TRAFFIC IMPACT ASSESSMENT

BULK FUEL DISTRIBUTION DEPOT
(Incorporating Office Administration and Service Station with Convenience Store)

For

SOUTH WEST FUEL - COOTAMUNDRA
Hovell Street, Cootamundra

July 2017

Prepared by

Winning Traffic Solutions Pty Ltd
PO Box 4106 Denistone East NSW 2112
Tel: 61 2 9807 9962 Fax: 61 2 9807 9963
Mob. 0411 484 014
Email: terry@winningtraffic.com.au
ABN: 74 091 818 021

CONTENTS

TRAFFIC IMPACT ASSESSMENT

BULK FUEL DISTRIBUTION DEPOT
(Incorporating Office Administration and Service Station with Convenience Store)
For

SOUTH WEST FUEL - COOTAMUNDRA
Hovell Street, Cootamundra

1. *Introduction*

Winning Traffic Solutions Pty Ltd, an established consultancy in providing traffic engineering solutions and advice, has been engaged to assess the traffic impacts of the proposed development of the subject site as a Bulk Fuel Distribution Facility (incorporating Office Administration and Service Station with Convenience Store) located within the Cootamundra Shire Council administration boundaries.

It is understood South West Fuel currently operates a similar distribution facility at 26-30 Hovell Street and it is proposed to relocate and expand the operations and relocate to the proposed new site development.

The site of the new proposed development is located on land located between Albert Park and the Cootamundra railway station that is currently vacant (refer Figure 1).

Figure 1

This Traffic Impact Assessment Report is in support of the DA and addresses relevant traffic, vehicle access and parking issues associated with the operation of the proposed developed site.

Vehicle access provisions have been determined by the largest vehicle, a 26m articulated (B-double) vehicle, swept path analysis accessing the site from Hovell Street and provide all weather surface and associated works as required by Council for the site development.

This report has been prepared by Terry Winning, Director of Winning Traffic Solutions Pty. Ltd. an RMS accredited Level 3 Road safety Auditor (RSA-02-0063), and addresses the above issues as well as the operational aspects of the site.

2. ***Scope of Report***

This report reviews the relative traffic, parking and road safety operational aspects of a proposed Bulk Fuel Distribution Facility (incorporating Office Administration and Service Station with Convenience Store) proposed for the site.

This Report is based on Cootamundra Shire Council's Development Control Plan 2013; Chapter 5 - Car Parking and Vehicle Access. In addition reference to RMS "Guide to Traffic Generating Developments" (Version 2.2 – 2002) as well as AS/NZ Standard 2890.1:2004 – Part 1- Off-street Car Parking and 2890.2 – Part 2 Off-street Commercial Vehicle Facilities (parking), and 2890.6 – Part 6 Off-street parking for people with disabilities have been applied to the site access proposed and presents the assessment undertaken of traffic impacts of the development with due consideration of type of development, customer access needs, traffic generation, vehicle access, parking requirements, surrounding road network, overall road safety and the current restrictions of the site.

3. The Site

For the purpose of description the Hovell Street is orientated in a north/south direction past the subject site (refer Figure 1 above).

The site is located on the eastern side of Hovell Street, and is identified as No. 76 Hovell Street, Cootamundra. It is understood Hovell Street is an RMS Classified Road (HW 41) Olympic Highway recently relocated from Parker Street through the Cootamundra CBD.

The site is located within a mix of residential and light industrial development with Albert Park situated directly opposite the subject site (refer Figure 2).

Figure 2

Proposed vehicle access of the site is anticipated to be predominantly from the south (as existing) via separate driveways entry (single entry) and exit (X 2) further south along the frontage of the site (refer Appendix 1).

Hovell Street is speed regulated to 50 km/hr in the vicinity of the site. To the north of the site "Stop" sign traffic control in Temora Street/Pinkerton Road is employed and to the south a roundabout at Mackay Street/Muttama Road manages traffic through the intersection.

The road carriageway in Hovell Street is measured at 19.3 m employing edgeline traffic calming with generally 6m wide shoulders and 3.5m wide travel lanes in both directions. Kerbside parking restrictions 'No Stopping Vehicles Over 3 Tonne 6:00pm to 7:00am" are employed both sides of the road. The road network generally operates as a two-lane two-way undivided carriageway.

Abutting the northern end of the site is Salvation Army Facility/Building and quite active (assumed to be meals on wheels) during the day. To the south the abutting land accommodates Cootamundra Heritage Centre and Tourist Bureau – with buildings remotely located opposite Bourke Street. On the eastern side the Main Southern Railway Line abuts the site (refer Figure 2).

The site is clear of any buildings or infrastructure.

4. ***Proposed Site Development***

It is understood South West Fuel currently operates a similar distribution facility at 26-30 Hovell Street and it is proposed to relocate and expand the operations and relocate to the proposed new site development.

The existing Bulk Fuel Distribution Depot/Service Station is considerably run down and in need of refurbishment. The light vehicle fuelling facilities are in need of an upgrade and there are limited diesel facilities for the needs of both the local community and potential large vehicle customers and the operators are seeking to relocate and expand the existing services.

The site of the new proposed development is located on land located between Albert Park and the Cootamundra railway station that is currently vacant (refer Figure 1).

The proposal for the Bulk Fuel Distribution Depot/Service Station amenity upgrade includes, but is not limited to, the following major items (refer Appendix 1):

- Underground Fuel Tanks;
- Light Vehicle canopy and forecourt dispensers (both petrol and diesel);
- Heavy Vehicle diesel canopy and dispensers;
- Heavy Vehicle Loading canopy for fuel distribution (not accessible to public);
- Building Storage area housing Lubrication Oils;
- Main Building housing:
    - Office facilities supporting the Bulk Fuel Distribution activities;
    - Service Station counter area and Convenience Store;
    - Coffee Dispensing window (light vehicles only) and associated kitchen facilities;
    - Toilet amenities for general use;
- Parking, and
- Main Identification lighting of the proposed development

Note there are no "work bays" associated with the operation of the Depot or Service Station submitted for the development and a "Coffee Drive-thru lane/service window" has been incorporated into the site to meet the demands of established passing trade.

5. ***Traffic Flow***

Traffic flow information in Hovell Street was not available and to assist with the development application traffic volume surveys were undertaken at Temora Street/Pinkerton Road in the north and to the south at Mackay Street/Muttama Road.

In order to gauge current traffic flow conditions during the weekday morning and afternoon peak periods and for the purpose of evaluation, these periods are considered the peak times where the higher (commuter) traffic demand will mix with traffic of the proposed development.

The results of the traffic surveys are shown in Appendix 2.

In addition information provided by South West Fuel indicated there is no focus to "peak time" truck movements at the existing facility and are quite evenly spread throughout the day. The average traffic flow (vehicle trips per day - vtpd) is approximately 150vtpd made up of 8x B-doubles, 8x Semitrailers, 20x Rigid/Bus/Pantech vehicles, 5x tractor/loader/mowers and remainder passenger vehicles.

South West Fuel have also indicated the following desired operational hours for the proposed development:

- Bulk Fuel Distribution activities – 24/7 (secured access);
- Office Hours supporting Bulk Fuel distribution – 8:00am-5:00pm;
- Service Station/Convenience Store – 6:00am- 10:00pm (Credit Card operation 24/7)

6. ***Traffic Generation of Proposed Development.***

The greatest impact of generated traffic of the proposed development will be during the morning and afternoon peak periods where the higher (commuter) traffic demand will mix with traffic of the proposed development.

The RMS "Guide To Traffic Generation Developments" does not include information for bulk fuel distribution centres however, it is considered that no more than a maximum of 4 to 6 heavy vehicles per hour would seek the services of the facility and have been included in the overall assessment of generated traffic volumes.

Notwithstanding, the RMS Guide does include the following two-way weekday afternoon peak hour traffic generation rates for other uses:

- 0.66 A(F) for service stations with convenience stores, where A(F) is the area of the convenience store; and
- Office and commercial:
  - Daily vehicle trips = 10 per 100 m^2 gross floor area;
  - Evening peak hour vehicle trips = 2 per 100 m^2 gross floor area

On this basis, the following assumptions have been made to determine the various components of generated traffic for the proposed development:

- It has been established for normal service stations alongside arterial roads that about 75% of patronage comes from the adjacent road with induced traffic from other locations and roads representing about 25% of patronage;
- Heavy vehicles seeking access of the site, either for Fuel Distribution activities or "passing trade" seeking to refuel would be 4 to 6 vehicles per hour;
- The average percentage of total trips between 3.00 and 6.00 pm for fuel, is 46% (whether goods were purchased as well or not);
- In this instance traffic generation of the site distributed along Hovell Street is 80% southbound traffic and 20% northbound traffic.

For the purpose of calculation:

- the total building area (including shared amenities) = 382 m^2
- SWP Office (including staff area) – 122 m^2
- Service area including kitchen, cool rooms and store = 218 m^2

Applying the above parameters the anticipated traffic generated by the proposed development for the critical PM Peak commuter times as two-way trips is:

- SWF Office 2 x 1.22 = 2.44 two-way vtph
- Service Station/Convenience Store 0.66 x 218 = 143.88 two-way vtph
- Fuel Depot associated trips = 8 two-way vtph
- **TOTAL trips 156 vtph**

It should be noted that the calculated number of vehicles accessing the site and its impact on the adjoining road network, during the peak hour times, of the proposed development needs to take into account the existing traffic currently accessing the existing facility at 26-30 Hovell Street. This is assumed as 80%.

South West Fuel have indicated that the majority of vehicle trips, based on existing operations, would be from the north with only a small percentage generated from the south (i.e. right turn into and out of the proposed development).

On this basis and for the purpose of assessing on road traffic management the following two-way trip distribution has been applied:

- Southbound = 126 vtph
- Northbound = 30 vtph

(Note: the above includes 20% induced traffic by the development)

7. ***Evaluation of Traffic Generation by the Proposed Development***

The capacity of the road network is largely determined by the capacity of its intersections to cater for peak traffic flows.

SIDRA provides a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle. It must be noted the SIDRA software does not model "co-ordinated" intersections.

Based on average delay per vehicle, SIDRA estimates the following Levels of Service (LoS) for an intersection configuration operating under give way/stop signs, the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LoS:

0 to 14	=	"A" Good
15 to 28	=	"B" Acceptable delays and spare capacity
29 to 42	=	"C" Satisfactory but accident study required
43 to 56	=	"D" Near capacity and accident study required
57 to 70	=	"E" At capacity and requires other control mode
> 70	=	"F" unsatisfactory and requires other control mode

It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account in context of the whole of site operation. For example, an intersection where all movements are operating at a LoS "A" except one which is at LoS "E", may not necessarily define the intersection LoS if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

Traffic volume counts undertaken at the intersections upstream and downstream of the proposed development (refer Appendix 2) revealed low traffic movements that, based on volume/capacity assessment and observations, would operate at "LoS A" (with average delays for ALL movements of less than 15 seconds per vehicle during morning and afternoon peak times) thus it is considered SIDRA analysis was unwarranted.

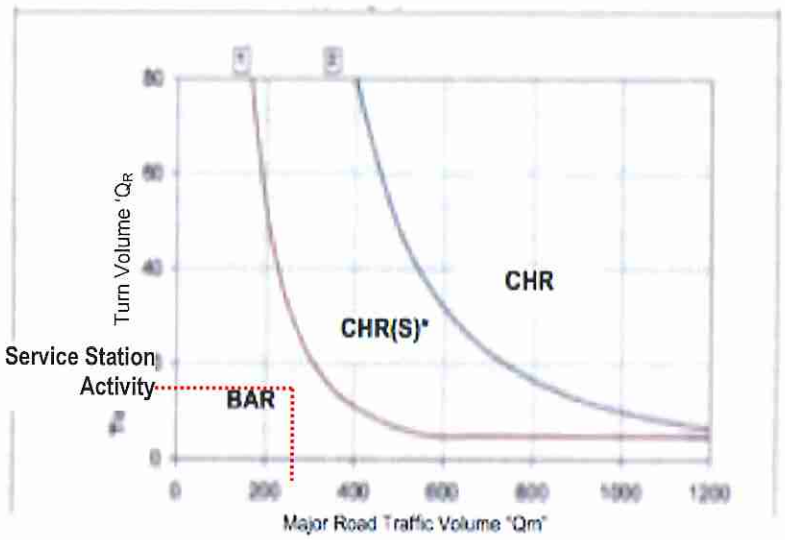
Due consideration has been given to the content of heavy vehicles within the traffic stream and it is considered that given the existing traffic volumes counts included heavy vehicles the percentage increase in this volume, due to the proposed development, would not be that great to influence the future LoS of either intersection.

Notwithstanding it is understood RMS have raised some concerns relating to the operation of the proposed development for access of northbound vehicles into the site and the need to provide an assessment of the warrants for intersection treatments accommodating passing of stationary vehicles turning right into the site and the road user safety implications. The following assessment is offered for consideration.

The AUSTROADS Guide To Traffic Management Part 6: Intersection, Interchanges and Crossings; Section 2.3.6 Warrants for BA, AU and CH Turn Treatments discusses the warrants to be employed for assessment of major road turn treatments for the basic, auxiliary and channelized layouts.

The following assessment was undertaken of the subject site and applies to the turning movements from the major road only.

Figure 3 indicates the selection for turn treatments on roads with a design speed of less than 100km/hr *(refer Austroads Guide To Traffic Management Part 6: Section 2.3.6)*



Design Speed ≤ 100km/h

Figure 3

In the context of this assessment it should be noted that:

- Curve 1 represents the boundary between a BAR and a CHR(S)
- Curve 2 represents the boundary between a CHR(S) and a CHR

From the surveyed traffic data and assessed traffic generation of the proposed development above (being the PM peak flow) shown in Figure 4 is the calculated assessment for the application of "Qm" *(refer AUSTROADS Part 6 Figure 2.24).*

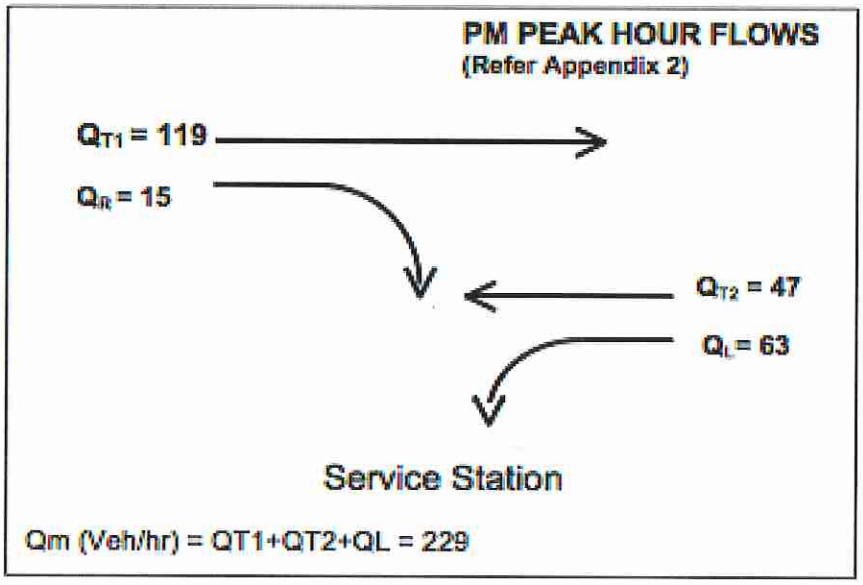


Figure 4

Applying the value of Qm to the above Figure a BAR is warranted.

The design for an Urban Basic Right-turn Treatment (BAR) is indicated in the AUSTROADS Guide To Road Design Section 7.7.1 (refer Figure 5 below).

It should be noted that applying the design to Hovell Street does not encroach into the linemarked kebside shoulder area that would require the removal of parking.

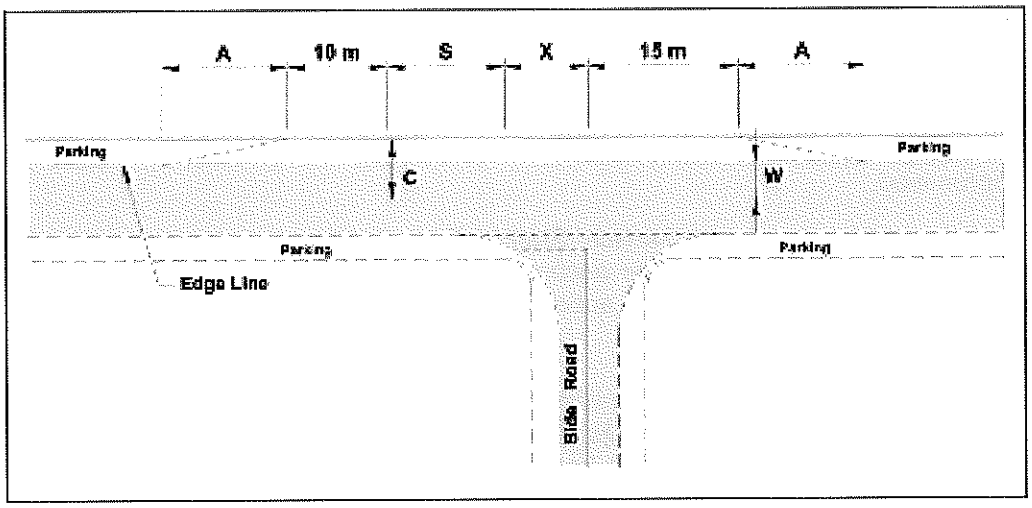


Figure 5

The need and extent of any upgrade of the pavement outside of the current travel lanes will need to be determined. Road testing will be required to determine existing pavement depth that will indicate whether or not a warrant for pavement strengthening is met and could be "Conditioned" should the DA be approved.

On this basis, the scope of Civil Design for associated road works for submission to RMS for approval can then proceed and the Construction Certificate stage on the basis and extent of road testing findings.

8. Vehicle Access and Movements Within the Site

It is intended all vehicles will access the site via one entry and two exit driveways to be constructed off Hovell Street.

There are good vehicle/vehicle and vehicle/pedestrian mutual sight lines at all access points compliant with AS 2890.1 Off-street Car Parking and AS 2890.2 Off-street Commercial Vehicle Facilities standards to ensure road user safety is not compromised.

The entry and exit of the Service Station Fuel Facility has been designed to accommodate the largest vehicle accessing the site, a 26m articulated (B-double) vehicle, as well as other vehicles accessing the site and is demonstrated by swept path analysis (refer Appendix 3).

Road user safety has been duly considered in that adequate sight lines are available at the access points of the adjoining road network, commensurate with the signposted speed of the road (50 km/hr), specifically at the proposed "Exit Only" driveways onto Hovell Street.

During the site inspection it was observed that at the point of proposed entry (northern) driveway kerbside parking was in high demand during the middle part of the day due to the adjacent Salvation Army operations.

It is submitted that consideration be given to employing "No Stopping" kerbside parking restrictions from the northern boundary of the proposed development site to beyond the first exit driveway to the south to ensure adequate vehicle/vehicle mutual sight lies are maintained and space available for the swept path of a vehicle turning into the site from Hovell Street. The first exit driveway is designated exclusively for vehicles exiting from the Service Station/Convenience Store whilst the second exit driveway accommodates heavy and light vehicles exiting other operations of the site.

Internal to the site access of both light and heavy vehicle refuelling areas have been identified in the submitted plans (refer Appendix 1).

Basically traffic flow within the site is configured in a clockwise direction. The majority of vehicles (both light and heavy) will access the site via Hovell Street in the southbound direction (currently the case). It is anticipated that only a small percentage of vehicles will enter the site from the south.

The majority of light vehicles entering the service station/convenience store refuelling facility or take away coffee window will move to the right after entry and progress to the refueling pumps. A passing bay is provided between the refueling pumps for those vehicles seeking the take away coffee window only. In addition and for those vehicles exiting the take away coffee window, "Give Way" signposting is provided at the exit point of the take away coffee window to ensure driver awareness of a potential vehicle conflict point.

Adequate queuing area has been provided for light vehicles queuing for the service station/convenience store refuelling facility, take away coffee window and heavy vehicles (not expected to be more than two vehicle) to accommodate stored vehicles and is demonstrated in Appendix 3.

Other light vehicles seeking the Convenience Store facility only, maintain a clockwise movement to access parking bays provided. The parking facilities have been designed in accordance with AS 2890.1 Off-street Car Parking.

Heavy vehicles are to proceed past the light vehicle refueling facility and also turn right into the heavy vehicle fuel facilities. This movement has been appropriately signposted (refer Appendix 1). There is no provision for heavy vehicle parking on the site excepting the storage areas for the refueling of the underground tanks and loading/unloading area adjacent to the Oil Storage Area (that is not accessible to the

public), the later is anticipated to be no more than two (2) vehicles at any one time with access being controlled by South West Fuel site management thus negating any queuing issues that may arise.

Exiting the site it is expected all vehicles (both light and heavy) will exit via the designated exit driveways provided to Hovell Street.

The southern access driveway is separated by median/plinth internal to the site (an RMS issue) that allows gated security for the operation of the Bulk Fuel distribution activities (on the southern side of the site) outside of designated operational hours and accessed via a remote key device.

The design of the southern exit driveway has been determined to accommodate the swept path of a B-double exiting the site from the restricted and unrestricted areas, and due to site constraints it is not practical to provide separate driveways narrow this driveway.

The road user safety issues of these exits have been discussed above.

9. Parking

Council parking rates shown in DCP 2013 Section 5 – Car Parking and Vehicle Access that applies to all developments indicates the following car parking requirements:

Parking Requirements

Land Use	Parking Requirement
Office and Commercial	Unrestrained situation: 1 space per 40m2 GFA Restrained situation: refer to council parking code
Service Station/ Convenience Stores NOTE: No work bays No restaurant	Requirements are additive: ▪ 6 spaces per work bay ▪ 5 spaces per 100m2 GFA of convenience store *(if restaurant present, then greater of:* ▪ 15 spaces per 100m2 GFA, or ▪ 1 space per 3 seats)

The proposed office building/service station/convenience store component for the Bulk Fuel Distribution Depot proposes a GFA of 382m^2 and understood the service station/convenience store employing a maximum of three (3) staff members and for office and depot five (5) staff members at any one time.

For the purpose of calculation:

- SWP Office (including staff area) – 122 m^2
- Service area including kitchen, cool rooms and store = 218 m^2

On the basis of the above the number of car parking spaces required for the proposed development is assessed as follows:

Staff members = 3 spaces

Shops and Retail = 11 spaces

In total **fourteen (14) car parking spaces** are required to comply with Council's DCP.

In total, the submitted proposed development as a described above provides **twewnty (20)** car parking spaces accommodating disabled access and provision for 26m long B-double access at the tank refueling facilities.

The designated areas for parking activities servicing the convenience store, other than refueling pumps, can accommodate the required number (14 spaces) on the site that includes parking along the northern boundary (refer Appendix 1) thus satisfying Council DCP requirements.

The proposed parking provisions, not only for the submitted development but the whole of site operation, is therefore considered appropriate.

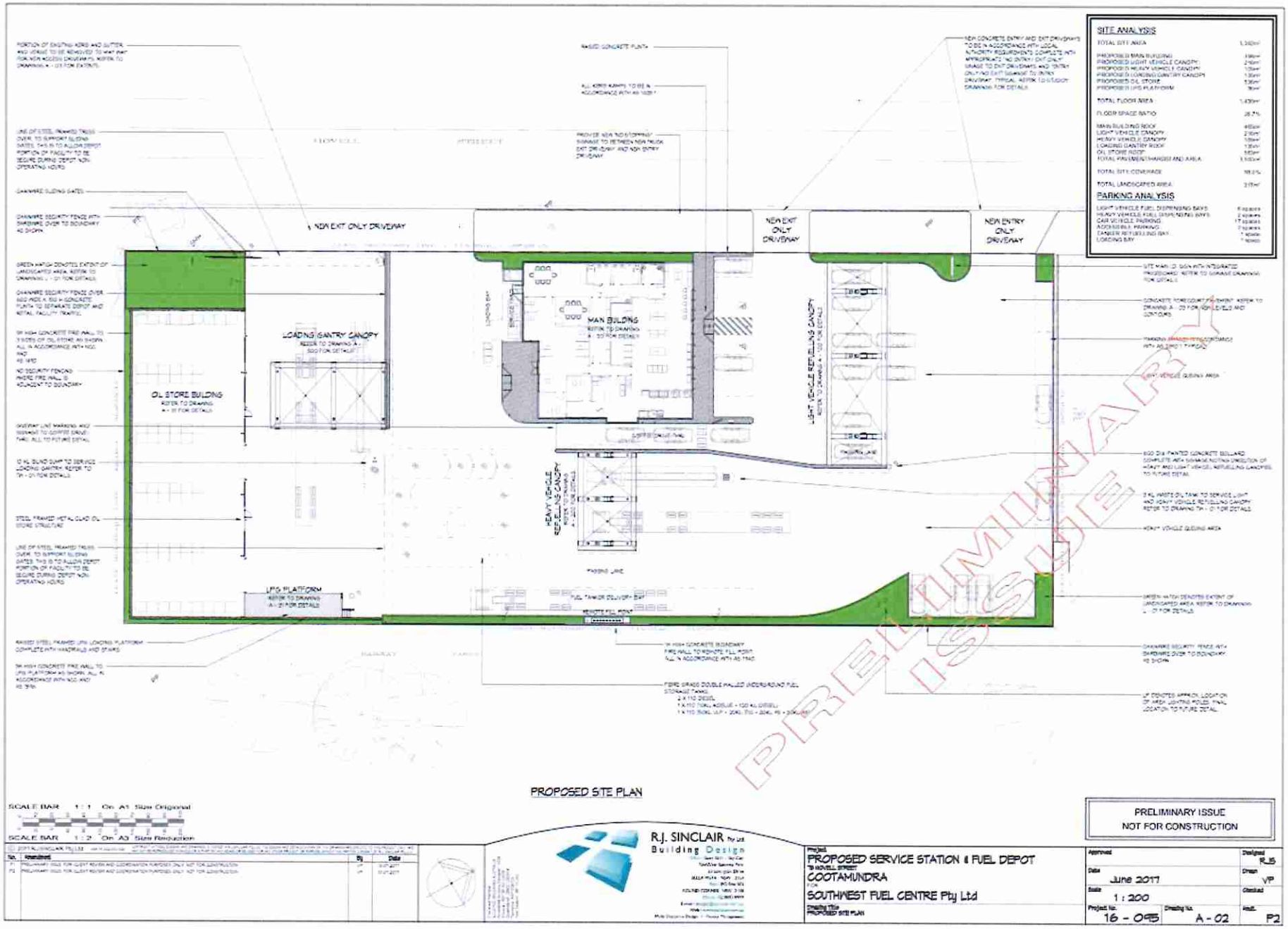
10. Conclusion

The existing Bulk Fuel Distribution Depot/Service Station located at 26-30 Hovell Street is considerably run down and in need of refurbishment. The light vehicle fuelling facilities are in need of an upgrade and there are limited diesel facilities for the needs of both the local community and potential large vehicle customers and the operators are seeking to relocate the existing services.

It is proposed to expand the existing operations and relocate to the proposed new site development described above.

On the basis of this submission, it is considered that the assessment of the traffic and parking impacts and the assumptions and calculations made in determining those impacts are considered valid.

In conclusion, it is considered the proposed development of the subject site as a Bulk Fuel Distribution Depot (Incorporating Office Administration and Service Station with Convenience Store) will not impact the existing Level of Service (LoS) provided on the adjoining road network nor will access or road user safety be compromised by the operation shown in the submitted plans and is submitted for Council approval.



PROPOSED SITE PLAN

SCALE BAR 1 : 1 On A1 Size Original

SCALE BAR 1 : 2 On A3 Size Reduction

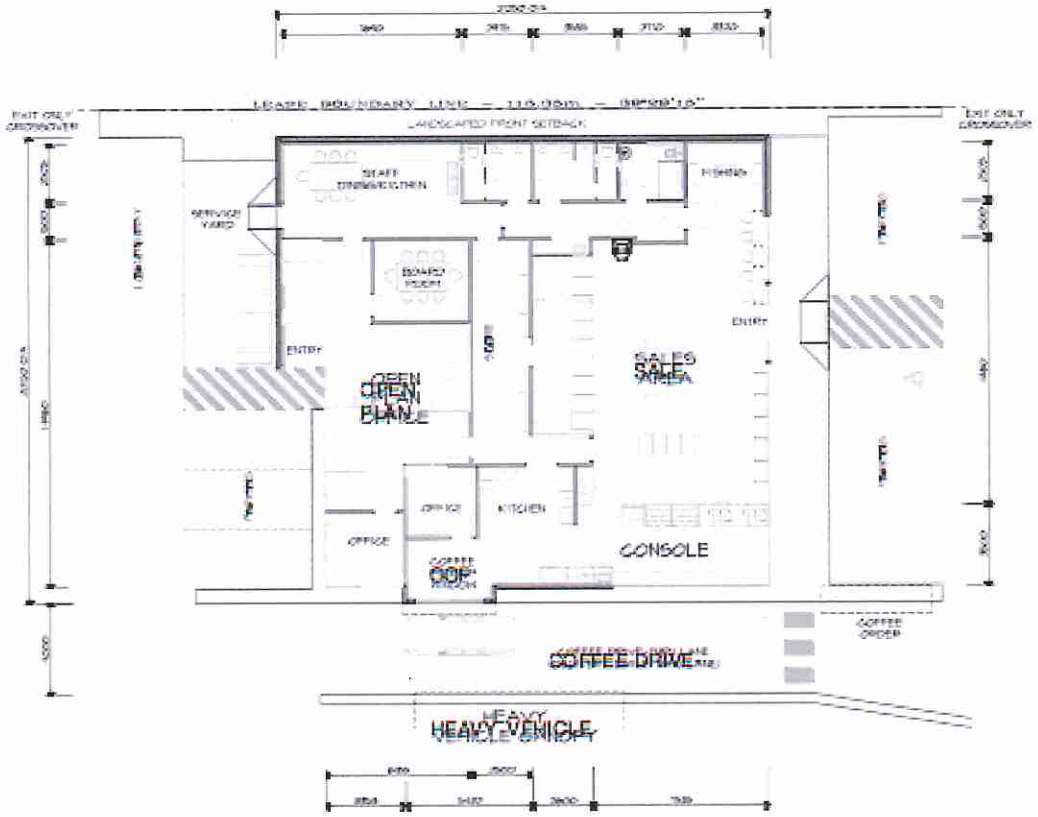
PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

R.J. SINCLAIR Pty Ltd
Building Design

PROPOSED SERVICE STATION & FUEL DEPOT
COOTAMUNDRA
SOUTHWEST FUEL CENTRE Pty Ltd

June 2017
1 : 200
16 - 095
A - 02
P2

APPENDIX 1



PRELIMINARY ISSUE - FOR COMMENT

BUILDING LAYOUT - CONCEPT PLAN - OPTION 7

SCALE BAR 1 : 1 On A1 Size Original

SCALE BAR 1 : 2 On A3 Size Reduction

PRELIMINARY ISSUE FOR DISCUSSION PURPOSES ONLY NOT FOR CONSTRUCTION

R.J. SINCLAIR Pty Ltd
Building Design

SERVICE STATION + FUEL DEPOT
COOTAMUNDRA NSW
SOUTHWEST FUEL CENTRE Pty Ltd
BUILDING LAYOUT - CONCEPT PLAN - OPTION 7

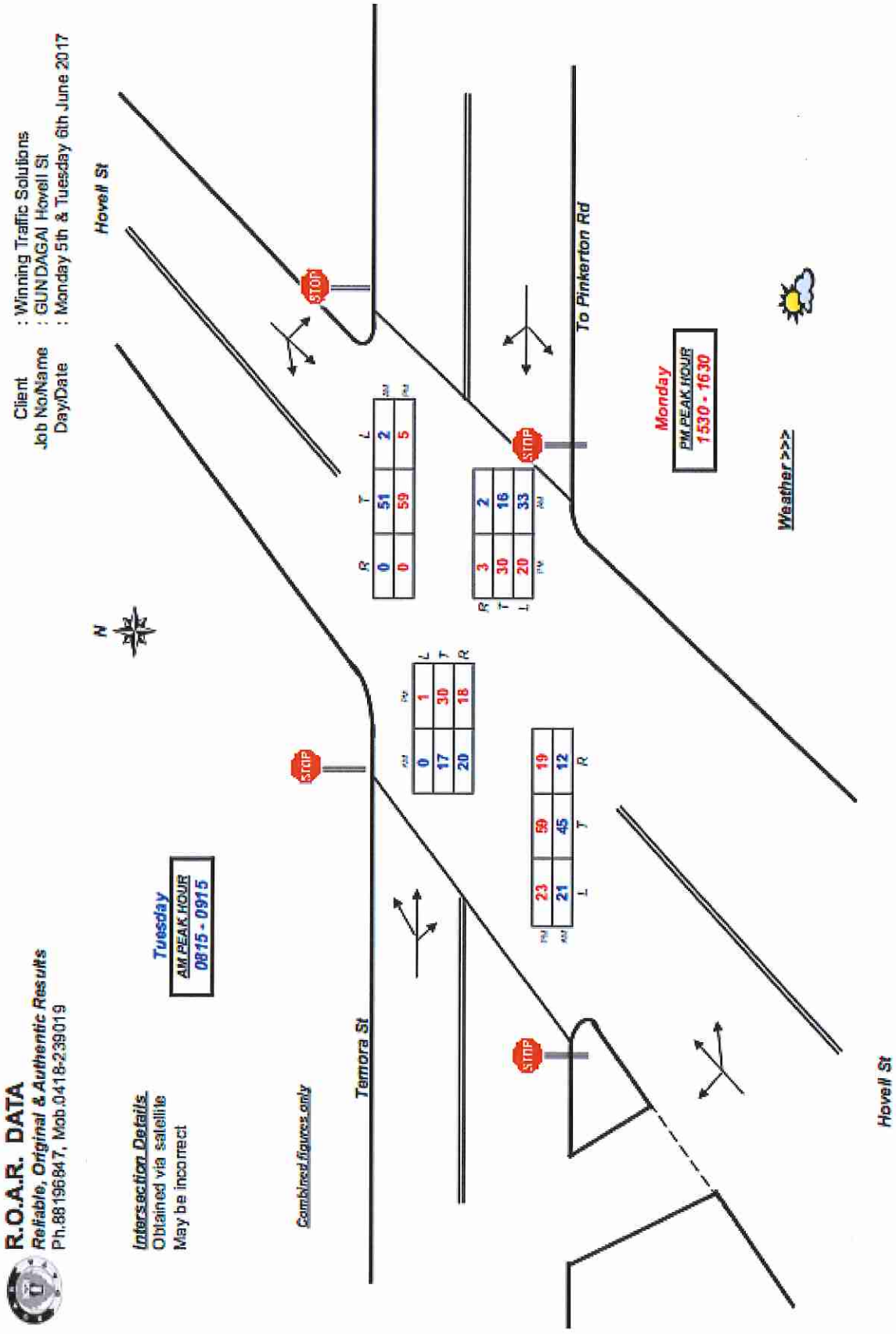
January 2017
1 : 100 @ A1 & 1 : 200 @ A3

16 - 045 SK - 07.1 P2

APPENDIX 2

TRAFFIC SURVEY DATA

Hovell Street and Temora Street/Pinkerton Road



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : Winning Traffic Solutions
Job No/Name : GUNDAGAI Hovell St
Day/Date : Tuesday 6th June 2017

Lights

Time Per	NORTH Hovell St			WEST Temora St			SOUTH Hovell St			EAST To Pinkerton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0645	0	3	0	0	4	3	3	3	0	1	2	0	16
0645 - 0700	0	7	0	0	6	7	1	8	1	3	1	0	34
0700 - 0715	0	5	0	0	3	3	3	7	2	2	3	0	28
0715 - 0730	0	7	0	0	2	3	1	7	0	3	5	1	29
0730 - 0745	1	5	0	0	0	2	5	8	2	4	3	0	30
0745 - 0800	0	12	0	0	4	3	4	14	2	5	4	1	49
0800 - 0815	0	4	0	0	2	4	5	14	3	2	3	0	37
0815 - 0830	0	14	0	0	6	5	5	11	0	5	5	1	52
0830 - 0845	0	6	0	0	4	2	5	7	1	6	3	1	37
0845 - 0900	1	15	0	0	3	3	7	9	8	9	7	0	62
0900 - 0915	1	10	0	0	3	9	4	13	3	9	1	0	53
0915 - 0930	0	11	0	2	7	1	5	10	1	4	6	1	48
Period End	3	99	0	2	44	45	48	111	23	55	43	5	478

Peak Time	NORTH Hovell St			WEST Temora St			SOUTH Hovell St			EAST To Pinkerton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0730	0	22	0	0	15	16	8	25	3	9	11	1	110
0645 - 0745	1	24	0	0	11	15	10	30	5	12	12	1	121
0700 - 0800	1	29	0	0	9	11	13	36	0	14	15	2	130
0715 - 0815	1	28	0	0	8	12	15	43	7	14	15	2	145
0730 - 0830	1	35	0	0	12	14	19	47	7	16	15	2	168
0745 - 0845	0	36	0	0	16	14	19	46	6	20	15	3	175
0800 - 0900	1	39	0	0	15	14	22	41	12	24	18	2	188
0815 - 0915	2	45	0	0	16	19	21	40	12	31	16	2	204
0830 - 0930	2	42	0	2	17	15	21	39	13	30	17	2	200
PEAK HOUR	2	45	0	0	16	19	21	40	12	31	16	2	204

Heavies

Time Per	NORTH Hovell St			WEST Temora St			SOUTH Hovell St			EAST To Pinkerton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0645	0	1	0	0	0	1	0	0	0	0	0	0	2
0645 - 0700	0	1	0	0	0	0	0	3	0	0	0	0	4
0700 - 0715	0	1	0	0	0	0	1	2	0	0	0	0	4
0715 - 0730	0	3	0	0	0	0	0	5	0	0	0	0	8
0730 - 0745	0	0	0	0	0	0	0	3	0	0	0	0	3
0745 - 0800	0	0	1	0	0	0	0	1	0	0	0	0	2
0800 - 0815	0	1	0	0	0	0	0	2	0	0	0	0	3
0815 - 0830	0	1	0	0	1	0	0	2	0	1	0	0	5
0830 - 0845	0	1	0	0	0	0	0	2	0	1	0	0	4
0845 - 0900	0	4	0	0	0	0	0	0	0	0	0	0	4
0900 - 0915	0	0	0	0	0	1	0	1	0	0	0	0	2
0915 - 0930	0	2	0	0	0	0	0	2	0	0	0	0	4
Period End	0	15	1	0	1	2	1	23	0	2	0	0	45

Peak Per	NORTH Hovell St			WEST Temora St			SOUTH Hovell St			EAST To Pinkerton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0730	0	6	0	0	0	1	1	10	0	0	0	0	18
0645 - 0745	0	5	0	0	0	0	1	13	0	0	0	0	19
0700 - 0800	0	4	1	0	0	0	1	11	0	0	0	0	17
0715 - 0815	0	4	1	0	0	0	0	11	0	0	0	0	16
0730 - 0830	0	2	1	0	1	0	0	8	0	1	0	0	13
0745 - 0845	0	3	1	0	1	0	0	7	0	2	0	0	14
0800 - 0900	0	7	0	0	1	0	0	6	0	2	0	0	16
0815 - 0915	0	6	0	0	1	1	0	5	0	2	0	0	15
0830 - 0930	0	7	0	0	0	1	0	5	0	1	0	0	14
PEAK HOUR	0	6	0	0	1	1	0	5	0	2	0	0	15

Combined

Time Per	NORTH Hovell St			WEST Temora St			SOUTH Hovell St			EAST To Pinkerton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0645	0	4	0	0	4	4	3	3	0	1	2	0	21
0645 - 0700	0	8	0	0	6	7	1	11	1	3	1	0	38
0700 - 0715	0	6	0	0	3	3	4	9	2	2	3	0	32
0715 - 0730	0	10	0	0	2	3	1	12	0	3	5	1	37
0730 - 0745	1	5	0	0	0	2	5	11	2	4	3	0	33
0745 - 0800	0	12	1	0	4	3	4	15	2	5	4	1	51
0800 - 0815	0	5	0	0	2	4	5	16	3	2	3	0	40
0815 - 0830	0	15	0	0	7	5	5	13	0	6	5	1	57
0830 - 0845	0	7	0	0	4	2	5	9	1	9	3	1	41
0845 - 0900	1	19	0	0	3	3	7	9	8	9	7	0	66
0900 - 0915	1	10	0	0	3	10	4	14	3	9	1	0	55
0915 - 0930	0	13	0	2	7	1	5	12	1	4	6	1	52
Period End	3	114	1	2	45	47	49	134	23	57	43	5	523

Peak Per	NORTH Hovell St			WEST Temora St			SOUTH Hovell St			EAST To Pinkerton Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0730	0	28	0	0	15	17	9	35	3	9	11	1	128
0645 - 0745	1	29	0	0	11	15	11	43	5	12	12	1	140
0700 - 0800	1	33	1	0	9	11	14	47	6	14	15	2	153
0715 - 0815	1	32	1	0	8	12	15	54	7	14	15	2	161
0730 - 0830	1	37	1	0	13	14	19	55	7	17	15	2	181
0745 - 0845	0	39	1	0	17	14	19	53	6	22	15	3	189
0800 - 0900	1	46	0	0	16	14	22	47	12	26	18	2	204
0815 - 0915	2	51	0	0	17	20	21	45	12	33	16	2	219
0830 - 0930	2	49	0	2	17	16	21	44	13	31	17	2	214
PEAK HOUR	2	51	0	0	17	20	21	45	12	33	16	2	219

R.O.A.R DATA

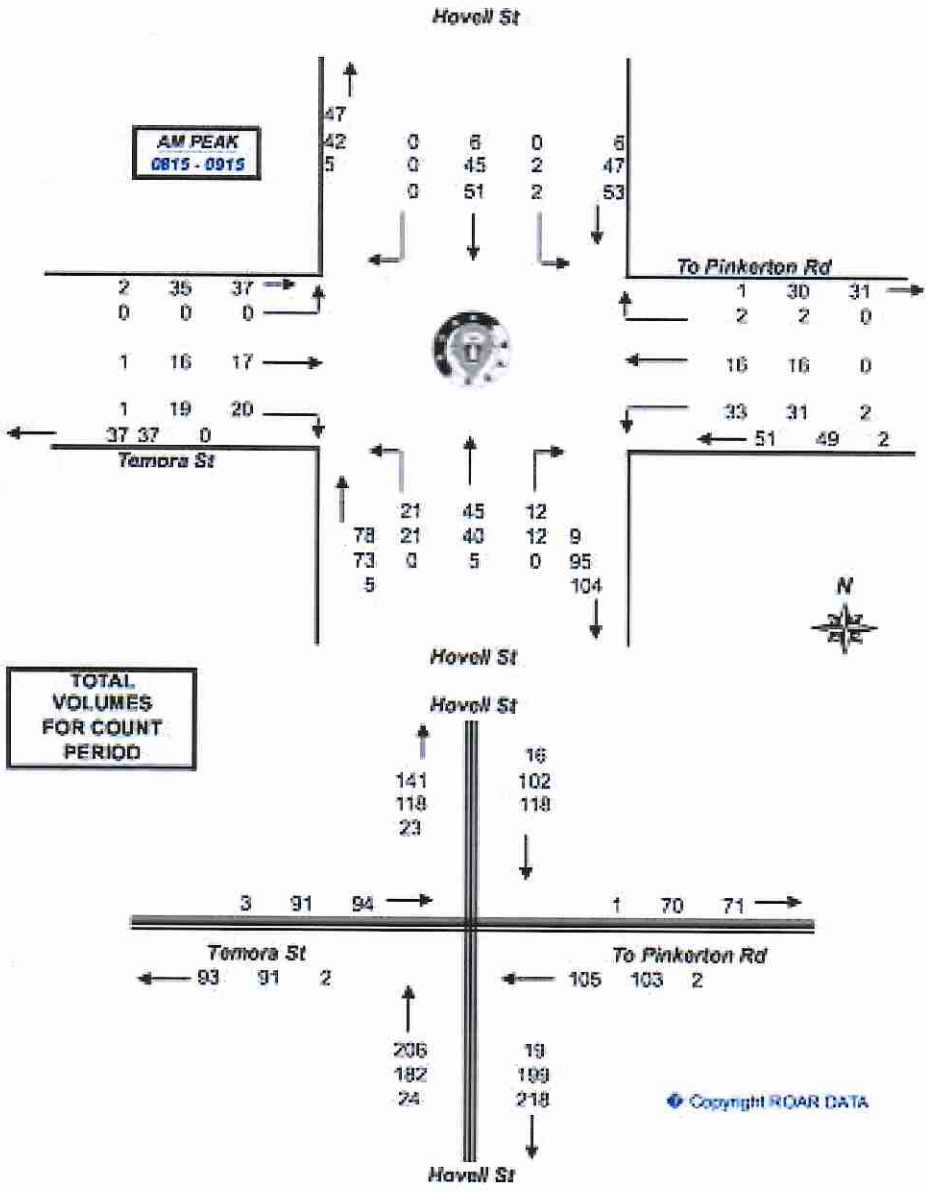
Reliable, Original & Authentic Results

Ph:88196847, Mob:0418-230019

Client : Winning Traffic Solutions
Job No/Name : GUNDAGAI Hovell St
Day/Date : Tuesday 6th June 2017

Peds	NORTH	WEST	SOUTH	EAST	
	Hovell St	*Tamora St*	*Hovell St*	*To Pinkerton Rd*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0630 - 0645	0	0	0	0	0
0645 - 0700	0	0	0	0	0
0700 - 0715	0	0	0	0	0
0715 - 0730	0	0	0	0	0
0730 - 0745	1	0	1	1	3
0745 - 0800	1	0	3	1	5
0800 - 0815	0	0	0	0	0
0815 - 0830	0	0	9	0	9
0830 - 0845	0	0	0	0	0
0845 - 0900	0	0	0	0	0
0900 - 0915	0	0	0	0	0
0915 - 0930	0	0	1	1	2
Period End	2	0	14	3	19

Peds	NORTH	WEST	SOUTH	EAST	
	Hovell St	*Tamora St*	*Hovell St*	*To Pinkerton Rd*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0630 - 0730	0	0	0	0	0
0645 - 0745	1	0	1	1	3
0700 - 0800	2	0	4	2	8
0715 - 0815	2	0	4	2	8
0730 - 0830	2	0	13	2	17
0745 - 0845	1	0	12	1	14
0800 - 0900	0	0	9	0	9
0815 - 0915	0	0	9	0	9
0830 - 0930	0	0	1	1	2
PEAK HR	0	0	9	0	9



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph 88196847, Mob 0418-239019

Client : Winning Traffic Solutions
Job No/Name : GUNDAGAI Hovell St
Day/Date : Monday 5th June 2017

Lights

	NORTH Hovell St			WEST Tomora St			SOUTH Hovell St			EAST To Pinkerton Rd			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1530 - 1545	1	15	0	0	12	5	5	10	5	4	0	1	66
1545 - 1600	2	8	0	0	9	3	10	11	4	8	8	1	62
1600 - 1615	1	13	0	1	3	3	3	15	4	2	8	1	54
1615 - 1630	1	9	0	0	6	5	3	17	5	6	7	0	59
1630 - 1645	0	11	0	0	12	2	7	9	8	3	1	0	53
1645 - 1700	2	9	1	0	2	6	2	12	2	2	4	3	45
1700 - 1715	3	9	1	0	11	2	6	9	2	1	5	1	50
1715 - 1730	0	8	1	0	8	6	2	7	2	6	7	0	47
1730 - 1745	1	6	0	0	5	3	8	5	7	3	3	0	41
1745 - 1800	0	3	0	0	3	2	5	7	3	1	2	0	26
1800 - 1815	1	2	0	1	8	1	4	3	4	2	4	1	31
1815 - 1830	0	2	0	0	4	0	2	4	1	1	3	1	18
Period End	12	95	3	2	83	38	57	109	47	39	58	9	552

Lights

	NORTH Hovell St			WEST Tomora St			SOUTH Hovell St			EAST To Pinkerton Rd			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1530 - 1630	5	45	0	1	30	16	21	53	18	20	29	3	241
1545 - 1645	4	41	0	1	30	13	23	52	21	19	22	2	228
1600 - 1700	4	42	1	1	23	16	15	52	19	13	20	4	211
1615 - 1715	6	38	2	0	31	15	18	47	17	12	17	4	207
1630 - 1730	5	37	3	0	33	16	17	37	14	12	17	4	195
1645 - 1745	6	32	3	0	26	17	16	33	13	12	19	4	183
1700 - 1800	4	26	2	0	27	13	21	28	14	11	17	1	164
1715 - 1815	2	19	1	1	24	12	19	22	16	12	16	1	145
1730 - 1830	2	13	0	1	20	6	19	19	15	7	12	2	116
PEAK HOUR	5	45	0	1	30	16	21	53	18	20	29	3	241

Heavies

	NORTH Hovell St			WEST Tomora St			SOUTH Hovell St			EAST To Pinkerton Rd			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1530 - 1545	0	1	0	0	0	0	1	0	1	0	0	0	3
1545 - 1600	0	4	0	0	0	2	0	3	0	0	1	0	10
1600 - 1615	0	3	0	0	0	0	0	3	0	0	0	0	6
1615 - 1630	0	6	0	0	0	0	1	0	0	0	0	0	7
1630 - 1645	0	4	0	0	0	0	0	0	0	0	0	0	4
1645 - 1700	0	1	0	0	0	0	0	2	0	0	0	0	3
1700 - 1715	0	4	0	0	0	0	0	1	0	0	0	0	5
1715 - 1730	0	2	0	0	0	0	1	5	1	0	0	0	9
1730 - 1745	0	2	0	0	0	0	0	3	0	0	0	0	5
1745 - 1800	0	2	0	0	0	0	0	1	0	0	0	0	3
1800 - 1815	0	2	0	0	0	0	0	4	0	0	1	0	7
1815 - 1830	0	1	0	0	0	0	0	2	0	0	0	0	3
Period End	0	32	0	0	0	2	3	24	2	0	2	0	65

Heavies

	NORTH Hovell St			WEST Tomora St			SOUTH Hovell St			EAST To Pinkerton Rd			
Peak Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1530 - 1630	0	14	0	0	0	2	2	0	1	0	1	0	26
1545 - 1645	0	17	0	0	0	2	1	6	0	0	1	0	27
1600 - 1700	0	14	0	0	0	0	1	5	0	0	0	0	20
1615 - 1715	0	15	0	0	0	0	1	3	0	0	0	0	19
1630 - 1730	0	11	0	0	0	0	1	8	1	0	0	0	21
1645 - 1745	0	9	0	0	0	0	1	11	1	0	0	0	22
1700 - 1800	0	10	0	0	0	0	1	10	1	0	0	0	22
1715 - 1815	0	8	0	0	0	0	1	13	1	0	1	0	24
1730 - 1830	0	7	0	0	0	0	0	10	0	0	1	0	18
PEAK HOUR	0	14	0	0	0	2	2	0	1	0	1	0	26

Combined

	NORTH Hovell St			WEST Tomora St			SOUTH Hovell St			EAST To Pinkerton Rd			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1530 - 1545	1	16	0	0	12	5	6	10	6	4	0	1	69
1545 - 1600	2	12	0	0	9	5	10	14	4	8	7	1	72
1600 - 1615	1	16	0	1	3	3	3	18	4	2	8	1	60
1615 - 1630	1	15	0	0	6	5	4	17	5	6	7	0	66
1630 - 1645	0	15	0	0	12	2	7	9	8	3	1	0	57
1645 - 1700	2	10	1	0	2	6	2	14	2	2	4	3	48
1700 - 1715	3	13	1	0	11	2	6	10	2	1	5	1	55
1715 - 1730	0	10	1	0	8	6	3	12	3	6	7	0	56
1730 - 1745	1	8	0	0	5	3	8	8	7	3	3	0	46
1745 - 1800	0	5	0	0	3	2	5	8	3	1	2	0	29
1800 - 1815	1	4	0	1	8	1	4	7	4	2	5	1	38
1815 - 1830	0	3	0	0	4	0	2	6	1	1	3	1	21
Period End	12	127	3	2	83	40	60	133	49	39	60	9	617

Combined

	NORTH Hovell St			WEST Tomora St			SOUTH Hovell St			EAST To Pinkerton Rd			
Peak Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1530 - 1630	5	59	0	1	30	16	23	59	19	20	30	3	267
1545 - 1645	4	58	0	1	30	15	24	58	21	19	23	2	255
1600 - 1700	4	56	1	1	23	16	16	58	19	13	20	4	231
1615 - 1715	6	53	2	0	31	15	19	50	17	12	17	4	226
1630 - 1730	5	48	3	0	33	16	18	45	15	12	17	4	216
1645 - 1745	6	41	3	0	26	17	19	44	14	12	19	4	205
1700 - 1800	4	36	2	0	27	13	22	38	15	11	17	1	186
1715 - 1815	2	27	1	1	24	12	20	35	17	12	17	1	169
1730 - 1830	2	20	0	1	20	6	19	29	15	7	13	2	134
PEAK HOUR	5	59	0	1	30	16	23	59	19	20	30	3	267

R.O.A.R DATA

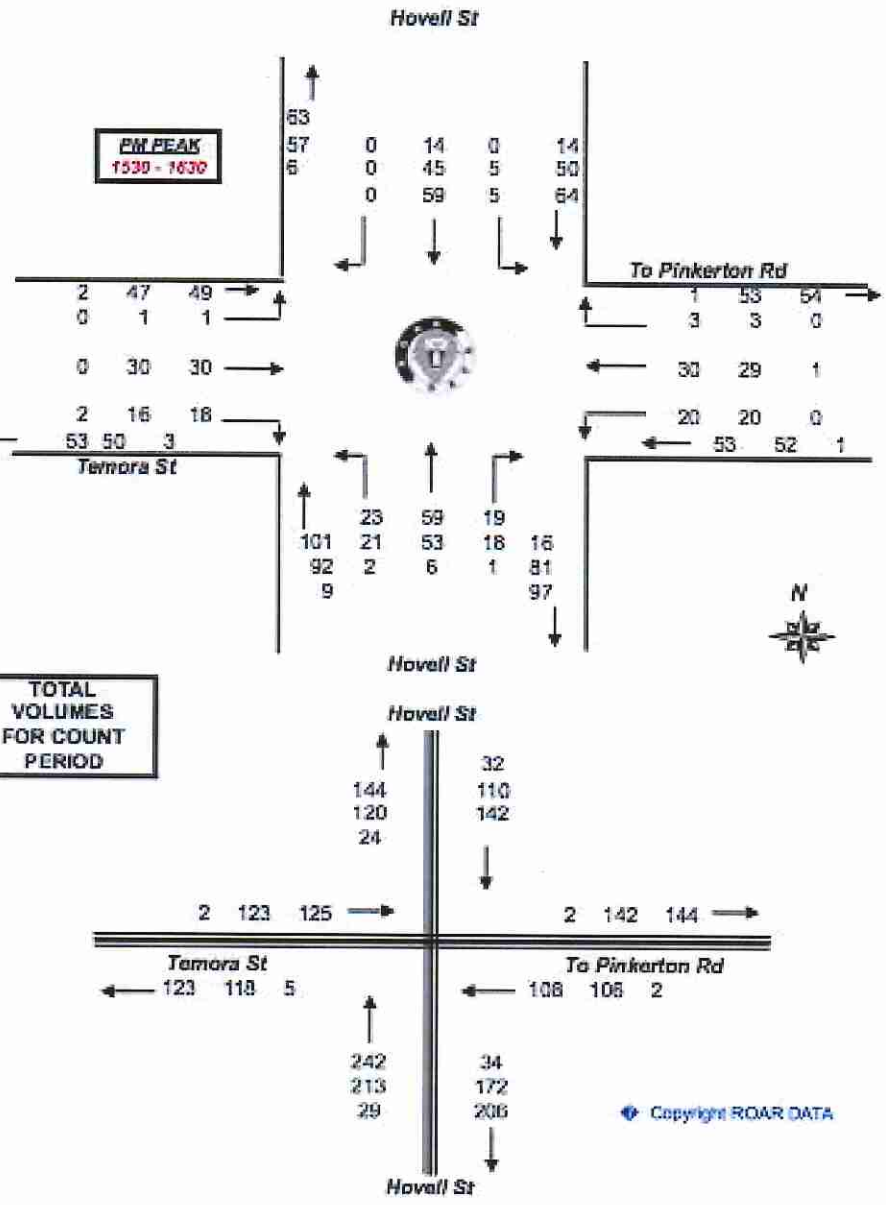
Reliable, Original & Authentic Results

Ph.08196847, Mob.0418-239019

Client : Winning Traffic Solutions
Job No/Name : GUNDAGAI Hovell St
Day/Date : Monday 5th June 2017

Peds	NORTH	WEST	SOUTH	EAST	
	Hovell St	*Tamora St*	*Hovell St*	*To Pinkerton Rd*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1530 - 1545	0	0	0	0	0
1545 - 1600	0	0	0	0	0
1600 - 1615	0	0	0	0	0
1615 - 1630	0	0	0	0	0
1630 - 1645	0	0	0	0	0
1645 - 1700	0	0	0	2	2
1700 - 1715	0	1	0	0	1
1715 - 1730	0	0	0	0	0
1730 - 1745	0	0	0	0	0
1745 - 1800	0	0	0	0	0
1800 - 1815	0	1	2	0	3
1815 - 1830	0	0	0	0	0
Period End	0	2	2	2	6

Peds	NORTH	WEST	SOUTH	EAST	
	Hovell St	*Tamora St*	*Hovell St*	*To Pinkerton Rd*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1530 - 1630	0	0	0	0	0
1545 - 1645	0	0	0	0	0
1600 - 1700	0	0	0	2	2
1615 - 1715	0	1	0	2	3
1630 - 1730	0	1	0	2	3
1645 - 1745	0	1	0	2	3
1700 - 1800	0	1	0	0	1
1715 - 1815	0	1	2	0	3
1730 - 1830	0	1	2	0	3
PEAK HR	0	0	0	0	0



TRAFFIC SURVEY DATA

Hovell Street and Mackay Street/Muttama Road

R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : Winning Traffic Solutions
Job No/Name : GUNDAGAI Hovell St
Day/Date : Tuesday 6th June 2017

Lights

Time Per	NORTH Hovell St			WEST Mackay St			SOUTH Hovell St			EAST Gundagai Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0645	6	5	0	0	6	0	0	4	0	2	6	4	33
0645 - 0700	11	15	1	5	11	0	0	5	2	7	7	5	69
0700 - 0715	14	12	1	5	15	0	1	15	7	2	2	0	74
0715 - 0730	12	7	2	3	4	1	0	2	8	4	9	10	62
0730 - 0745	6	8	2	3	4	1	0	8	3	4	3	7	49
0745 - 0800	14	12	0	8	8	2	0	9	8	4	8	7	80
0800 - 0815	15	7	1	4	6	0	0	9	6	6	16	15	85
0815 - 0830	10	6	5	3	7	1	1	15	3	4	24	16	95
0830 - 0845	14	17	5	2	5	0	0	7	2	5	15	17	89
0845 - 0900	14	16	5	7	12	1	2	12	2	6	35	16	130
0900 - 0915	11	13	7	6	8	2	3	17	6	5	25	18	121
0915 - 0930	10	14	3	5	5	0	1	12	4	1	19	12	86
Period End	137	132	32	51	91	8	8	115	51	50	169	129	973

Lights

Peak Time	NORTH Hovell St			WEST Mackay St			SOUTH Hovell St			EAST Gundagai Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0730	43	39	4	13	36	1	1	26	17	15	24	19	238
0645 - 0745	43	42	6	16	34	2	1	30	20	17	21	22	254
0700 - 0800	46	39	5	19	31	4	1	34	26	14	22	24	265
0715 - 0815	47	34	5	18	22	4	0	28	25	18	26	39	276
0730 - 0830	45	33	8	18	25	4	1	41	20	18	51	45	309
0745 - 0845	53	42	11	17	26	3	1	40	19	19	63	55	349
0800 - 0900	53	46	16	16	30	2	3	43	13	21	90	66	399
0815 - 0915	49	52	22	18	32	4	6	51	13	20	99	69	435
0830 - 0930	49	60	20	20	30	3	6	48	14	17	94	65	426
PEAK HOUR	49	52	22	18	32	4	6	51	13	20	99	69	435

Heavies

Time Per	NORTH Hovell St			WEST Mackay St			SOUTH Hovell St			EAST Gundagai Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0645	1	1	0	0	0	0	0	1	0	0	0	0	3
0645 - 0700	1	0	0	0	0	0	0	2	0	0	1	2	6
0700 - 0715	0	0	0	0	0	0	0	0	1	0	0	1	2
0715 - 0730	2	2	0	0	0	0	0	2	1	0	0	1	8
0730 - 0745	0	1	0	0	0	0	0	1	0	0	0	0	2
0745 - 0800	3	0	0	0	0	0	0	0	0	1	0	1	5
0800 - 0815	1	1	0	0	0	0	0	3	0	2	0	0	7
0815 - 0830	0	0	0	0	1	0	0	1	0	0	0	0	2
0830 - 0845	1	1	0	1	0	0	0	2	1	0	0	0	6
0845 - 0900	2	3	0	0	0	0	0	0	0	1	1	0	7
0900 - 0915	1	0	0	0	0	0	0	1	1	0	0	0	3
0915 - 0930	1	1	0	0	0	0	0	0	2	0	0	1	5
Period End	13	10	0	1	1	0	0	13	6	4	2	5	56

Heavies

Peak Per	NORTH Hovell St			WEST Mackay St			SOUTH Hovell St			EAST Gundagai Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0730	4	3	0	0	0	0	0	5	2	0	1	4	19
0645 - 0745	3	3	0	0	0	0	0	5	2	0	1	4	18
0700 - 0800	5	3	0	0	0	0	0	3	2	1	0	3	17
0715 - 0815	6	4	0	0	0	0	0	6	1	3	0	2	22
0730 - 0830	4	2	0	0	1	0	0	5	0	3	0	1	16
0745 - 0845	5	2	0	1	1	0	0	6	1	3	0	1	20
0800 - 0900	4	5	0	1	1	0	0	6	1	3	1	0	22
0815 - 0915	4	4	0	1	1	0	0	4	2	1	1	0	18
0830 - 0930	5	5	0	1	0	0	0	3	4	1	1	1	21
PEAK HOUR	4	4	0	1	1	0	0	4	2	1	1	0	18

Combined

Time Per	NORTH Hovell St			WEST Mackay St			SOUTH Hovell St			EAST Gundagai Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0645	7	6	0	0	6	0	0	5	0	2	6	4	36
0645 - 0700	12	15	1	5	11	0	0	7	2	7	8	7	75
0700 - 0715	14	12	1	5	15	0	1	15	8	2	2	1	76
0715 - 0730	14	9	2	3	4	1	0	4	9	4	9	11	70
0730 - 0745	6	9	2	3	4	1	0	9	3	4	3	7	51
0745 - 0800	17	12	0	8	8	2	0	9	8	5	8	8	85
0800 - 0815	16	8	1	4	6	0	0	12	6	8	16	15	92
0815 - 0830	10	6	5	3	8	1	1	16	3	4	24	16	97
0830 - 0845	15	18	5	3	5	0	0	9	3	5	15	17	95
0845 - 0900	16	19	5	7	12	1	2	12	2	7	36	18	137
0900 - 0915	12	13	7	6	8	2	3	18	7	5	25	18	124
0915 - 0930	11	15	3	5	5	0	1	12	6	1	19	13	91
Period End	150	142	32	52	92	8	8	128	57	54	171	135	1029

Combined

Peak Per	NORTH Hovell St			WEST Mackay St			SOUTH Hovell St			EAST Gundagai Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0730	47	42	4	13	36	1	1	31	19	15	25	23	257
0645 - 0745	46	45	6	16	34	2	1	35	22	17	22	26	272
0700 - 0800	51	42	5	19	31	4	1	37	28	15	22	27	282
0715 - 0815	53	38	5	18	22	4	0	34	26	21	36	41	298
0730 - 0830	49	35	8	18	26	4	1	46	20	21	51	46	325
0745 - 0845	58	44	11	18	27	3	1	46	20	22	63	56	359
0800 - 0900	57	51	16	17	31	2	3	49	14	24	91	66	421
0815 - 0915	53	56	22	19	33	4	6	55	15	21	100	69	453
0830 - 0930	54	65	20	21	30	3	6	51	18	18	95	66	447
PEAK HOUR	53	56	22	19	33	4	6	55	15	21	100	69	453

R.O.A.R DATA

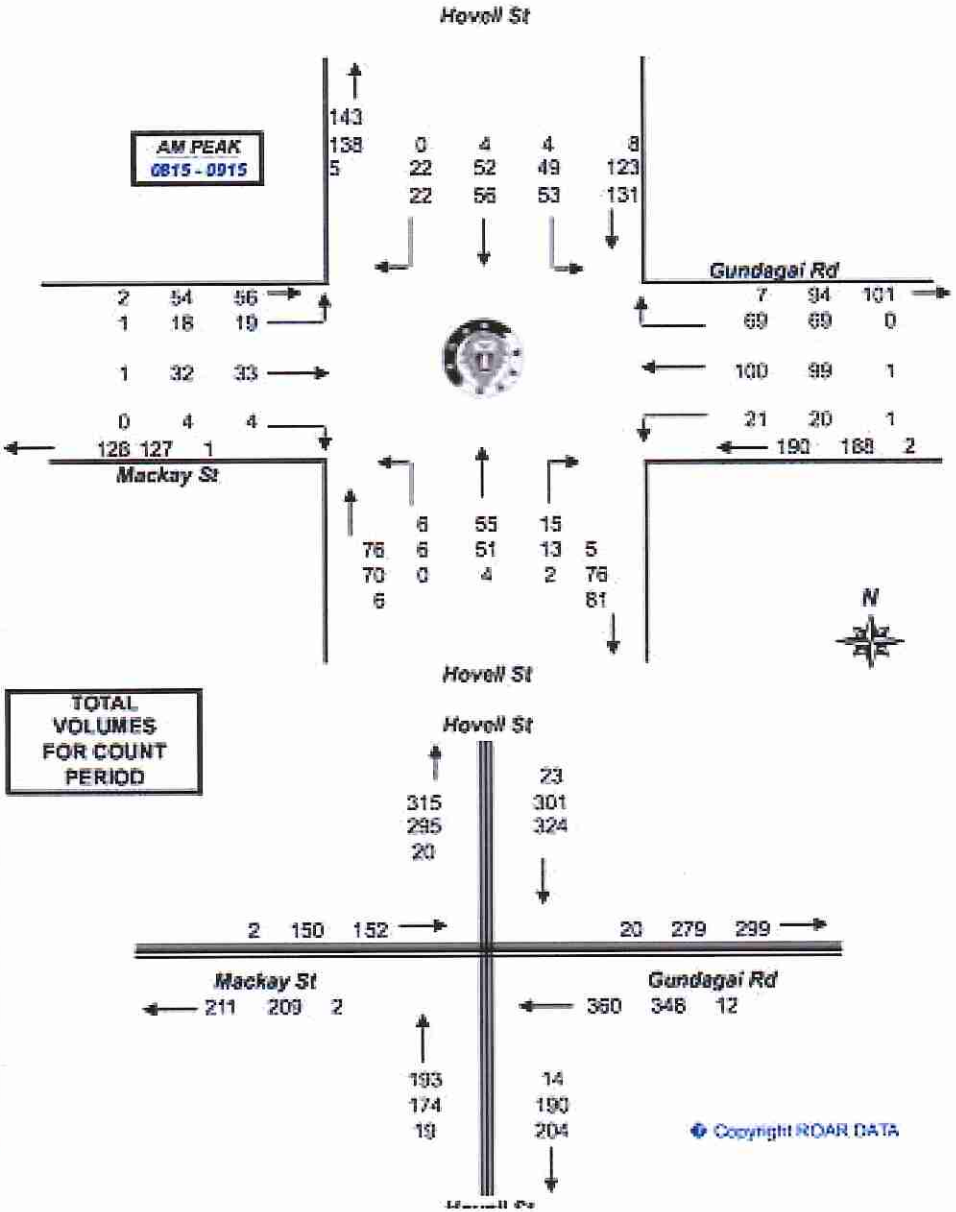
Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : Winning Traffic Solutions
Job No/Name : GUNDAGAI Hovell St
Day/Date : Tuesday 6th June 2017

Peds	NORTH	WEST	SOUTH	EAST	
	Hovell St	*Mackay St*	*Hovell St*	*Gundagai Rd*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0630 - 0645	1	1	0	0	2
0645 - 0700	0	0	0	0	0
0700 - 0715	2	0	0	0	2
0715 - 0730	0	0	0	0	0
0730 - 0745	1	0	0	0	1
0745 - 0800	2	0	0	0	2
0800 - 0815	0	0	0	0	0
0815 - 0830	0	0	0	0	0
0830 - 0845	2	0	0	0	2
0845 - 0900	1	1	0	0	2
0900 - 0915	0	0	0	0	0
0915 - 0930	0	2	0	0	2
Period End	9	4	0	0	13

Peds	NORTH	WEST	SOUTH	EAST	
	Hovell St	*Mackay St*	*Hovell St*	*Gundagai Rd*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0630 - 0730	3	1	0	0	4
0645 - 0745	3	0	0	0	3
0700 - 0800	5	0	0	0	5
0715 - 0815	3	0	0	0	3
0730 - 0830	3	0	0	0	3
0745 - 0845	4	0	0	0	4
0800 - 0900	3	1	0	0	4
0815 - 0915	3	1	0	0	4
0830 - 0930	3	3	0	0	6
PEAK HR	3	1	0	0	4



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph 88186847, Mob 0418-239019

Client : Winning Traffic Solutions
Job No/Name : GUNDAGAI Hovell St
Day/Date : Monday 5th June 2017

Lights

Time Per	NORTH Hovell St L	NORTH Hovell St I	NORTH Hovell St R	WEST Mackay St L	WEST Mackay St I	WEST Mackay St R	SOUTH Hovell St L	SOUTH Hovell St I	SOUTH Hovell St R	EAST Gundagai Rd L	EAST Gundagai Rd I	EAST Gundagai Rd R	TOT
1530 - 1545	31	16	2	5	19	1	2	10	1	9	21	11	128
1545 - 1600	18	8	6	3	9	0	1	14	1	2	12	7	81
1600 - 1615	28	23	7	5	11	2	2	17	5	5	26	19	150
1615 - 1630	18	10	5	5	11	0	0	8	3	5	14	19	98
1630 - 1645	25	16	0	5	10	1	1	5	4	2	14	15	98
1645 - 1700	14	7	4	2	7	0	1	15	4	6	20	12	92
1700 - 1715	23	8	3	3	16	0	2	14	9	5	27	14	124
1715 - 1730	33	16	4	5	9	1	2	12	3	2	11	15	113
1730 - 1745	6	5	1	2	14	0	2	9	4	3	14	11	71
1745 - 1800	10	7	2	1	12	0	0	5	0	0	12	7	56
1800 - 1815	13	3	4	1	3	0	0	9	0	4	13	7	57
1815 - 1830	8	3	2	1	8	0	0	3	1	1	9	3	39
Period End	227	122	40	38	129	5	13	121	35	44	193	140	1107

Lights

Peak Time	NORTH Hovell St L	NORTH Hovell St I	NORTH Hovell St R	WEST Mackay St L	WEST Mackay St I	WEST Mackay St R	SOUTH Hovell St L	SOUTH Hovell St I	SOUTH Hovell St R	EAST Gundagai Rd L	EAST Gundagai Rd I	EAST Gundagai Rd R	TOT
1530 - 1630	95	57	20	18	50	3	5	49	10	21	73	56	457
1545 - 1645	89	57	18	18	41	3	4	44	13	14	66	60	427
1600 - 1700	85	56	16	17	39	3	4	45	16	18	74	65	438
1615 - 1715	80	41	12	15	44	1	4	42	20	18	75	60	412
1630 - 1730	95	47	11	15	42	2	6	46	20	15	72	56	427
1645 - 1745	76	36	12	12	46	1	7	50	20	16	72	52	400
1700 - 1800	72	36	10	11	51	1	6	40	16	10	64	47	364
1715 - 1815	62	31	11	9	38	1	4	35	7	9	50	40	297
1730 - 1830	37	18	9	5	37	0	2	20	5	0	40	25	223
PEAK HOUR	95	57	20	18	50	3	5	49	10	21	73	56	457

Heavies

Time Per	NORTH Hovell St L	NORTH Hovell St I	NORTH Hovell St R	WEST Mackay St L	WEST Mackay St I	WEST Mackay St R	SOUTH Hovell St L	SOUTH Hovell St I	SOUTH Hovell St R	EAST Gundagai Rd L	EAST Gundagai Rd I	EAST Gundagai Rd R	TOT
1530 - 1545	0	0	0	0	0	0	1	1	1	0	1	0	4
1545 - 1600	2	1	1	0	1	0	0	0	0	0	0	1	6
1600 - 1615	2	3	0	0	0	0	0	1	0	1	0	3	10
1615 - 1630	3	2	0	0	0	0	0	1	0	1	0	1	8
1630 - 1645	3	0	0	0	0	0	0	0	0	2	0	0	5
1645 - 1700	1	1	0	0	0	0	0	2	0	0	0	1	5
1700 - 1715	1	2	0	0	0	0	0	1	1	0	0	1	6
1715 - 1730	1	2	0	0	0	0	0	1	0	0	0	4	8
1730 - 1745	1	1	0	0	0	0	0	0	0	0	0	3	5
1745 - 1800	1	0	0	0	0	0	0	1	0	0	0	0	2
1800 - 1815	1	1	0	0	0	0	0	0	0	0	0	5	7
1815 - 1830	1	0	0	0	0	0	0	1	0	0	0	0	2
Period End	17	13	1	0	1	0	1	9	2	4	1	19	55

Heavies

Peak Per	NORTH Hovell St L	NORTH Hovell St I	NORTH Hovell St R	WEST Mackay St L	WEST Mackay St I	WEST Mackay St R	SOUTH Hovell St L	SOUTH Hovell St I	SOUTH Hovell St R	EAST Gundagai Rd L	EAST Gundagai Rd I	EAST Gundagai Rd R	TOT
1530 - 1630	7	6	1	0	1	0	1	3	1	2	1	5	28
1545 - 1645	10	6	1	0	1	0	0	2	0	4	0	5	29
1600 - 1700	8	6	0	0	0	0	0	4	0	4	0	5	28
1615 - 1715	8	5	0	0	0	0	0	4	1	3	0	3	24
1630 - 1730	6	5	0	0	0	0	0	4	1	2	0	6	24
1645 - 1745	4	6	0	0	0	0	0	4	1	0	0	9	24
1700 - 1800	4	5	0	0	0	0	0	3	1	0	0	8	21
1715 - 1815	4	4	0	0	0	0	0	2	0	0	0	12	22
1730 - 1830	4	2	0	0	0	0	0	2	0	0	0	8	16
PEAK HOUR	7	6	1	0	1	0	1	3	1	2	1	5	28

Combined

Time Per	NORTH Hovell St L	NORTH Hovell St I	NORTH Hovell St R	WEST Mackay St L	WEST Mackay St I	WEST Mackay St R	SOUTH Hovell St L	SOUTH Hovell St I	SOUTH Hovell St R	EAST Gundagai Rd L	EAST Gundagai Rd I	EAST Gundagai Rd R	TOT
1530 - 1545	31	16	2	5	19	1	3	11	2	9	22	11	132
1545 - 1600	20	9	7	3	10	0	1	14	1	2	12	8	87
1600 - 1615	30	26	7	5	11	2	2	18	5	6	26	22	160
1615 - 1630	21	12	5	6	11	0	0	9	3	6	14	20	105
1630 - 1645	28	16	0	5	10	1	1	5	4	4	14	15	103
1645 - 1700	15	8	4	2	7	0	1	17	4	6	20	13	97
1700 - 1715	24	10	3	3	16	0	2	15	10	5	27	15	130
1715 - 1730	34	18	4	5	9	1	2	13	3	2	11	19	121
1730 - 1745	7	6	1	2	14	0	2	9	4	3	14	14	76
1745 - 1800	11	7	2	1	12	0	0	5	0	0	12	7	55
1800 - 1815	14	4	4	1	3	0	0	9	0	4	13	12	64
1815 - 1830	9	3	2	1	8	0	0	4	1	1	9	3	41
Period End	244	135	41	38	130	5	14	130	37	48	194	159	1175

Combined

Peak Per	NORTH Hovell St L	NORTH Hovell St I	NORTH Hovell St R	WEST Mackay St L	WEST Mackay St I	WEST Mackay St R	SOUTH Hovell St L	SOUTH Hovell St I	SOUTH Hovell St R	EAST Gundagai Rd L	EAST Gundagai Rd I	EAST Gundagai Rd R	TOT
1530 - 1630	102	63	21	18	51	3	6	52	11	23	74	61	485
1545 - 1645	99	63	19	18	42	3	4	46	13	18	66	65	456
1600 - 1700	94	62	16	17	39	3	4	49	16	22	74	70	466
1615 - 1715	88	46	12	15	44	1	4	46	21	21	75	63	436
1630 - 1730	101	52	11	15	42	2	6	50	21	17	72	62	451
1645 - 1745	80	42	12	12	46	1	7	54	21	16	72	61	424
1700 - 1800	76	41	10	11	51	1	6	43	17	10	64	55	385
1715 - 1815	66	35	11	9	38	1	4	37	7	9	50	52	319
1730 - 1830	41	20	9	5	37	0	2	26	5	0	40	36	239
PEAK HOUR	102	63	21	18	51	3	6	52	11	23	74	61	485

R.O.A.R DATA

Reliable, Original & Authentic Results

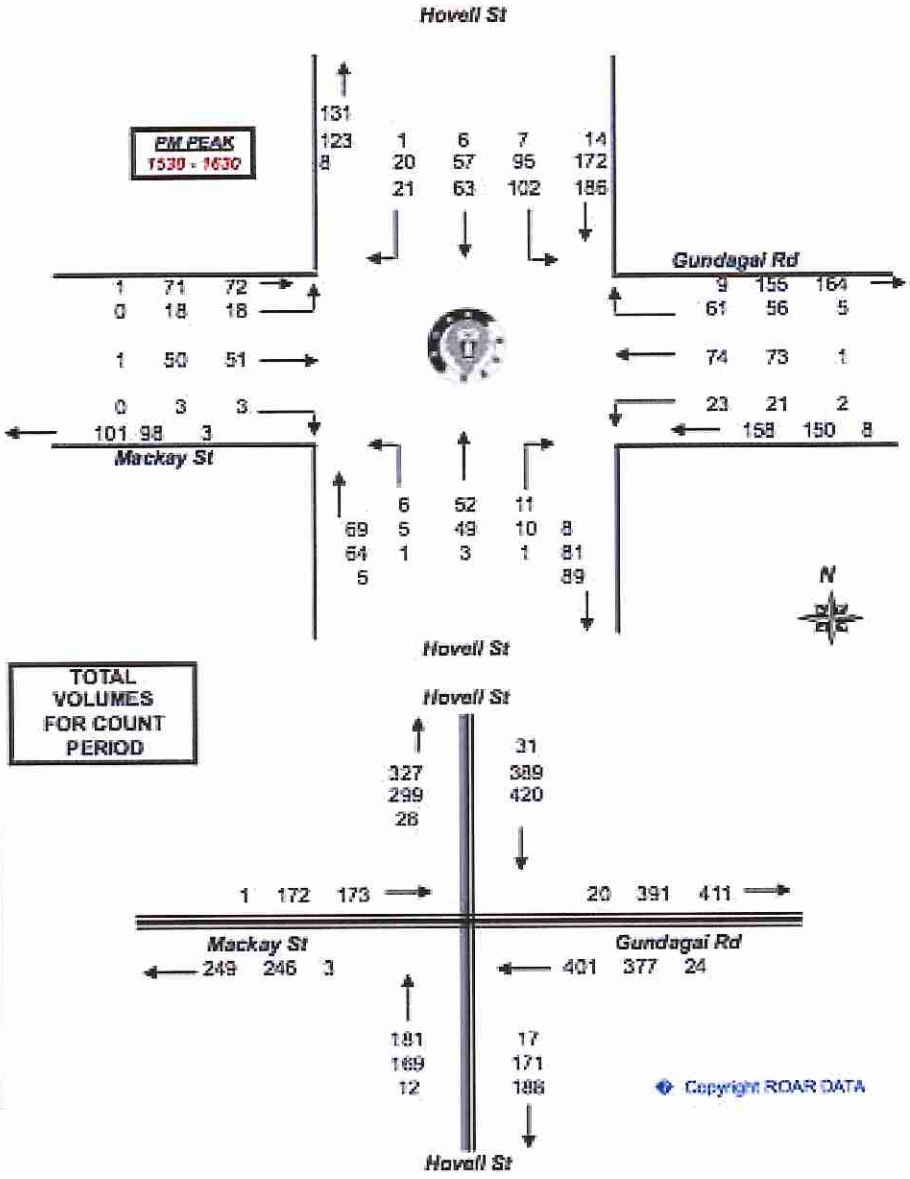
Ph.88198047, Mob.0418-239019

Client : Winning Traffic Solutions
Job No/Name : GUNDAGAI Hovell St
Day/Date : Monday 5th June 2017

Peds	NORTH	WEST	SOUTH	EAST	
	Hovell St	*Mackay St*	*Hovell St*	*Gundagai Rd*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1530 - 1545	2	3	2	1	8
1545 - 1600	1	1	0	0	2
1600 - 1615	1	1	0	5	7
1615 - 1630	1	0	0	0	1
1630 - 1645	1	1	0	1	3
1645 - 1700	0	0	0	0	0
1700 - 1715	1	0	0	0	1
1715 - 1730	2	0	0	0	2
1730 - 1745	0	0	0	0	0
1745 - 1800	1	4	0	0	5
1800 - 1815	0	0	0	0	0
1815 - 1830	0	1	0	0	1
Period End	10	11	2	7	30

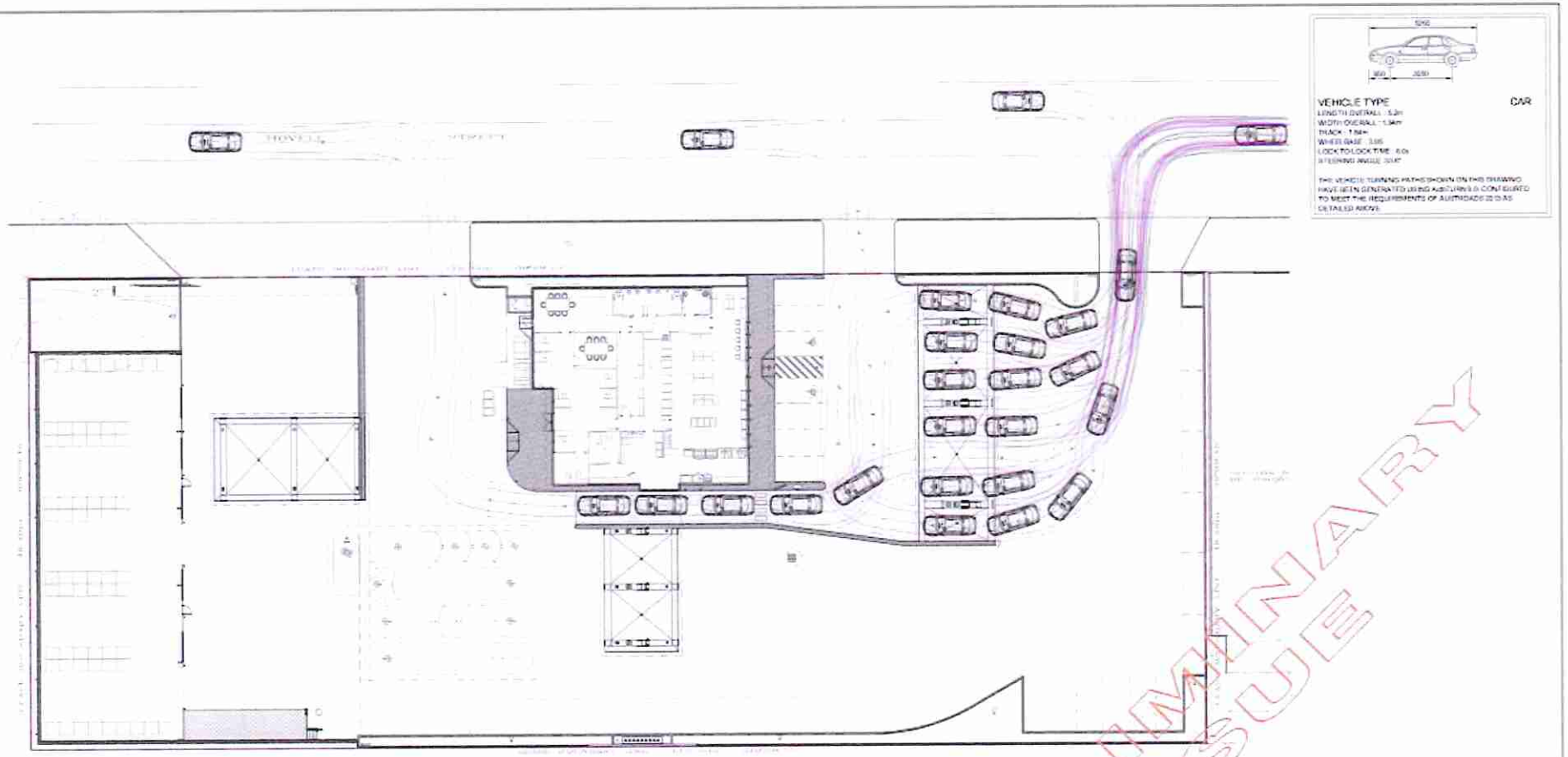
Peds	NORTH	WEST	SOUTH	EAST	
	Hovell St	*Mackay St*	*Hovell St*	*Gundagai Rd*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1530 - 1630	5	5	2	6	18
1545 - 1645	4	3	0	6	13
1600 - 1700	3	2	0	6	11
1615 - 1715	3	1	0	1	5
1630 - 1730	4	1	0	1	6
1645 - 1745	3	0	0	0	3
1700 - 1800	4	4	0	0	8
1715 - 1815	3	4	0	0	7
1730 - 1830	1	5	0	0	6

PEAK HR	5	5	2	6	18



APPENDIX 3

VEHICLE SWEPT PATH ANALYSIS



CAR TURNING STUDY

SCALE BAR 1 : 1 On A1 Size Original

SCALE BAR 1 : 2 On A3 Size Reduction

No.	Amendment	By	Date
P1	PRELIMINARY ISSUE FOR CLIENT REVIEW AND COORDINATION PURPOSES ONLY. NOT FOR CONSTRUCTION		15.06.2017

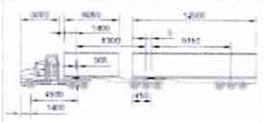
R.J. SINCLAIR Pty Ltd
Building Design

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

Project
PROPOSED SERVICE STATION & FUEL DEPOT
19 HOVELL STREET
COOTAMUNDRA
FOR
SOUTHWEST FUEL CENTRE Pty Ltd

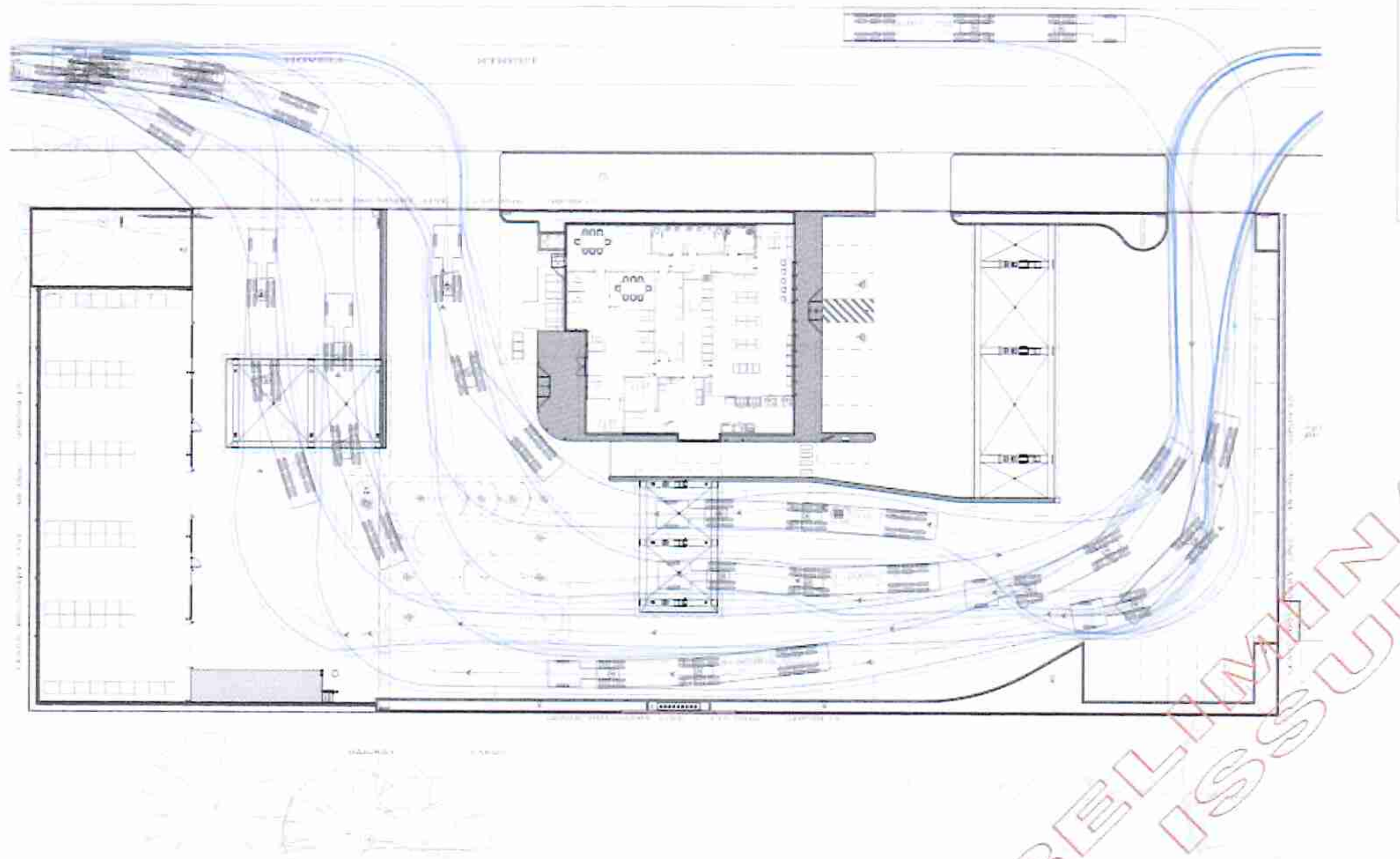
Drawing Title
CAR TURNING STUDY

Approved	Designed RJS
Date June 2017	Drawn VP
Scale As Indicated	Checked
Project No. 16 - 095	Drawing No. TS - 01
	Issue P1



VEHICLE TYPE B-DOUBLE
LENGTH OVERALL 26m
TRACTOR WIDTH : 2.5m
TRAILER WIDTH : 2.5m
TRACTOR TRACK : 2.5m
TRAILER TRACK : 2.5m
LOCK TO LOCK TIME : 6.0s
STEERING ANGLE : 22.4°

THE VEHICLE TURNING PATHS SHOWN ON THIS DRAWING HAVE BEEN GENERATED USING AutoTURN 9.0, CONFIGURED TO MEET THE REQUIREMENTS OF AUSTROADS 2013 AS DETAILED ABOVE.



26m B-DOUBLE TURNING STUDY

SCALE BAR 1 : 1 On A1 Size Original

SCALE BAR 1 : 2 On A3 Size Reduction

PRELIMINARY ISSUE

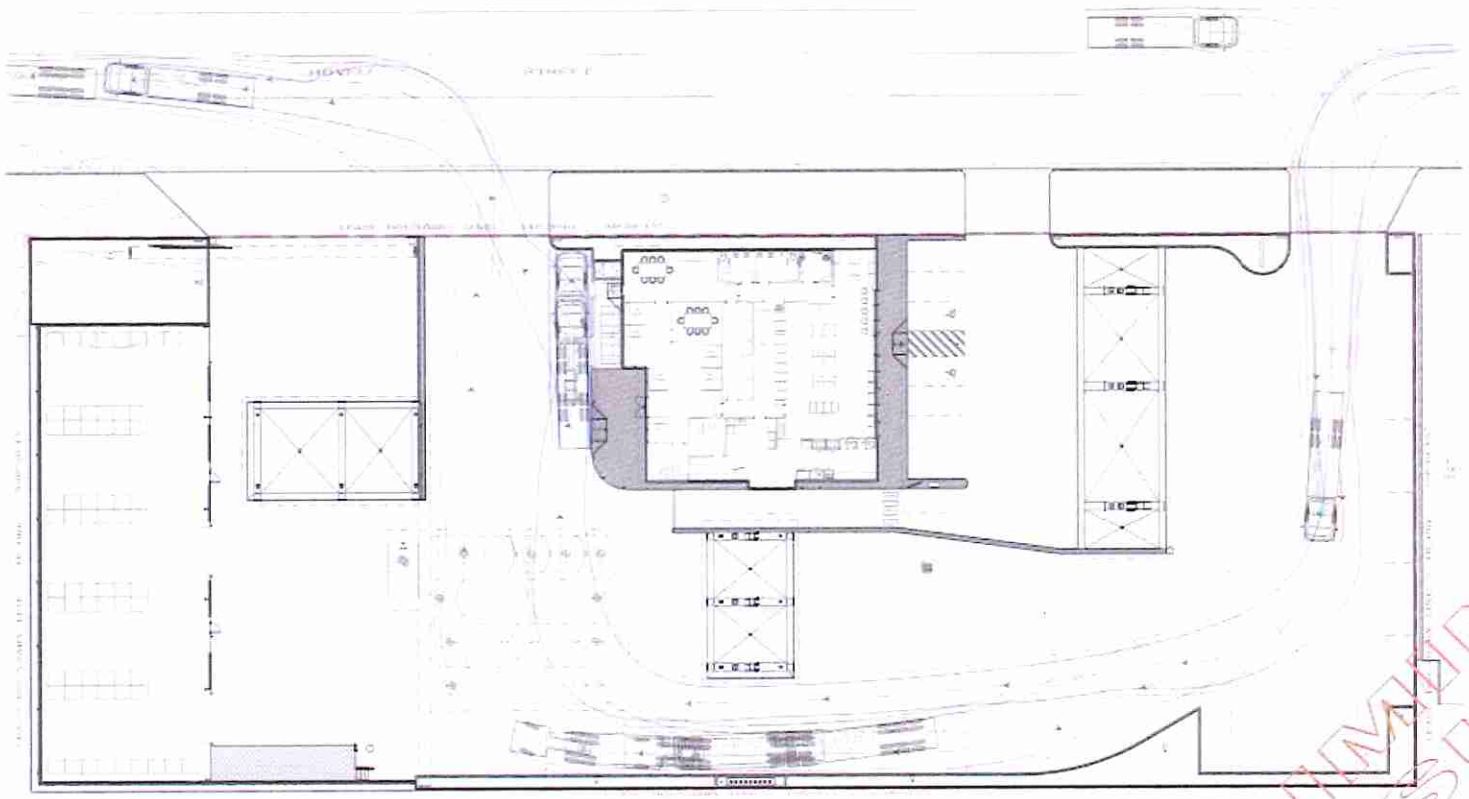
NOT FOR CONSTRUCTION

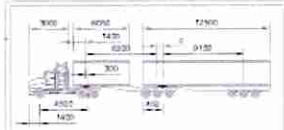
R.J. SINCLAIR Pty Ltd
Building Design

Project
PROPOSED SERVICE STATION & FUEL DEPOT
COOTAMUNDRA
FOR
SOUTHWEST FUEL CENTRE Pty Ltd
Drawing Title
26m B-DOUBLE TURNING STUDY

Approved	Designed RJS
Date June 2017	Drawn VP
Scale As Indicated	Checked
Project No. 16 - 095	Drawing No. TS - 02	Amd. P1

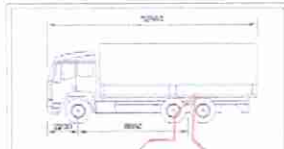
PRELIMINARY ISSUE





VEHICLE TYPE B-DOUBLE
LENGTH OVERALL 26m
TRACTOR WIDTH 2.5m
TRAILER WIDTH 2.5m
TRACTOR TRACK 2.5m
TRAILER TRACK 2.5m
LOCK TO LOCK TIME 6.0s
STEERING ANGLE 23°
ARTICULATING ANGLE 70°

THE VEHICLE TURNING PATHS SHOWN ON THIS DRAWING HAVE BEEN GENERATED USING AUTOTURN 9.0, CONFIGURED TO MEET THE REQUIREMENTS OF AUSTROADS 2013 AS DETAILED ABOVE.



VEHICLE TYPE SINGLE UNIT TRUCK
LENGTH OVERALL 12.5m
WIDTH OVERALL 2.5m
TRACK 2.5m
WHEEL BASE 6.8m
LOCK TO LOCK TIME 12s
STEERING ANGLE 35°

THE VEHICLE TURNING PATHS SHOWN ON THIS DRAWING HAVE BEEN GENERATED USING AUTOTURN 9.0, CONFIGURED TO MEET THE REQUIREMENTS OF AUSTROADS 2013 AS DETAILED ABOVE.

DELIVERY TRUCK TURNING STUDY

SCALE BAR 1 : 1 On A1 Size Original

SCALE BAR 1 : 2 On A3 Size Reduction

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

No.	Amendment	By	Date
P1	PRELIMINARY ISSUE FOR CLIENT REVIEW AND COORDINATION PURPOSES ONLY - NOT FOR CONSTRUCTION		

R.J. SINCLAIR Pty Ltd
Building Design

Project
PROPOSED SERVICE STATION & FUEL DEPOT
9 NOVELL STREET
COOTAMUNDRA
FOR
SOUTHWEST FUEL CENTRE Pty Ltd

Drawing Title
DELIVERY TRUCK TURNING STUDY

Approved			Designed RJS
Date	June 2017		Drawn VP
Scale	As Indicated		Checked
Project No.	16 - 095	Drawing No. T5 - 03	Amdt. P1