Ref: 23050
Date: March 2024
Issue: E

Planning Proposal

Burragorang Road and Barkers Lodge Road, Oakdale

Traffic Impact Assessment

Transport and Traffic Planning Associates

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1.0 Engaged Subdivision

This report has been prepared to accompany a Planning Proposal to Wollondilly Shire Council for a rezoning of the consolidated site of 1455 & 1475 Burragorang Road and 1838 Barkers Lodge Road at Oakdale (Figure 1).

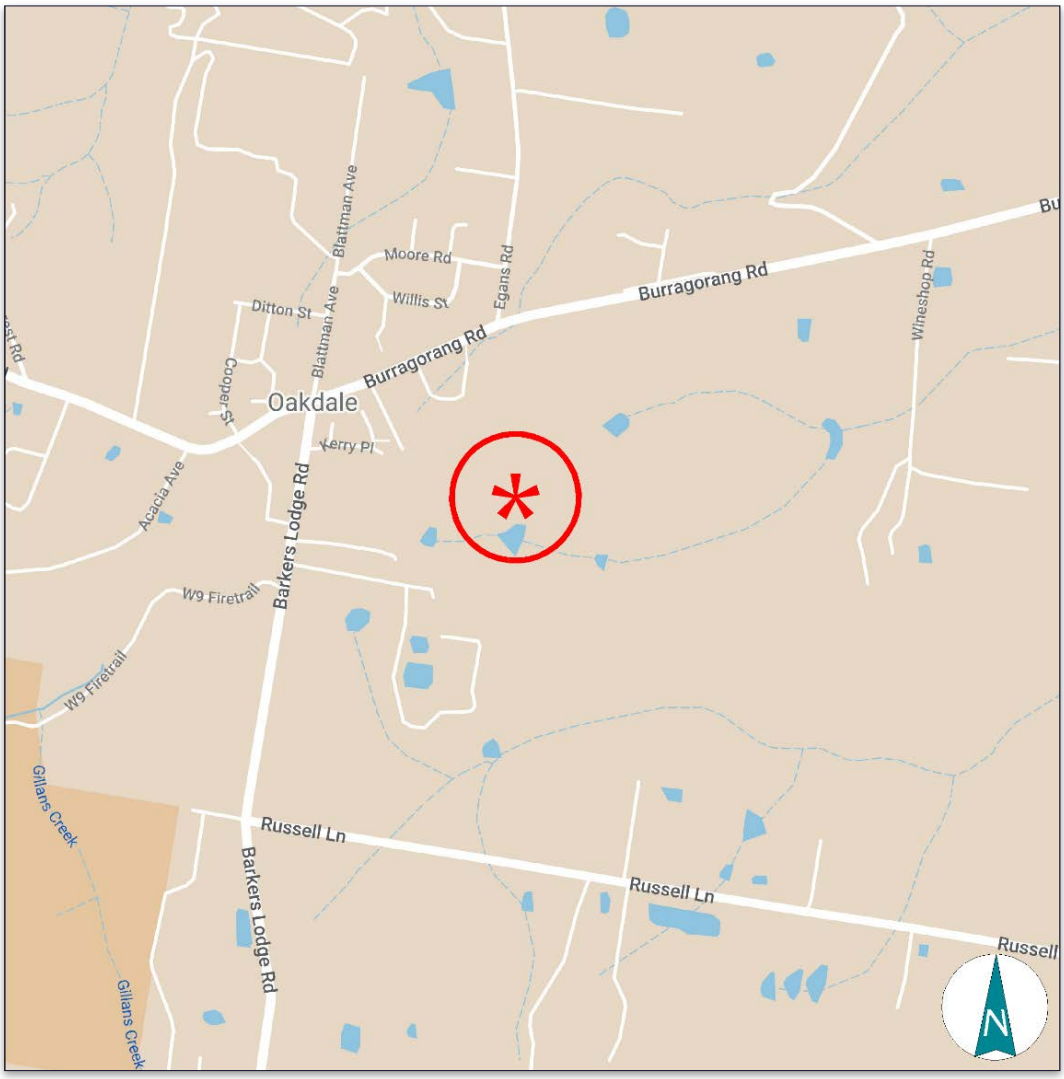

Figure 1 - Site Location

The site is currently zoned as RU1 Primary Production with a partially zoned R2 – Low Density Residential and has a minimum lot size of 16 ha for subdivision purposes and 700m^2 for residential.

The Planning Proposal seeks to amend the current planning controls to achieve additional residential dwellings. The request proposes amendments to WLEP 2011:

- to rezone part of the site to R2 Low Density Residential
- to rezone 39,146m^2 to C2 Environmental Conservation
- to rezone 28,207 m^2 to C3 Environmental Management
- adjustments to lot size
- height of buildings
- Urban release Area

The purpose of this report is to:

- describe the site and the Planning Proposal
- describe the proposed road network and traffic serving the site
- assess the appropriateness of the proposed access road system
- assess the potential traffic implications
- assess the suitability of the proposed vehicle access provisions
- identify any necessary infrastructure upgrades and improvements required to ameliorate the traffic and safety impacts of the development of the site
- consider the cumulative impact of the Planning Proposal in relation to other Planning Proposals within the Oakdale locality
- consider key nodes in the Oakdale locality to achieve pedestrian and cycle connectivity
- consider the accessibility to public transport services.

2.0 Proposed Development

2.1 Site, Context & Existing Circumstances

The site (Figure 2) is a consolidation of Lots 1, 2 and 6 of DP 734561 occupying an irregular shaped area of some 22.7 ha with frontages to Burragorang and Barkers Lodge Roads. The site, which is currently 23 ha, contains 3 existing rural residential dwellings and outbuildings with vehicle accesses on Burragorang Road and Barkers Lodge Road.

Figure 2 - Site Boundary

The surrounding land use comprises:

- the low density residential development adjoining to the west
- the rural residential properties to the east
- the adjoining Willis Park

The small Oakdale town centre is located just to the north along Burragorang Road

2.2 Proposed Development Scheme

The Planning Proposal seeks to amend the current planning controls applying to allow to provide additional residential housing. The proposal comprises:

- Rezoning 2 parts of the site to R2 Low Density Residential
- Rezoning some 39,146m^2 to C2 Environmental Conservation
- Rezoning some 28,207 m^2 to C3 Environmental Management

It is envisaged that the proposal would enable the provision of some 208 low-density residential lots with:

- A minimum lot size of 566 m^2 in the northern part and lots within 60m of the boundary with rural zoned land
- A minimum lot size of 300 m^2 to the remainder of the site being land obscured from existing roads and adjoining rural land.
- Retention of 1 existing dwelling.

Details of the proposed development plans are provided by Colliers international Engineering & Design (CED) and are reproduced in part in Appendix A.

3.0 Road Network and Traffic Conditions

3.1 Road Network

The road network serving the site (Figure 3) comprises:

- *Burragorang Road* – a Regional Road and Collector Road route providing connection between Nattai/Lake Burragorang and Camden
- *Barkers Lodge Road* – a Regional Road and Collector Road route providing connection between Oakdale and Picton
- *Egans Road, Janette Place, Blattman Avenue, Kerry Place and Banksia Place* – local access roads providing connection to the collector system

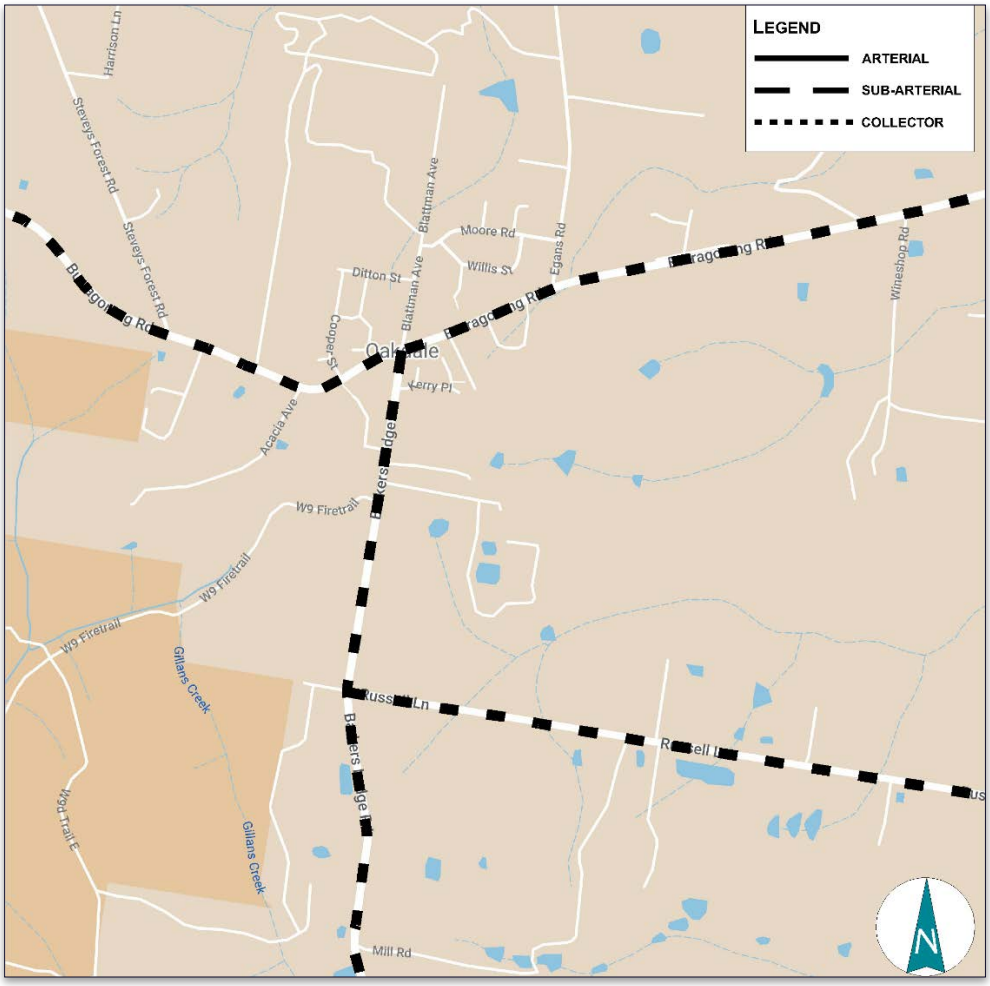

Figure 3 - Road Network

3.2 Traffic Controls

The existing traffic controls on the road system serving the site (Figure 4) comprise:

- the pedestrian refuge crossing along Burragorang Road just to the east of the Burragorang Road/Barkers Lodge Road intersection
- the GIVE WAY sign control at the Burragorang Road/Barkers Lodge Road intersection
- the SCHOOL ZONE speed restriction at Blattman Avenue
- the pedestrian refuge crossing at Blattman Avenue

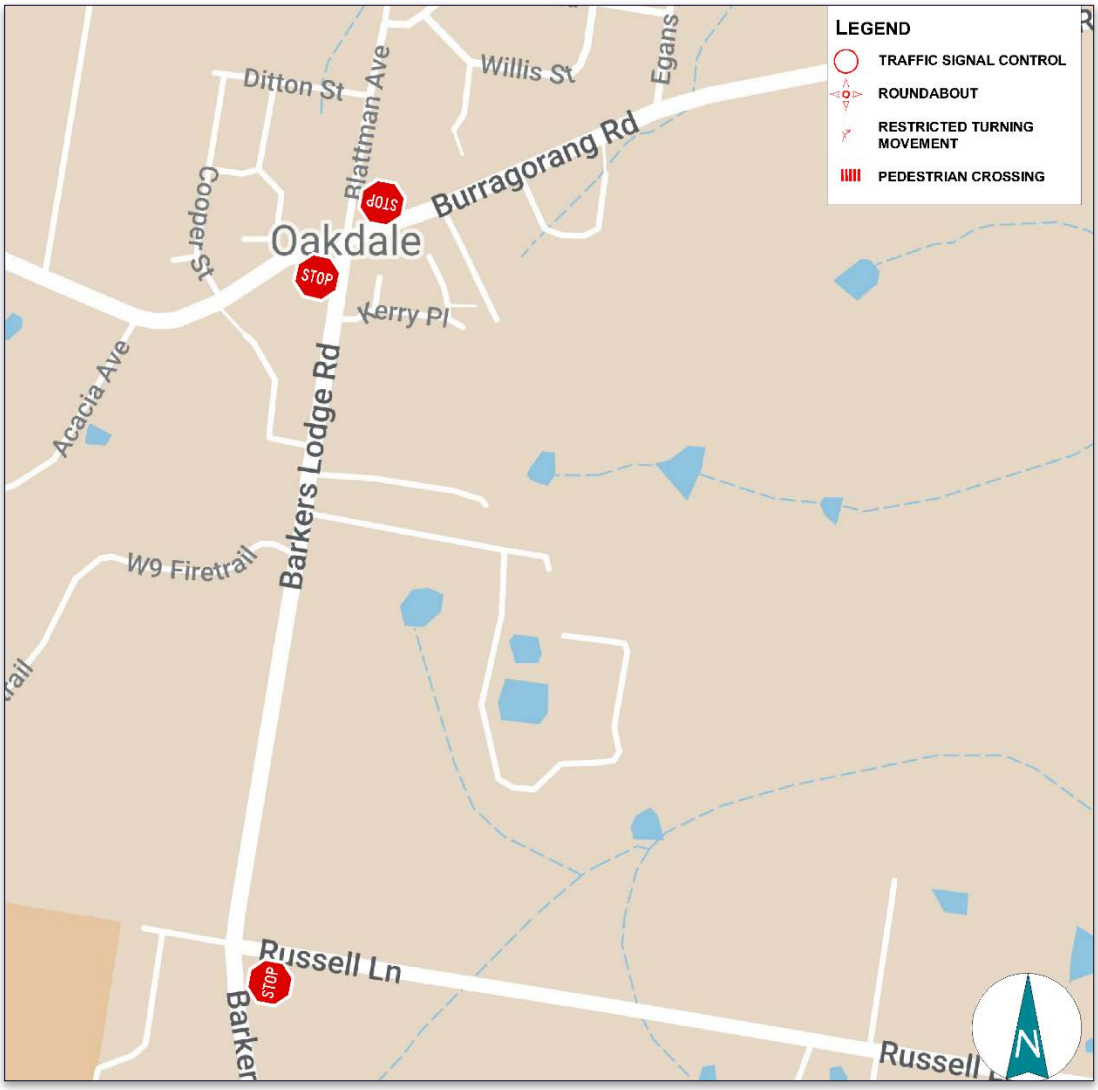

Figure 4 - Traffic Controls

3.3 Traffic Conditions

An indication of the prevailing traffic conditions in the vicinity of the site is provided by data published by TfNSW[1] and surveys undertaken as part of this study. The data published by TfNSW is expressed in terms of Annual Average Daily Traffic (AADT), and the most recent information reveals the following:

	AADT
Burragorand Road, Oakdale	2,680

Traffic surveys were undertaken during the weekday morning and afternoon peak periods at the intersection of Burragorang Road and Barkers Lodge Road. The results of those surveys which are provided in Appendix B are summarised in the following:

		AM	**PM**
Burragorang Road	Westbound	31	104
	Right turn	7	11
	Left turn	16	34
	Eastbound	52	32
	Right turn	10	5
	Left turn	9	9
Barkers Lodge Road/ Blattman Avenue	Northbound	11	4
	Right turn	25	33
	Left turn	9	14
	Southbound	9	1
	Right turn	12	6
	Left turn	4	3

[1] *Traffic Volume Data for Sydney Region*
Roads and Maritime Services

The operational performance of this intersection under the prevailing peak traffic demands is satisfactory with Level of Service 'A' during peak times.

Traffic flows along Burragorang Road and Barkers Lodge Road are quite minor particularly as a result of the cessation of underground coal mining at the Oakdale collieries. Traffic flows on the local access roads within the vicinity of site are very light reflecting the low density residential nature of the area.

4.0 Access Road Network

The proposed vehicle access arrangements will involve construction of two separate new access systems one connecting to Burragorang Road frontage (some 53 lots) and one connecting to Barkers Lodge Road frontage (some 155 lots).

The design of these internal road systems will be the subject of future subdivision Development Applications and will comply with Council's design criteria.

5.0 Traffic

The traffic generation of the proposed subdivision can be established with reference to RMS Guidelines for Traffic Generating Developments. The Guidelines specify a traffic generation for low density residential developments of 0.85 vehicle trips per hour (vtph) per dwelling.

The operation of the Burragorang Road/ Barkers Lodge Road intersection is assessed with the additional traffic flows resulting from the proposed rezoning and subdivision of the subject site, including:

- 53 lots connected to Burragorang Road
- 155 lots connected to Barkers Lodge Road

As vehicle movements associated with the 53-lot subdivision off Burragorang Road of proposed subdivision are unlikely to impact on the Burragorang Road/Barkers Lodge Road intersection, accordingly the traffic generation of these lots are not relevant to the assessment of the intersection.

It is proposed for 53 lots to be accessed via Burragorang Road and the remaining 155 lots will be accessed via Barkers Lodge Road frontage, and application of RMS' traffic generation criteria to the relevant developments indicates the following traffic generation and this traffic will be distributed as follows:

		AM		PM	
	Total	**IN (25%)**	**OUT (75%)**	**IN (65%)**	**OUT (35%)**
155 lots via Barkers Lodge Road	132 vtph	33 vtph	99 vtph	86 vtph	46 vtph
53 lots via Burragorang Road	45 vtph	11 vtph	34 vtph	29 vtph	16 vtph

This cumulative traffic generation has been 'overlaid' on the existing traffic flows at the Burragorang/Barkers Lodge Roads intersection and assessed using the SIDRA modelling program. The results of this assessment are provided in Appendix C and summarised in the following:

	AM			PM		
	LOS	**DS**	**AVD**	**LOS**	**DS**	**AVD**
Existing	A	0.048	8.4s	A	0.088	9.0s
Post Development (incl. Planning Proposal)	A	0.156	8.7s	A	0.119	9.5s

The assessment is conservative in that it assumes all traffic generated by the residential lots would travel eastwards in the morning and vice versa in the afternoon. The assessment indicates that the existing intersection of Barkers Lodge Road and Burragorang Road will have ample capacity to accommodate the proposed subdivision. It is therefore apparent that the proposal will not result in adverse traffic or parking implications on the surrounding road network and in that no additional infrastructure upgrades/improvements will be required to accommodate the anticipated growth resultant to the rezoning in the locality.

6.0 Pedestrians, Cyclists and Public Transport

6.1 Pedestrians and Cyclists

The movement of pedestrians and cyclists will be facilitated by the new shared pathways along Burragorang Road and Barkers Lodge Road as shown on the Oakdale Cycleway map diagram (Appendix D).

These shared pathways, which will connect the site with the local school, shops, Willis Park and community hall, are proposed to form part of a voluntary planning agreement attached to the planning proposal.

6.2 Public Transport

Transport services within the Oakdale area are provided by the local bus services operated by Busways which run along Burragorang Road connecting to Camden and provides further access to the wider transport network.

7.0 Conclusion

A number of rezoning proposals to permit the subdivision of rural lands at Oakdale for residential lots have been submitted for Council's assessment. The subject planning proposal will enable a subdivision which will be consistent with a desirable land use outcome for the area. The assessment undertaken concludes that:

- the new access roads can be provided to accord with the councils design guidelines
- suitable vehicle access and circulation arrangements can be achieved
- adequate parking provision can be achieved
- suitable provision for delivery and service vehicles can be achieved
- provision for pedestrians and cyclists will be suitable and appropriate
- there will not be any adverse traffic implications resultant to development on the proposed subdivision scheme

Appendix A
Development Plans

ttpa TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Established 1994

A1

MGA20-56

BURRAGORANG ROAD

EGANS ROAD

WILLIS PARK

BURRAGORANG DISTRICT SOCCER CLUB

SOCCER AND CRICKET FIELD

A DP420680

D P 734561

D P 261211

D P 255502

BANKSIA PLACE

BARKERS LODGE ROAD

10 DP609714

SKETCH

50 40 30 20 10 0 50

1:1250 @ A1

CADASTRAL BOUNDARY

EXISTING OPEN SPACE

AMEND	DATE	CALC	DRAFTED	P.M.	CHECKED	APPROVED
00	23-02-2024	N.P.	G.W.E.	A.H.		

DETAILS: ORIGINAL ISSUE

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APPROVED COMPANY ISO 45001 QPS Certification Services

APPROVED COMPANY ISO 14001 QPS Certification Services

APPROVED COMPANY ISO 9001 QPS Certification Services

Project:

SKETCH OVER
LOTS 1, 2 & 6 DP734561
BARKERS LODGE ROAD AND BURRAGORANG ROAD,
OAKDALE

Principal:			
Scale 1:1250	Date 11/10/2023	Council Ref.	
	Datum AHD	L.G.A. WOLLONDILLY SHIRE COUNCIL	
Calc's A.H.	Drawn. G.W.E.	Proj.Man. A.H.	Client Ref:

Colliers

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www.colliers.com.au

Our Ref. 030-22

Dwg File Ref. [Rev] - Sheet Ref.

030-22G L07 [00]
- Concept Rd Layout

CAD REF: G:\ACURED\CP\PROJECTS\2022 - YR\030-22\SURVEY\PLANS\L07 CALCULATION\030-22G L07 [00].DWG - Concept Rd Layout - A.H. - G.W.E. - A.H. - DATE PRINTED: 23/02/2024 - 1:22:19 PM

A1

MGA20-56

EGANS ROAD

BURRAGORANG ROAD

WILLIS PARK

BURRAGORANG DISTRICT
SOCCER CLUB

SOCCER
AND
CRICKET FIELDS

A
DP420680

D P 774640

D P 261211

D P 255302

D P 255302

BANKSIA PLACE

BARKERS LODGE ROAD

10 DP609714

CONCEPT ENVIRONMENTAL CONSERVATION (C2) ZONING
CONCEPT ENVIRONMENTAL MANAGEMENT (C3) ZONING
CONCEPT RESIDENTIAL (R2) ZONING

CADASTRAL BOUNDARY
EXISTING OPEN SPACE

50 40 30 20 10 0 50
1:1250 @ A1

SKETCH

AMEND	DATE	CALC	DRAFTED	P.M.	CHECKED	APPROVED
00	23-02-2024	N.P.	G.W.E.	A.H.		

DETAILS
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APPROVED COMPANY ISO 45001 Occupational Health and Safety Management Systems — QAS Certification Services

APPROVED COMPANY ISO 14001 Environmental Management Systems — QAS Certification Services

APPROVED COMPANY ISO 9001 Quality Management Systems — QAS Certification Services

Project:
SKETCH OVER
LOTS 1, 2 & 6 DP734561
BARKERS LODGE ROAD AND BURRAGORANG ROAD,
OAKDALE

Principal:

Scale	1:1250	Date	11/10/2023	Council Ref.	
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Our Ref. 030-22

Dwg File Ref. [Rev] - Sheet Ref.

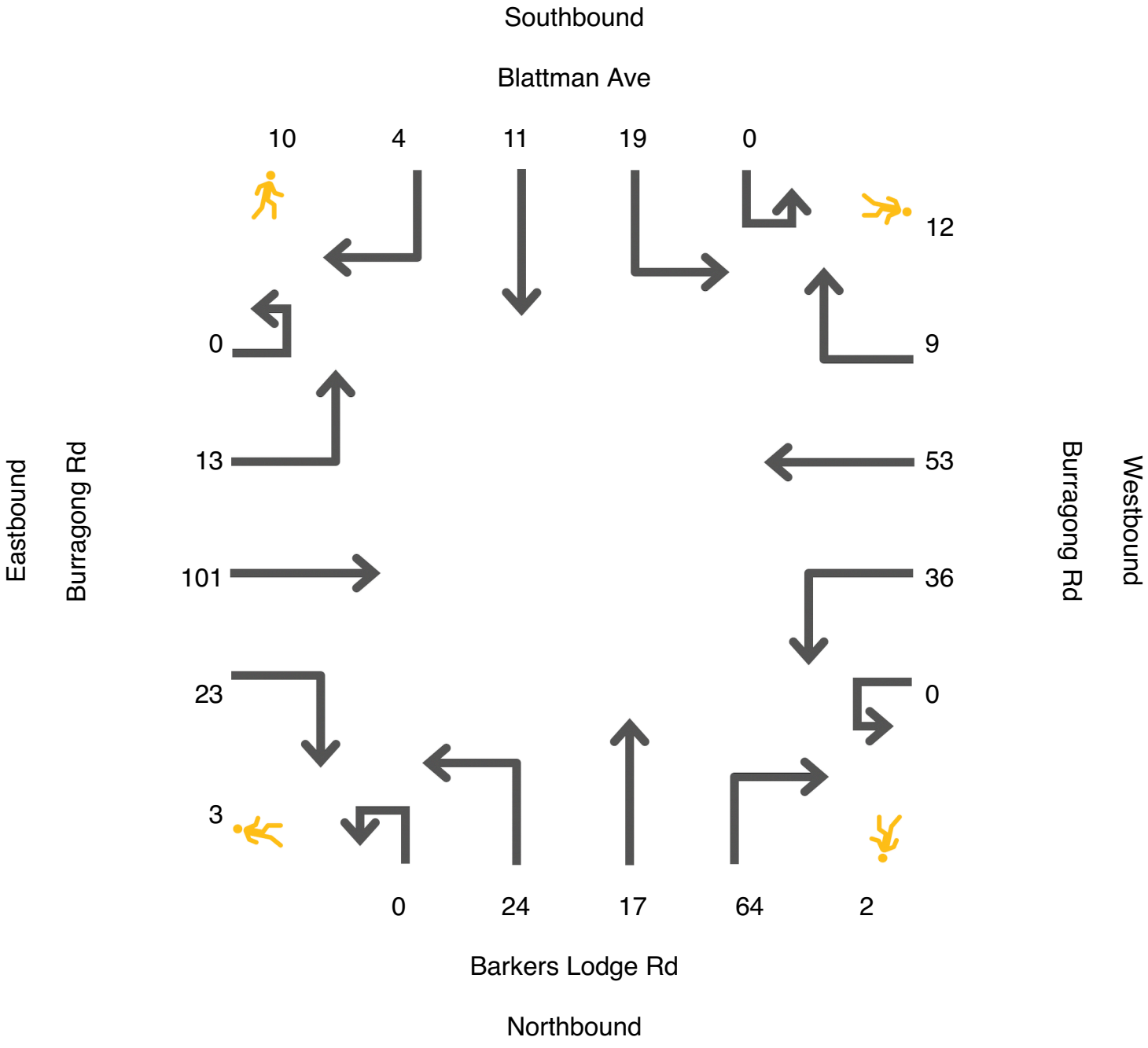
030-22G L07 [00]
- Concept Rd and Zoning

Appendix B
Traffic Survey Results

ttpa TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Established 1994

Turning Movement Count

Study Name: Stop-controlled Intersection
Date: Wednesday, Aug 23 2023
Location: Burragong Rd/ Blattman Ave, Barkers Lodge Rd
Observer: Van Dau
Weather: Fine
Comments: "TTPA"



Created with Traffic Count for iOS

Summary of Turning Movement Counts - from Traffic Count on iOS
Study Nam Stop-controlled Intersection
Observer Van Dau
Location Burragong Rd/ Blattman Ave, Barkers Lodge Rd
Weather Fine
Comments TTPA
Streets NB Barkers Lodge Rd SB Blattman Ave EB Burragong Rd WB Burragong Rd

Cars

	Northbound					Southbound					Eastbound					Westbound					
Start Time	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
7:30 AM	2	1	8	0	11	3	0	0	0	3	0	16	4	0	20	4	8	0	0	12	46
7:45 AM	3	1	13	0	17	2	0	0	0	2	1	7	2	0	10	4	4	1	0	9	38
8:00 AM	1	3	6	0	10	1	0	0	0	1	0	12	4	0	16	6	6	0	0	12	39
8:15 AM	6	1	11	0	18	1	2	0	0	3	1	11	1	0	13	4	3	1	0	8	42
8:30 AM	1	0	6	0	7	1	1	0	0	2	1	16	1	0	18	3	8	0	0	11	38
8:45 AM	0	3	8	0	11	0	0	0	0	0	3	10	3	0	16	2	4	2	0	8	35
9:00 AM	4	3	5	0	12	6	3	2	0	11	2	13	2	0	17	5	8	2	0	15	55
9:15 AM	4	4	5	0	13	4	4	2	0	10	4	12	2	0	18	4	6	2	0	12	53
9:30 AM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	1	2	0	0	3	5
Total	21	17	62	0	100	18	11	4	0	33	12	97	19	0	128	33	49	8	0	90	351

Bicycles

	Northbound					Southbound					Eastbound					Westbound					
Start Time	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1

Light Trucks

	Northbound					Southbound					Eastbound					Westbound					
Start Time	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	1	0	2	0	0	0	0	0	0	1	0	0	1	1	1	0	0	2	5

Heavy Trucks

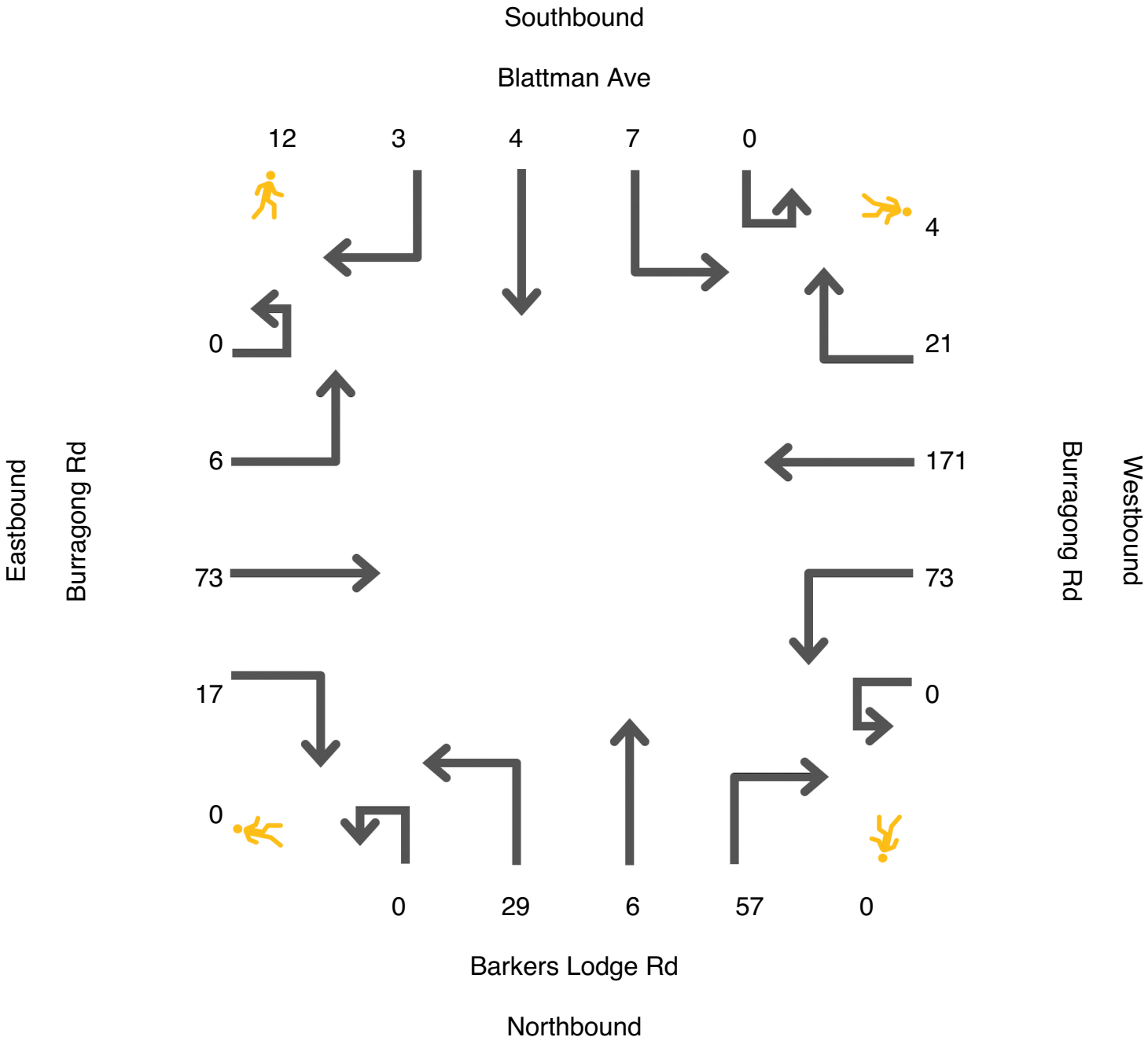
	Northbound					Southbound					Eastbound					Westbound					
Start Time	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
7:30 AM	2	0	0	0	2	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	1	0	0	0	1	4
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
9:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	2
9:15 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
Total	2	0	1	0	3	1	0	0	0	1	0	3	4	0	7	2	3	1	0	6	17

Pedestrians

	Northbound			Southbound			Eastbound			Westbound			
Start Time	Counterclc	Clockwise	Total	Counterclc	Clockwise	Total	Counterclc	Clockwise	Total	Counterclc	Clockwise	Total	Total All
7:30 AM	0	0	0	5	0	5	0	2	2	0	0	0	7
7:45 AM	0	0	0	0	1	1	0	0	0	0	0	0	1
8:00 AM	0	2	2	2	1	3	0	0	0	0	0	0	5
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	1	0	1	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	7	1	8	8
9:00 AM	0	0	0	0	1	1	0	0	0	2	0	2	3
9:15 AM	0	0	0	0	0	0	0	0	0	0	2	2	2
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	2	7	3	10	1	2	3	9	3	12	27

Turning Movement Count

Study Name: Stop-controlled intersection
Date: Wednesday, Aug 23 2023
Location: Burragong Rd/ Blattman Ave, Barkers Lodge Rd
Observer: Van Dau
Weather: Fine
Comments: "TTPA"



Created with Traffic Count for iOS

Summary of Turning Movement Counts - from Traffic Count on iOS
Study Nam Stop-controlled intersection
Observer Van Dau
Location Burragong Rd/ Blattman Ave, Barkers Lodge Rd
Weather Fine
Comments TTPA
Streets NB Barkers Lodge Rd SB Blattman Ave EB Burragong Rd WB Burragong Rd

Cars

	Northbound					Southbound					Eastbound					Westbound					
Start Time	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
4:29 PM	2	0	5	0	7	0	2	0	0	2	0	9	2	0	11	10	14	2	0	26	46
4:44 PM	5	1	7	0	13	2	0	0	0	2	2	5	2	0	9	11	18	4	0	33	57
4:59 PM	3	2	13	0	18	1	1	1	0	3	0	10	1	0	11	7	25	4	0	36	68
5:14 PM	3	1	7	0	11	2	0	1	0	3	1	6	3	0	10	8	25	3	0	36	60
5:29 PM	3	0	4	0	7	1	0	1	0	2	2	8	2	0	12	8	29	0	0	37	58
5:44 PM	2	0	2	0	4	0	1	0	0	1	0	13	1	0	14	12	14	5	0	31	50
5:59 PM	2	1	8	0	11	1	0	0	0	1	0	10	0	0	10	10	25	1	0	36	58
6:14 PM	6	1	7	0	14	0	0	0	0	0	0	8	2	0	10	7	10	2	0	19	43
6:29 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	26	6	53	0	85	7	4	3	0	14	5	69	13	0	87	73	160	21	0	254	440

Bicycles

	Northbound					Southbound					Eastbound					Westbound					
Start Time	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
4:29 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:44 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:59 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:14 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
5:29 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:44 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:59 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:14 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:29 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1

Light Trucks

	Northbound					Southbound					Eastbound					Westbound					
Start Time	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
4:29 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:44 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:59 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:14 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:29 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:44 PM	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	3
5:59 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:14 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
6:29 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	4	0	5	0	0	0	0	0	0	1	1	0	2	0	1	0	0	1	8

Heavy Trucks

	Northbound					Southbound					Eastbound					Westbound					
Start Time	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Left	Thru	Right	UTurn	Total	Total All
4:29 PM	1	0	0	0	1	0	0	0	0	0	0	1	1	0	2	0	1	0	0	1	4
4:44 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	3
4:59 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2	0	0	2	4
5:14 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
5:29 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
5:44 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
5:59 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
6:14 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:29 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	0	0	0	2	0	0	0	0	0	0	3	3	0	6	0	10	0	0	10	18

Pedestrians

	Northbound			Southbound			Eastbound			Westbound			
Start Time	Counterclc	Clockwise	Total	Counterclc	Clockwise	Total	Counterclc	Clockwise	Total	Counterclc	Clockwise	Total	Total All
4:29 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:44 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
4:59 PM	0	0	0	0	5	5	0	0	0	0	2	2	7
5:14 PM	0	0	0	3	0	3	0	0	0	0	0	0	3
5:29 PM	0	0	0	0	0	0	0	0	0	0	1	1	1
5:44 PM	0	0	0	1	0	1	0	0	0	1	0	1	2
5:59 PM	0	0	0	0	1	1	0	0	0	0	0	0	1
6:14 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
6:29 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	6	6	12	0	0	0	1	3	4	16

Appendix C
SIDRA Output

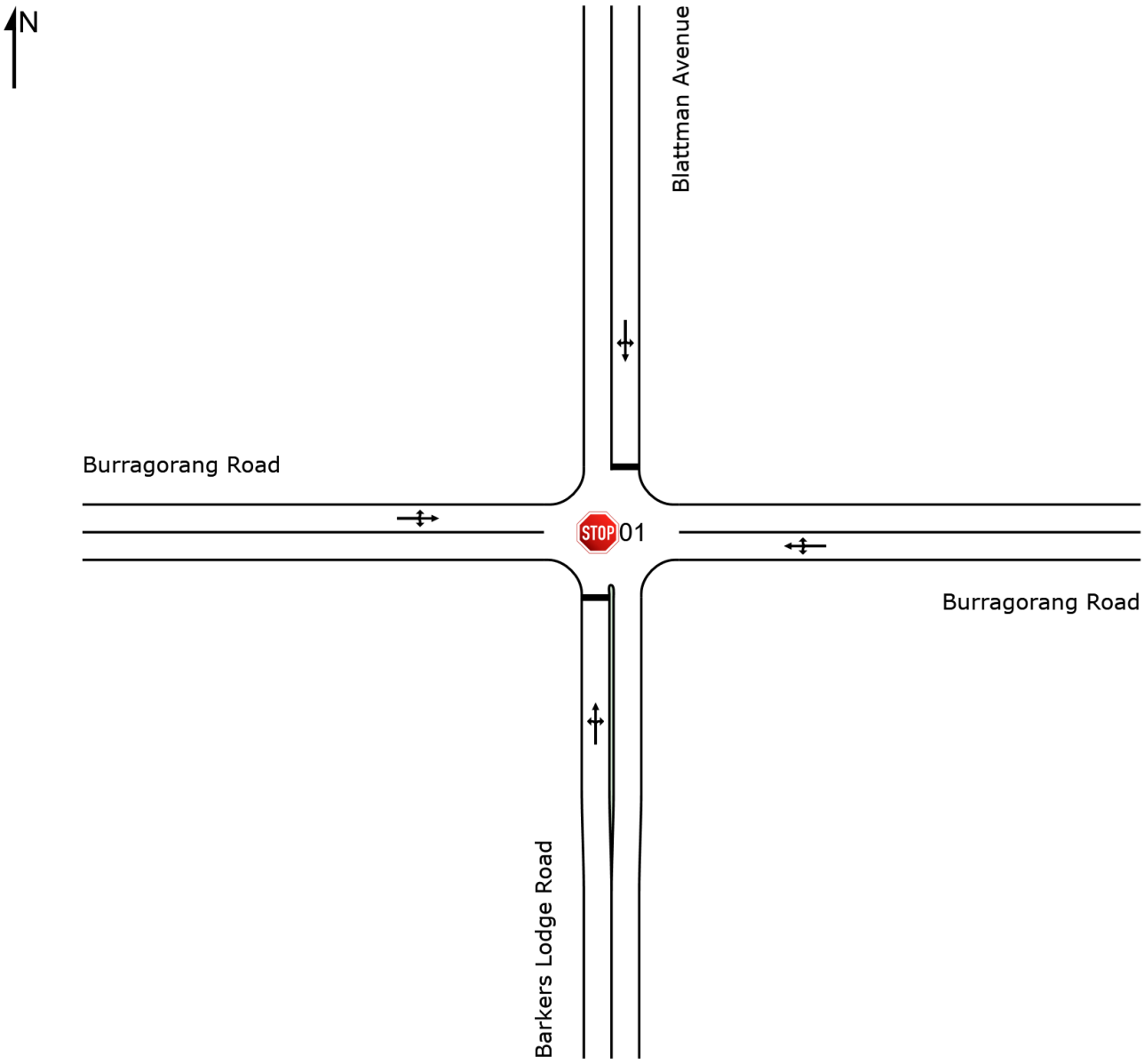
TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Established 1994

SITE LAYOUT

Site: 01 [Burragorang Road/ Barkers Lodge Road (Site Folder: Layout)]

Burragorang Road & Barkers Lodge Road, Oakdale
Site Category: Planning Proposal for Residential Subdivision
Stop (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 01 [Burragorang Road/ Barkers Lodge Road - AM (Site Folder: Existing)]

Burragorang Road & Barkers Lodge Road, Oakdale
Site Category: Planning Proposal for Residential Subdivision
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Barkers Lodge Road														
10	L2	9	0	9	0.0	0.048	8.1	LOS A	0.2	1.2	0.17	0.93	0.17	54.3
11	T1	11	0	12	0.0	0.048	8.2	LOS A	0.2	1.2	0.17	0.93	0.17	44.3
12	R2	25	1	26	4.0	0.048	8.4	LOS A	0.2	1.2	0.17	0.93	0.17	53.8
Approach		45	1	47	2.2	0.048	8.3	LOS A	0.2	1.2	0.17	0.93	0.17	52.2
East: Burragorang Road														
1	L2	16	1	17	6.3	0.032	5.7	LOS A	0.1	0.5	0.06	0.24	0.06	57.1
2	T1	31	3	33	9.7	0.032	0.0	LOS A	0.1	0.5	0.06	0.24	0.06	58.7
3	R2	7	1	7	14.3	0.032	5.8	LOS A	0.1	0.5	0.06	0.24	0.06	51.7
Approach		54	5	57	9.3	0.032	2.5	NA	0.1	0.5	0.06	0.24	0.06	57.5
North: Blattman Avenue														
4	L2	4	0	4	0.0	0.027	6.9	LOS A	0.1	0.7	0.20	0.93	0.20	48.8
5	T1	9	0	9	0.0	0.027	7.1	LOS A	0.1	0.7	0.20	0.93	0.20	43.7
6	R2	12	1	13	8.3	0.027	7.3	LOS A	0.1	0.7	0.20	0.93	0.20	48.3
Approach		25	1	26	4.0	0.027	7.2	LOS A	0.1	0.7	0.20	0.93	0.20	47.1
West: Burragorang Road														
7	L2	10	0	11	0.0	0.040	5.6	LOS A	0.1	0.5	0.05	0.16	0.05	52.8
8	T1	52	1	55	1.9	0.040	0.0	LOS A	0.1	0.5	0.05	0.16	0.05	59.2
9	R2	9	1	9	11.1	0.040	5.7	LOS A	0.1	0.5	0.05	0.16	0.05	57.1
Approach		71	2	75	2.8	0.040	1.5	NA	0.1	0.5	0.05	0.16	0.05	58.3
All Vehicles		195	9	205	4.6	0.048	4.1	NA	0.2	1.2	0.10	0.46	0.10	55.6

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 01 [Burragorang Road/ Barkers Lodge Road - PM (Site Folder: Existing)]

Burragorang Road & Barkers Lodge Road, Oakdale
Site Category: Planning Proposal for Residential Subdivision
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Barkers Lodge Road														
10	L2	14	0	15	0.0	0.060	8.5	LOS A	0.2	1.5	0.28	0.90	0.28	54.1
11	T1	4	0	4	0.0	0.060	8.7	LOS A	0.2	1.5	0.28	0.90	0.28	49.8
12	R2	33	2	35	6.1	0.060	9.0	LOS A	0.2	1.5	0.28	0.90	0.28	53.6
Approach		51	2	54	3.9	0.060	8.8	LOS A	0.2	1.5	0.28	0.90	0.28	53.6
East: Burragorang Road														
1	L2	34	0	36	0.0	0.088	5.6	LOS A	0.1	0.7	0.03	0.17	0.03	57.8
2	T1	111	7	117	6.3	0.088	0.0	LOS A	0.1	0.7	0.03	0.17	0.03	59.1
3	R2	11	0	12	0.0	0.088	5.6	LOS A	0.1	0.7	0.03	0.17	0.03	57.0
Approach		156	7	164	4.5	0.088	1.6	NA	0.1	0.7	0.03	0.17	0.03	58.8
North: Blattman Avenue														
4	L2	3	0	3	0.0	0.011	8.1	LOS A	0.0	0.3	0.15	0.92	0.15	53.4
5	T1	1	0	1	0.0	0.011	8.7	LOS A	0.0	0.3	0.15	0.92	0.15	49.8
6	R2	6	0	6	0.0	0.011	8.5	LOS A	0.0	0.3	0.15	0.92	0.15	53.0
Approach		10	0	11	0.0	0.011	8.4	LOS A	0.0	0.3	0.15	0.92	0.15	52.9
West: Burragorang Road														
7	L2	5	0	5	0.0	0.028	5.9	LOS A	0.1	0.5	0.13	0.17	0.13	57.2
8	T1	32	3	34	9.4	0.028	0.2	LOS A	0.1	0.5	0.13	0.17	0.13	58.9
9	R2	9	1	9	11.1	0.028	6.1	LOS A	0.1	0.5	0.13	0.17	0.13	56.7
Approach		46	4	48	8.7	0.028	1.9	NA	0.1	0.5	0.13	0.17	0.13	58.4
All Vehicles		263	13	277	4.9	0.088	3.3	NA	0.2	1.5	0.10	0.34	0.10	57.6

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 01 [Burragorang Road/ Barkers Lodge Road - AM (Site Folder: Post Development)]

Burragorang Road & Barkers Lodge Road, Oakdale
Site Category: Planning Proposal for Residential Subdivision
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Barkers Lodge Road														
10	L2	9	0	9	0.0	0.156	8.2	LOS A	0.6	4.1	0.27	0.91	0.27	54.1
11	T1	11	0	12	0.0	0.156	8.7	LOS A	0.6	4.1	0.27	0.91	0.27	44.1
12	R2	109	1	115	0.9	0.156	8.7	LOS A	0.6	4.1	0.27	0.91	0.27	53.7
Approach		129	1	136	0.8	0.156	8.7	LOS A	0.6	4.1	0.27	0.91	0.27	53.2
East: Burragorang Road														
1	L2	45	1	47	2.2	0.054	5.6	LOS A	0.1	0.5	0.05	0.32	0.05	56.8
2	T1	41	3	43	7.3	0.054	0.1	LOS A	0.1	0.5	0.05	0.32	0.05	58.4
3	R2	7	1	7	14.3	0.054	5.9	LOS A	0.1	0.5	0.05	0.32	0.05	51.3
Approach		93	5	98	5.4	0.054	3.2	NA	0.1	0.5	0.05	0.32	0.05	57.2
North: Blattman Avenue														
4	L2	4	0	4	0.0	0.028	7.0	LOS A	0.1	0.7	0.26	0.92	0.26	48.8
5	T1	9	0	9	0.0	0.028	7.4	LOS A	0.1	0.7	0.26	0.92	0.26	43.6
6	R2	12	1	13	8.3	0.028	7.6	LOS A	0.1	0.7	0.26	0.92	0.26	48.2
Approach		25	1	26	4.0	0.028	7.4	LOS A	0.1	0.7	0.26	0.92	0.26	47.0
West: Burragorang Road														
7	L2	10	0	11	0.0	0.056	5.7	LOS A	0.1	0.6	0.05	0.11	0.05	53.0
8	T1	81	1	85	1.2	0.056	0.0	LOS A	0.1	0.6	0.05	0.11	0.05	59.4
9	R2	9	1	9	11.1	0.056	5.9	LOS A	0.1	0.6	0.05	0.11	0.05	57.3
Approach		100	2	105	2.0	0.056	1.1	NA	0.1	0.6	0.05	0.11	0.05	58.7
All Vehicles		347	9	365	2.6	0.156	4.9	NA	0.6	4.1	0.15	0.52	0.15	55.7

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 01 [Burragorang Road/ Barkers Lodge Road - PM (Site Folder: Post Development)]

Burragorang Road & Barkers Lodge Road, Oakdale
Site Category: Planning Proposal for Residential Subdivision
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Barkers Lodge Road														
10	L2	14	0	15	0.0	0.119	8.6	LOS A	0.4	3.0	0.35	0.91	0.35	53.9
11	T1	4	0	4	0.0	0.119	9.2	LOS A	0.4	3.0	0.35	0.91	0.35	49.5
12	R2	72	2	76	2.8	0.119	9.5	LOS A	0.4	3.0	0.35	0.91	0.35	53.5
Approach		90	2	95	2.2	0.119	9.3	LOS A	0.4	3.0	0.35	0.91	0.35	53.4
East: Burragorang Road														
1	L2	108	0	114	0.0	0.141	5.6	LOS A	0.1	0.7	0.02	0.28	0.02	57.2
2	T1	130	7	137	5.4	0.141	0.0	LOS A	0.1	0.7	0.02	0.28	0.02	58.6
3	R2	11	0	12	0.0	0.141	5.6	LOS A	0.1	0.7	0.02	0.28	0.02	56.3
Approach		249	7	262	2.8	0.141	2.7	NA	0.1	0.7	0.02	0.28	0.02	58.0
North: Blattman Avenue														
4	L2	3	0	3	0.0	0.012	8.2	LOS A	0.0	0.3	0.18	0.91	0.18	53.3
5	T1	1	0	1	0.0	0.012	9.3	LOS A	0.0	0.3	0.18	0.91	0.18	49.7
6	R2	6	0	6	0.0	0.012	8.8	LOS A	0.0	0.3	0.18	0.91	0.18	52.9
Approach		10	0	11	0.0	0.012	8.6	LOS A	0.0	0.3	0.18	0.91	0.18	52.8
West: Burragorang Road														
7	L2	5	0	5	0.0	0.036	6.2	LOS A	0.1	0.6	0.15	0.13	0.15	57.4
8	T1	45	3	47	6.7	0.036	0.2	LOS A	0.1	0.6	0.15	0.13	0.15	59.1
9	R2	9	1	9	11.1	0.036	6.5	LOS A	0.1	0.6	0.15	0.13	0.15	56.9
Approach		59	4	62	6.8	0.036	1.7	NA	0.1	0.6	0.15	0.13	0.15	58.7
All Vehicles		408	13	429	3.2	0.141	4.1	NA	0.4	3.0	0.12	0.41	0.12	57.1

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix D
Oakdale Cycleway Map

ttpa TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Established 1994

Cycleway / Shared Pathway Routes

WOLLONDILLY SHIRE COUNCIL

OAKDALE

CYCLEWAY / SHARED PATHWAY ROUTES

Date printed: 18/06/2008