	0.961	50.2	LOS D	55.2	389.4	0.77	0.98	26.6
West: Kalandar St (W)											
10	L	66	2.0	0.771	70.3	LOS E	10.8	76.1	0.96	0.96	18.0
11	T	168	0.0	0.771	61.7	LOS E	15.0	105.2	0.98	0.92	17.1
12	R	173	0.8	0.771	71.6	LOS F	15.0	105.2	1.00	0.88	17.5
Approach		407	0.6	0.771	67.3	LOS E	15.0	105.2	0.98	0.91	17.4
All Vehicles		4304	1.5	0.968	63.3	LOS E	55.2	389.4	0.89	1.00	21.5

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	53.3	LOS E	0.2	0.2	0.89	0.89
P3	Across E approach	53	32.7	LOS D	0.1	0.1	0.70	0.70
P5	Across N approach	53	61.6	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		159	49.2	LOS E			0.85	0.85

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 8. Coonamia-Currarong-Forest (Ex Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Coonamia Road- Currarong Road-Forest Road
Friday AM (0800-0900) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Currarong Road											
5	T	13	0.0	0.041	0.9	LOS A	0.2	1.2	0.31	0.00	79.6
6	R	40	0.0	0.041	13.3	LOS A	0.2	1.2	0.31	0.77	68.3
Approach		53	0.0	0.041	10.3	NA	0.2	1.2	0.31	0.59	70.8
North: Coonamia Road											
7	L	7	0.0	0.012	13.1	LOS A	0.0	0.2	0.22	0.68	67.6
9	R	67	1.8	0.096	14.1	LOS A	0.4	2.7	0.35	0.73	66.8
Approach		75	1.6	0.096	14.0	LOS A	0.4	2.7	0.34	0.73	66.9
West: Forest Road											
10	L	197	1.8	0.117	12.7	LOS A	0.0	0.0	0.00	0.79	69.1
11	T	19	6.3	0.117	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		216	2.2	0.117	11.6	NA	0.0	0.0	0.00	0.72	71.1
All Vehicles		343	1.7	0.117	11.9	NA	0.4	2.7	0.12	0.70	70.1

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:32 AM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 8. Coonamia-Currarong-Forest (Ex Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Coonamia Road- Currarong Road-Forest Road
Friday PM (1600-1700) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Currarong Road											
5	T	15	0.0	0.020	0.6	LOS A	0.1	0.7	0.27	0.00	82.9
6	R	15	0.0	0.020	13.1	LOS A	0.1	0.7	0.27	0.87	69.4
Approach		29	0.0	0.020	6.8	NA	0.1	0.7	0.27	0.43	75.7
North: Coonamia Road											
7	L	37	0.0	0.058	13.0	LOS A	0.1	0.8	0.20	0.69	67.7
9	R	185	4.0	0.249	14.2	LOS A	1.1	8.3	0.35	0.73	67.1
Approach		222	3.3	0.249	14.0	LOS A	1.1	8.3	0.33	0.73	67.2
West: Forest Road											
10	L	137	5.4	0.094	13.0	LOS A	0.0	0.0	0.00	0.84	69.1
11	T	34	4.3	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		171	5.2	0.094	10.5	NA	0.0	0.0	0.00	0.67	73.7
All Vehicles		422	3.9	0.249	12.1	NA	1.1	8.3	0.19	0.68	70.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:32 AM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 8. Coonamia-Currarong-Forest (Ex Sat-120th HH)

13S1231000 - West Culburra Subdivision
Coonamia Road- Currarong Road-Forest Road
Saturday - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Currarong Road											
5	T	11	0.0	0.027	0.6	LOS A	0.1	0.8	0.27	0.00	82.0
6	R	26	0.0	0.027	13.1	LOS A	0.1	0.8	0.27	0.78	68.6
Approach		37	0.0	0.027	9.5	NA	0.1	0.8	0.27	0.56	72.0
North: Coonamia Road											
7	L	29	0.0	0.046	13.0	LOS A	0.1	0.7	0.19	0.69	67.8
9	R	151	1.8	0.202	13.9	LOS A	0.9	6.3	0.34	0.73	67.2
Approach		180	1.5	0.202	13.7	LOS A	0.9	6.3	0.31	0.72	67.3
West: Forest Road											
10	L	152	0.9	0.092	12.6	LOS A	0.0	0.0	0.00	0.80	69.1
11	T	19	0.0	0.092	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		171	0.8	0.092	11.2	NA	0.0	0.0	0.00	0.71	71.6
All Vehicles		387	1.0	0.202	12.2	NA	0.9	6.3	0.17	0.70	69.6

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:32 AM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 9. Kalandar St-Kinghorne St
(Ex Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Kalandar Street-Kinghorne Street-Albatross Road
Friday AM (0800-0900) - Equivalent 120th HH
Existing
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kinghorne Street											
1	L	31	7.7	0.711	19.1	LOS B	9.6	69.3	0.97	1.10	40.2
2	T	483	3.4	0.711	17.7	LOS B	9.6	69.3	0.97	1.09	40.3
3	R	59	0.0	0.711	22.5	LOS B	9.6	69.3	0.97	1.10	38.4
Approach		573	3.3	0.711	18.2	LOS B	9.6	69.3	0.97	1.09	40.1
East: Kalandar Street											
4	L	315	7.5	0.422	7.9	LOS A	2.7	19.5	0.45	0.59	45.2
6	R	156	2.3	0.422	12.6	LOS A	2.7	19.5	0.45	0.78	42.0
Approach		471	5.8	0.422	9.4	LOS A	2.7	19.5	0.45	0.65	44.0
North: Kinghorne Street											
7	L	127	3.7	0.327	8.8	LOS A	2.2	15.9	0.57	0.66	47.2
8	T	31	0.0	0.327	7.8	LOS A	2.2	15.9	0.57	0.62	47.2
9	R	176	3.4	0.327	11.9	LOS A	2.2	15.9	0.57	0.74	45.5
Approach		334	3.2	0.327	10.4	LOS A	2.2	15.9	0.57	0.70	46.2
South West: Albatross Road											
30	L	261	4.5	0.729	19.6	LOS B	9.3	68.4	1.00	1.18	38.6
32	R	217	8.1	0.729	23.8	LOS B	9.3	68.4	1.00	1.18	37.3
Approach		478	6.2	0.729	21.5	LOS B	9.3	68.4	1.00	1.18	38.0
All Vehicles		1855	4.6	0.729	15.4	LOS B	9.6	69.3	0.77	0.93	41.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:33 AM
SIDRA INTERSECTION 5.1.13.2093
Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West Culburra Subdivision.sip
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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 9. Kalandar St-Kinghorne St
(Ex Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Kalandar Street-Kinghorne Street-Albatross Road
Friday AM (1600-1700) - Equivalent 120th HH
Existing
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kinghorne Street											
1	L	34	0.0	0.576	15.2	LOS B	5.6	39.4	0.90	0.99	42.9
2	T	326	0.0	0.576	13.9	LOS A	5.6	39.4	0.90	0.97	43.1
3	R	77	0.0	0.576	18.8	LOS B	5.6	39.4	0.90	1.01	40.8
Approach		437	0.0	0.576	14.9	LOS B	5.6	39.4	0.90	0.98	42.6
East: Kalandar Street											
4	L	278	0.0	0.436	8.9	LOS A	2.8	19.8	0.61	0.71	44.0
6	R	115	0.0	0.436	13.8	LOS A	2.8	19.8	0.61	0.84	40.9
Approach		393	0.0	0.436	10.3	LOS A	2.8	19.8	0.61	0.74	43.0
North: Kinghorne Street											
7	L	315	0.0	0.766	15.0	LOS B	10.8	75.8	0.96	1.01	42.2
8	T	80	0.0	0.766	14.2	LOS A	10.8	75.8	0.96	1.01	42.3
9	R	304	0.0	0.766	18.2	LOS B	10.8	75.8	0.96	1.02	40.7
Approach		699	0.0	0.766	16.3	LOS B	10.8	75.8	0.96	1.02	41.6
South West: Albatross Road											
30	L	300	0.0	0.774	16.7	LOS B	11.2	78.4	1.00	1.12	40.4
32	R	341	0.0	0.774	20.9	LOS B	11.2	78.4	1.00	1.12	39.0
Approach		641	0.0	0.774	18.9	LOS B	11.2	78.4	1.00	1.12	39.6
All Vehicles		2169	0.0	0.774	15.7	LOS B	11.2	78.4	0.90	0.99	41.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:33 AM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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INTERSECTION

MOVEMENT SUMMARY

Site: 9. Kalandar St-Kinghorne St
(Ex Sat-120th HH)

13S1231000 - West Culburra Subdivision
Kalandar Street-Kinghorne Street-Albatross Road
Saturday - Equivalent 120th HH
Existing
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kinghorne Street											
1	L	21	12.5	0.225	10.5	LOS A	1.4	9.9	0.59	0.74	47.5
2	T	162	1.6	0.225	8.8	LOS A	1.4	9.9	0.59	0.66	47.5
3	R	29	0.0	0.225	13.6	LOS A	1.4	9.9	0.59	0.81	44.7
Approach		213	2.5	0.225	9.6	LOS A	1.4	9.9	0.59	0.69	47.1
East: Kalandar Street											
4	L	199	6.0	0.262	7.5	LOS A	1.4	10.1	0.37	0.56	45.8
6	R	96	1.4	0.262	12.2	LOS A	1.4	10.1	0.37	0.77	42.3
Approach		295	4.5	0.262	9.0	LOS A	1.4	10.1	0.37	0.63	44.5
North: Kinghorne Street											
7	L	152	0.8	0.310	8.5	LOS A	2.0	14.0	0.52	0.64	47.4
8	T	21	0.0	0.310	7.7	LOS A	2.0	14.0	0.52	0.60	47.5
9	R	157	2.6	0.310	11.8	LOS A	2.0	14.0	0.52	0.73	45.6
Approach		329	1.6	0.310	10.0	LOS A	2.0	14.0	0.52	0.68	46.6
South West: Albatross Road											
30	L	161	1.4	0.373	8.0	LOS A	2.5	18.0	0.56	0.62	47.4
32	R	234	1.7	0.373	12.2	LOS A	2.5	18.0	0.56	0.75	45.6
Approach		395	1.6	0.373	10.5	LOS A	2.5	18.0	0.56	0.70	46.3
All Vehicles		1232	2.4	0.373	9.8	LOS A	2.5	18.0	0.51	0.68	46.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 9:54:33 AM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 10. Princes Hwy-Forest (Ex
Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Princes Highway-Forest Road
Friday AM (0800-0900) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
2	T	1413	3.1	0.739	0.4	X	X	X	X	0.00	98.7
3	R	27	13.0	0.043	17.2	LOS B	0.2	1.2	0.56	0.81	56.9
Approach		1440	3.3	0.739	0.7	NA	0.2	1.2	0.01	0.02	97.7
South East: Forest Road (Median RT)											
23	R	102	2.3	0.056	8.1	LOS A	0.0	0.0	0.00	0.61	53.3
Approach		102	2.3	0.056	8.1	LOS A	0.0	0.0	0.00	0.61	53.3
East: Forest Road											
4	L	36	3.3	0.078	13.1	LOS A	0.2	1.5	0.53	0.80	51.4
6	R	102	2.3	0.213	14.6	LOS B	0.7	5.3	0.59	0.88	49.9
Approach		138	2.6	0.213	14.2	LOS A	0.7	5.3	0.58	0.86	50.3
North: Princes Hwy (N)											
7	L	57	8.3	0.032	13.0	LOS A	0.0	0.0	0.00	0.76	63.3
8	T	521	16.0	0.295	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		578	15.2	0.295	1.3	NA	0.0	0.0	0.00	0.07	95.8
All Vehicles		2258	6.3	0.739	2.0	NA	0.7	5.3	0.04	0.11	90.1

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 1:37:25 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 10. Princes Hwy-Forest (Ex
Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Princes Highway-Forest Road
Friday PM (1600-1700) - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
2	T	640	6.0	0.341	0.1	X	X	X	X	0.00	99.8
3	R	51	2.9	0.357	44.3	LOS D	1.2	8.5	0.93	1.01	33.0
Approach		691	5.8	0.357	3.3	NA	1.2	8.5	0.07	0.07	89.5
South East: Forest Road (Median RT)											
23	R	66	2.2	0.036	8.1	LOS A	0.0	0.0	0.00	0.61	53.3
Approach		66	2.2	0.036	8.1	LOS A	0.0	0.0	0.00	0.61	53.3
East: Forest Road											
4	L	49	0.0	0.448	51.2	LOS D	1.5	10.2	0.95	1.04	30.2
6	R	66	2.2	0.654	66.4	LOS E	2.4	16.9	0.96	1.10	26.0
Approach		116	1.3	0.654	59.9	LOS E	2.4	16.9	0.96	1.07	27.6
North: Princes Hwy (N)											
7	L	148	2.0	0.081	12.7	LOS A	0.0	0.0	0.00	0.75	63.3
8	T	1475	2.0	0.766	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		1623	2.0	0.766	1.2	NA	0.0	0.0	0.00	0.07	96.1
All Vehicles		2496	3.0	0.766	4.7	NA	2.4	16.9	0.06	0.13	83.7

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 1:38:42 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 10. Princes Hwy-Forest (Ex Sat-120th HH)

13S1231000 - West Culburra Subdivision
Princes Highway-Forest Road
Saturday - Equivalent 120th HH
Existing
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
2	T	812	1.7	0.421	0.1	X	X	X	X	0.00	99.7
3	R	40	0.0	0.142	25.1	LOS B	0.5	3.3	0.83	0.96	46.4
Approach		852	1.6	0.421	1.3	NA	0.5	3.3	0.04	0.04	95.7
South East: Forest Road (Median RT)											
23	R	88	0.0	0.048	8.0	LOS A	0.0	0.0	0.00	0.61	53.3
Approach		88	0.0	0.048	8.0	LOS A	0.0	0.0	0.00	0.61	53.3
East: Forest Road											
4	L	45	0.0	0.202	25.0	LOS B	0.7	4.6	0.85	0.96	42.0
6	R	88	3.0	0.470	33.6	LOS C	1.8	12.6	0.89	1.05	37.3
Approach		134	2.0	0.470	30.7	LOS C	1.8	12.6	0.88	1.02	38.8
North: Princes Hwy (N)											
7	L	125	0.0	0.067	12.5	LOS A	0.0	0.0	0.00	0.75	63.3
8	T	1153	1.7	0.598	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		1278	1.6	0.598	1.2	NA	0.0	0.0	0.00	0.07	95.8
All Vehicles		2352	1.5	0.598	3.2	NA	1.8	12.6	0.06	0.14	87.0

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 1:39:22 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 11. Princes Hwy-Moss (Ex Fri AM-120th HH)

13S1231000 - West Culburra Subdivision

Princes Highway-Moss Street

Friday AM (0800-0900) - Equivalent 120th HH

Existing

Signals - Fixed Time Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
1	L	3	0.0	0.947	91.5	LOS F	22.5	167.8	1.00	1.06	17.9
2	T	904	7.6	1.025	105.5	LOS F	29.3	218.8	1.00	1.16	16.3
3	R	158	3.7	0.906	88.8	LOS F	12.0	86.5	1.00	0.97	17.5
Approach		1065	7.0	1.025	103.0	LOS F	29.3	218.8	1.00	1.13	16.4
East: Moss St (E)											
4	L	34	3.4	0.377	50.0	LOS D	3.9	28.5	0.82	0.77	24.8
5	T	227	4.1	1.011	97.9	LOS F	42.5	308.5	0.97	1.13	14.4
6	R	257	4.6	1.011	118.6	LOS F	42.5	308.5	1.00	1.25	14.3
Approach		518	4.3	1.011	105.0	LOS F	42.5	308.5	0.97	1.17	14.8
North: Princes Hwy (N)											
7	L	187	5.0	1.000 ³	55.0	LOS D	29.0	213.5	0.98	0.93	25.5
8	T	1450	6.8	1.005	85.3	LOS F	52.3	387.5	1.00	1.16	18.9
9	R	356	3.7	1.022	99.5	LOS F	27.1	195.7	1.00	1.10	16.0
Approach		1994	6.1	1.022	85.0	LOS F	52.3	387.5	0.99	1.13	18.7
West: Moss St (W)											
10	L	126	10.3	0.257	21.6	LOS B	3.1	23.3	0.66	0.75	25.0
11	T	131	3.6	0.526	54.0	LOS D	10.8	79.6	0.95	0.79	10.1
12	R	49	11.9	0.526	61.8	LOS E	10.8	79.6	0.95	0.82	12.7
Approach		306	7.7	0.526	41.9	LOS C	10.8	79.6	0.83	0.78	14.6
All Vehicles		3883	6.2	1.025	89.2	LOS F	52.3	387.5	0.98	1.11	17.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

³ x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	55.1	LOS E	0.2	0.2	0.90	0.90
P3	Across E approach	53	40.1	LOS E	0.2	0.2	0.77	0.77
P5	Across N approach	53	61.6	LOS F	0.2	0.2	0.96	0.96
P7	Across W approach	53	56.0	LOS E	0.2	0.2	0.91	0.91
All Pedestrians		212	53.2	LOS E			0.89	0.89

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 11. Princes Hwy-Moss (Ex Fri PM-120th HH)

13S1231000 - West Culburra Subdivision

Princes Highway-Moss Street

Friday PM (1600-1700) - Equivalent 120th HH

Existing

Signals - Fixed Time Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
1	L	11	0.0	1.144	205.9	LOS F	42.0	301.3	1.00	1.42	9.0
2	T	1117	3.1	1.237	260.8	LOS F	58.8	422.6	1.00	1.63	7.8
3	R	115	0.0	0.927	93.6	LOS F	8.9	62.2	1.00	0.99	16.8
Approach		1242	2.8	1.237	244.9	LOS F	58.8	422.6	1.00	1.57	8.2
East: Moss St (E)											
4	L	34	4.3	0.369	56.2	LOS D	3.9	28.1	0.87	0.77	23.2
5	T	149	0.0	0.991	88.2	LOS F	31.0	219.2	0.97	1.06	15.4
6	R	232	1.9	0.991	109.3	LOS F	31.0	219.2	1.00	1.20	15.1
Approach		415	1.4	0.991	97.4	LOS F	31.0	219.2	0.98	1.11	15.7
North: Princes Hwy (N)											
7	L	199	3.7	1.000 ³	62.5	LOS E	29.6	213.5	1.00	0.94	23.3
8	T	1465	3.5	1.166	190.1	LOS F	80.2	578.3	1.00	1.56	10.2
9	R	262	0.7	1.128	179.4	LOS F	27.7	195.1	1.00	1.26	9.9
Approach		1926	2.9	1.166	175.4	LOS F	80.2	578.3	1.00	1.46	10.7
West: Moss St (W)											
10	L	169	1.2	0.330	19.1	LOS B	3.6	25.2	0.61	0.75	26.6
11	T	245	0.0	1.237	288.0	LOS F	113.0	795.9	1.00	1.79	2.4
12	R	135	1.1	1.237	295.5	LOS F	113.0	795.9	1.00	1.79	3.1
Approach		886	0.8	1.237	240.2	LOS F	113.0	795.9	0.88	1.47	3.8
All Vehicles		4469	2.3	1.237	199.9	LOS F	113.0	795.9	0.98	1.35	9.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

³ x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	61.6	LOS F	0.2	0.2	0.96	0.96
P3	Across E approach	53	44.0	LOS E	0.2	0.2	0.81	0.81
P5	Across N approach	53	47.3	LOS E	0.2	0.2	0.84	0.84
P7	Across W approach	53	56.0	LOS E	0.2	0.2	0.91	0.91
All Pedestrians		212	52.2	LOS E			0.88	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 11. Princes Hwy-Moss (Ex Sat-120th HH)

13S1231000 - West Culburra Subdivision

Princes Highway-Moss Street

Saturday - Equivalent 120th HH

Existing

Signals - Fixed Time Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
1	L	12	0.0	0.820	66.0	LOS E	23.8	170.1	0.98	0.93	23.0
2	T	1167	2.7	0.887	60.8	LOS E	28.0	200.4	0.99	0.96	23.7
3	R	104	0.0	0.541	72.5	LOS F	6.7	47.1	1.00	0.79	20.2
Approach		1283	2.4	0.887	61.8	LOS E	28.0	200.4	0.99	0.94	23.4
East: Moss St (E)											
4	L	32	0.0	0.228	52.5	LOS D	2.4	17.0	0.83	0.75	24.0
5	T	80	0.0	0.612	53.2	LOS D	13.0	91.7	0.95	0.78	20.8
6	R	146	1.8	0.612	62.5	LOS E	13.0	91.7	0.97	0.83	21.8
Approach		258	1.0	0.612	58.4	LOS E	13.0	91.7	0.95	0.80	21.8
North: Princes Hwy (N)											
7	L	115	2.3	0.757	48.5	LOS D	20.7	147.2	0.82	0.96	27.7
8	T	1303	1.5	0.757	40.2	LOS C	27.2	192.6	0.88	0.78	30.1
9	R	258	1.0	0.858	49.2	LOS D	12.0	85.0	1.00	0.91	26.1
Approach		1676	1.5	0.858	42.1	LOS C	27.2	192.6	0.89	0.81	29.3
West: Moss St (W)											
10	L	311	0.0	0.590	23.7	LOS B	8.0	55.9	0.77	0.80	23.5
11	T	154	0.0	0.700	55.8	LOS D	16.1	113.0	0.99	0.84	9.8
12	R	103	1.3	0.700	63.2	LOS E	16.1	113.0	0.99	0.85	12.3
Approach		567	0.2	0.700	39.6	LOS C	16.1	113.0	0.87	0.82	15.8
All Vehicles		3784	1.6	0.887	49.5	LOS D	28.0	200.4	0.93	0.86	24.9

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	61.6	LOS F	0.2	0.2	0.96	0.96
P3	Across E approach	53	36.3	LOS D	0.1	0.1	0.73	0.73
P5	Across N approach	53	60.7	LOS F	0.2	0.2	0.95	0.95
P7	Across W approach	53	47.3	LOS E	0.2	0.2	0.84	0.84
All Pedestrians		212	51.5	LOS E			0.87	0.87

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1. Culburra -Coonamia
(Future Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Culburra Road-Coonamia Road
Friday AM (0800-0900) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonamia Rd											
1	L	165	0.0	0.234	14.4	LOS A	0.8	5.6	0.46	0.79	61.2
3	R	85	6.5	0.175	17.6	LOS B	0.7	5.1	0.55	0.86	57.3
Approach		251	2.2	0.234	15.5	LOS B	0.8	5.6	0.49	0.81	59.8
East: Culburra Rd (E)											
4	L	58	2.9	0.032	11.5	LOS A	0.0	0.0	0.00	0.74	63.3
5	T	328	3.7	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		386	3.6	0.172	1.7	NA	0.0	0.0	0.00	0.11	76.6
West: Culburra Rd (W)											
11	T	123	12.3	0.068	0.0	X	X	X	X	0.00	80.0
12	R	33	3.6	0.033	13.1	LOS A	0.1	0.9	0.42	0.72	61.2
Approach		156	10.5	0.068	2.8	NA	0.1	0.9	0.09	0.15	74.7
All Vehicles		793	4.5	0.234	6.3	NA	0.8	5.6	0.17	0.34	70.2

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 1:59:08 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 1. Culburra -Coonamia
(Future Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Culburra Road-Coonamia Road
Friday PM (1600-1700) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonamia Rd											
1	L	77	7.7	0.107	13.7	LOS A	0.3	2.2	0.30	0.71	62.7
3	R	99	2.0	0.181	16.3	LOS B	0.7	5.2	0.52	0.82	58.6
Approach		176	4.5	0.181	15.2	LOS B	0.7	5.2	0.42	0.77	60.4
East: Culburra Rd (E)											
4	L	89	2.0	0.049	11.5	LOS A	0.0	0.0	0.00	0.74	63.3
5	T	139	2.6	0.072	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		228	2.4	0.072	4.5	NA	0.0	0.0	0.00	0.29	72.0
West: Culburra Rd (W)											
11	T	371	1.1	0.191	0.0	X	X	X	X	0.00	79.9
12	R	152	3.9	0.131	12.5	LOS A	0.6	4.0	0.34	0.71	61.6
Approach		522	1.9	0.191	3.6	NA	0.6	4.0	0.10	0.21	73.1
All Vehicles		926	2.5	0.191	6.0	NA	0.7	5.2	0.14	0.33	70.1

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 2:00:53 PM

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MOVEMENT SUMMARY

Site: 1. Culburra -Coonamia
(Future SAT-120th HH)

13S1231000 - West Culburra Subdivision
Culburra Road-Coonamia Road
Saturday - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Coonamia Rd											
1	L	104	1.3	0.144	13.8	LOS A	0.4	3.1	0.38	0.74	62.2
3	R	89	0.0	0.177	16.9	LOS B	0.7	4.9	0.54	0.85	57.6
Approach		194	0.7	0.177	15.2	LOS B	0.7	4.9	0.45	0.79	60.0
East: Culburra Rd (E)											
4	L	106	0.0	0.057	11.3	LOS A	0.0	0.0	0.00	0.73	63.3
5	T	225	0.8	0.116	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		332	0.5	0.116	3.6	NA	0.0	0.0	0.00	0.24	73.3
West: Culburra Rd (W)											
11	T	227	0.8	0.117	0.0	X	X	X	X	0.00	80.0
12	R	104	2.5	0.100	12.9	LOS A	0.4	2.9	0.41	0.73	61.2
Approach		332	1.3	0.117	4.1	NA	0.4	2.9	0.13	0.23	72.4
All Vehicles		857	0.9	0.177	6.4	NA	0.7	4.9	0.15	0.36	69.6

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 2:09:55 PM

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MOVEMENT SUMMARY

Site: 2. Culburra-Mayfield (Future
Fri AM-120th HH)

Culburra Road-Mayfield Road
Friday AM (0800-0900) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Culburra Road (S)											
1	L	2	0.0	0.251	10.1	LOS A	0.0	0.0	0.00	1.73	57.1
2	T	486	0.0	0.251	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		488	0.0	0.251	0.0	NA	0.0	0.0	0.00	0.01	79.9
North: Culburra Road (N)											
8	T	154	0.0	0.080	2.7	LOS A	0.7	5.0	0.58	0.00	63.0
9	R	1	0.0	0.080	12.8	LOS A	0.7	5.0	0.58	1.31	60.3
Approach		155	0.0	0.080	2.7	NA	0.7	5.0	0.58	0.01	63.0
West: Mayfield Road											
10	L	1	0.0	0.008	16.3	LOS B	0.0	0.2	0.61	0.70	44.3
12	R	2	0.0	0.008	16.3	LOS B	0.0	0.2	0.61	0.79	44.5
Approach		3	0.0	0.008	16.3	LOS B	0.0	0.2	0.61	0.76	44.4
All Vehicles		646	0.0	0.251	0.8	NA	0.7	5.0	0.14	0.01	74.8

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 2:07:18 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 2. Culburra-Mayfield (Future
Fri PM-120th HH)

Culburra Road-Mayfield Road
Friday PM (1600-1700) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Culburra Road (S)											
1	L	1	0.0	0.115	10.1	LOS A	0.0	0.0	0.00	1.73	57.1
2	T	217	4.6	0.115	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		218	4.6	0.115	0.0	NA	0.0	0.0	0.00	0.01	79.9
North: Culburra Road (N)											
8	T	502	1.8	0.261	1.2	LOS A	2.1	14.9	0.44	0.00	66.4
9	R	1	0.0	0.261	11.4	LOS A	2.1	14.9	0.44	1.41	60.4
Approach		503	1.8	0.261	1.2	NA	2.1	14.9	0.44	0.00	66.4
West: Mayfield Road											
10	L	1	0.0	0.030	56.4	LOS D	0.1	0.9	0.80	0.60	25.6
12	R	1	100.0	0.030	61.8	LOS E	0.1	0.9	0.80	0.95	28.1
Approach		2	50.0	0.030	59.1	LOS E	0.1	0.9	0.80	0.78	27.0
All Vehicles		723	2.8	0.261	1.0	NA	2.1	14.9	0.31	0.01	69.6

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 2:11:44 PM

SIDRA INTERSECTION 5.1.13.2093

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MOVEMENT SUMMARY

Site: 2. Culburra-Mayfield
(Future-120th HH)

Culburra Road-Mayfield Road
Saturday - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Culburra Road (S)											
1	L	3	0.0	0.173	10.1	LOS A	0.0	0.0	0.00	1.72	57.1
2	T	333	0.5	0.173	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		336	0.5	0.173	0.1	NA	0.0	0.0	0.00	0.02	79.7
North: Culburra Road (N)											
8	T	309	0.5	0.160	1.8	LOS A	1.3	9.2	0.51	0.00	64.7
9	R	1	0.0	0.160	11.9	LOS A	1.3	9.2	0.51	1.36	60.9
Approach		311	0.5	0.160	1.8	NA	1.3	9.2	0.51	0.00	64.6
West: Mayfield Road											
10	L	1	0.0	0.012	16.6	LOS B	0.0	0.3	0.59	0.65	44.0
12	R	3	0.0	0.012	16.6	LOS B	0.0	0.3	0.59	0.80	44.2
Approach		4	0.0	0.012	16.6	LOS B	0.0	0.3	0.59	0.76	44.1
All Vehicles		651	0.5	0.173	1.0	NA	1.3	9.2	0.25	0.02	71.4

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 2:15:42 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 3. Greenwell Pt-Pyree (Future
Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Pyree Lane
Friday AM (0800-0900) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Pyreen Ln											
1	L	479	1.9	0.261	11.2	X	X	X	X	0.69	58.8
3	R	14	8.3	0.020	13.0	LOS A	0.1	0.6	0.34	0.69	56.9
Approach		493	2.1	0.261	11.2	LOS A	0.1	0.6	0.01	0.69	58.8
East: Greenwell Pt Rd (E)											
4	L	20	66.7	0.094	14.9	LOS B	0.0	0.0	0.00	1.42	58.9
5	T	147	5.6	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		167	12.9	0.094	1.8	NA	0.0	0.0	0.00	0.17	76.8
West: Greenwell Pt Rd (W)											
11	T	63	5.6	0.034	0.0	X	X	X	X	0.00	80.0
12	R	138	7.4	0.306	18.3	LOS B	1.4	10.6	0.61	0.92	50.5
Approach		201	6.9	0.306	12.5	LOS A	1.4	10.6	0.42	0.63	57.2
All Vehicles		861	5.3	0.306	9.7	NA	1.4	10.6	0.10	0.57	61.2

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 2:21:29 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 3. Greenwell Pt-Pyree (Future
Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Pyree Lane
Friday PM (1600-1700) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Pyreen Ln											
1	L	179	5.8	0.100	11.3	X	X	X	X	0.69	58.9
3	R	32	0.0	0.039	11.5	LOS A	0.2	1.1	0.23	0.68	58.0
Approach		211	4.9	0.100	11.4	LOS A	0.2	1.1	0.03	0.69	58.7
East: Greenwell Pt Rd (E)											
4	L	26	0.0	0.050	10.9	LOS A	0.0	0.0	0.00	1.07	58.9
5	T	68	4.3	0.050	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		95	3.1	0.050	3.0	NA	0.0	0.0	0.00	0.30	72.9
West: Greenwell Pt Rd (W)											
11	T	173	1.7	0.090	0.0	X	X	X	X	0.00	80.0
12	R	481	1.5	0.701	18.6	LOS B	9.6	68.2	0.69	0.93	49.8
Approach		654	1.6	0.701	13.7	LOS A	9.6	68.2	0.51	0.68	55.4
All Vehicles		959	2.5	0.701	12.1	NA	9.6	68.2	0.36	0.65	57.5

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 2:23:41 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 3. Greenwell Pt-Pyree (Future Sat-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Pyree Lane
Friday AM (0800-0900) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Pyreen Ln											
1	L	274	1.2	0.149	11.1	X	X	X	X	0.69	58.9
3	R	55	0.0	0.080	12.7	LOS A	0.3	2.2	0.37	0.72	56.5
Approach		328	1.0	0.149	11.4	LOS A	0.3	2.2	0.06	0.69	58.5
East: Greenwell Pt Rd (E)											
4	L	169	2.7	0.146	11.1	LOS A	0.0	0.0	0.00	0.87	58.9
5	T	100	3.9	0.146	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		269	3.2	0.146	7.0	NA	0.0	0.0	0.00	0.55	65.4
West: Greenwell Pt Rd (W)											
11	T	227	1.2	0.117	0.0	X	X	X	X	0.00	80.0
12	R	146	1.2	0.307	17.4	LOS B	1.4	10.2	0.60	0.92	51.0
Approach		374	1.2	0.307	6.8	LOS A	1.4	10.2	0.24	0.36	65.6
All Vehicles		972	1.7	0.307	8.4	NA	1.4	10.2	0.11	0.52	62.9

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 4. Greenwell Pt-Jindy Andy
(Future Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Jindy Andy Lane
Friday AM (0800-0900) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
North East: Greenwell Point Road (NE)											
25	T	442	4.8	0.234	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
26	R	191	0.7	0.283	10.8	LOS A	1.3	9.1	0.44	0.72	46.2
Approach		633	3.6	0.283	3.2	NA	1.3	9.1	0.13	0.22	66.7
North West: Jindy Andy Lane											
27	L	45	3.0	0.045	11.9	LOS A	0.2	1.2	0.28	0.68	57.3
29	R	12	30.0	0.084	37.7	LOS C	0.3	2.4	0.82	0.96	36.9
Approach		57	8.5	0.084	17.1	LOS B	0.3	2.4	0.39	0.74	51.5
South West: Greenwell Point Road (SW)											
30	L	8	42.9	0.091	13.5	LOS A	0.0	0.0	0.00	1.47	58.9
31	T	157	8.7	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		165	10.4	0.091	0.7	NA	0.0	0.0	0.00	0.07	78.6
All Vehicles		855	5.2	0.283	3.7	NA	1.3	9.1	0.12	0.22	67.4

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 4. Greenwell Pt-Jindy Andy
(Future Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Jindy Andy Lane
Friday AM (1600-1700) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
North East: Greenwell Point Road (NE)											
25	T	193	5.9	0.103	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
26	R	67	2.4	0.192	17.1	LOS B	0.7	5.1	0.66	0.89	40.8
Approach		260	5.0	0.192	4.4	NA	0.7	5.1	0.17	0.23	65.3
North West: Jindy Andy Lane											
27	L	185	1.9	0.273	14.8	LOS B	1.1	7.9	0.55	0.89	54.0
29	R	3	0.0	0.011	21.5	LOS B	0.0	0.3	0.70	0.83	46.9
Approach		188	1.8	0.273	14.9	LOS B	1.1	7.9	0.55	0.88	53.9
South West: Greenwell Point Road (SW)											
30	L	14	11.1	0.249	11.6	LOS A	0.0	0.0	0.00	1.37	58.9
31	T	464	1.9	0.249	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		478	2.1	0.249	0.3	NA	0.0	0.0	0.00	0.04	79.2
All Vehicles		926	2.9	0.273	4.4	NA	1.1	7.9	0.16	0.26	68.7

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 4. Greenwell Pt-Jindy Andy
(Future Sat-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Jindy Andy Lane
Saturday - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
North East: Greenwell Point Road (NE)											
25	T	287	3.1	0.150	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
26	R	109	1.4	0.218	13.3	LOS A	0.9	6.2	0.56	0.83	43.9
Approach		397	2.6	0.218	3.7	NA	0.9	6.2	0.15	0.23	66.4
North West: Jindy Andy Lane											
27	L	113	0.0	0.134	12.8	LOS A	0.5	3.5	0.42	0.75	56.3
29	R	9	0.0	0.033	21.3	LOS B	0.1	0.8	0.69	0.89	47.1
Approach		122	0.0	0.134	13.4	LOS A	0.5	3.5	0.44	0.76	55.5
South West: Greenwell Point Road (SW)											
30	L	5	0.0	0.166	10.9	LOS A	0.0	0.0	0.00	1.33	58.9
31	T	313	3.2	0.166	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		318	3.1	0.166	0.2	NA	0.0	0.0	0.00	0.02	79.5
All Vehicles		837	2.4	0.218	3.8	NA	0.9	6.2	0.14	0.23	68.9

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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MOVEMENT SUMMARY

Site: 5. Greenwell Pt-Mayfield
(Future Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Mayfield Road
Friday AM (0800-0900) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Mayfield Road											
21	L	12	0.0	0.020	12.3	LOS A	0.1	0.5	0.49	0.72	47.9
23	R	1	0.0	0.020	12.3	LOS A	0.1	0.5	0.49	0.81	48.0
Approach		13	0.0	0.020	12.3	LOS A	0.1	0.5	0.49	0.73	47.9
North East: Greenwell Point Road (NE)											
24	L	3	0.0	0.237	10.1	LOS A	0.0	0.0	0.00	1.72	57.1
25	T	448	3.8	0.237	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		452	3.7	0.237	0.1	NA	0.0	0.0	0.00	0.01	79.8
South West: Greenwell Point Road (SW)											
31	T	162	9.2	0.103	6.4	LOS A	1.5	11.3	0.75	0.00	59.0
32	R	6	0.0	0.103	16.6	LOS B	1.5	11.3	0.75	1.17	56.2
Approach		168	8.8	0.103	6.8	NA	1.5	11.3	0.75	0.04	58.9
All Vehicles		633	5.0	0.237	2.1	NA	1.5	11.3	0.21	0.03	72.1

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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MOVEMENT SUMMARY

Site: 5. Greenwell Pt-Mayfield
(Future Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Mayfield Road
Friday PM (1600-1700) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Mayfield Road											
21	L	6	0.0	0.042	18.8	LOS B	0.1	1.1	0.55	0.63	42.4
23	R	6	25.0	0.042	20.2	LOS B	0.1	1.1	0.55	0.88	42.6
Approach		13	12.5	0.042	19.5	LOS B	0.1	1.1	0.55	0.76	42.5
North East: Greenwell Point Road (NE)											
24	L	1	0.0	0.106	10.1	LOS A	0.0	0.0	0.00	1.73	57.1
25	T	199	5.7	0.106	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		200	5.7	0.106	0.1	NA	0.0	0.0	0.00	0.01	79.9
South West: Greenwell Point Road (SW)											
31	T	478	1.4	0.270	2.8	LOS A	3.6	25.3	0.62	0.00	61.8
32	R	15	0.0	0.270	13.0	LOS A	3.6	25.3	0.62	1.19	60.3
Approach		493	1.4	0.270	3.2	NA	3.6	25.3	0.62	0.04	61.8
All Vehicles		705	2.8	0.270	2.6	NA	3.6	25.3	0.44	0.04	65.5

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 5. Greenwell Pt-Mayfield
(Future Sat-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Mayfield Road
Saturday - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South East: Mayfield Road											
21	L	8	0.0	0.013	11.5	LOS A	0.0	0.3	0.41	0.66	48.7
23	R	1	0.0	0.013	11.5	LOS A	0.0	0.3	0.41	0.79	48.8
Approach		9	0.0	0.013	11.5	LOS A	0.0	0.3	0.41	0.67	48.7
North East: Greenwell Point Road (NE)											
24	L	4	66.7	0.157	13.0	LOS A	0.0	0.0	0.00	2.25	57.1
25	T	297	1.0	0.157	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		301	1.9	0.157	0.2	NA	0.0	0.0	0.00	0.03	79.6
South West: Greenwell Point Road (SW)											
31	T	314	1.8	0.183	4.1	LOS A	2.5	17.7	0.69	0.00	60.3
32	R	12	0.0	0.183	14.3	LOS A	2.5	17.7	0.69	1.17	59.0
Approach		325	1.8	0.183	4.5	NA	2.5	17.7	0.69	0.04	60.2
All Vehicles		636	1.8	0.183	2.5	NA	2.5	17.7	0.36	0.05	67.8

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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MOVEMENT SUMMARY

Site: 6. Greenwell Pt-Millbank-Worrigee (Future Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Millbank Road-Worrigee Road
Friday AM (0800-0900) - Equivalent 120th HH
Future - Full Site Development
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Worrigee Road											
1	L	69	5.1	0.448	23.0	LOS B	2.4	17.5	0.71	1.12	40.8
2	T	118	3.0	0.448	21.6	LOS B	2.4	17.5	0.71	1.10	38.7
3	R	23	0.0	0.084	23.0	LOS B	0.3	2.0	0.71	1.00	40.5
Approach		211	3.4	0.448	22.2	LOS B	2.4	17.5	0.71	1.09	39.6
East: Greenwell Point Road (E)											
4	L	14	0.0	0.227	10.1	LOS A	0.0	0.0	0.00	1.65	57.1
5	T	421	3.0	0.227	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
6	R	37	7.4	0.033	11.3	LOS A	0.1	0.9	0.32	0.67	55.2
Approach		472	3.2	0.227	1.2	NA	0.1	0.9	0.02	0.10	76.8
North: Millbank Road											
7	L	16	16.7	0.032	13.9	LOS A	0.1	0.5	0.31	0.86	48.1
8	T	26	13.6	0.148	24.6	LOS B	0.5	4.0	0.75	1.00	37.1
9	R	12	0.0	0.148	24.8	LOS B	0.5	4.0	0.75	1.00	39.4
Approach		54	11.6	0.148	21.5	LOS B	0.5	4.0	0.62	0.96	40.5
West: Greenwell Point Road (W)											
10	L	47	7.5	0.114	10.4	LOS A	0.0	0.0	0.00	1.27	57.1
11	T	160	9.1	0.114	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
12	R	61	5.8	0.069	12.5	LOS A	0.3	1.9	0.47	0.75	54.0
Approach		268	8.1	0.114	4.7	NA	0.3	1.9	0.11	0.40	68.6
All Vehicles		1004	5.0	0.448	7.6	NA	2.4	17.5	0.22	0.43	60.7

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 6. Greenwell Pt-Millbank-Worrreege (Future Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Millbank Road-Worrreege Road
Friday PM (1600-1700) - Equivalent 120th HH
Future - Full Site Development
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Worrreege Road											
1	L	58	0.0	0.218	17.8	LOS B	0.8	5.8	0.49	0.84	44.0
2	T	47	0.0	0.218	16.6	LOS B	0.8	5.8	0.49	1.00	42.0
3	R	23	5.3	0.110	28.0	LOS B	0.4	2.7	0.79	1.00	37.7
Approach		128	0.9	0.218	19.2	LOS B	0.8	5.8	0.55	0.93	42.0
East: Greenwell Point Road (E)											
4	L	23	7.1	0.107	10.4	LOS A	0.0	0.0	0.00	1.47	57.1
5	T	177	5.5	0.107	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
6	R	16	0.0	0.019	12.4	LOS A	0.1	0.5	0.48	0.72	53.7
Approach		216	5.2	0.107	2.0	NA	0.1	0.5	0.04	0.21	74.7
North: Millbank Road											
7	L	25	0.0	0.050	14.6	LOS B	0.1	0.9	0.49	0.91	46.7
8	T	54	2.8	0.270	25.5	LOS B	1.1	7.6	0.79	1.03	36.2
9	R	18	0.0	0.270	26.3	LOS B	1.1	7.6	0.79	1.03	38.5
Approach		97	1.5	0.270	22.8	LOS B	1.1	7.6	0.71	1.00	39.1
West: Greenwell Point Road (W)											
10	L	17	0.0	0.251	10.1	LOS A	0.0	0.0	0.00	1.64	57.1
11	T	469	0.7	0.251	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
12	R	115	1.3	0.097	11.0	LOS A	0.4	2.8	0.32	0.68	55.2
Approach		601	0.8	0.251	2.4	NA	0.4	2.8	0.06	0.18	73.6
All Vehicles		1042	1.8	0.270	6.3	NA	1.1	7.6	0.18	0.35	63.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 2:39:47 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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SIDRA
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MOVEMENT SUMMARY

Site: 6. Greenwell Pt-Millbank-Worrigee (Future Sat-120th HH)

13S1231000 - West Culburra Subdivision
Greenwell Point Road-Millbank Road-Worrigee Road
Saturday - Equivalent 120th HH
Future - Full Site Development
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Worrigee Road											
1	L	77	0.0	0.163	15.2	LOS B	0.6	4.4	0.48	0.89	46.2
2	T	29	4.5	0.163	14.2	LOS A	0.6	4.4	0.48	1.00	44.2
3	R	40	3.4	0.150	21.7	LOS B	0.5	3.3	0.68	1.00	41.6
Approach		146	1.9	0.163	16.7	LOS B	0.6	4.4	0.53	0.94	44.5
East: Greenwell Point Road (E)											
4	L	22	6.7	0.152	10.4	LOS A	0.0	0.0	0.00	1.57	57.1
5	T	269	1.1	0.152	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
6	R	19	0.0	0.018	11.3	LOS A	0.1	0.5	0.37	0.67	55.0
Approach		311	1.4	0.152	1.4	NA	0.1	0.5	0.02	0.15	76.2
North: Millbank Road											
7	L	12	16.7	0.025	14.6	LOS B	0.1	0.4	0.38	0.86	47.6
8	T	24	11.1	0.127	21.3	LOS B	0.5	3.4	0.69	1.00	39.2
9	R	16	0.0	0.127	21.6	LOS B	0.5	3.4	0.69	1.00	41.5
Approach		52	9.0	0.127	19.9	LOS B	0.5	3.4	0.62	0.97	41.7
West: Greenwell Point Road (W)											
10	L	21	6.2	0.152	10.3	LOS A	0.0	0.0	0.00	1.57	57.1
11	T	272	1.0	0.152	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
12	R	54	0.0	0.050	11.3	LOS A	0.2	1.4	0.37	0.69	54.9
Approach		346	1.2	0.152	2.4	NA	0.2	1.4	0.06	0.20	73.7
All Vehicles		855	1.9	0.163	5.6	NA	0.6	4.4	0.16	0.36	64.5

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 7. Princes Hwy-Kalandar
(Future Fri AM-120th HH)

13S1231000 - West Culburra Subdivision

Princes Highway-Kalandar Street

Friday AM (0800-0900) - Equivalent 120th HH

Future - Full Site Development

Signals - Fixed Time Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
1	L	3	0.0	1.082	128.4	LOS F	44.0	322.3	1.00	1.22	14.1
2	T	962	5.6	1.082	136.7	LOS F	53.8	394.6	1.00	1.32	13.4
3	R	41	0.0	0.497	81.8	LOS F	2.8	19.9	1.00	0.73	19.2
Approach		1006	5.3	1.082	134.5	LOS F	53.8	394.6	1.00	1.30	13.5
East: Kalandar St (E)											
4	L	41	9.4	1.069	138.2	LOS F	59.5	428.7	1.00	1.30	9.2
5	T	324	3.1	1.069	128.9	LOS F	59.5	428.7	1.00	1.30	8.6
6	R	823	2.9	1.069	151.5	LOS F	64.2	460.7	1.00	1.27	8.5
Approach		1188	3.1	1.069	144.9	LOS F	64.2	460.7	1.00	1.28	8.6
North: Princes Hwy (N)											
7	L	266	7.3	0.268	9.2	LOS A	0.8	5.9	0.07	0.64	53.4
8	T	898	7.3	0.751	42.2	LOS C	24.8	184.6	0.90	0.79	29.4
9	R	157	11.3	1.042	112.3	LOS F	12.0	92.4	1.00	1.09	15.2
Approach		1321	7.8	1.042	43.9	LOS D	24.8	184.6	0.74	0.80	28.9
West: Kalandar St (W)											
10	L	52	13.6	0.708	66.0	LOS E	9.2	67.2	0.95	0.91	19.0
11	T	154	1.6	0.708	57.5	LOS E	13.0	94.3	0.97	0.86	17.9
12	R	156	5.3	0.708	69.6	LOS E	13.0	94.3	1.00	0.85	17.9
Approach		361	4.9	0.708	63.9	LOS E	13.0	94.3	0.98	0.86	18.1
All Vehicles		3877	5.4	1.082	100.2	LOS F	64.2	460.7	0.91	1.08	15.0

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	44.8	LOS E	0.2	0.2	0.81	0.81
P3	Across E approach	53	37.8	LOS D	0.2	0.2	0.75	0.75
P5	Across N approach	53	61.6	LOS F	0.2	0.2	0.96	0.96
All Pedestrians		159	48.1	LOS E			0.84	0.84

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 7. Princes Hwy-Kalandar
(Future Fri PM-120th HH)

13S1231000 - West Culburra Subdivision

Princes Highway-Kalandar Street

Friday PM (1600-1700) - Equivalent 120th HH

Future - Full Site Development

Signals - Fixed Time Cycle Time = 125 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
1	L	12	0.0	1.081	130.4	LOS F	32.8	234.8	1.00	1.20	13.9
2	T	785	2.6	1.081	136.2	LOS F	41.9	300.0	1.00	1.30	13.4
3	R	114	1.4	1.104	185.8	LOS F	12.7	89.6	1.00	1.22	10.0
Approach		911	2.4	1.104	142.3	LOS F	41.9	300.0	1.00	1.29	12.9
East: Kalandar St (E)											
4	L	102	1.5	1.104	159.8	LOS F	46.8	333.6	1.00	1.39	8.1
5	T	248	2.4	1.104	150.8	LOS F	46.8	333.6	1.00	1.39	7.6
6	R	573	1.8	1.104	177.5	LOS F	49.9	354.4	1.00	1.37	7.4
Approach		923	2.0	1.104	168.4	LOS F	49.9	354.4	1.00	1.38	7.5
North: Princes Hwy (N)											
7	L	867	1.1	1.000 ³	34.2	LOS C	18.5	130.6	0.22	0.78	33.2
8	T	1303	3.1	1.109	167.1	LOS F	75.1	539.5	1.00	1.60	11.4
9	R	138	5.4	0.612	42.7	LOS D	5.8	42.4	0.99	0.79	29.3
Approach		2308	2.5	1.109	109.7	LOS F	75.1	539.5	0.71	1.24	15.7
West: Kalandar St (W)											
10	L	109	9.5	1.000 ³	54.2	LOS D	13.7	99.2	0.94	0.90	21.7
11	T	322	0.0	1.094	104.0	LOS F	52.0	366.2	0.97	1.13	11.8
12	R	303	1.0	1.094	174.9	LOS F	52.0	366.2	1.00	1.44	8.6
Approach		735	1.8	1.094	125.8	LOS F	52.0	366.2	0.98	1.22	10.8
All Vehicles		4877	2.3	1.109	129.3	LOS F	75.1	539.5	0.86	1.27	12.6

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

³ x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	51.1	LOS E	0.2	0.2	0.90	0.90
P3	Across E approach	53	36.9	LOS D	0.1	0.1	0.77	0.77
P5	Across N approach	53	50.2	LOS E	0.2	0.2	0.90	0.90
All Pedestrians		159	46.0	LOS E			0.86	0.86

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 7. Princes Hwy-Kalandar
(Future Fri PM-120th HH)

13S1231000 - West Culburra Subdivision

Princes Highway-Kalandar Street

Friday PM (1600-1700) - Equivalent 120th HH

Future - Full Site Development

Signals - Fixed Time Cycle Time = 125 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
1	L	12	0.0	1.081	130.4	LOS F	32.8	234.8	1.00	1.20	13.9
2	T	785	2.6	1.081	136.2	LOS F	41.9	300.0	1.00	1.30	13.4
3	R	114	1.4	1.104	185.8	LOS F	12.7	89.6	1.00	1.22	10.0
Approach		911	2.4	1.104	142.3	LOS F	41.9	300.0	1.00	1.29	12.9
East: Kalandar St (E)											
4	L	102	1.5	1.104	159.8	LOS F	46.8	333.6	1.00	1.39	8.1
5	T	248	2.4	1.104	150.8	LOS F	46.8	333.6	1.00	1.39	7.6
6	R	573	1.8	1.104	177.5	LOS F	49.9	354.4	1.00	1.37	7.4
Approach		923	2.0	1.104	168.4	LOS F	49.9	354.4	1.00	1.38	7.5
North: Princes Hwy (N)											
7	L	867	1.1	1.000 ³	34.2	LOS C	18.5	130.6	0.22	0.78	33.2
8	T	1303	3.1	1.109	167.1	LOS F	75.1	539.5	1.00	1.60	11.4
9	R	138	5.4	0.612	42.7	LOS D	5.8	42.4	0.99	0.79	29.3
Approach		2308	2.5	1.109	109.7	LOS F	75.1	539.5	0.71	1.24	15.7
West: Kalandar St (W)											
10	L	109	9.5	1.000 ³	54.2	LOS D	13.7	99.2	0.94	0.90	21.7
11	T	322	0.0	1.094	104.0	LOS F	52.0	366.2	0.97	1.13	11.8
12	R	303	1.0	1.094	174.9	LOS F	52.0	366.2	1.00	1.44	8.6
Approach		735	1.8	1.094	125.8	LOS F	52.0	366.2	0.98	1.22	10.8
All Vehicles		4877	2.3	1.109	129.3	LOS F	75.1	539.5	0.86	1.27	12.6

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

³ x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	51.1	LOS E	0.2	0.2	0.90	0.90
P3	Across E approach	53	36.9	LOS D	0.1	0.1	0.77	0.77
P5	Across N approach	53	50.2	LOS E	0.2	0.2	0.90	0.90
All Pedestrians		159	46.0	LOS E			0.86	0.86

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 8. Coonamia-Currarong-Forest (Future Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Coonamia Road- Currarong Road-Forest Road
Friday AM (0800-0900) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Currarong Road											
5	T	13	0.0	0.041	0.9	LOS A	0.2	1.2	0.32	0.00	79.0
6	R	40	0.0	0.041	13.3	LOS A	0.2	1.2	0.32	0.77	68.3
Approach		53	0.0	0.041	10.4	NA	0.2	1.2	0.32	0.59	70.6
North: Coonamia Road											
7	L	7	0.0	0.012	13.1	LOS A	0.0	0.2	0.22	0.68	67.6
9	R	85	1.8	0.123	14.3	LOS A	0.5	3.5	0.37	0.74	66.6
Approach		93	1.6	0.123	14.2	LOS A	0.5	3.5	0.36	0.73	66.7
West: Forest Road											
10	L	209	1.8	0.124	12.7	LOS A	0.0	0.0	0.00	0.79	69.1
11	T	19	6.3	0.124	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		228	2.2	0.124	11.7	NA	0.0	0.0	0.00	0.72	71.0
All Vehicles		374	1.7	0.124	12.1	NA	0.5	3.5	0.13	0.71	69.8

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

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SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 8. Coonamia-Currarong-Forest (Future Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Coonamia Road- Currarong Road-Forest Road
Friday PM (1600-1700) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Currarong Road											
5	T	15	0.0	0.020	0.7	LOS A	0.1	0.7	0.30	0.00	81.8
6	R	15	0.0	0.020	13.2	LOS A	0.1	0.7	0.30	0.86	69.4
Approach		29	0.0	0.020	7.0	NA	0.1	0.7	0.30	0.43	75.2
North: Coonamia Road											
7	L	37	0.0	0.059	13.1	LOS A	0.1	0.9	0.22	0.69	67.6
9	R	200	4.0	0.274	14.4	LOS A	1.3	9.3	0.38	0.74	66.8
Approach		237	3.4	0.274	14.2	LOS A	1.3	9.3	0.35	0.73	66.9
West: Forest Road											
10	L	161	5.4	0.108	13.0	LOS A	0.0	0.0	0.00	0.83	69.1
11	T	34	4.3	0.108	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		195	5.2	0.108	10.8	NA	0.0	0.0	0.00	0.69	73.1
All Vehicles		461	4.0	0.274	12.3	NA	1.3	9.3	0.20	0.69	69.9

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 3:14:53 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 8. Coonamia-Currarong-Forest (Future Sat-120th HH)

13S1231000 - West Culburra Subdivision
Coonamia Road- Currarong Road-Forest Road
Saturday - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Currarong Road											
5	T	11	0.0	0.027	0.7	LOS A	0.1	0.8	0.29	0.00	80.9
6	R	26	0.0	0.027	13.2	LOS A	0.1	0.8	0.29	0.78	68.6
Approach		37	0.0	0.027	9.6	NA	0.1	0.8	0.29	0.56	71.7
North: Coonamia Road											
7	L	29	0.0	0.047	13.0	LOS A	0.1	0.7	0.21	0.69	67.7
9	R	174	1.8	0.238	14.1	LOS A	1.1	7.6	0.36	0.74	66.9
Approach		203	1.5	0.238	13.9	LOS A	1.1	7.6	0.34	0.73	67.0
West: Forest Road											
10	L	175	0.9	0.104	12.6	LOS A	0.0	0.0	0.00	0.79	69.1
11	T	19	0.0	0.104	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		194	0.8	0.104	11.4	NA	0.0	0.0	0.00	0.72	71.3
All Vehicles		434	1.1	0.238	12.4	NA	1.1	7.6	0.18	0.71	69.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 3:16:06 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130226sid-12S1231000 West

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SIDRA
INTERSECTION

MOVEMENT SUMMARY

Site: 9. Kalandar St-Kinghorne St
(Future Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Kalandar Street-Kinghorne Street-Albatross Road
Friday AM (0800-0900) - Equivalent 120th HH
Future - Full Site Development
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kinghorne Street											
1	L	31	7.7	0.722	20.0	LOS B	10.1	72.6	0.98	1.13	39.5
2	T	483	3.4	0.722	18.5	LOS B	10.1	72.6	0.98	1.12	39.7
3	R	59	0.0	0.722	23.3	LOS B	10.1	72.6	0.98	1.12	37.9
Approach		573	3.3	0.722	19.1	LOS B	10.1	72.6	0.98	1.12	39.5
East: Kalandar Street											
4	L	327	7.5	0.437	7.9	LOS A	2.8	20.6	0.46	0.59	45.1
6	R	161	2.3	0.437	12.6	LOS A	2.8	20.6	0.46	0.78	42.0
Approach		488	5.8	0.437	9.4	LOS A	2.8	20.6	0.46	0.65	44.0
North: Kinghorne Street											
7	L	129	3.7	0.329	8.8	LOS A	2.2	16.0	0.58	0.66	47.1
8	T	31	0.0	0.329	7.9	LOS A	2.2	16.0	0.58	0.62	47.1
9	R	176	3.4	0.329	12.0	LOS A	2.2	16.0	0.58	0.74	45.5
Approach		336	3.2	0.329	10.4	LOS A	2.2	16.0	0.58	0.70	46.2
South West: Albatross Road											
30	L	261	4.5	0.738	20.1	LOS B	9.6	70.6	1.00	1.19	38.2
32	R	219	8.1	0.738	24.4	LOS B	9.6	70.6	1.00	1.20	37.0
Approach		480	6.2	0.738	22.1	LOS B	9.6	70.6	1.00	1.19	37.6
All Vehicles		1877	4.7	0.738	15.8	LOS B	10.1	72.6	0.78	0.94	40.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 9. Kalandar St-Kinghorne St
(Future Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Kalandar Street-Kinghorne Street-Albatross Road
Friday AM (1600-1700) - Equivalent 120th HH
Future - Full Site Development
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kinghorne Street											
1	L	34	0.0	0.581	15.4	LOS B	5.7	40.2	0.90	1.00	42.7
2	T	326	0.0	0.581	14.1	LOS A	5.7	40.2	0.90	0.98	42.9
3	R	79	0.0	0.581	19.0	LOS B	5.7	40.2	0.90	1.02	40.7
Approach		439	0.0	0.581	15.1	LOS B	5.7	40.2	0.90	0.99	42.5
East: Kalandar Street											
4	L	280	0.0	0.440	8.9	LOS A	2.9	20.1	0.62	0.71	43.9
6	R	116	0.0	0.440	13.8	LOS A	2.9	20.1	0.62	0.84	40.9
Approach		396	0.0	0.440	10.3	LOS A	2.9	20.1	0.62	0.75	43.0
North: Kinghorne Street											
7	L	322	0.0	0.782	15.7	LOS B	11.5	80.8	0.98	1.04	41.6
8	T	80	0.0	0.782	14.9	LOS B	11.5	80.8	0.98	1.04	41.7
9	R	304	0.0	0.782	18.9	LOS B	11.5	80.8	0.98	1.05	40.2
Approach		706	0.0	0.782	17.0	LOS B	11.5	80.8	0.98	1.05	41.0
South West: Albatross Road											
30	L	300	0.0	0.786	17.3	LOS B	11.7	82.1	1.00	1.13	40.0
32	R	348	0.0	0.786	21.5	LOS B	11.7	82.1	1.00	1.13	38.6
Approach		648	0.0	0.786	19.5	LOS B	11.7	82.1	1.00	1.13	39.2
All Vehicles		2189	0.0	0.786	16.2	LOS B	11.7	82.1	0.91	1.01	41.0

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 3:19:01 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 9. Kalandar St-Kinghorne St
(Future Sat-120th HH)

13S1231000 - West Culburra Subdivision
Kalandar Street-Kinghorne Street-Albatross Road
Saturday - Equivalent 120th HH
Future - Full Site Development
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Kinghorne Street											
1	L	21	12.5	0.226	10.6	LOS A	1.4	10.0	0.60	0.74	47.5
2	T	162	1.6	0.226	8.8	LOS A	1.4	10.0	0.60	0.66	47.5
3	R	29	0.0	0.226	13.7	LOS A	1.4	10.0	0.60	0.81	44.7
Approach		213	2.5	0.226	9.7	LOS A	1.4	10.0	0.60	0.69	47.1
East: Kalandar Street											
4	L	204	6.0	0.268	7.5	LOS A	1.4	10.4	0.37	0.56	45.7
6	R	98	1.4	0.268	12.2	LOS A	1.4	10.4	0.37	0.77	42.3
Approach		302	4.5	0.268	9.0	LOS A	1.4	10.4	0.37	0.63	44.5
North: Kinghorne Street											
7	L	154	0.8	0.313	8.6	LOS A	2.0	14.2	0.53	0.65	47.4
8	T	21	0.0	0.313	7.7	LOS A	2.0	14.2	0.53	0.60	47.5
9	R	157	2.6	0.313	11.8	LOS A	2.0	14.2	0.53	0.74	45.6
Approach		332	1.6	0.313	10.0	LOS A	2.0	14.2	0.53	0.69	46.5
South West: Albatross Road											
30	L	161	1.4	0.377	8.0	LOS A	2.6	18.2	0.57	0.62	47.4
32	R	237	1.7	0.377	12.2	LOS A	2.6	18.2	0.57	0.75	45.6
Approach		398	1.6	0.377	10.5	LOS A	2.6	18.2	0.57	0.70	46.3
All Vehicles		1244	2.5	0.377	9.9	LOS A	2.6	18.2	0.51	0.68	46.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 10. Princes Hwy-Forest
(Future Fri AM-120th HH)

13S1231000 - West Culburra Subdivision
Princes Highway-Forest Road
Friday AM (0800-0900) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
2	T	1413	3.1	0.739	0.4	X	X	X	X	0.00	98.7
3	R	37	13.0	0.058	17.3	LOS B	0.2	1.7	0.56	0.83	56.7
Approach		1449	3.4	0.739	0.8	NA	0.2	1.7	0.01	0.02	97.3
South East: Forest Road (Median RT)											
23	R	107	2.3	0.059	8.1	LOS A	0.0	0.0	0.00	0.61	53.3
Approach		107	2.3	0.059	8.1	LOS A	0.0	0.0	0.00	0.61	53.3
East: Forest Road											
4	L	36	3.3	0.078	13.1	LOS A	0.2	1.5	0.54	0.80	51.4
6	R	107	2.3	0.227	14.9	LOS B	0.8	5.9	0.60	0.89	49.6
Approach		143	2.6	0.227	14.5	LOS A	0.8	5.9	0.59	0.87	50.1
North: Princes Hwy (N)											
7	L	60	8.3	0.034	13.0	LOS A	0.0	0.0	0.00	0.76	63.3
8	T	521	16.0	0.295	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		581	15.2	0.295	1.3	NA	0.0	0.0	0.00	0.08	95.6
All Vehicles		2281	6.3	0.739	2.1	NA	0.8	5.9	0.05	0.12	89.6

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 3:22:10 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 10. Princes Hwy-Forest
(Future Fri PM-120th HH)

13S1231000 - West Culburra Subdivision
Princes Highway-Forest Road
Friday PM (1600-1700) - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
2	T	640	6.0	0.341	0.1	X	X	X	X	0.00	99.8
3	R	63	2.9	0.457	48.6	LOS D	1.6	11.4	0.95	1.03	30.9
Approach		703	5.7	0.457	4.4	NA	1.6	11.4	0.08	0.09	86.4
South East: Forest Road (Median RT)											
23	R	71	2.2	0.039	8.1	LOS A	0.0	0.0	0.00	0.61	53.3
Approach		71	2.2	0.039	8.1	LOS A	0.0	0.0	0.00	0.61	53.3
East: Forest Road											
4	L	60	0.0	0.551	57.0	LOS E	1.9	13.2	0.96	1.06	28.4
6	R	71	2.2	0.721	75.2	LOS F	2.7	19.6	0.97	1.14	24.0
Approach		131	1.2	0.721	66.8	LOS E	2.7	19.6	0.96	1.10	25.9
North: Princes Hwy (N)											
7	L	160	2.0	0.087	12.7	LOS A	0.0	0.0	0.00	0.75	63.3
8	T	1475	2.0	0.766	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		1635	2.0	0.766	1.2	NA	0.0	0.0	0.00	0.07	95.8
All Vehicles		2539	3.0	0.766	5.7	NA	2.7	19.6	0.07	0.15	81.0

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 3:23:29 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 10. Princes Hwy-Forest
(Future Sat-120th HH)

13S1231000 - West Culburra Subdivision
Princes Highway-Forest Road
Saturday - Equivalent 120th HH
Future - Full Site Development
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
2	T	812	1.7	0.421	0.1	X	X	X	X	0.00	99.7
3	R	52	0.0	0.187	25.9	LOS B	0.6	4.4	0.84	0.97	45.6
Approach		863	1.6	0.421	1.6	NA	0.6	4.4	0.05	0.06	94.5
South East: Forest Road (Median RT)											
23	R	98	0.0	0.053	8.0	LOS A	0.0	0.0	0.00	0.61	53.3
Approach		98	0.0	0.053	8.0	LOS A	0.0	0.0	0.00	0.61	53.3
East: Forest Road											
4	L	62	0.0	0.280	26.6	LOS B	1.0	6.7	0.86	0.99	41.0
6	R	98	3.0	0.536	36.3	LOS C	2.1	15.0	0.91	1.07	36.0
Approach		160	1.8	0.536	32.5	LOS C	2.1	15.0	0.89	1.04	37.8
North: Princes Hwy (N)											
7	L	137	0.0	0.074	12.5	LOS A	0.0	0.0	0.00	0.75	63.3
8	T	1153	1.7	0.598	0.0	LOS A	0.0	0.0	0.00	0.00	100.0
Approach		1289	1.5	0.598	1.3	NA	0.0	0.0	0.00	0.08	95.4
All Vehicles		2411	1.5	0.598	3.8	NA	2.1	15.0	0.08	0.16	84.9

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model used.

Processed: Thursday, 28 February 2013 3:25:58 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130226sid-12S1231000 West

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MOVEMENT SUMMARY

Site: 11. Princes Hwy-Moss
(Future Fri AM-120th HH)

13S1231000 - West Culburra Subdivision

Princes Highway-Moss Street

Friday AM (0800-0900) - Equivalent 120th HH

Future - Full Site Development

Signals - Fixed Time Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
1	L	5	0.0	0.974	100.6	LOS F	24.6	183.4	1.00	1.11	16.6
2	T	928	7.6	1.054	122.4	LOS F	32.7	243.9	1.00	1.22	14.6
3	R	158	3.7	0.982	109.7	LOS F	13.6	98.2	1.00	1.06	14.9
Approach		1092	7.0	1.054	120.4	LOS F	32.7	243.9	1.00	1.20	14.6
East: Moss St (E)											
4	L	37	3.4	0.382	48.3	LOS D	4.0	28.9	0.80	0.77	25.3
5	T	243	4.1	1.025	105.2	LOS F	47.6	345.5	0.97	1.17	13.7
6	R	275	4.6	1.025	126.7	LOS F	47.6	345.5	1.00	1.28	13.6
Approach		555	4.3	1.025	112.1	LOS F	47.6	345.5	0.97	1.20	14.1
North: Princes Hwy (N)											
7	L	193	5.0	1.000 ³	55.8	LOS D	29.0	213.4	0.99	0.92	25.2
8	T	1479	6.8	1.066	119.8	LOS F	63.7	471.6	1.00	1.32	14.7
9	R	335	3.7	1.040	111.7	LOS F	27.1	195.8	1.00	1.13	14.7
Approach		2006	6.1	1.066	112.3	LOS F	63.7	471.6	1.00	1.25	15.3
West: Moss St (W)											
10	L	126	10.3	0.268	22.5	LOS B	3.2	24.4	0.67	0.75	24.5
11	T	134	3.6	0.535	54.1	LOS D	11.0	81.1	0.96	0.79	10.1
12	R	49	11.9	0.535	61.9	LOS E	11.0	81.1	0.96	0.82	12.6
Approach		309	7.7	0.535	42.5	LOS C	11.0	81.1	0.84	0.78	14.5
All Vehicles		3962	6.2	1.066	109.1	LOS F	63.7	471.6	0.98	1.19	14.9

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

³ x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	53.3	LOS E	0.2	0.2	0.89	0.89
P3	Across E approach	53	40.8	LOS E	0.2	0.2	0.78	0.78
P5	Across N approach	53	61.6	LOS F	0.2	0.2	0.96	0.96
P7	Across W approach	53	56.0	LOS E	0.2	0.2	0.91	0.91
All Pedestrians		212	53.0	LOS E			0.88	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 11. Princes Hwy-Moss
(Future Fri PM-120th HH)

13S1231000 - West Culburra Subdivision

Princes Highway-Moss Street

Friday PM (1600-1700) - Equivalent 120th HH

Future - Full Site Development

Signals - Fixed Time Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
1	L	13	0.0	1.149	210.3	LOS F	42.7	306.5	1.00	1.43	8.8
2	T	1120	3.1	1.243	265.7	LOS F	59.6	428.5	1.00	1.64	7.7
3	R	115	0.0	1.191	266.0	LOS F	16.2	113.5	1.00	1.31	7.0
Approach		1247	2.8	1.243	265.2	LOS F	59.6	428.5	1.00	1.61	7.6
East: Moss St (E)											
4	L	37	4.3	0.378	56.3	LOS D	4.0	28.7	0.87	0.77	23.2
5	T	153	0.0	1.013	98.5	LOS F	33.6	237.5	0.97	1.11	14.3
6	R	235	1.9	1.013	121.7	LOS F	33.6	237.5	1.00	1.25	14.0
Approach		424	1.4	1.013	107.7	LOS F	33.6	237.5	0.98	1.16	14.6
North: Princes Hwy (N)											
7	L	214	3.7	1.000 ³	62.2	LOS E	29.6	213.6	1.00	0.95	23.3
8	T	1525	3.5	1.238	244.3	LOS F	97.0	699.1	1.00	1.74	8.2
9	R	240	0.7	1.167	209.9	LOS F	27.8	195.8	1.00	1.29	8.7
Approach		1978	3.0	1.238	220.4	LOS F	97.0	699.1	1.00	1.60	8.8
West: Moss St (W)											
10	L	160	1.2	0.330	19.1	LOS B	3.4	24.2	0.61	0.75	26.5
11	T	259	0.0	1.216	268.9	LOS F	112.8	794.8	1.00	1.74	2.5
12	R	135	1.1	1.216	276.3	LOS F	112.8	794.8	1.00	1.74	3.3
Approach		900	0.8	1.216	227.9	LOS F	112.8	794.8	0.89	1.45	4.0
All Vehicles		4549	2.4	1.243	223.2	LOS F	112.8	794.8	0.98	1.42	8.2

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

³ x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	61.6	LOS F	0.2	0.2	0.96	0.96
P3	Across E approach	53	44.0	LOS E	0.2	0.2	0.81	0.81
P5	Across N approach	53	45.6	LOS E	0.2	0.2	0.82	0.82
P7	Across W approach	53	56.0	LOS E	0.2	0.2	0.91	0.91
All Pedestrians		212	51.8	LOS E			0.87	0.87

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 11. Princes Hwy-Moss
(Future Sat-120th HH)

13S1231000 - West Culburra Subdivision

Princes Highway-Moss Street

Saturday - Equivalent 120th HH

Future - Full Site Development

Signals - Fixed Time Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Princes Hwy (S)											
1	L	14	0.0	0.807	64.6	LOS E	23.7	169.6	0.97	0.93	23.3
2	T	1183	2.7	0.873	58.7	LOS E	27.8	198.7	0.99	0.94	24.2
3	R	104	0.0	0.583	73.8	LOS F	6.8	47.7	1.00	0.79	20.0
Approach		1301	2.4	0.873	60.0	LOS E	27.8	198.7	0.99	0.93	23.8
East: Moss St (E)											
4	L	35	0.0	0.243	52.6	LOS D	2.6	18.1	0.83	0.75	24.0
5	T	85	0.0	0.651	53.7	LOS D	13.9	98.5	0.96	0.79	20.7
6	R	155	1.8	0.651	63.0	LOS E	13.9	98.5	0.98	0.83	21.7
Approach		275	1.0	0.651	58.8	LOS E	13.9	98.5	0.96	0.81	21.7
North: Princes Hwy (N)											
7	L	121	2.3	0.737	45.2	LOS D	19.6	139.6	0.79	0.95	28.8
8	T	1313	1.5	0.737	37.7	LOS C	26.8	189.8	0.85	0.76	31.1
9	R	258	1.0	0.858	49.0	LOS D	11.9	84.2	1.00	0.91	26.2
Approach		1692	1.5	0.858	40.0	LOS C	26.8	189.8	0.87	0.80	30.2
West: Moss St (W)											
10	L	311	0.0	0.609	24.2	LOS B	8.2	57.2	0.78	0.80	23.3
11	T	163	0.0	0.755	58.6	LOS E	17.3	121.4	1.00	0.89	9.5
12	R	103	1.3	0.755	66.1	LOS E	17.3	121.4	1.00	0.89	11.9
Approach		577	0.2	0.755	41.4	LOS C	17.3	121.4	0.88	0.84	15.3
All Vehicles		3844	1.6	0.873	48.3	LOS D	27.8	198.7	0.92	0.85	25.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	Across S approach	53	61.6	LOS F	0.2	0.2	0.96	0.96
P3	Across E approach	53	34.8	LOS D	0.1	0.1	0.72	0.72
P5	Across N approach	53	61.6	LOS F	0.2	0.2	0.96	0.96
P7	Across W approach	53	46.5	LOS E	0.2	0.2	0.83	0.83
All Pedestrians		212	51.1	LOS E			0.86	0.86

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Culburra-Collector East -
Post-Dev AM

12S1231000 West Culburra Subdivision
Culburra Road - Collector Road-East
Friday AM (0800-0900) - Equivalent 120th HH
Future - Full Site Development
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Culburra Road - East Approach											
5	T	277	2.5	0.212	2.5	LOS A	1.3	9.3	0.02	0.25	47.1
6	R	98	1.0	0.212	8.8	LOS A	1.3	9.3	0.02	0.90	41.8
Approach		375	2.1	0.212	4.1	LOS A	1.3	9.3	0.02	0.42	45.5
North: East Access - North Approach											
7	L	311	1.0	0.254	4.8	LOS A	1.5	10.5	0.42	0.49	43.6
9	R	1	1.0	0.254	9.9	LOS A	1.5	10.5	0.42	0.76	41.3
Approach		312	1.0	0.254	4.8	LOS A	1.5	10.5	0.42	0.49	43.6
West: Culburra Road - West Approach											
10	L	1	1.0	0.155	4.1	LOS A	0.8	5.6	0.24	0.44	44.8
11	T	213	2.5	0.155	2.9	LOS A	0.8	5.6	0.24	0.32	45.6
Approach		214	2.5	0.155	2.9	LOS A	0.8	5.6	0.24	0.32	45.6
All Vehicles		900	1.8	0.254	4.1	LOS A	1.5	10.5	0.21	0.42	44.8

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: Wednesday, 13 March 2013 2:09:41 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130313sid12S1231000 Culburra-Collector Rd East.sip

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MOVEMENT SUMMARY

Site: Culburra-Collector East -
Post-Dev PM

12S1231000 West Culburra Subdivision
Culburra Road - Collector Road-East
Friday PM (1600-1700) - Equivalent 120th HH
Future - Full Site Development
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Culburra Road - East Approach											
5	T	193	2.5	0.285	2.5	LOS A	2.0	13.9	0.02	0.23	47.0
6	R	312	1.0	0.285	8.8	LOS A	2.0	13.9	0.02	0.76	41.8
Approach		504	1.6	0.285	6.4	LOS A	2.0	13.9	0.02	0.56	43.5
North: East Access - North Approach											
7	L	104	1.0	0.099	5.3	LOS A	0.6	3.9	0.51	0.54	43.1
9	R	1	1.0	0.099	10.4	LOS A	0.6	3.9	0.51	0.76	41.1
Approach		105	1.0	0.099	5.4	LOS A	0.6	3.9	0.51	0.54	43.1
West: Culburra Road - West Approach											
10	L	1	1.0	0.319	5.4	LOS A	1.9	13.5	0.51	0.58	43.7
11	T	365	2.5	0.319	4.3	LOS A	1.9	13.5	0.51	0.47	43.9
Approach		366	2.5	0.319	4.3	LOS A	1.9	13.5	0.51	0.47	43.9
All Vehicles		976	1.9	0.319	5.5	LOS A	2.0	13.9	0.26	0.52	43.6

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

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SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130313sid12S1231000 Culburra-Collector Rd East.sip

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MOVEMENT SUMMARY

Site: Culburra-Collector East -
Post-Dev SAT

12S1231000 West Culburra Subdivision
Culburra Road - Collector Road-East
Saturday - Equivalent 120th HH
Future - Full Site Development
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Culburra Road - East Approach											
5	T	251	2.5	0.255	2.5	LOS A	1.7	11.8	0.02	0.24	47.0
6	R	201	1.0	0.255	8.8	LOS A	1.7	11.8	0.02	0.82	41.8
Approach		452	1.8	0.255	5.3	LOS A	1.7	11.8	0.02	0.50	44.4
North: East Access - North Approach											
7	L	201	1.0	0.171	4.8	LOS A	1.0	6.8	0.43	0.49	43.6
9	R	1	1.0	0.171	9.9	LOS A	1.0	6.8	0.43	0.75	41.3
Approach		202	1.0	0.171	4.8	LOS A	1.0	6.8	0.43	0.49	43.5
West: Culburra Road - West Approach											
10	L	1	1.0	0.194	4.6	LOS A	1.0	7.4	0.37	0.50	44.3
11	T	240	2.5	0.194	3.5	LOS A	1.0	7.4	0.37	0.38	44.8
Approach		241	2.5	0.194	3.5	LOS A	1.0	7.4	0.37	0.38	44.8
All Vehicles		895	1.8	0.255	4.7	LOS A	1.7	11.8	0.21	0.47	44.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: Wednesday, 13 March 2013 2:09:42 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWT\Modelling\SIDRA\130313sid12S1231000 Culburra-Collector Rd East.sip

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MOVEMENT SUMMARY

Site: Culburra-Collector East-Golf Course - Post-Dev AM

12S1231000 West Culburra Subdivision
Culburra Road - Collector Road-East - Golf Course
Friday AM (0800-0900) - Equivalent 120th HH
Future - Full Site Development
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Golf Course Access (S)											
1	L	4	0.0	0.009	7.1	LOS A	0.0	0.3	0.45	0.50	48.7
2	T	1	0.0	0.009	6.0	LOS A	0.0	0.3	0.45	0.44	49.1
3	R	4	0.0	0.009	12.7	LOS A	0.0	0.3	0.45	0.68	45.5
Approach		9	0.0	0.009	9.5	LOS A	0.0	0.3	0.45	0.57	47.2
East: Culburra Road - East Approach											
4	L	15	0.0	0.237	5.7	LOS A	1.4	10.0	0.10	0.48	51.4
5	T	277	2.5	0.237	2.6	LOS A	1.4	10.0	0.10	0.25	46.5
6	R	98	1.0	0.237	8.9	LOS A	1.4	10.0	0.10	0.84	41.7
Approach		389	2.0	0.237	4.3	LOS A	1.4	10.0	0.10	0.41	45.3
North: East Access - North Approach											
7	L	311	1.0	0.259	4.9	LOS A	1.5	10.8	0.44	0.50	43.5
8	T	1	0.0	0.259	5.7	LOS A	1.5	10.8	0.44	0.50	49.5
9	R	1	1.0	0.259	10.0	LOS A	1.5	10.8	0.44	0.76	41.2
Approach		313	1.0	0.259	4.9	LOS A	1.5	10.8	0.44	0.50	43.5
West: Culburra Road - West Approach											
10	L	1	1.0	0.166	4.1	LOS A	0.9	6.2	0.26	0.44	44.7
11	T	213	2.5	0.166	3.0	LOS A	0.9	6.2	0.26	0.32	45.4
12	R	15	0.0	0.166	11.6	LOS A	0.9	6.2	0.26	0.85	46.6
Approach		228	2.3	0.166	3.5	LOS A	0.9	6.2	0.26	0.36	45.5
All Vehicles		940	1.7	0.259	4.3	LOS A	1.5	10.8	0.25	0.43	44.8

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

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SIDRA INTERSECTION 5.1.13.2093

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MOVEMENT SUMMARY

Site: Culburra-Collector East-Golf
Course - Post-Dev PM

12S1231000 West Culburra Subdivision
Culburra Road - Collector Road-East - Golf Course
Friday PM (1600-1700) - Equivalent 120th HH
Future - Full Site Development
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Golf Course Access (S)											
1	L	23	0.0	0.047	7.9	LOS A	0.2	1.7	0.53	0.58	48.1
2	T	1	0.0	0.047	6.8	LOS A	0.2	1.7	0.53	0.53	48.3
3	R	23	0.0	0.047	13.5	LOS A	0.2	1.7	0.53	0.73	44.9
Approach		47	0.0	0.047	10.6	LOS A	0.2	1.7	0.53	0.65	46.4
East: Culburra Road - East Approach											
4	L	6	0.0	0.298	5.6	LOS A	2.0	14.2	0.07	0.45	51.5
5	T	193	2.5	0.298	2.5	LOS A	2.0	14.2	0.07	0.23	46.6
6	R	312	1.0	0.298	8.8	LOS A	2.0	14.2	0.07	0.73	41.7
Approach		511	1.6	0.298	6.4	LOS A	2.0	14.2	0.07	0.54	43.4
North: East Access - North Approach											
7	L	104	1.0	0.103	5.5	LOS A	0.6	4.1	0.53	0.55	43.0
8	T	1	0.0	0.103	6.3	LOS A	0.6	4.1	0.53	0.55	48.7
9	R	1	1.0	0.103	10.6	LOS A	0.6	4.1	0.53	0.76	41.0
Approach		106	1.0	0.103	5.5	LOS A	0.6	4.1	0.53	0.55	43.0
West: Culburra Road - West Approach											
10	L	1	1.0	0.331	5.6	LOS A	2.0	14.3	0.53	0.60	43.5
11	T	365	2.5	0.331	4.4	LOS A	2.0	14.3	0.53	0.49	43.7
12	R	6	0.0	0.331	13.1	LOS A	2.0	14.3	0.53	0.87	46.0
Approach		373	2.5	0.331	4.6	LOS A	2.0	14.3	0.53	0.50	43.8
All Vehicles		1037	1.7	0.331	5.9	LOS A	2.0	14.3	0.31	0.53	43.6

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

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SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130313sid12S1231000 Culburra-Collector Rd East.sip

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MOVEMENT SUMMARY

Site: Culburra-Collector East-Golf
Course - Post-Dev SAT

12S1231000 West Culburra Subdivision
Culburra Road - Collector Road-East - Golf Course
Saturday - Equivalent 120th HH
Future - Full Site Development
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Golf Course Access (S)											
1	L	18	0.0	0.036	7.6	LOS A	0.2	1.3	0.51	0.56	48.3
2	T	1	0.0	0.036	6.4	LOS A	0.2	1.3	0.51	0.50	48.6
3	R	18	0.0	0.036	13.2	LOS A	0.2	1.3	0.51	0.72	45.2
Approach		37	0.0	0.036	10.2	LOS A	0.2	1.3	0.51	0.63	46.7
East: Culburra Road - East Approach											
4	L	18	0.0	0.286	5.7	LOS A	1.9	13.3	0.12	0.46	51.2
5	T	251	2.5	0.286	2.6	LOS A	1.9	13.3	0.12	0.24	46.3
6	R	201	1.0	0.286	8.9	LOS A	1.9	13.3	0.12	0.77	41.6
Approach		469	1.8	0.286	5.4	LOS A	1.9	13.3	0.12	0.48	44.2
North: East Access - North Approach											
7	L	201	1.0	0.177	5.0	LOS A	1.0	7.1	0.46	0.51	43.4
8	T	1	0.0	0.177	5.8	LOS A	1.0	7.1	0.46	0.51	49.3
9	R	1	1.0	0.177	10.1	LOS A	1.0	7.1	0.46	0.76	41.2
Approach		203	1.0	0.177	5.0	LOS A	1.0	7.1	0.46	0.52	43.4
West: Culburra Road - West Approach											
10	L	1	1.0	0.212	4.7	LOS A	1.2	8.3	0.40	0.51	44.1
11	T	240	2.5	0.212	3.6	LOS A	1.2	8.3	0.40	0.40	44.5
12	R	18	0.0	0.212	12.3	LOS A	1.2	8.3	0.40	0.84	46.4
Approach		259	2.3	0.212	4.2	LOS A	1.2	8.3	0.40	0.43	44.6
All Vehicles		968	1.7	0.286	5.2	LOS A	1.9	13.3	0.28	0.48	44.3

Level of Service (LOS) Method: Delay (RTA NSW).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model used.

Processed: Wednesday, 13 March 2013 4:26:11 PM

SIDRA INTERSECTION 5.1.13.2093

Project: P:\12S1200-1299\12S1231000 - West Culburra MWTModelling\SIDRA\130313sid12S1231000 Culburra-Collector Rd East.sip

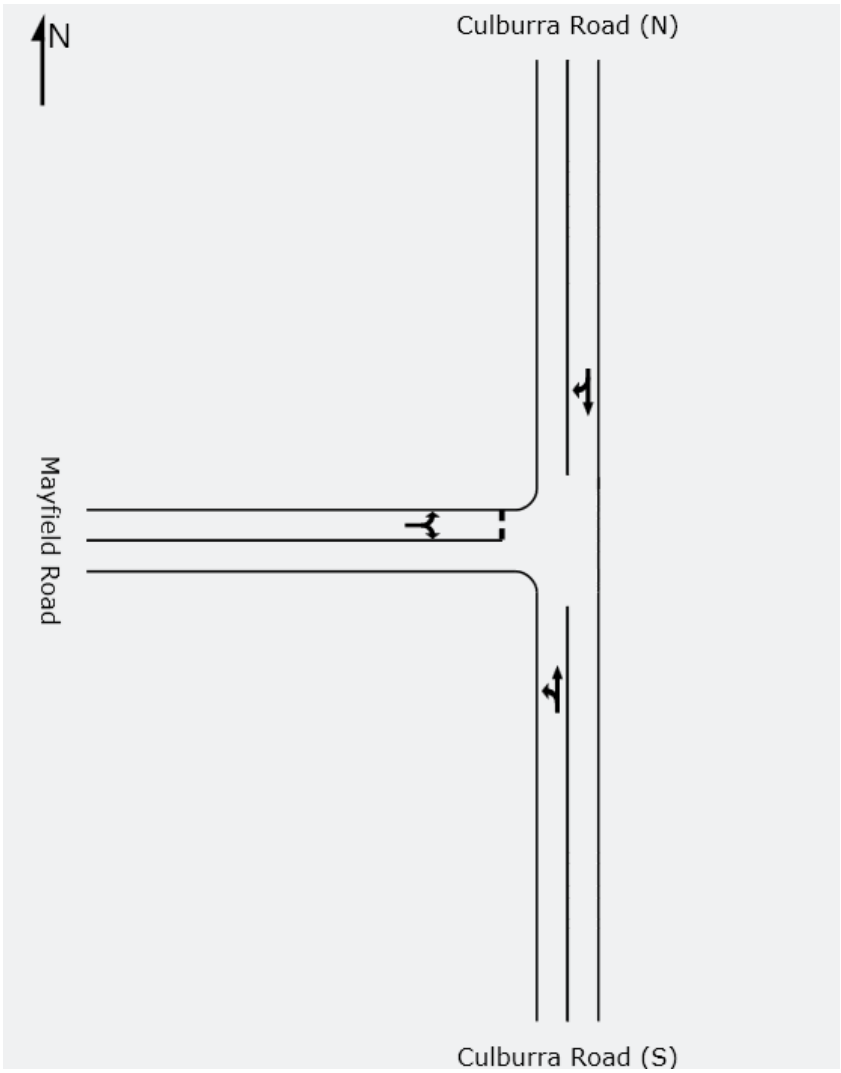
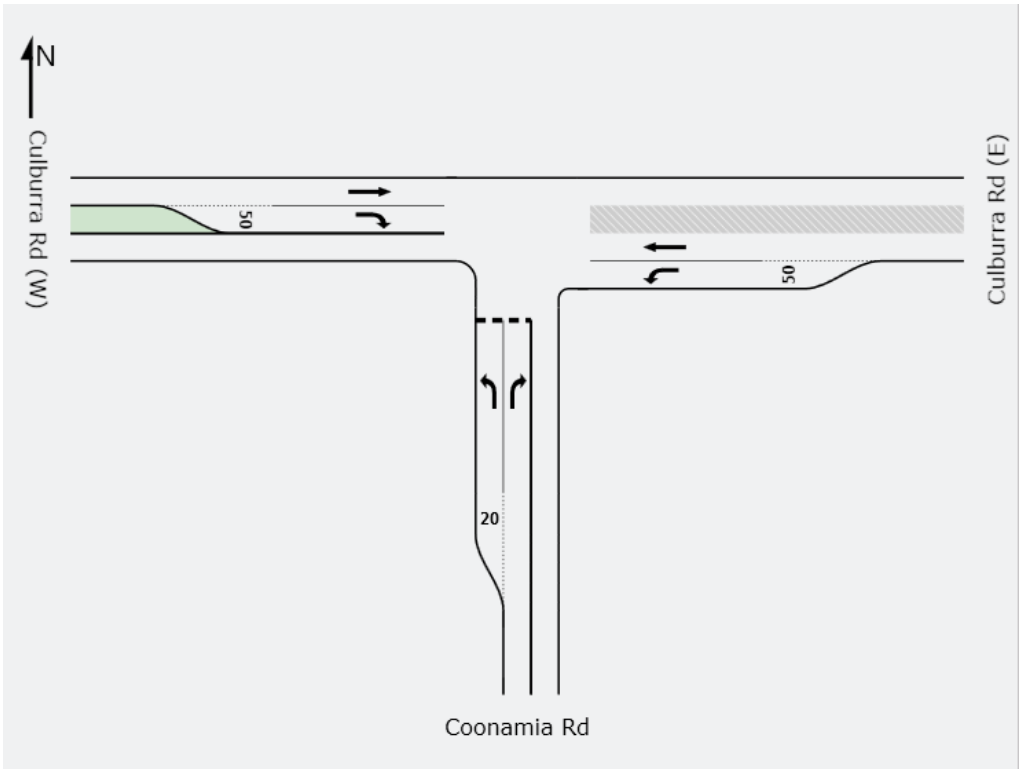
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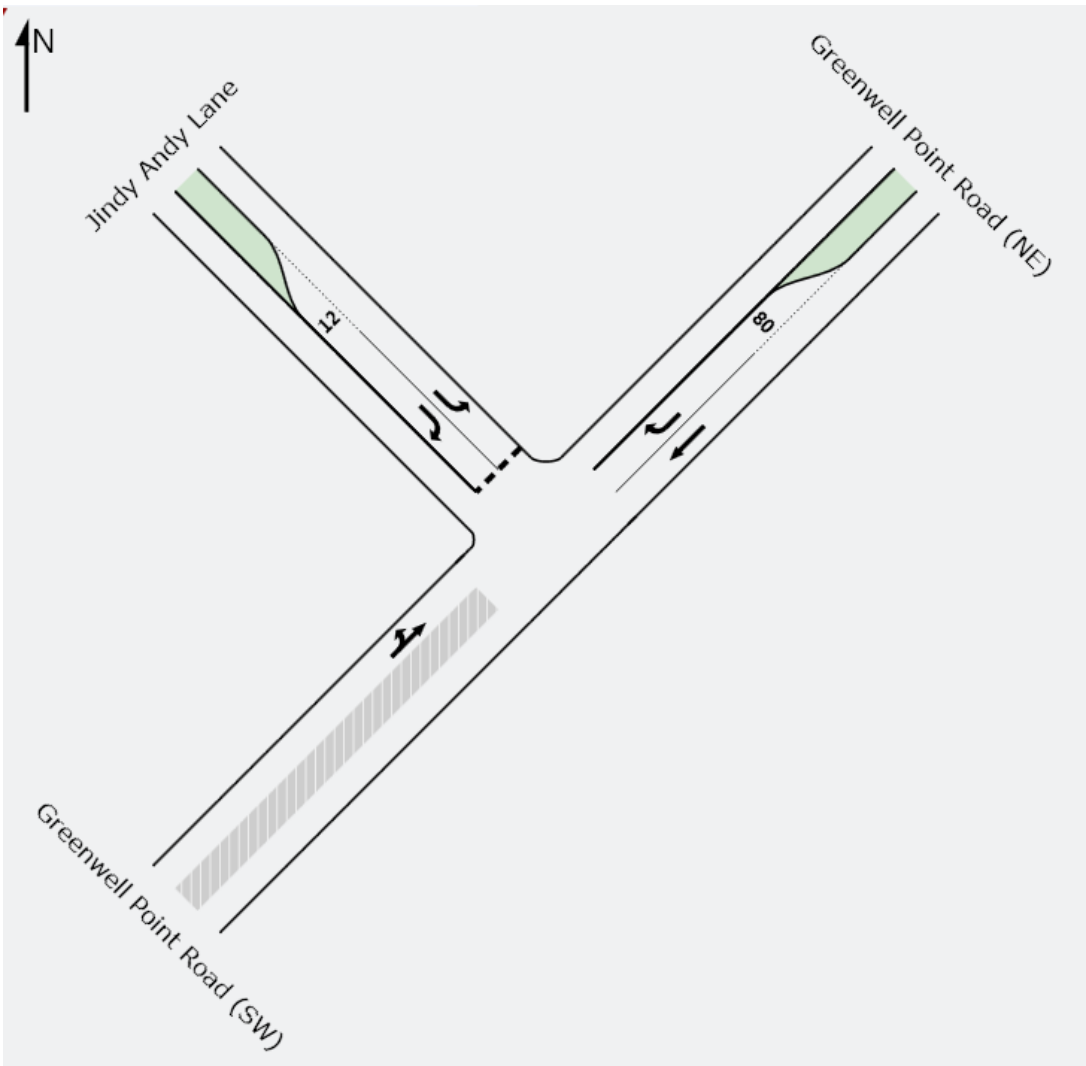
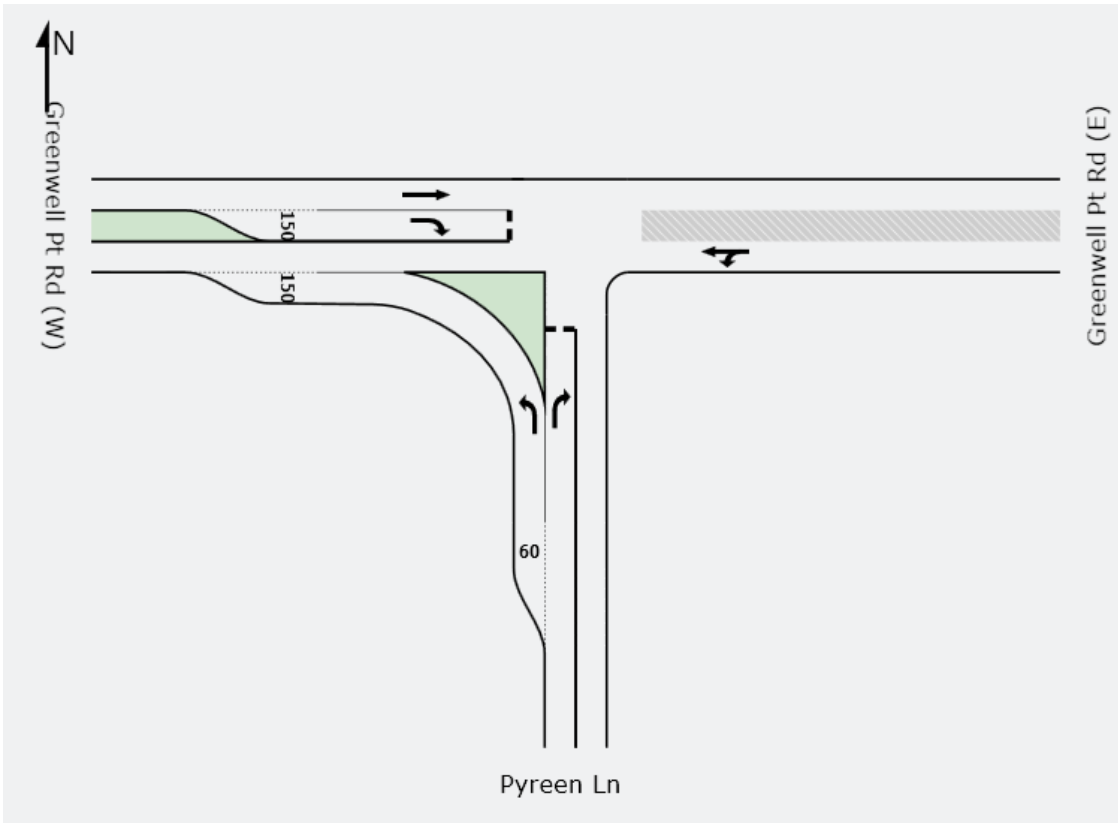
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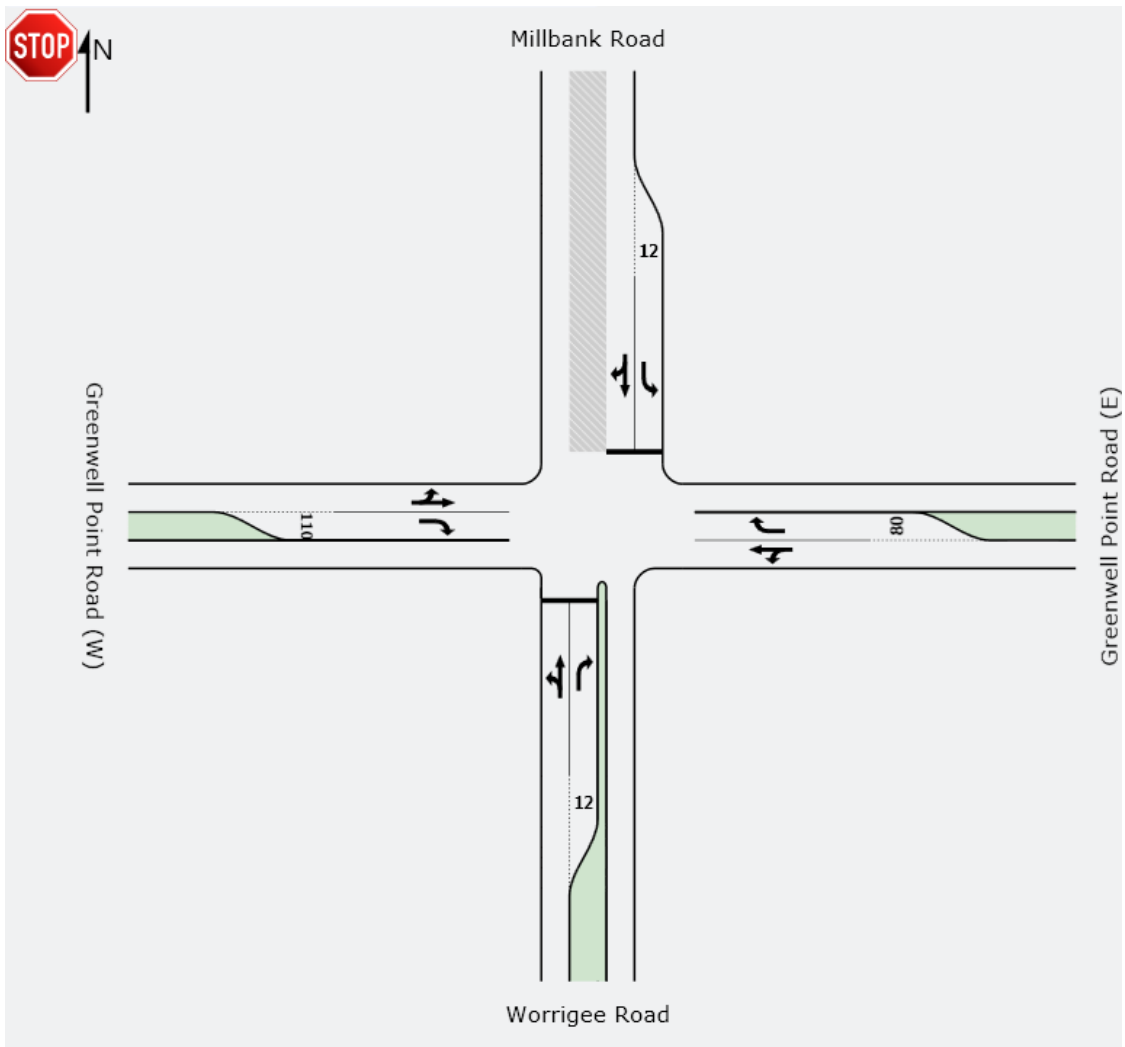
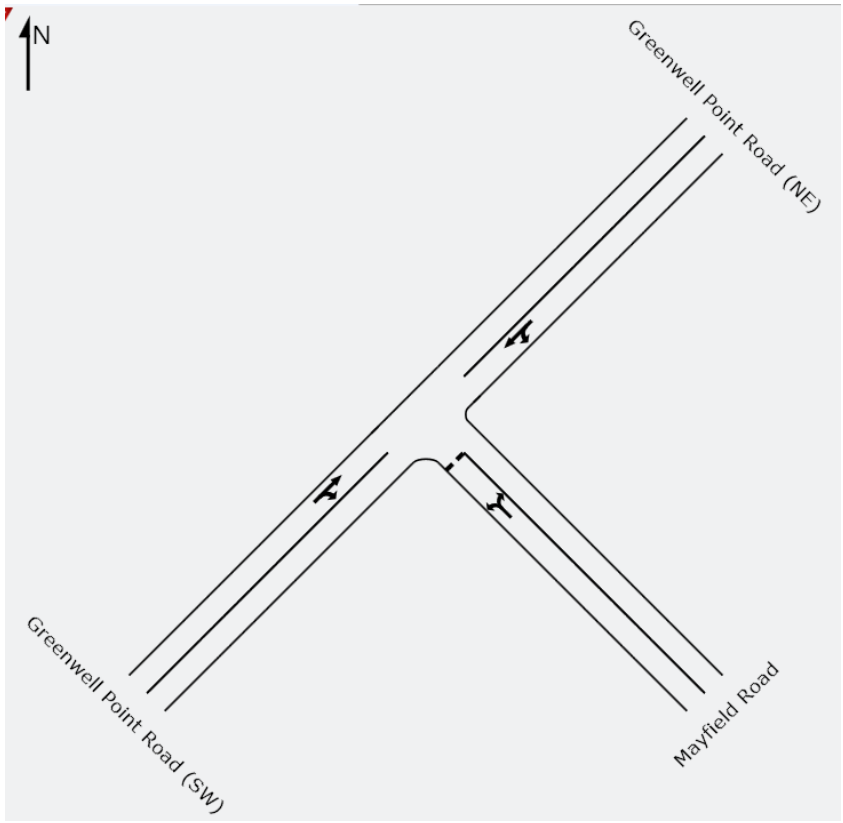
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INTERSECTION

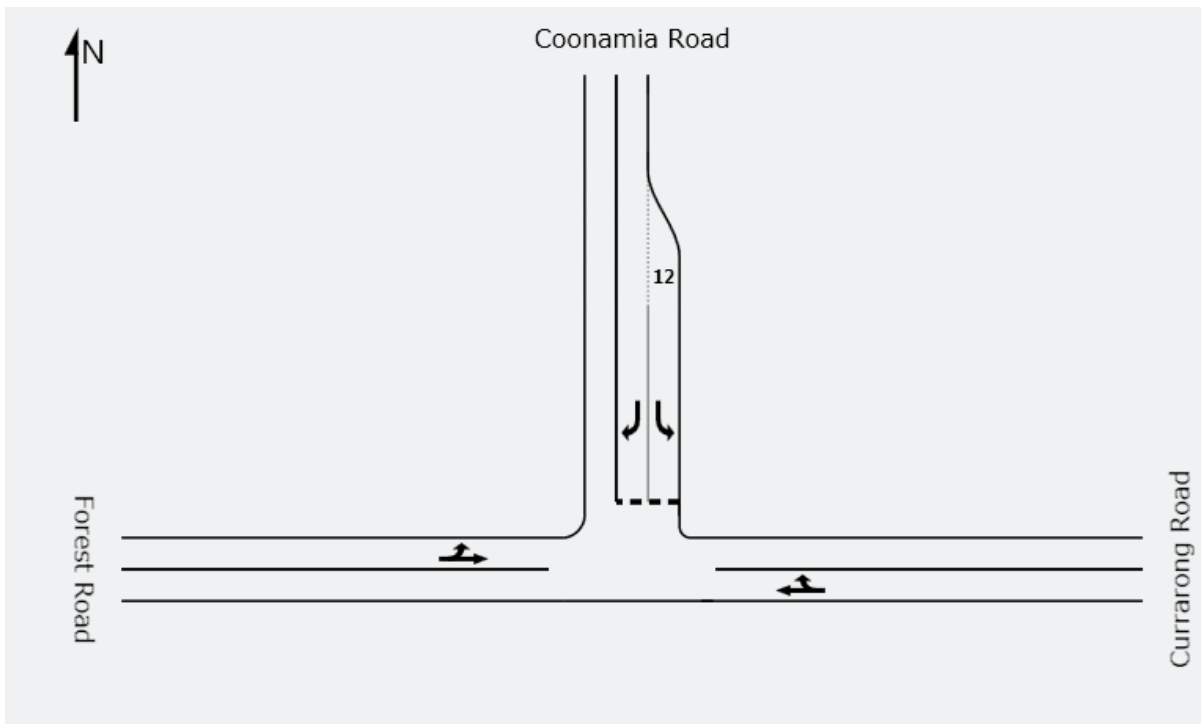
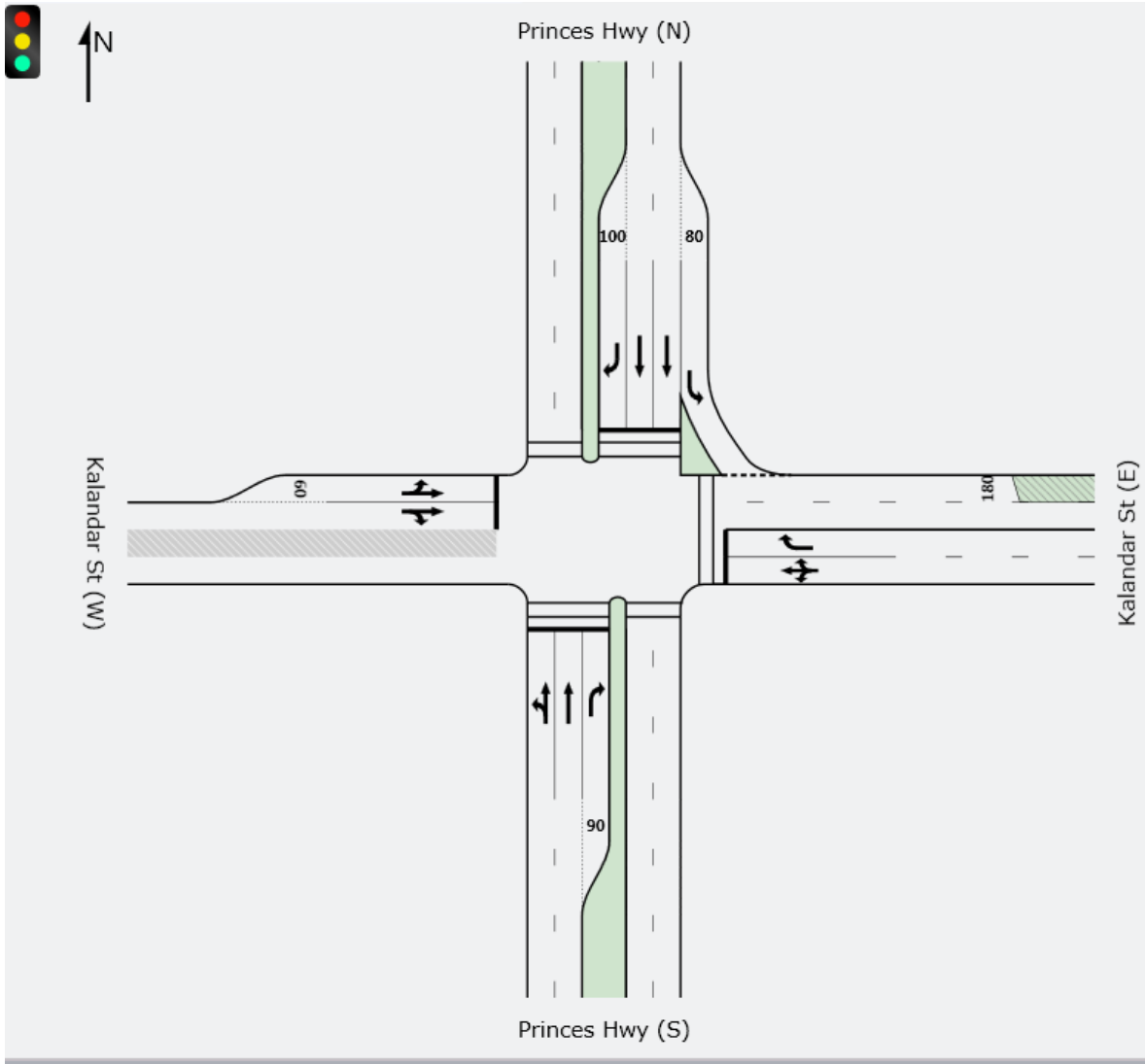
Appendix E

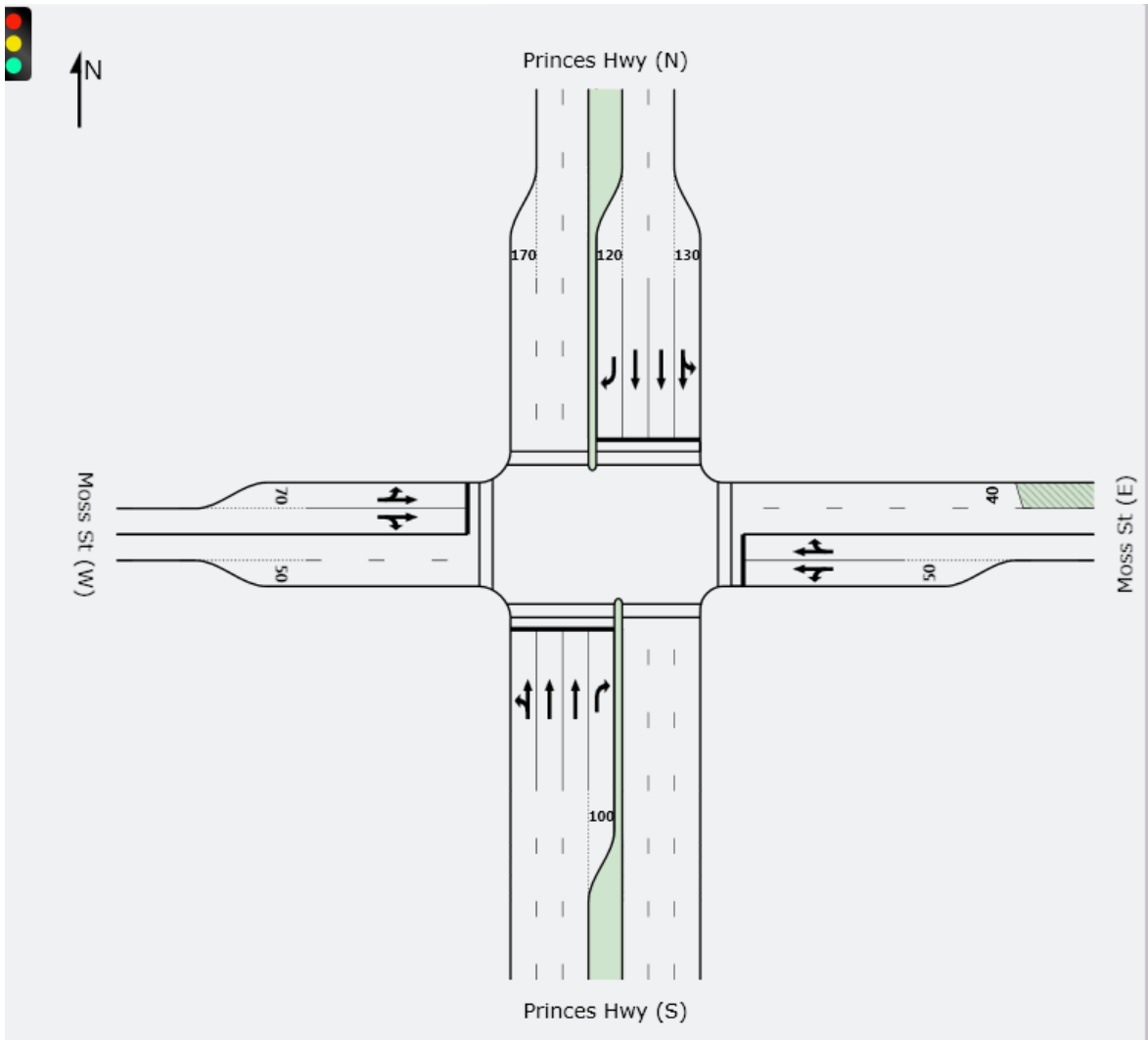
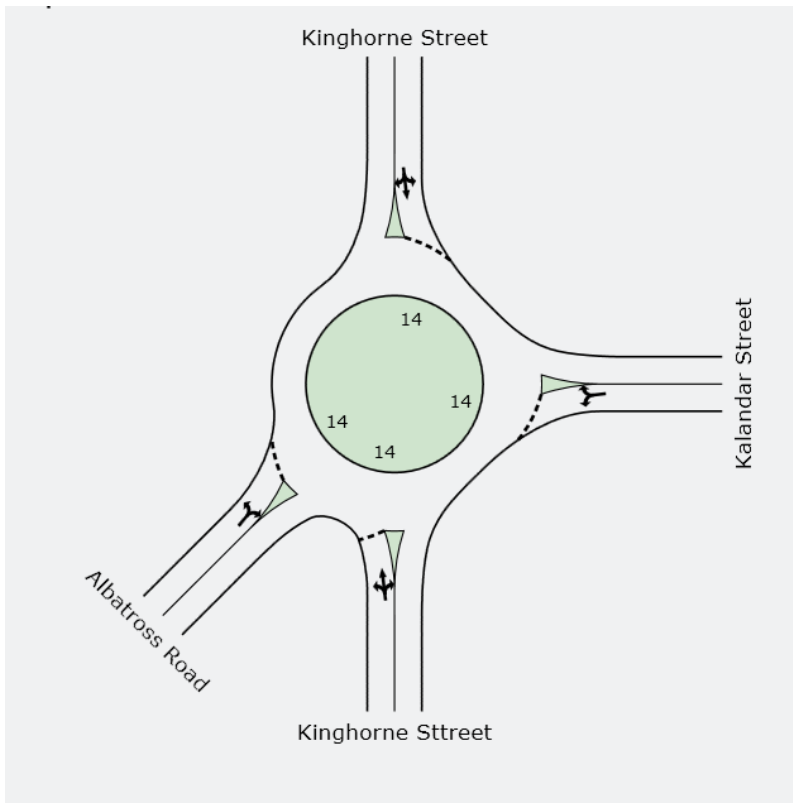
SIDRA INTERSECTION Layouts





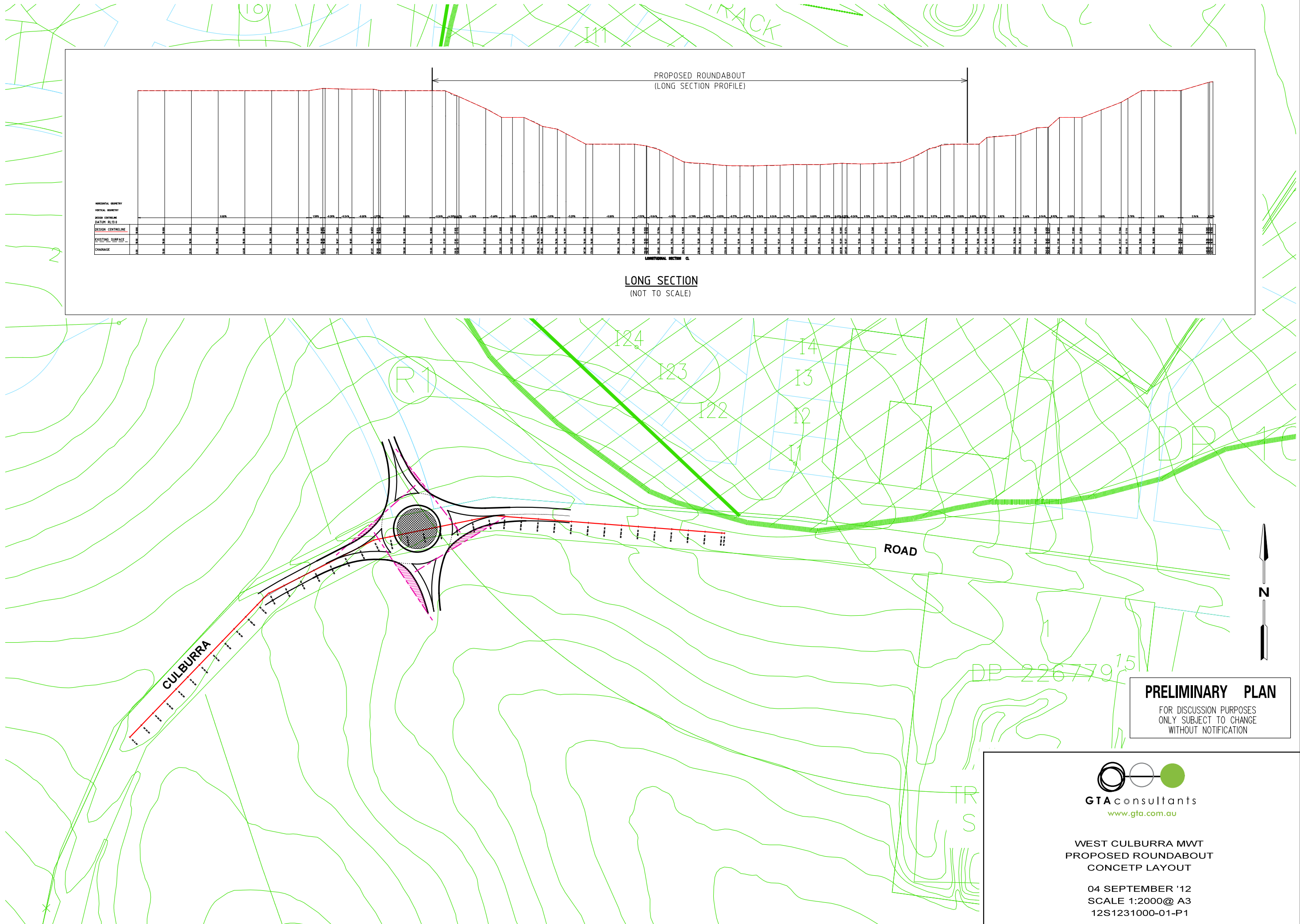






Appendix F

Preliminary Intersection Concept Design



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES
ONLY SUBJECT TO CHANGE
WITHOUT NOTIFICATION



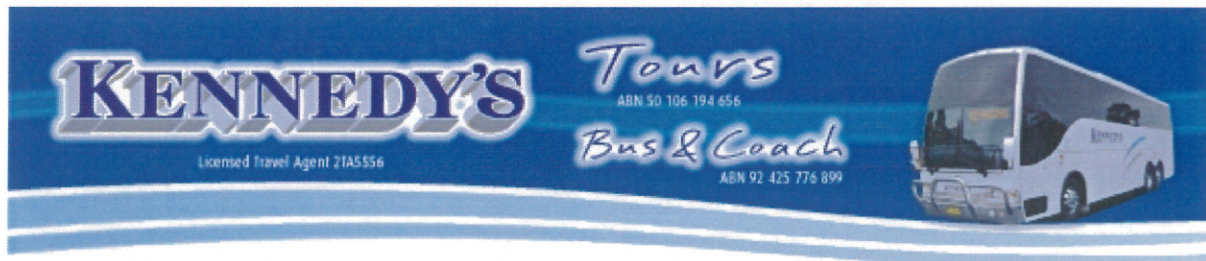
WEST CULBURRA MWT
PROPOSED ROUNDABOUT
CONCETP LAYOUT

04 SEPTEMBER '12
SCALE 1:2000@ A3
12S1231000-01-P1

Appendix G

Appendix G

Bus Operator Correspondence



Ken Hollyoak
Associate Director
GTA Consultants
PO Box 5254
West Chatswood NSW 1515

Re: Proposed Residential Development - Culburra

As a follow up from our initial discussion relating to your proposed development of 900 home sites in Culburra, the following information is provided.

Kennedys Bus & Coach is the contracted provider for Transport for NSW in supplying school & route services to Culburra / Orient Point. Additional patronage from your development would be welcomed and approval to include this development within our normal operations can be easily arranged. If the Development Proposal is approved we would be happy to extend our current service arrangements. There would be no additional cost to the government undercurrent contract arrangements.

It is important that you be aware in the design of this residential housing estate, that development enables bus stops to be located within 400 metre from access points / dwellings. The geometry of the road must be designed in order to allow for a minimum 12.5 metre to 13.5 metre bus to circulate through the proposed development.

Consideration also needs to be had relating to provision of Disability Access for low floor wheelchair buses which will be compulsory on all route services by 2020.

We look forward to providing services to this proposed new development. If I can be of any further assistance please contact me on the number below.

Yours sincerely

A handwritten signature in black ink, appearing to read 'David Tagg', is written over a large, loopy circular flourish.

David Tagg
12th September 2012

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