

# **TRAFFIC IMPACT ASSESSMENT**

## **RESIDENTIAL PLANNING PROPOSAL**

**PART LOT 1552 DP 1046610  
8 KERLEW STREET, NULKABA**

**PREPARED FOR: INSITE PLANNING SERVICES PTY LTD**

**JULY 2019**

REF: 19/061

**TRAFFIC IMPACT ASSESSMENT REPORT  
RESIDENTIAL PLANNING PROPOSAL****PART LOT 1552 DP 1046610  
8 KERLEW STREET, NULKABA  
INSITE PLANNING SERVICES PTY LTD**

Intersect Traffic Pty Ltd (ABN: 43 112 606 952)

**Address:**Shop 7, Metford Shopping Village  
Cnr Chelmsford Drive & Tennyson Street,  
Metford NSW 2323  
PO Box 268  
East Maitland NSW 2323**Contact:**(Ph) 02 4933 6200  
(Mob) 0423 324 188  
Email: jeff@intersecttraffic.com.au**QUALITY ASSURANCE**

This document has been prepared, checked and released in accordance with the Quality Control Standards established by Intersect Traffic Pty Ltd.

Issue	Date	Description	By
A	09/07/19	Draft	JG
B	10/07/19	Edit	JG
C	10/07/2019	Final Proof	JG
D	27/11/2019	Approved	SL

Copyright © Intersect Traffic Pty Ltd

This document has been authorised by



Date: - July 2019

**Disclaimer**

This report has been prepared based on the information supplied by the client and investigation undertaken by Intersect Traffic Pty Ltd & other consultants. Recommendations are based on Intersect Traffic's professional judgement only and whilst every effort has been taken to provide accurate advice, Council and any other regulatory authorities may not concur with the recommendations expressed within this report. This document and the information are solely for the use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purpose other than that for which it was supplied by Intersect Traffic Pty Ltd. Intersect Traffic makes no representation, undertakes no duty and accepts no responsibility to any third party who may use or rely upon this document or the information.

**Confidentiality Statement**

All information, concepts, ideas, strategies, commercial data and all other information whatsoever contained within this document as well as any and all ideas and concepts described during the presentation are provided on a commercial in confidence basis and remain the intellectual property and Copyright of Intersect Traffic Pty Ltd and affiliated entities.

# CONTENTS

<b>1. INTRODUCTION</b>	<b>1</b>
<b>2. DEVELOPMENT PROPOSAL</b>	<b>2</b>
2.1 SITE LOCATION	2
2.2 DEVELOPMENT PROPOSAL	3
2.3 EXISTING ROAD NETWORK	3
2.4 TRAFFIC GENERATION	5
2.5 TRAFFIC IMPACTS AND CONSIDERATIONS	5
2.5.1 Road Network Capacity	5
2.5.2 Intersection Capacity	6
2.5.3 On-site parking	8
2.5.4 Alternative Transport Modes	8
<b>3. CONCLUSIONS</b>	<b>9</b>
<b>4. RECOMMENDATION</b>	<b>9</b>

# ATTACHMENTS

<b>ATTACHMENT A</b>	<b>TRAFFIC COUNT DATA</b>
<b>ATTACHMENT B</b>	<b>SIDRA MOVEMENT SUMMARY TABLES</b>

# PHOTOGRAPHS

<i>Photograph 1 – Existing site conditions.</i>	<b>3</b>
<i>Photograph 2 – Wine Country Road in the vicinity of Kerlew Street.</i>	<b>4</b>
<i>Photograph 3 – Kerlew Street in the vicinity of the site.</i>	<b>4</b>

# FIGURES

<i>Figure 1 – Site Location</i>	<b>2</b>
<i>Figure 2 – Development Traffic Trip Distribution</i>	<b>7</b>

# TABLES

<i>Table 1 – Sidra results – All Vehicles – Wine Country Drive / Kerlew Street ‘T’ intersection</i>	<b>8</b>
---	----------





# 1. INTRODUCTION

Intersect Traffic Pty Ltd has been engaged by Insite Planning Services Pty Ltd to undertake a traffic impact assessment for a residential planning proposal of part Lot 1552 DP 1046610, 8 Kerlew Street, Nulkaba. The planning proposal will allow the provision of 7 new residential allotments on the site.

This traffic impact assessment is required to support a planning proposal application to Cessnock City Council seeking approval for the rezoning of the land from R5 – Large Lot Residential to RU5 – Village thereby allowing smaller lot sizes. The purpose of this document is to undertake an assessment of the likely traffic impacts of the proposal on the local road network and associated roadside infrastructure to allow Council to assess the merits of the application.

This report presents the findings of the traffic impact assessment and includes the following:

- ◆ An outline of the existing situation in the vicinity of the site;
- ◆ An assessment of the traffic impacts of the proposed development including the predicted traffic generation and its impact on existing road and intersection capacities;
- ◆ Reviews the on-site parking and vehicular access provided within the proposed development and assesses it against Council and Australian Standards requirements; and
- ◆ Presentation of conclusions and recommendations.



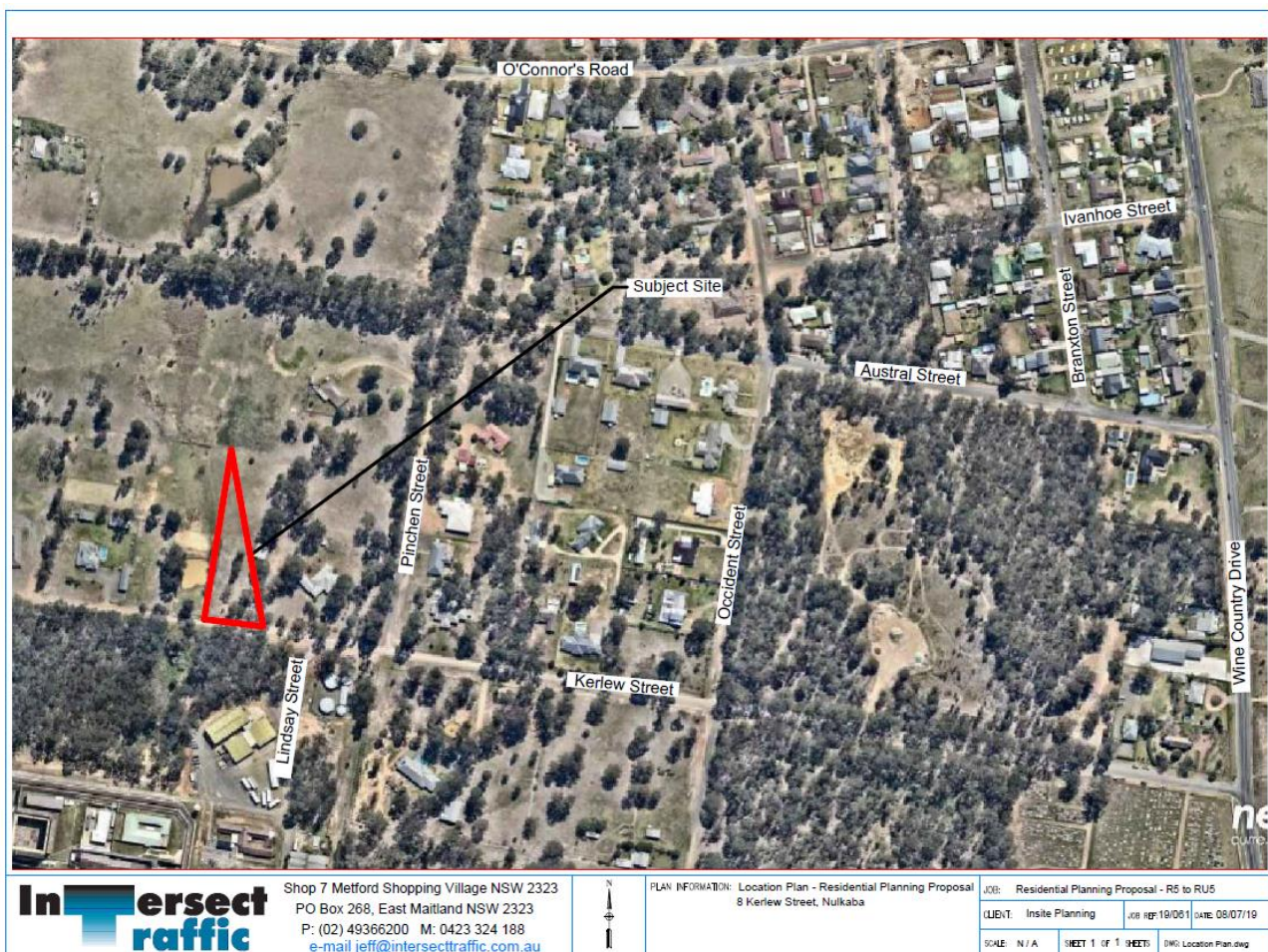
## 2. DEVELOPMENT PROPOSAL

### 2.1 Site Location

The site is located on Kerlew Street approximately 110 metres west of Pinchen Street, Nulkaba. The site is located approximately 3 km's north of Cessnock and 6 km's south of Cessnock Airport. **Figure 1** below shows the site location from a local context.

The site is titled Part Lot 1552 DP 1046610 and addressed as 8 Kerlew Street, Nulkaba. The total area of the site for rezoning is approximately 2,500 m2 and currently is vacant land which is part of an existing lot containing a dwelling and various sheds. The site is currently zoned R5 – Large Lot Residential pursuant to the Cessnock LEP (2011). The subject land is wholly located within the Nulkaba BC10 urban release area and Part E15 of Cessnock Development Control Plan 2010 provides specific guidance for the development of the land within the Nulkaba Urban Release Areas, BC 10 and Valley View Place. **Photograph 1** below shows the existing site condition.

The site currently has a narrow rural vehicular access to Kerlew Street at the western boundary of the site as shown in **Photograph 1** below.



**Figure 1 – Site Location**





*Photograph 1 – Existing site conditions.*

## **2.2 Development Proposal**

The proposal involves the rezoning of the land from R5 Large Lot Residential to RU5 Village which will allow an additional 7 residential lots to be provided within a proposed residential subdivision of Lot 1552 DP1046610 – 8 Kerlew Street, Nulkaba.

## **2.3 Existing Road Network**

### **Wine Country Drive**

Wine Country Drive in the vicinity of the site is a classified state road (MR 220) under the care and control of the NSW Roads and Maritime Services (RMS). As a sub-arterial road its main function is to provide access to the closest arterial road (Hunter Expressway M15) for towns and villages along its length.

Wine Country Drive provides a single travel lane in each direction with a sealed shoulder on the east side and kerb & gutter on the west side. A 70 km/h speed zoning applies in the vicinity of the site and at the time of inspection Wine Country Drive was observed to be in good condition. **Photograph 2** below shows Wine Country Drive in the vicinity of the site.

### **Kerlew Street**

Kerlew Street is a local road (no through road) under the care and control of Cessnock City Council. As a local road its main function is to provide vehicular access to properties along its length.

Kerlew Street provides a single travel lane in each direction with unsealed shoulders and longitudinal table drains along both sides and in the vicinity of the site is both sealed and unsealed but unsealed along the site frontage. A 50 km/h speed zoning applies in the vicinity of the site and



at the time of inspection Kerlew Street was observed to be in fair condition. **Photograph 3** below shows Kerlew Street in the vicinity of the site.



*Photograph 2 – Wine Country Road in the vicinity of Kerlew Street.*



*Photograph 3 – Kerlew Street in the vicinity of the site.*

## 2.4 Traffic Generation

Traffic generation data for this assessment report has been sourced from the RMS's *Technical Direction TDT13/04 May 2013*.

The relevant trip generation data contained within the Guide for low density residential dwellings is as follows:

- ◆ *Daily vehicle trips – 7.4 per dwelling in regional areas;*
- ◆ *Weekday average evening peak hour vehicle trips = 0.9 (maximum) per dwelling in regional areas; and*
- ◆ *Weekday average morning peak hour vehicle trips = 0.85 (maximum) per dwelling in regional areas.*

Noting that a total of 7 additional residential lots would result from the proposed planning proposal the additional peak traffic generation from the proposal would be:

- ◆ **Daily vehicle trips =  $7 \times 7.4 = 52$  vtpd;**
- ◆ **Morning peak hour vehicle trips =  $0.85 \times 7 = 6$  vtph; and**
- ◆ **Evening peak hour vehicle trips =  $0.9 \times 7 = 7$  vtph**

These trip generation values have been adopted for this assessment. It is noted that the addition of only 6 vtph and 7 vtph on the road network during peak hours is insignificant and alone would not alter LoS on the local or state road network.

## 2.5 Traffic Impacts and Considerations

### 2.5.1 Road Network Capacity

The capacity of the road network is generally determined by the capacity of intersections, however, the RMS's *'Guide to Traffic Generating Developments'* provides some guidance on mid-block capacities and likely LoS.

For urban roads *Table 4.3* of the *Guide*, reproduced below, provides some guidance on mid-block capacities and likely levels of service.

**Table 4.3**  
**Typical mid-block capacities for urban roads with interrupted flow**

Type of Road	One-Way Mid-block Lane Capacity (pcu/hr)	
Median or inner lane:	Divided Road	1,000
	Undivided Road	900
Outer or kerb lane:	With Adjacent Parking Lane	900
	Clearway Conditions	900
	Occasional Parked Cars	600
4 lane undivided:	Occasional Parked Cars	1,500
	Clearway Conditions	1,800
4 lane divided:	Clearway Conditions	1,900

Source: - RMS's *Guide to Traffic Generating Developments* (2002).

In determining the capacity of Wine Country Drive from the tables above the following has been considered:

- ◆ The road is considered a 2-lane undivided road;



On this basis the likely mid-block two-way road capacity for Wine Country Drive derived from Table 4.3 is at least 1,800 vtp/h.

In regard to Kerlew Street it is considered that the environmental capacity goals contained within Table 4.6 of the RMS publication “*Guide to Traffic Generating Developments*” (reproduced below) is the relevant capacity standard. Identifying Kerlew Street as a local street this table identifies a traffic volume of 300 vtp/h maximum as the capacity for these local streets.

**Table 4.6**  
**Environmental capacity performance standards on residential streets**

Road class	Road type	Maximum Speed (km/hr)	Maximum peak hour volume (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

**Note:** Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to 85th percentile speed.

Therefore, the road network capacities adopted in this assessment are;

- ◆ Wine Country Drive – 1,800 vtp/h; and
- ◆ Kerlew Street – 300 vtp/h.

Intersect Traffic undertook traffic counts at the Wine Country Drive / Kerlew Street intersection during a typical AM and PM peak traffic period on Monday 12<sup>th</sup> November 2018 between the hours of 8:00am to 9:00am and 4:30pm to 5:30pm - these hours are considered to reflect the weekday AM and PM peak periods. These counts (see **Attachment A**) determine that the existing 2018 peak hour traffic volumes on the road network is:

- ◆ Wine Country Drive – 1,303 vtp/h (AM) and 1,076 vtp/h (PM); and
- ◆ Kerlew Street - 62 vtp/h (AM) and 73 vtp/h (PM).

Applying a 1% per annum background traffic growth to these figures the future (2019 and 2029) traffic volumes will be:

- ◆ Wine Country Drive – 1,316 and 1,454 vtp/h (AM) and 1,087 vtp/h and 1,200 vtp/h (PM); and
- ◆ Kerlew Street – 63 vtp/h and 70 vtp/h (AM) and 72 vtp/h and 82 vtp/h (PM).

As these values are well below the mid-block two-way road capacity for Wine Country Drive and the environmental capacity for Kerlew Street and the additional traffic from the development is only 6 vtp/h in the AM peak and 7 vtp/h in the PM peak it is reasonable to conclude that the existing road network has sufficient mid-block two-way road capacity to cater for the planning proposal which would allow another 7 residential lots to be provided on the land.

### 2.5.2 Intersection Capacity

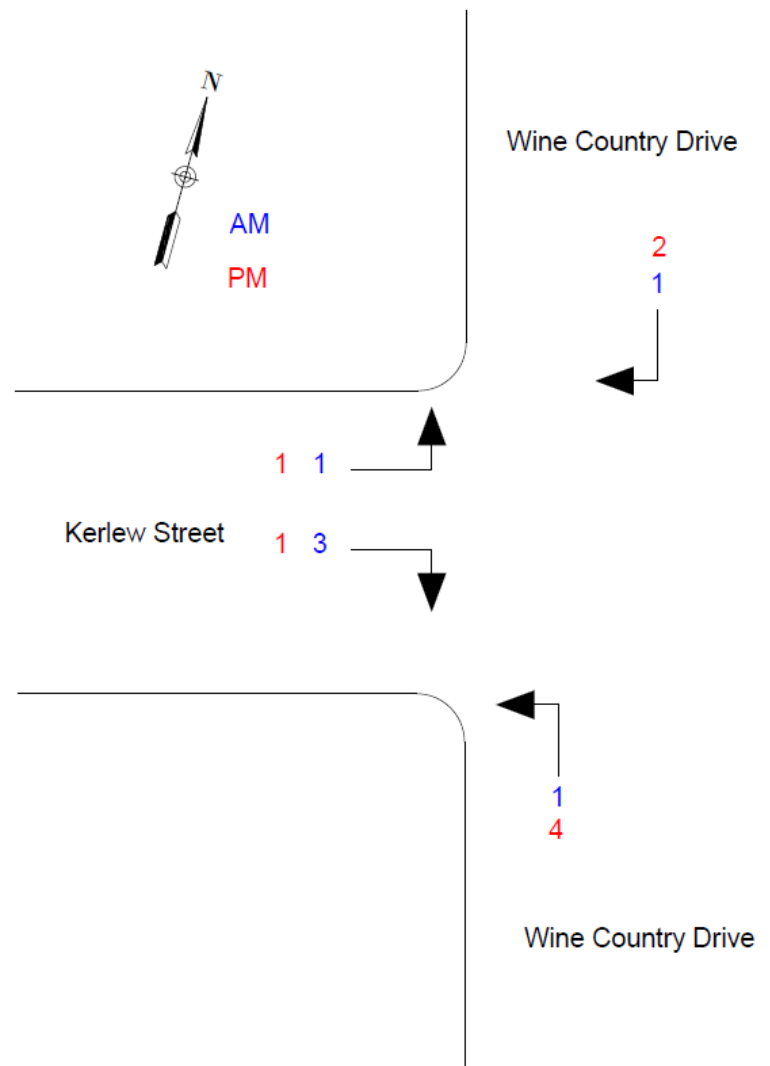
By observation the Wine Country Drive / Kerlew Street intersection is operating with satisfactory levels of service with little or no delay and little or no vehicle queuing occurring (the maximum observed queue length in Kerlew Street was three (3) vehicles and this only occurred once). The addition of only 6 vtp/h (AM) and 7 vtp/h (PM) on the road network would not be expected to impact on the operation of the intersection. To demonstrate this the Wine Country Drive / Kerlew Street intersection was modelled using the Sidra intersection modelling program.

This software package predicts likely delays, queue lengths and thus LoS that will occur at intersection. Assessment is then based on the LoS requirements of the RMS shown below (*Table 4.2 of "Guide to Traffic Generating Development"*).

In undertaking this modelling, the following assumptions were made:

- ◆ A background traffic growth rate of 1% per annum;
- ◆ In the AM 80% of traffic is outbound and 20% inbound;
- ◆ The PM peak mirrors the AM peak;
- ◆ All development traffic utilises the Wine Country Drive / Kerlew Street "T" intersection to access the site; and
- ◆ At Wine Country Drive 70% of traffic has an origin / destination to south towards Cessnock and 30% of traffic has an origin / destination to the north towards Pokolbin (based roughly on existing turn movements).

The resulting development traffic distribution at the intersection is shown in **Figure 2** below.



**Figure 2 – Development Traffic Trip Distribution**

The results of the Sidra modelling for the *All Vehicles* case with the worst movement LoS is shown in **Table 1** below while the Sidra Movement Summary Tables are provided in **Attachment B**.



Table 1 – Sidra Results – All Vehicles – Wine Country Drive / Kerlew Street 'T' intersection.

Scenario	Deg. Satn (v/c)	Average Delay (sec)	Worst Level of Service	95 % Back of Queue distance (vehicles)
Existing 2019 AM	0.375	1.2	C	0.4
Existing 2019 PM	0.354	1.3	B	0.4
2029 AM with development	0.417	1.3	C	0.6
2029 PM with development	0.391	1.4	C	0.5

The modelling shows that the intersection continues to operate satisfactorily post development through to 2029. The degree of lane saturation, average delay, LoS and 95% back of queue lengths for all modelled scenarios are well within the threshold limits identified by NSW RMS. Detailed values can be obtained from the movement summary tables in **Attachment B**.

### 2.5.3 On-site parking

The development as a residential planning proposal does not generate an on-site car parking demand however future development of the new allotments created by the planning proposal will generate an on-site car parking demand. Further assessment of on-site car parking will be required at development application stage for developments on the new allotments.

### 2.5.4 Alternative Transport Modes

As previously advised, the development is not required under the area specific DCP to provide pedestrian and cycle ways within or adjacent to the site. The development is however required to contribute to external infrastructure under the current Nulkaba S94 developer contributions plan.

Rover Coaches provides public transport (bus) services in the area however these services are limited to a North – South City Hoppa providing 3 services a day Monday to Friday. Connections to other bus services run by Rover Coaches connecting to other towns in the area as well as rail services at Maitland, Newcastle and Morisset provides public transport services for future residents of the subdivision. The nearest bus stop is located on Wine Country Drive near O'Connor's Road some 900 metres east of the site.

Future development in the Nulkaba area could lead to changes to this service should the demand for the service exist however on the basis of the current development in the area and in particular the minimal additional demand generated by the proposed development there would be insufficient demand to encourage Rover Coaches to provide additional services or changes to the current bus route.

It is concluded that the existing public transport services are satisfactory for the level of development proposed within the planning proposal.

### 3. CONCLUSIONS

This traffic impact assessment for the proposed planning proposal for part Lot 1552 DP 1046610, 8 Kerlew Street, Nulkaba seeking rezoning of the land from R5 Large Lot Residential to RU5 Village has concluded:

- ◆ With an additional 7 residential lots resulting from the planning proposal it will generate up to an additional 6 vtpm in the AM peak and 7 vtpm in the PM peak on the local and state road network.
- ◆ Wine Country Drive and Kerlew Street have sufficient available spare two-way mid-block capacity to cater for the development;
- ◆ The addition of up to 6 vtpm in the AM peak and 7 vtpm in the PM peak on the local road network will not adversely impact on the operation of the adjoining local road network;
- ◆ Sidra modelling of the Wine Country Drive / Kerlew Street intersection has shown that the planning proposal does not adversely impact on the operation of this intersection;
- ◆ The development as a residential planning proposal does not generate an on-site car parking demand however future development of the new allotments created by the planning proposal will generate an on-site car parking demand. Further assessment of on-site car parking will be required at development application stage for developments on the new allotments;
- ◆ The development is not required under the area specific DCP to provide pedestrian and cycle ways within or adjacent to the site. The development is however required to contribute to external infrastructure under the current Nulkaba S94 developer contributions plan as well as undertake shoulder and kerb and gutter construction on Kerlew Street and Pinchen Street along the site frontage; and
- ◆ The existing public transport services are satisfactory for the level of development proposed within the planning proposal.

### 4. RECOMMENDATION

Having carried out this traffic impact assessment for the planning proposal of part Lot 1552 DP 1046610, 8 Kerlew Street, Nulkaba seeking rezoning from R5 - Large Lot Residential to RU5 - Village (7 additional residential lots) it is recommended that the proposal can be supported as it is considered it would not adversely impact on the local road network and could meet all the requirements of Cessnock City Council and NSW Roads and Maritime Services.



**JR Garry BE (Civil), Masters of Traffic**  
**Director**  
**Intersect Traffic Pty Ltd**



# ATTACHMENT A

## TRAFFIC COUNT DATA

**Location:** Kerlew Street at Wine Country Drive, Nulkaba, NSW

**GPS Coordinates:**

**Date:** 2018-11-12

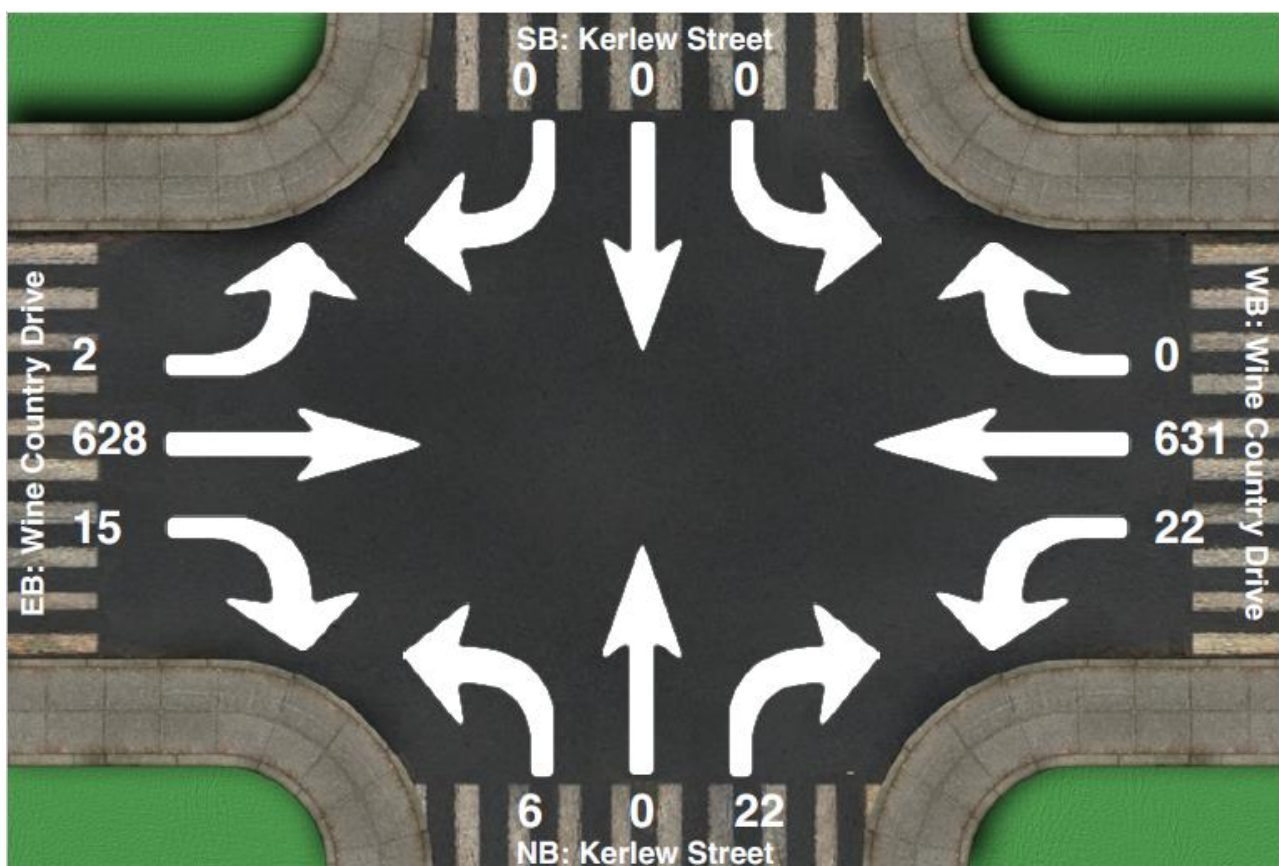
**Day of week:** Monday

**Weather:** Sunny

**Analyst:** Dale

## Total vehicle traffic

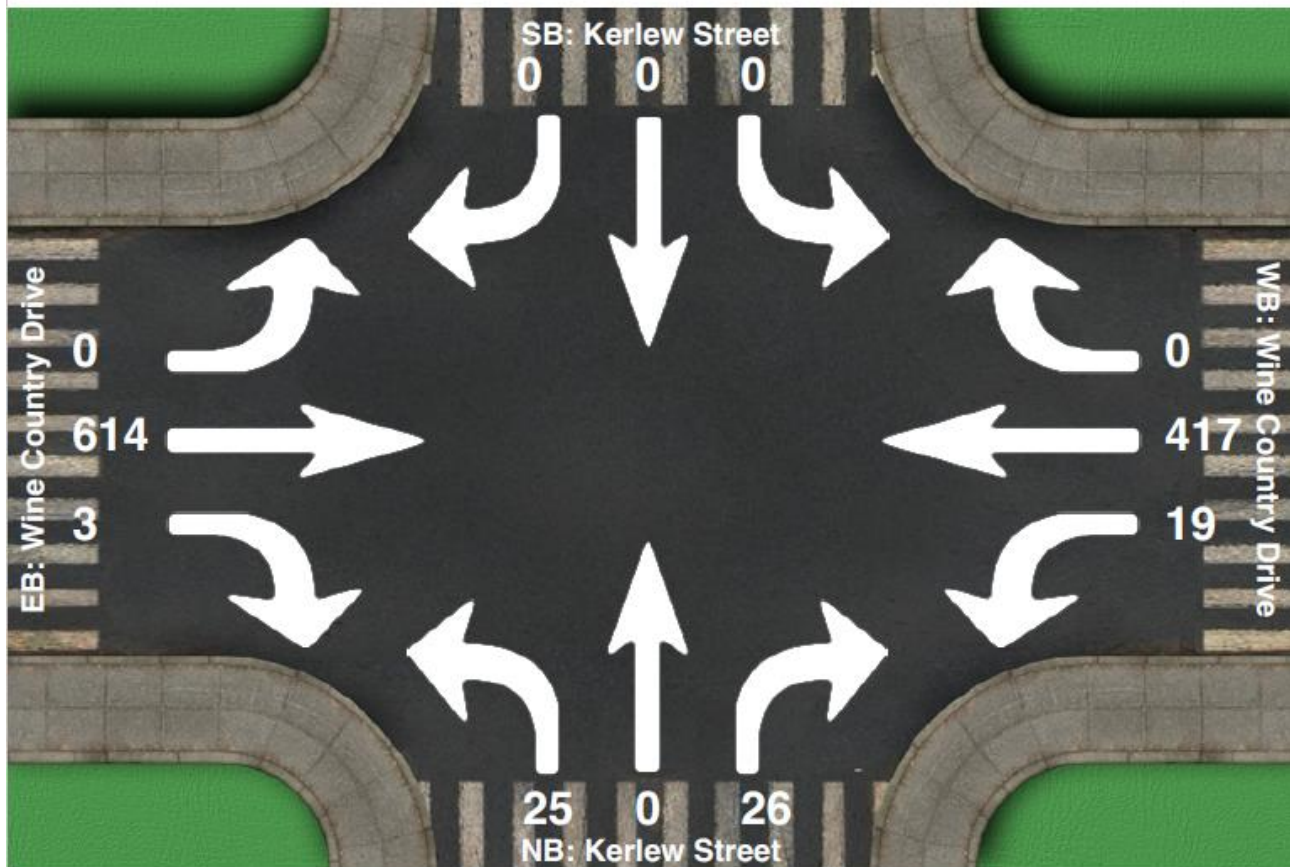
Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
08:00	0	0	0	7	171	0	0	0	6	2	176	3	365
08:15	0	0	0	4	133	0	4	0	6	0	189	6	342
08:30	0	0	0	5	137	0	1	0	3	0	124	4	274
08:45	0	0	0	6	190	0	1	0	7	0	139	2	345





## Intersection Peak Hour

Location: Kerlew Street at Wine Country Drive, Nulkaba, NSW  
 GPS Coordinates:  
 Date: 2018-11-12  
 Day of week: Monday  
 Weather: Sunny  
 Analyst: Dale



# ATTACHMENT B

## SIDRA MOVEMENT SUMMARY TABLES

## MOVEMENT SUMMARY

▽ Site: 101 [Kerlew Street 2019 AM]

2018 AM

Site Category: (None)

Giveway / Yield (Two-Way)

Design Life Analysis (Final Year): Results for 1 years

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Wine Country Drive												
1	L2	22	5.0	0.368	6.5	LOS A	0.0	0.0	0.00	0.02	0.00	64.5
2	T1	671	5.0	0.368	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	69.6
Approach		693	5.0	0.368	0.3	NA	0.0	0.0	0.00	0.02	0.00	69.4
North: Wine Country Drive												
8	T1	668	5.0	0.375	1.4	LOS A	0.4	3.1	0.06	0.18	0.08	62.7
9	R2	16	5.0	0.375	10.6	LOS B	0.4	3.1	0.06	0.18	0.08	59.9
Approach		684	5.0	0.375	1.6	NA	0.4	3.1	0.06	0.18	0.08	62.6
West: Kerlew Street												
10	L2	4	5.0	0.094	7.9	LOS A	0.3	2.0	0.81	0.91	0.81	43.4
12	R2	19	5.0	0.094	19.4	LOS C	0.3	2.0	0.81	0.91	0.81	43.1
Approach		23	5.0	0.094	17.3	LOS C	0.3	2.0	0.81	0.91	0.81	43.1
All Vehicles		1400	5.0	0.375	1.2	NA	0.4	3.1	0.04	0.11	0.05	65.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Tuesday, 9 July 2019 8:46:52 PM

Project: C:\Work Documents\Projects\2019\19.061 - Kerlew Street, Nulkaba Planning Proposal\KerlewStNulkabar.sip8



## MOVEMENT SUMMARY

▽ Site: 101 [Kerlew Street 2019 PM]

2018 PM

Site Category: (None)

Giveway / Yield (Two-Way)

Design Life Analysis (Final Year): Results for 1 years

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Wine Country Drive												
1	L2	26	5.0	0.249	6.5	LOS A	0.0	0.0	0.00	0.03	0.00	64.4
2	T1	443	5.0	0.249	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	69.5
Approach		469	5.0	0.249	0.4	NA	0.0	0.0	0.00	0.03	0.00	69.2
North: Wine Country Drive												
8	T1	653	5.0	0.354	1.1	LOS A	0.1	1.0	0.02	0.18	0.03	63.2
9	R2	9	5.0	0.354	7.7	LOS A	0.1	1.0	0.02	0.18	0.03	60.4
Approach		661	5.0	0.354	1.2	NA	0.1	1.0	0.02	0.18	0.03	63.1
West: Kerlew Street												
10	L2	28	5.0	0.121	6.4	LOS A	0.4	2.8	0.61	0.77	0.61	47.1
12	R2	30	5.0	0.121	14.5	LOS B	0.4	2.8	0.61	0.77	0.61	46.8
Approach		57	5.0	0.121	10.6	LOS B	0.4	2.8	0.61	0.77	0.61	47.0
All Vehicles		1188	5.0	0.354	1.3	NA	0.4	2.8	0.04	0.15	0.04	64.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Tuesday, 9 July 2019 8:48:54 PM

Project: C:\Work Documents\Projects\2019\19.061 - Kerlew Street, Nulkaba Planning Proposal\KerlewStNulkabar.sip8

## MOVEMENT SUMMARY

### ▽ Site: 101 [Kerlew Street 2029 AM]

2018 AM

Site Category: (None)

Giveway / Yield (Two-Way)

Design Life Analysis (Final Year): Results for 11 years

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Wine Country Drive												
1	L2	25	5.0	0.406	6.5	LOS A	0.0	0.0	0.00	0.02	0.00	64.5
2	T1	741	5.0	0.406	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	69.6
Approach		766	5.0	0.406	0.3	NA	0.0	0.0	0.00	0.02	0.00	69.4
North: Wine Country Drive												
8	T1	738	5.0	0.417	1.5	LOS A	0.6	4.2	0.08	0.18	0.11	62.5
9	R2	18	5.0	0.417	12.4	LOS B	0.6	4.2	0.08	0.18	0.11	59.7
Approach		755	5.0	0.417	1.7	NA	0.6	4.2	0.08	0.18	0.11	62.4
West: Kerlew Street												
10	L2	5	5.0	0.136	8.7	LOS A	0.4	2.8	0.86	0.94	0.86	41.2
12	R2	21	5.0	0.136	24.7	LOS C	0.4	2.8	0.86	0.94	0.86	40.9
Approach		26	5.0	0.136	21.8	LOS C	0.4	2.8	0.86	0.94	0.86	41.0
All Vehicles		1547	5.0	0.417	1.3	NA	0.6	4.2	0.05	0.11	0.07	65.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

**SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com**

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Tuesday, 9 July 2019 8:49:58 PM

Project: C:\Work Documents\Projects\2019\19.061 - Kerlew Street, Nulkaba Planning Proposal\KerlewStNulkabar.sip8

## MOVEMENT SUMMARY

Site: 101 [Kerlew Street 2029 PM]

2018 PM

Site Category: (None)

Giveaway / Yield (Two-Way)

Design Life Analysis (Final Year): Results for 11 years

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Wine Country Drive												
1	L2	28	5.0	0.275	6.5	LOS A	0.0	0.0	0.00	0.03	0.00	64.3
2	T1	490	5.0	0.275	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	69.5
Approach		518	5.0	0.275	0.4	NA	0.0	0.0	0.00	0.03	0.00	69.2
North: Wine Country Drive												
8	T1	721	5.0	0.391	1.1	LOS A	0.2	1.4	0.03	0.18	0.03	63.1
9	R2	9	5.0	0.391	8.5	LOS A	0.2	1.4	0.03	0.18	0.03	60.3
Approach		730	5.0	0.391	1.2	NA	0.2	1.4	0.03	0.18	0.03	63.1
West: Kerlew Street												
10	L2	31	5.0	0.159	6.7	LOS A	0.5	3.6	0.67	0.81	0.67	46.2
12	R2	33	5.0	0.159	17.4	LOS C	0.5	3.6	0.67	0.81	0.67	45.8
Approach		63	5.0	0.159	12.2	LOS B	0.5	3.6	0.67	0.81	0.67	46.0
All Vehicles		1312	5.0	0.391	1.4	NA	0.5	3.6	0.05	0.15	0.05	64.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

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 is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Tuesday, 9 July 2019 8:50:40 PM

Project: C:\Work Documents\Projects\2019\19.061 - Kerlew Street, Nulkaba Planning Proposal\KerlewStNulkabar.sip8