Appendix F

Transport Impact Assessment by Arup

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EG Property Group

Tahmoor Tourist & Recreation Precinct

Transport Impact Assessment

Rev A | November 2010

Arup Arup Pty Ltd ABN 18 000 966 165



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It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 220887



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1 Introduction

Arup has been commissioned by the applicant to undertake a transport impact assessment for a proposed rezoning of an existing rural parcel of land at Tahmoor in the Southern Highlands of NSW. The purpose of this report is to provide a detailed traffic and transport assessment to Wollondilly Shire Council so it can determine the traffic impacts on the local road network should the land be developed for a future rural residential subdivision of up to 92 lots as well as a recreational precinct that would easily accommodate up to 190 people.

The report describes the existing site access, traffic situation, existing road network performance and transport facilities in the vicinity of the site. It also analyses the proposed development's effect on forecast traffic generation and trip distribution. A transport impact assessment is then undertaken for the likely future additional peak weekday and weekend traffic which will be generated by this type of redevelopment of the site.

The transport impact assessment for the site has generally determined that the future site redevelopment will have minimal effect on the existing local roads in the area, with the exception of River Road, between the site and the existing Tahmoor urban area, which will require widening to a minimum two lane RTA Rural Road width standard.

1.1 The Demography of Tahmoor

The town of Tahmoor is located about 100km south – west of Sydney. The main regional town in the area is Picton which is located about 6km north of Tahmoor on the Old Hume Highway (now Remembrance Drive). Other similar townships, Bargo and Thirlmere are located about 8km south and 3km west of Tahmoor. As per the 2006 ABS census data, the total population of Tahmoor is just under 4000 persons with a median age of 34 years.

About 60% of the workforce in Tahmoor is engaged in trade, labour, driving, machinery operation or clerical jobs and about 13% are professionals. The most common professions are school education, road freight transport etc. The median weekly income is \$1,077, compared to \$1,171 in Australia. About 6.7% of the labour force in Tahmoor was unemployed in 2006, which was slightly higher than the national average of 5.2% at that time.

About 95% of the dwellings in the town are separate houses. During the site inspection, most of the dwellings were observed to have multi unit garages (refer to Photograph 1). This is indicative of high car ownership and usage in the area.



Photograph 1: A Typical Dual Garage House in Tahmoor

1.2 Scope of the Report

The scope of this report is primarily to assess the following matters:

- Assessment of existing traffic and transport arrangements
- Assessment of the local road condition leading to the site (e.g. River Road)
- The likely traffic and parking impact of the proposal in the locality
- Assessment of the suitability of the proposal
- The impact on road network traffic safety and efficiency
- The impact on pedestrian movement, safety and amenity

2 Existing Conditions

2.1 Site Area and Land Uses

The site currently accommodates numerous grazing paddocks and is located on the south eastern end of River Road about 1.7km from the Remembrance Drive intersection (refer to Figure 1).

The site is generally bounded by conservation areas adjacent to the Nepean River to the east and Myrtle Creek to the north with existing farms (Tahmoor Duck Hatchery) and rural residential properties to the west and south (Rural Small Holdings as per Wollondilly Local Environmental Plan 2009).

The existing vehicular site access is provided via River Road. A steep hilly section of this road rises about 40 - 50m higher than the site to the west. There is a relatively steep downward slope towards the site from the existing end of River Road (refer to Photograph 3).



Figure 1: Site Location

The locality land uses in Tahmoor includes mostly single storey residential houses along both sides of River Road. Specific land uses include:

- Tahmoor Town Centre western side of Remembrance Drive (about 3km west of the site);
- Tahmoor Park bounded by Remembrance Drive Myrtle Creek Avenue Park Avenue – River Road (about 2km north – west of the site);
- Wollondilly Anglican College, Remembrance Drive (about 7km south west of the site);
- Tahmoor Duck Hatchery, River Road (about 500m north west of the site).

Photograph 2: Existing Site (View from River Road)



Photograph 3: Existing Site Entrance Approach from River Road



2.2 Road Hierarchy and Traffic Data

The Hume Highway (Motorway) is the main arterial road in the vicinity of the site. The Hume Highway is one of the longest highways in Australia which provides the most direct connection between Sydney and Melbourne (873km). It is generally a divided carriageway and has 2 lanes in each direction in the vicinity of Picton Road.

Figure 2: Regional Road Network Map



Remembrance Drive (Old Hume Highway) provides a direct north – south connection between Camden and the Hume Highway south of Bargo, via Picton and Tahmoor. It is generally a two lane two way road under the jurisdiction of the RTA. The general speed limit of Remembrance Drive is 80km/h, however the speed limit is reduced to 50km/h near most urban areas (refer to Photograph 4).



Photograph 4: Remembrance Drive at River Road Intersection (looking west)

Picton Road, a sub – arterial road, provides access to Picton Town Centre and areas such as Tahmoor and Thirlmere from The Hume Highway via Menangle Street, Prince Street and Argyle Street. The Picton Road route would generally be the preferred route for most future traffic from this site when travelling to and from the north. Picton Road is generally a two lane two way rural road with various posted speed limits up to 100km/h.

Thirlmere Way is another sub – arterial road which provides an east – west connection between the eastern and western part of Tahmoor by means of a railway overbridge. It generally provides access to the residential properties of Tahmoor which are located on the western side of the railway line. This road may be used by some future site subdivision traffic when travelling to and from rural areas in the west of Wollondilly Shire.

River Road, Moorland Avenue and Myrtle Creek Avenue are local roads which provide access to residential properties on the east side of Remembrance Drive. The posted speed limit of River Road is 50km/h. An existing load limit restriction (8 tonnes or over) is in place in River Road from the Remembrance Drive intersection (refer to Photograph 5).

Photograph 5: Various sections of River Road



Just South of Remembrance Dr

Just South of Moorland Rd



About 150m south of Moorland Rd

About 370m south of the Moorland Rd

River Road is generally an undivided two lane – two way road between Remembrance Drive and Moorland Road. The road width is gradually reduced to south of Moorland Road. Near the existing site access, River Road is generally only about 4m wide. The road width of the various sections of River Road is illustrated in Figure 3.

Sight distance is also very limited in some curved sections in the hilly parts of River Road (i.e. between the site and Tahmoor Duck Hatchery – refer to Photograph 6).



Figure 3: Existing Road Width on Various Sections of River Road

Photograph 6: Limited Sight Distance Looking North on River Road



2.3 Traffic Data

A seven day traffic count has been undertaken by an Arup appointed private contractor 'CFEIT' on Remembrance Drive and River Road. The counts were undertaken between 23 August 2010 and 29 August 2010 (non – school holiday period). The detailed traffic count data is attached in **Appendix A** and the summary results are presented in Figure 4.

Figure 4: Traffic Count Data



Traffic data on the above figure shows that considering it is an arterial road, the traffic volume on Remembrance Drive is well within acceptable limits. The current daily traffic volume is also acceptable on River Road as per the RTA's maximum environmental capacity threshold of 300 vehicles per hour -3,000 vehicles per day typically - for a local residential street.

2.4 Intersections at the Vicinity of the Site

As indicated by the site locality plan in Figure 1, the three key intersections on the traffic approach routes to the site which will carry the majority of the future site traffic are as follows:

- Remembrance Drive/ River Road
- Remembrance Drive/ Myrtle Creek Avenue
- River Road/ Moorland Road

The above three intersections were surveyed by an Arup appointed private contractor 'Roar Data' on Thursday, 26 August 2010 between the following peak traffic hours:

- 7am 9am
- 4pm 6pm

The actual morning and afternoon peak hour traffic periods which were determined from these intersection traffic surveys were 08.00 - 09.00 hrs and 16.45 - 17.45 hrs respectively. The complete intersection count data is attached in **Appendix A**. Further analysis and discussion of the current and future levels of service for traffic at these intersections, e.g. with and without the site development traffic, is presented later in Section 4.4 of this report.

2.5 Pedestrian Facilities

Paved footpaths are provided on Remembrance Drive in front of the retail precinct. A number of refuge islands are provided in front of the retail shops in order to allow pedestrians to cross Remembrance Drive.

Photograph 7: Refuge Island on Remembrance Drive



No paved footpaths are provided along River Road. No pedestrians were observed walking along River Road during the site inspection.

2.6 Parking Provision

The parking is generally unrestricted on residential streets in Tahmoor. However, in front of the main retail precinct on Remembrance Drive, parking is restricted to two hours (2P 8.30am - 5pm Monday – Friday and 8.30am - 12.30pm Saturday). An off – street car park is also provided in the Tahmoor Town centre. The parking inside the car park is restricted to three hours between 8am - 6pm Monday – Friday and 8am - 4pm Saturday – Sunday.

During a site inspection on Wednesday, 25 August 2010 between 3pm – 4pm most of the on and off – street parking spaces were occupied near Tahmoor Town Centre.

Photograph 8: Parking on Remembrance Drive in front of the Retail/ Business Precinct



2.7 Public Transport Facilities

2.7.1 Train

The Tahmoor Train Station, which has two platforms, is located about 3.2km west of the site on George Street (refer to Photograph 9). A few rail commuter car parking spaces are provided, mostly on the western side of the station on Pitt Street. Although Tahmoor station falls under City Rail's Southern Highlands Line, no direct train connection is provided between the Sydney CBD and Tahmoor. City bound passengers from Tahmoor must change trains at Campbelltown station. The train journey to Campbelltown takes 36 minutes from Tahmoor. Travel to the Sydney CBD by train takes a minimum of about 1.5 hours.

There was no train timetable information visible at Tahmoor Station. According to the 131500 website, there is generally about one train each hour in each direction, over the major part of the day on weekdays.

Photograph 9: Tahmoor Station



2.7.2 Bus

Picton Buslines operate bus routes between Bargo/ Buxton and Picton via Tahmoor. Routes 911, 912, 913 and 914 operate via Tahmoor. Bus frequencies vary during the day but generally one bus service is available each hour during the day time on weekdays and lesser frequency during the weekend. The Picton Buslines route map is provided in Figure 5. The closest bus stop to the site is located on Remembrance Drive just west of River Road (refer to Photograph 4).

Picton Buslines also provides school bus services in the area. All school children who live within an eligible radius/ walking distance travel for free.

A Wollondilly Community Bus is also available for use by community groups within the Shire. The bus is provided to assist transport to the disadvantaged in the community. The maximum seating capacity is 22 passengers. The booking fee is \$22.00 within the shire and \$44.00 outside the shire area.



Figure 5: Picton Buslines Route Map

2.7.3 Taxi

A wheelchair accessible taxi service is provided by 'Tahmoor and District Taxis' in the area.

2.8 Bicycle Route and Facilities

A separate bicycle lane is generally provided on the eastern side of Remembrance Drive through Tahmoor (refer to Photograph 4). Other designated bicycle routes in the area, generally without actual cycle lanes, are shown in Figure 6.

Figure 6: Bicycle Route Map for the Picton to Tahmoor Area



Source: Wollondilly Shire Council

2.9 Travel Mode Share and Distribution

As per the NSW Bureau of Transport Statistics (BTS) data, Tahmoor falls under zone 1448. Table 1 below provides a breakdown of proportions of journey to work travel mode for Tahmoor residents.

Travel Mode	Total Travel	% Mode
Train	97	5%
Bus	9	0.5%
Car as Diver (incl bus & motorbike)	1221	67.5%
Car as passenger	107	6%
Other modes	69	4%
Not stated	36	2%
Work at home or did not got to work	268	15%
	1807	100%

Table 1: Travel Modes from 2006 Census for Tahmoor Residents Journey to Work

High car dependency (over 70%) for the journey to work by Tahmoor residents is evident from the above table, even higher if those who did not travel at all on the survey day are not considered.

2.10 Major Road Works by Wollondilly Shire Council

The Remembrance Drive and Thirlmere Way roundabout is currently being updated by Wollondilly Shire Council. The Council has been funded by the Mine Subsidence Board to carry out works along Remembrance Drive from Bradbury Street to Progress Street and along Thirlmere Way between Remembrance Drive and York Street. The project includes:

- Replacement of sections of kerb and gutter
- Replacement of the Remembrance Drive /Thirlmere Way roundabout island
- Replacement of pavement for sections around the Remembrance Drive/Thirlmere Way roundabout

In addition to above, Council has received an application to close York Street (between Thirlmere Way and Larkin Street) to facilitate further commercial development within the Tahmoor shopping precinct.

Although the road closure proposal is likely to have minimal traffic impact in the Tahmoor Town Centre in the shorter term, the road closure could have greater potential impact considering the future growth of the shire. Public consultation is currently being undertaken for the proposal.

3 The Proposed Development

A future rural residential subdivision at the site could potentially accommodate up to 92 large rural residential lots as well as areas specifically designed for recreational use by both residents and visitors alike. The current proposed site plan, including the Tahmoor Tourist and Recreation Precinct, is illustrated by Figure 7 below.

The recreational areas include a new, state of the art conference facility that can accommodate approximately 100 guests for functions such as weddings and christenings. During busy times, the site recreation areas/ conference facility could potentially generate vehicular traffic movements from up to 190 additional visitors to the site in addition to the traffic movements from the 92 residential lots.

Figure 7 : Current Proposed Site Plan



3.1 Access Routes and Intersections

The proposed residential streets are a combination of local collector roads and local access streets which are essential in order to provide vehicular access to the rural residential precinct and public domain areas. They not only carry traffic but help to define the overall environmental amenity and character of a precinct.

A well designed local road network will ensure many of the problems associated with road traffic are reduced to a manageable level or are eliminated. A clearly defined road hierarchy helps to ensure that the potential local traffic impacts are limited to those streets which have the designated function of carrying through traffic.

To reinforce the rural residential nature of future local access streets, their carriageways should be:

- a suitable width for their function
- short in length
- have low design traffic speeds
- provide the sense of a safe low speed pedestrian environment
- pedestrians should be able to easily cross these streets
- cyclists should be able to share the road pavement with vehicles

The internal road network as shown in Figure 7 in the Tahmoor Tourist and Recreation Precinct will meet all these design objectives. The local collector road system designed for the precinct should also be capable of functioning as a school bus route. All works should be designed to comply with the relevant Wollondilly Shire Council standards for engineering works.

The future site traffic generation impact has been assessed for both the normal weekday and peak weekend traffic scenarios, which are defined as follows.

- The future peak weekday traffic situation is defined as the future site residential traffic (approximately 920 vehicle movements per day , 92 in either the morning or afternoon peak hours), travelling between the site and identified Remembrance Drive intersections. These are generally the River Road intersection for traffic travelling to or from the north or east and the Myrtle Creek Avenue intersection for traffic travelling to or from the west or south.
- The future peak weekend traffic situation is defined in relation to the currently identified Saturday morning and Sunday afternoon peak hour traffic periods, determined from the tube count surveys, which are 10.00 11.00 hrs and 17.00 18.00 hrs respectively. At these times the future site residential traffic would still be generally similar to the peak weekday traffic situation, but the additional likely visitor traffic (generally arriving on the Saturday) and generally departing on the Sunday) would also need to be considered.

4 Transport Impact Assessment

4.1 Traffic Generation

The 2006 household census data for travel to work for the Tahmoor area shows a high dependency on private vehicle usage (refer to Table 1). This high dependence on car travel is unlikely to change significantly in the short to medium term for existing or future residents/ visitors to Tahmoor.

For a conservative approach, it has also been assumed that there is effectively no traffic generation from the site currently. Therefore, no deduction has been made from the forecast future traffic generation of the site.

For the forecast traffic generation of the rural residential component of the future site development, traffic generation rates of 10 vehicle trips per day per household or 1 vehicle trip per hour per household in both the morning and afternoon peak hours would be applicable for each rural residential lot. These rates are slightly higher than standard RTA suburban detached dwelling traffic generation rates.

These external traffic generation rates would result in a future total of up to 92 vehicle trips per hour (in both the am and pm peak hours) or 920 future vehicle trips per day from the proposed residential development. Assuming, no weekday traffic generation by the equestrian facility, the site traffic generation trips for a typical weekday are likely to be:

- AM peak hour = 92 vehicles (18 incoming and 74 outgoing, considering a 20%/80% split)
- PM peak hour = 92 vehicles (64 incoming and 28 outgoing, considering a 70%/30% split)

For the proposed recreational component of the development with a maximum capacity of 190 visitors on-site, persons would usually share transport with typical car occupancy of 2 - 3 persons per vehicle when travelling to or from the site. The estimated trip generation rate is based on an average of 2.5 persons per vehicle travelling to the recreational facilities, which equates to an additional 76 vehicles arriving and/or departing per day for the facility at full capacity.

The on – site recreational facilities (e.g. lookout, bike/ horse trial, tennis court, conference centre) will attract visitors to stay overnight as the development will also provide overnight accommodation and camping facilities. Therefore, it is likely that the peak inbound and outbound vehicle trips would normally be distributed over two days on a busy weekend.

As such, the traffic calculation is undertaken over two days assuming 90% incoming recreational traffic on a Saturday Morning and 90% outgoing recreational traffic on a Sunday Afternoon. Assuming a peak hourly rate of 50% of all daily recreational traffic arriving or departing in the peak hour, the peak hourly weekend traffic pattern for the recreational visitors would be likely to be:

- Saturday morning peak hour **38 incoming vehicles**
- Sunday afternoon peak hour **38 outgoing vehicles**

It is also assumed that the future weekend peak site residential traffic during the weekend peak hours will be equally as high as the normal weekday am and pm peak hour traffic periods. This may be a slight over estimation of residential traffic generation but considering the high car dependency in the region, this estimation is probably appropriate. Therefore, the total estimated future site vehicle traffic during the peak hours on a busy weekend is likely to be:

- Saturday morning peak hour = **130 vehicles** (56 incoming and 74 outgoing traffic, considering a 20%/80% split of residential traffic)
- Sunday afternoon peak hour = **130 vehicles** (55 incoming and 75 outgoing traffic, considering a 60%/40% split of residential traffic)

This future additional traffic has been added to the existing road network traffic in the traffic analysis which has been undertaken in this report.

4.2 Traffic Distribution

The 2006 ABS census data shows the following journey to work trip distribution for Tahmoor residents:

- 46.1% trips to destinations within Wollondilly LGA
- 48.9% trips to destinations located north of Wollondilly LGA
- 5% trips to the destinations located south of Wollondilly LGA

For the future weekday peak hour trip distributions, it is assumed that approximately 70% of the vehicular trips will be to/ from the north and east (suburbs to the north including Picton) and the remaining 30% to the south and west (suburbs to the south including the local Tahmoor retail/ business precinct).

The weekend peak trip distributions for both the future site residents and recreational visitors are likely to be more evenly distributed north and south as it is expected that more residents will be visiting the Tahmoor Town Centre located to the south of the site and a significant number of recreational visitors will come from the rural areas which are generally located to the south and west of Tahmoor. Therefore, a 50% / 50% split (to the north and south) of the future weekend peak hour vehicle trip distribution for both the site residential and recreational traffic is considered appropriate.

4.3 External Road Network Impact

The effect of the future site generated traffic in terms of the predicted peak hour traffic increases on the two most affected roads is summarised in Table 2.

The data in Table 2 shows that existing hourly traffic flows on the local roads (e.g. River Road and Myrtle Creek Road) are very low, being less than 100 vehicles per hour typically. Even with the proposed new site residential and recreational facilities, the future total hourly traffic volumes will still remain well below the RTA's maximum environmental traffic capacity threshold (300 vehicles/hr) for a local street (refer to RTA Guide to Traffic Generating Developments; October 2002; issue 2.2). Therefore, these predicted future peak hourly traffic volumes on River Road and Myrtle Creek Drive are considered acceptable.

Road	Scenario		AM Peak			PM Peak	
		Existing traffic	Site Traffic	Total Traffic	Existing traffic	Site Traffic	Total Traffic
River Rd	Weekday	84	65	149	97	65	162
	Weekend	63	65	128	55	66	121
Remembrance	Weekday	827	65	892	954	65	1019
Dr (North)	Weekend	801	65	866	561	66	627
Myrtle Cr Dr	Weekday	35	27	62	68	27	95
	Weekend*	27	65	92	39	64	- 103

*- existing weekend traffic on Myrtle creek is calculated based on ratio of weekday and weekend traffic on River Road as both the roads are similar classification/ pattern

Remembrance Drive, which is an Arterial Road, currently carries about 800 - 1000 vehicles per hour during the peak hours. As per the RTA's Road Classification, peak hourly traffic volumes for an arterial road can normally be between 1,500 - 5,600 vehicles. With the additional predicted site redevelopment traffic, the maximum traffic volume at any time (the weekday pm peak) will be 1019 vehicles per hour which is still well below the acceptable RTA range for an Arterial Road. Therefore, the traffic impact due to the proposed development on Remembrance Drive will also be minimal.

4.4 Future Traffic Operations at Intersections

In urban areas, the traffic capacity of the major road network is generally a function of the performance of traffic intersections. This performance is quantified in terms of the Level of Service (LOS), which is an index of the operational performance of traffic at an intersection and is based on the average delay per vehicle. LOS ranges from A = very good to F = highly congested travel conditions, as shown in Table 3.

Description	Level of Service (RTA Definition)	Average Delay per Vehicle (s)
Very Good	A	< 14.5
Good	В	14.5 ≤ 28.5
Satisfactory	С	28.5 ≤ 42.5
Near Capacity	D	42.5 ≤ 56.5
At Capacity	Е	56.5 ≤ 70.5
Over Capacity	F	≥ 70.5

Table 3: Level of Service Definitions

Generally it is desirable to aim at achieving a Level of Service of C or better at all major road intersections. However, in practice, it is reasonable for some intersections to operate at Level of Service D at peak times.

Another common measure of intersection performance is the degree of saturation (DOS), which provides an overall measure of the capability of the intersection to accommodate additional traffic. A DOS of 1.0 indicates that an intersection is operating at capacity. The desirable maximum degree of saturation for an intersection with traffic signals is 0.9.

Sidra intersection modelling program has been used to assess the three major intersections discussed in the previous section. The existing intersection performance is assessed in this report in terms of the following four factors for each intersection:

- Degree of Saturation
- Average Delay (AVD) in seconds per vehicle
- Level of Service
- Length and direction of peak traffic queue (95th percentile traffic queue)

As long as the intersection traffic queues are managed such that they do not affect the adjacent intersections, the Sidra analysis is appropriate. The surveyed three intersections have been analysed by the Sidra modelling software. The results of the existing and future intersection performance (based on forecast traffic) are presented in Table 4, Table 5 and **Appendix B**.

4.4.1 Remembrance Drive & River Road Intersection

This intersection is currently operating at LOS A in both the weekday am and pm peak periods. The AVD and DOS are very low which indicates that the intersection has significant spare capacity to accommodate additional traffic.

With to the additional residential traffic during the weekday, the intersection will operate at LOS A & B in both the am and pm peak periods. The vehicles turning right from River Road will experience the highest delay (LOS B). However, the DOS, AVD and the maximum queue lengths will be well within the acceptable limit which will ensure that the intersection continues to operate at a satisfactory level.

No intersection traffic count was undertaken during the weekend. However, the weekend intersection traffic volumes have been estimated based on the weekday intersection count and the weekend traffic tube count data taken from both Remembrance Drive and River Road at the same periods. A detailed analysis of this traffic data reveals that:

- Weekend (Saturday) am peak through traffic on the road network (Remembrance Drive) is approximately 75% of the weekday am peak through traffic;
- Weekend (Sunday) pm peak through traffic on the road network (Remembrance Drive) is approximately 60% of the weekday am peak through traffic;
- Weekend (Saturday) am peak turning traffic on the road network (River Road) is almost exactly the same as weekday am peak turning traffic; and
- Weekend (Sunday) pm peak turning traffic on the road network (River Road) is approximately 60% of the weekday pm peak turning traffic.

The weekend Sidra analysis shows that the intersection is currently operating at LOS A in both the am and pm peak periods. The DOS is around the 0.20 mark and maximum queue length is around two vehicles only.

With the additional site visitor and residential traffic, the intersection will continue to operate at LOS A in all the scenarios. There will be a slight increase of both DOS and AVD but these will still remain well within acceptable limits.

4.4.2 Remembrance Drive & Myrtle Creek Avenue & York Street Intersection

On weekdays the intersection is currently operating at a peak hour LOS A on all the approaches. The intersection is currently operating at DOS of only 0.20 in the am peak and 0.31 capacity in the pm peak period respectively. Vehicles are currently experiencing only negligible delays.

There will also be only negligible future traffic impact due to additional residential traffic during the weekdays. The Sidra modelling shows that except for slight increases of the AVD and maximum queue, there will be virtually no change of the intersection performance.

During the weekend peak hours, the intersection is currently operating at LOS A and DOS is below 0.20 in both the peak periods. This indicates the intersection has significant spare capacity to accommodate additional traffic and there are only very minor vehicular delays at the intersection currently.

With the additional site traffic on weekends, the intersection will continue to operate at LOS A on all the approaches. Although there is slight increase in the DOS for the Saturday am peak, it will remain the same for the Sunday pm peak. However on the Sunday pm peak, there will be a slight increase in AVD.

Overall, there will be only a very minor traffic impact due the additional site traffic and the planned development will have an acceptable impact on this intersection.

4.4.3 River Road & Moorland Road Intersection

Due to the minimal volume of current traffic, traffic at this intersection is always free flowing. During the weekday peaks, vehicles at this intersection are currently experiencing delays of less than two seconds on average.

With the additional residential traffic, the intersection will continue to operate at LOS A on all the three approaches. The average traffic delay will still be very minor (less than six seconds) with significant available spare traffic capacity.

During the weekend peaks, the intersection is also operating at LOS A currently on all approaches. The AVD and maximum queues are also generally better than during the weekday peaks. With the additional site traffic, there will be only very minor changes in the weekend peak traffic operation of this intersection.

Overall, there will be only a very minor traffic impact due the additional site traffic at this intersection and the planned development will have an acceptable traffic impact at this location.

Intersection	Scenario		A	AM Peak			P	PM Peak	
		SOT	DOS	AVD (sec)	Max Queue (m)	ros	soq	AVD (sec)) Max Queue (m)
Remembrance Dr & River Road	Existing	A	0.27	2.7	15.1	Y	0.32	3.3	12.3
	Future	A&B	0.27	3.6	15.2	A & B	0.34	4.0	12.9
Remembrance Dr & Myrtle Cr	Existing	А	0.20	3.2	11.6	V	0.31	3.5	24.0
Ave & York St	Future	A a	0.21	3.4	9.11.9	Y	0.31	3.8	24.2
River Rd & Moorland Rd	Existing	A	0.01	1.4	0.5	V	0.02	1.8	0.6
	Future	A	0.07	5.0	2.3	A .	0.04	4.7	

Table 4: Existing and Future Weekday Intersection Performance

Table 5. Evicting and Future Weekend Intersection Derfo

Intersection	Scenario		Saturda	Saturday (AM Peak)			Sund	Sunday (PM Peak)	
		SOT	SOG	AVD (sec)	Max Queue (m)	ros	DOS	AVD (sec)	Max Queue (m)
Remembrance Dr & River Road	Existing	A	0.20	2.6	10.1	Y	0.19	2.7	5.6
	Future	A	0.20	3.5	10.3	Y	0.21	3.6	5.8
Remembrance Dr & Myrtle Cr	Existing	A	0.15	3.1	7.9	A	0.18	2.4	11.3
Ave & York St	Future	A	0.18	3.8	8.2	V	0.18	3.2	11.7
River Rd & Moorland Rd	Existing	A	0.01	1.7	0.4	V	0.01	1.9	0.4
	Future	V	0.07	5.6	2.2		0.07	5.6	2.2

Note: AVD - Average Vehicle Delay

4.5 Traffic Safety

As stated earlier, the existing road width and sight distance are currently insufficient on some parts of the southern section of River Road currently (refer to Figure 3 and Photograph 6).

Therefore, this hilly section of River Road should be resurveyed and redesigned with a new minimum 6.0 metre sealed width road carriageway, generally to be designed according to Section 3 of the RTA 'Road Design Guide'. To further improve the safety and comfort of the future road users, the following measures should generally be considered for the southern section of River Road (south of Tahmoor Duck Hatchery):

- Provide sufficient road sealed width (at least 6m) to ensure that all vehicles (including heavy vehicles) will able to accurately negotiate opposing traffic especially on the curve section of the roadway;
- Provide sufficient safe shoulder width, sealed or unsealed, on both sides of the roadway;
- Remove vegetation on the western side of River Road generally to improve visibility;
- Install "Type BB" centre line (unbroken line) markings to prohibit overtaking on the hilly section of River Road. Provide edge lines on both sides of the roadway;
- Install a safety barrier on the eastern side of River Road to improve vehicular safety on the hilly section. The Safety barrier should not be installed closer than 0.25m to the outer edge line;
- Restrict the posted vehicular traffic speed limit to 40km/h on the hilly section of River Road.

4.6 Parking Impact

The development is unlikely to have any significant parking impact in the existing local residential streets of Tahmoor (e.g. River Road) as the site is located reasonably far away from the existing residential sections of River Road and the site will provide sufficient on - site parking for its residents and visitors at all times.

Due to the proposed rezoning development, the only potential parking impact could occur near the Tahmoor Town Centre, e.g. during the weekends. Therefore, following the site development, parking situation near the town centre could be monitored and discussions could be held by Council with the local businesses, in relation to the need for additional customer car parking in the vicinity of the local retail shops and/or additional commuter car parking in the vicinity of the Tahmoor Railway Station.

4.7 Public Transport Pedestrian and Cyclist Impact

The development is unlikely to have any significant impact on current public transport, pedestrian or cyclist activity or operations.

It is understood that Wollondilly Shire Council has written to the Minister for Transport and Shadow Minister for Transport asking for consideration for better bus services in Wollondilly.

Should demand for local public transport services in the area increase in the future with the proposed rezoning development, CityRail and Picton Buslines should consider the increased frequencies of services.

5 Summary & Recommendation

This report has assessed the anticipated traffic and transport impacts for the proposed rezoning and subsequent re-development of the subject site at the south – eastern end of River Road, Tahmoor.

As such, the proposed rezoning development will contribute positively towards achieving Council's long term strategic growth plan goals.

The key findings of this traffic and transport impact assessment report are summarised below:

- The forecast traffic generated by the site development can be accommodated by the surrounding road network with only minimal impact. There will be only negligible traffic effects on either the existing local roads or main roads in the Tahmoor Urban area;
- The rural section of River Road, in particular the end section (between the site and Tahmoor Duck Hatchery) will require some upgrading to cater for the future site traffic. This section of the roadway would need to be resurveyed and redesigned in accordance with Section 3 of the RTA Road Design Guide;
- The site currently has poor public transport accessibility as it is not directly served by any existing bus services. However, following the site redevelopment, discussions should be held with the relevant public transport authorities, in relation to any demand for improved public transport services;
- The proposed development will provide sufficient on site parking provision for all the anticipated future resident and visitor needs. Any additional parking impact in the nearby residential streets is likely to be low. However, potential increased parking demand may occur near the Tahmoor Town Centre especially during shopping hours on weekends. Therefore following the site development, parking conditions near the town centre should be monitored and appropriate action could be taken in due course; and
- The proposed development is recommended as suitable for this area in traffic and transport terms as it will generate relatively moderate future levels of vehicular traffic which will remain compatible with the existing semi rural nature of the local environment and surrounding land uses.

Appendix A

Traffic Survey Data

CfeIT bob.white@cfeit.com (02) 9740 8600

Traffic Count Summary Report

	7770										
Street Location	REMEMBRANCE DRIVE, TAHMOOR : Between RIVER ROAD & STILTON LANE (bidirectional) : East of River Road, 15m west of Stilton Lane, on Blackspot Sign	E DRIVE, TA ad, 15m west	HMOOR : Beth of Stilton Lane,	ween RIVER ROAI on Blackspot Sign	OAD & STILTO Sign	N LANE (bidi	rectional) :		Carriageway		
			Start	Start Date	23-AUG-10		Weekly	Weekly 50th Percentile Speed	e Speed		74 79
TOTAL COL	TOTAL COUNT MATRIX		Duration	ution val	7 DAYS 1 HOUR		Five Da Seven I	Five Day AADT Seven Day AADT		4	10329 9524
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	23RD / 30TH	24TH	25TH	26TH	27TH	28TH	29TH	Total	Averade	Total	Average
Midnight - 1am	21	17	29	24	31	81	89	122	24	292	42
1am - 2am	12	15	18	21	17	33	44	83	17	160	33
2am - 3am	19	25	10	20	22	23	21	96	19	140	20
3am - 4am	30	28	34	33	36	19	16	161	32	196	28
4am - 5am	110	114	129	104	114	56	17	571	114	644	92
5am - 6am	299	268	250	280	299	103	43	1396	279	1542	220
6am - 7am	486	468	486	454	468	159	69	2362	472	2590	370
7am - 8am	594	560	588	567	557	271	136	2866	573	3273	468
8am - 9am	135 T35	752	813	827	793	454	276	3920	784	4650	664
9am - 10am	679	675	729	769	798	647	430	3650	730	4727	675
10am - 11am	567	578	582	627	649	728	542	3003	601	4273	610
11am - Midday	549	522	553	640	663	801	620	2927	585	4348	621
Midday - 1pm	581	597	679	573	613	704	561	3043	609	4308	615
1pm - 2pm	582	574	623	617	673	726	501	3069	614	4296	614
2pm - 3pm	629	686	684	680	769	594	512	3448	690	4554	651
3pm - 4pm	891	895	916	954	1008	625	547	4664	933	5836	834
4pm - 5pm	870	834	875	882	896	560	519	4357	871	5436	777
5pm - 6pm	778	806	853	869	797	594	493	4103	821	5190	741
6pm - 7pm	516	563	687	680	640	451	325	3086	617	3862	552
7pm - 8pm	309	311	341	344	404	310	234	1709	342	2253	322
8pm - 9pm	171	196	299	274	252	226	162	1192	238	1580	226
9pm - 10pm	135	136	263	274	158	211	114	996	193	1291	184
10pm - 11pm	84	105	107	131	131	171	53	558	112	782	112
11pm - Midnight	40	49	40	56	106	120	36	291	58	447	64
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Hourly Classification Summary

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Street Location	ŭ										•						
Location	12	MEMBR	ANCE	DRIVE,	REMEMBRANCE DRIVE, TAHMOOR : From RIVER	OR : Fr	om RIVI		D to ST	ILTON L	ROAD to STILTON LANE : EAST BOUND	AST BC	DNDC				
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Street	RIVER ROAD,	RIVER ROAD, TAHMOOR : Between REMEMBRANCE DRIVE & PARK AVENUE (bidirectional) :	Setween REME	EMBRANCE DI	RIVE & PARK A	VENUE (bidir	ectional) :				
Location	4 to utnos muc	50m south of Kemembrance Drive, House No 4 ELP 496	Irve, House No	4 ELP 496					Carriageway		
			Start	Start Date	23-AUG-10		Weekly	Weekly 50th Percentile Speed	le Speed		20
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6am - 7am	48	45	42	50	53	21	9	238	48	265	38
7am - 8am	55	54		54	63	22	12	287	57	321	46
8am - 9am	1944 a	57	55	84	69	38	24	326	65	388	55
9am - 10am	56	48	61	73	57	53	39	295	59	387	22
10am - 11am	35	38	41	43	53	63	33	210	42	306	44
11am - Midday	41	26	31	52	45	46	54	195	39	295	42
Midday - 1pm	15	34	46	36	45	45	38	176	35	259	37
1pm - 2pm	40	35	43	45	50	50	35	213	43	298	43
2pm - 3pm	41	40	66	44	58	60	42	249	50	351	50
3pm - 4pm	71	81	79	97	75	55	40	403	81	498	71
4pm - 5pm	68	64	61	86	76	54	35	355	71	444	63
5рт - 6рт	67	82	67	85	83	69	55	384	17	508	73
6pm - 7pm	65	58	66	62	63	43	38	314	63	395	56
7pm - 8pm	28	31	26	35	30	12	23	150	30	185	26
8pm - 9pm	17	24	25	35	19	22	11	120	24	153	22
9pm - 10pm	£	19	18	26	12	21	17	86	17	124	18
10pm - 11pm	4	4	12	10	13	17	4	43	6	64	6
11pm - Midnight	7	4	3	e	ស	12	٢	17	S	30	4
Total	761	778	835	950	000	795	530	2268	BAG	5488	197

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Page:1

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UTELI DOD.WNITE@CTELL.COM (UZ) 9/4U 80UU

011333

Hourly Classification Summary

Street RI Location 50 Start Date 23 Start Time 13 Duration 71 Interval 11	RIVER ROAD, TAHMOOR : From PARK AVENUE to R 50m south of Remembrance Drive, House No 4 ELP 496 23-AUG-10 Weekly 50th Percentile 7 DAYS Weekly 55th Percentile 7 DAYS Weekly 55th Percentile 7 DAYS Neekly 55th Percentile 7 DAYS Neekly 55th Percentile 7 DAYS Seven Day ADT 7 DAYS 01 02 03 04 05 07 11 0 0 0 0 0 0 0 11 0 0 0 0 0 0 0 0 11 0 0 0 0 0 0 0 0 0 0 0 11 0 </th <th>AD, TAF of Reme</th> <th>IMOOR mbrance</th> <th>: From PA</th> <th>PARK A</th> <th></th> <th></th> <th>REMEMBRANCE DRIVE : NORTH BOUND</th> <th>VCE DRI</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	AD, TAF of Reme	IMOOR mbrance	: From PA	PARK A			REMEMBRANCE DRIVE : NORTH BOUND	VCE DRI							
ey ey	0 200 210 200 200 200 200 200 200 200 20	of Reme	mbrance									UND				
	3-AUG-10 300 DAYS HOUR 11 11 11 20 36 36 36			Drive, F	louse N	04 ELP	496	1990 P. 10 P	**************************************	CONTRACTOR AND A READ A READ AND A READ AND A READ AND A READ AND A READ A	A REAL PROPERTY AND A REAL				Carriageway	
	300 DAYS HOUR 11 11 20 20 36 36 36 36 36	~	$\sum_{i=1}^{i}$	Wee	ikly 50th	Weekly 50th Percentile Speed	tile Spe	pa		22	_	THE BO	THE BODY OF THIS REPORT	4IS REPC	RT	
	01 HOUR 38 38 38 38 38 38 38 38 38 38 38 38 38 3			Wee	Weekly 85th Pe	Weekly 85th Percentile Speed	tile Spe	ed		60		SHOWS :	•• ,	v	SEVENDAY	
	01 11 01 11 01 11 11 11 11		\leq	Sev	seven Day AADT	ADT				40 9	_	ŝ	•			
Time 00	7 30 30 20 4 4 7 20 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	02	03	04	05	06	07	80	09	10 1	11 12	13	Total	Avg		
Midnight - 1am 0	96 36 6 4	0	0	0	0	0	0	0	0	0	0			2	toot /	
1am - 2am 0	30 20 0 30 30 0	0	D	0	0	0	0	0	0		000	0	4	~		
2am - 3am 0	38 38 38	0	0	0	0	0	0	0	0	0	0 0	0	9	~		
3am - 4am 0	36 96	0	0	O	0	0	0	0	0	0			20	ę		
4am - 5am 0	96	-	2	0	0	ο	0	0	0	0	0		39		/	/
5am - 6am 0		3	сл	0	0	0	0	0	0	0	0		103			/
6am - 7am 0	202	4 ~~	9	0	0	0	0	0	-	0	0		210			/
7am - 8am 2	229	ი	10	0	0	0	0	0	0	0	000		244			
8am - 9am 0	284	0	9	0	0	0	0	0	0	0	0		290			
9am - 10am 1	244	N	6	ę	0	0	0	0	0	0	0		259			
10am - 11am 1	178	ი	10	0	0	0	0	+	0	0	0	0	193			_
11am - Midday 0	143	4	9		~	0	0	0	0	0			155		Hour	_]
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1pm - 2pm 1	144	4	7	5	0	*	0	0	0	0						.
2pm - 3pm 0	149	ო	7	0	٥	0	0	~	0	0						
3pm - 4pm 0	168	വ	21	5	0	ŝ	0	7	4	0						
4 pm - 5pm 0	159	2	4	0	0	0	0	0	0	0					2100	
5pm - 6pm 0	154	2	ω	•	0	o	0	0	0	0				•	_	
6pm - 7pm 0	145	o	.	0	0	0	0	0	0	0			*			
7 pm - 8pm 0	72	k	2	0	0	0	0	0	0	0				4		
8pm - 9pm 0	51	0	5	0	0	0	0	0	0	0					-	
9pm - 10pm 0	37	0	0	0	0	0	0	0	0	0						
10pm - 11pm 0	21	٥	0	0	0	0	0	0	0	0		0	21			
11pm - Midnigh 0	14	0		0	0	0	0	0	0	0	0	000	15	2		
Total 6	2688	34	115	12	-	<i>м</i>	0	4	7	0	0	0 0	2865	409	× ۰	Vehicles
% of Total	94	۳	4													

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CTELL DOD.White@CTELCOM (UZ) 9/40 8000

Hourly Classification Summary

Street	R	PINER POAD TAHMOOD · Erom PEMEMBDANCE	IVE OV	accurr	1.01	DEMER	VIN DON			714 200							
						KEMER	NENGR		UKIVE TO PARK AVENUE : SOUTH BOUND	KN AVE		HINNS	ROUND				
Location	50	50m south of Remembrance Drive, House No 4	of Rem	embrance	e Drive,	House 1		ELP 496								Carriageway	
Start Date Start Time	23 13	23-AUG-10 1300		\geq	We	ekly 501 ekly 851	Weekly 50th Percentil Weekly 85th Percentil	ntile Speed	eed		140	49 58	THE	THE BODY C SHOMS -	OF THIS	THE BODY OF THIS REPORT SHOWS - SEVENDAY	
Duration Interval	1	7 DAYS 1 HOUR			Fiv Sev	Five Day AADT Seven Day AADT	ADT AADT				403 375	<u>رم ت</u>	TRAFFIC	L L L			
Time	00	01	02	03	04	05	06	07	08	60	10	11	12	13 T	Total	Avg	
Midnight - 1am	0	7	0		0	0	0	0	0	0	0	0	0	0	8		
1am - 2am	Θ	5	0	0	0	0	0	G	0	0	0	0	0	0	5	4	
2am - 3am	0	с,	0	0	0	0	0	0	0	0	0	0	0	0	ŋ	1	
3am - 4am	σ	6	G	0	0	0	0	Q	0	0	o	0	0	0	6	1	÷
4am - 5am	0	7	0	0	0	0	0	0	0	0	0	0	Ō	0	2	_	
5am - 6am	0	4	0	.	0	0	0	0	0	0	0	0	0	0	S	1	
6am - 7am	0	50	0	ო	5	0	0	0	0	0	0	0	0	0	55	8	
7am - 8am	0	20	0	2	7	0	0	-	0	2	0	0	0	0	17	11 //	
8am - 9am	0	06	0	7		0	0	0	0	0	0	0	0	0	9 8	14 1100	
9am - 10am	4	112	÷	10	4	0	0	0	0	0	0	0	0	0	128	18	
10am - 11am	0	101	-	10	4	0	0	0	0	0	0	0	0	0	113	16	
11am - Midday	0	123	5	ω	ო	*	0	0	0	0	0	0	0	0	140	20	/
Midday - 1pm	0	115	÷	Q	4	0	0	0	0	~~	0	0	0	0	123	18 Hour	\int
1pm - 2pm	4	127	ო	ŝ	4	0	*	0	0	ი	0	0	0	0	141	20]
2pm - 3pm	0	178	ო	~	2	0	Q	0	0	*	0	0	0	0	191	27	
3pm - 4pm	0	274	2	12	7	0		0	0	~~	0	0	0	0	297	5	
4pm - 5pm	~-	264	-	0	٥	0	-	2	0	،	0	0	0	0	279	40 2100	
5pm - 6pm	ť-	334	2	9	0	O	0	0	0	0	0	0	0	0	343	64	
6pm - 7pm	0	243	~	4	0	0	0	•	0	0	0	0	0	0	249	36	
7pm - 8pm	0	107	*	2	0	0	0	0	0	0	0	0	0	0	110	16	
8pm - 9pm	0	96	0	ო	4	0	0	0	0	0	0	0	0	0	100	14	
9pm - 10pm	0	85	0	2	0	0	0	0	0	0	0	0	0	0	87	12	
10pm - 11pm	0	42	G		0	0	0	0	0	0	0	0	0	0	43	0	
11pm - Midnigh	0	15	0	0	0	0	0	0	0	0	0	0	0	o	15	3	ŀ
Total	4	2458	21	98	25	£	ю	4	0	6	0	0	0	0	2623	375 ° Vahiries	al-
% of Total		94	4	4	ب												

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Ph.88196847, Fax 88196849, Mob.0418-239019

	M	WEST	IOS	SOUTH	EA	EAST	
	Reme	Remembra	Rive	River Rd	Remembran	nbran	
Time Per	μI	R	L	R		I	TOTAL
0700 - 0715	68	t	2	5	0	31	107
0715 - 0730	62	4	1	6	0	47	140
0730 - 0745	103	1	ŀ	10	2	36	153
0745 - 0800	100	3	4	11	5	59	179
0800 - 0815	111	*	5	14	5	50	186
0815 - 0830	116	*	2	11	4	60	194
0830 - 0845	117	3	3	13	3	78	217
0845 - 0900	139	0	5	10	3	94	251
Period End	833	14	20	83	22	455	1427
							:

	W	WEST	SOL	SOUTH	EAST	ST	
	Reme	Remembra	Rive	River Rd	Remembran	nbran	
Peak Per	Ţ	R	L	R	Ĩ	H	TOTAL
0700 - 0800	350	6	5	35	7	173	579
0715 - 0815	393	6	8	44	12	192	658
0730 - 0830	430	9	6	46	16	205	712
0745 - 0845	444	8	11	49	17	247	776
0800 - 0900	483	5	15	48	15	282	848
			-				

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848	
282	
 15	
5. 48	
15.	
5	
483	
PEAK HR	



Client

: 3250 TAHMOOR Traffic Counts : Arup Job No/Name

: Thursday 26th August 2010

Day/Date

All Vehicles

	WEST	ST	SOI	SOUTH	EA	EAST	
	Remembran	nbran	Rive	River Rd	Remembran	nbran	
Time Per	H	21	11	ц	_]	۲I	TOTAL
1600 - 1615	63	7	0	9	16	126	248
1615 - 1630	81	6	0	12	8	126	233
1630 - 1645	92	1	3	8,	7	110	221
1645 - 1700	60	1	1	4	13	138	217
1700 - 1715	98	1	9	4	11	133	253
1715 - 1730	89	3	1	3	16	121	233
1730 - 1745	84	з	2	9	11	129	235
1745 - 1800	71	4	з	5	10	121	214
Period End	668	26	16	48	92	1004	1854

Remembran River Rd Remembran River Rd Remembran Remembran		WEST	ST	SOL	SOUTH	EAST	ST	
T R L R L T 326 15 4 30 44 500 331 9 10 28 39 507 333 6 11 19 47 502 331 8 10 17 51 507 331 8 10 17 51 502 331 8 10 17 51 502 342 11 12 18 48 504		Remei	nbran	Rive	r Rd	Remei	mbran	
326 15 4 30 44 500 331 9 10 28 39 507 339 6 11 19 47 502 331 8 10 77 51 527 333 6 11 19 47 502 334 10 17 51 521 531 342 11 12 18 48 504	ak Per	T	R	-1	8	Ē	ΤI	TOTAL
331 9 10 28 39 507 339 6 11 19 47 502 331 8 10 17 51 521 331 8 10 17 51 521 332 11 12 18 48 504	0 - 1700	326	15	4	30	44	500	919
339 6 11 19 47 502 331 8 10 17 51 521 342 11 12 18 48 504	1615 - 1715	331	6	10	28	39	507	924
331 8 10 17 51 521 342 11 12 18 48 504	1630 - 1730	339	9	13	19	47	502	924
342 11 12 18 48 504	1645 - 1745	331	8	10	17	51	521	938
	1700 - 1800	342	11	12	18	48	504	935

Remembrance Dr	348 —►	1 1 1 1 1 1 1 1 1 1	17 <u>PEAK HOUR</u> 1645 - 1745		
Remembrance Dr	339→→ 331→→		<u> </u>	27	TA
r Reme		.1	Z ZAZ	59	Copyright ROAR DATA

River Rd

River Rd

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(0		EAST							- -	-			EACT	All wells		_	_	-	_	-		-											Murtle Creek Rd				
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Arup 3250 TAHMOOR Traffic Counts	Thursday 26th August 2010	Ċ	ند ق ۲	-	12	6	7	0	0	0	0	26		á		26	25	13	2 ~	0		7			Kememorance ur		495	2	F	1				- 288		09 😽 😽 😽 😽 😽 🗸 🖌 09	
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Arup : 3250	uT :	WEST		7	3	10	~	ς	e	0		28	WEST			22	+	┢	3 6	9		13		Q	ř.	† 367	28	1	∲ - ←	٦		r•	↓ ► ┏──	- •	4	309 Re	
t lame	ate		I		35	24	26	16	27	ო	ы	173				124	i (j	6	3 2	49		72									T	0					
Client Job No/Name	Day/Date		B	20	23	6	16	9	4	2	~	82	T	0000	2	68	54	35	38	4		28			Г	1.5	7	York St			13	Ŭ					
dol		NOKIH	L I R	109	87	66	131	125	125	114	125	915	NOPTH	14400		426	442	480	495	489		495				<u>РЕАК НОИR</u> 1645 - 1745		Yor	IĨ			(æ				
	ľ			0	9	<i>с</i>	2	2	2	4	+	20	~	000		1.1	13	0.	, e	6	1	10				<u>PEAK</u> 1645 -			91-						_		
	L		Per	1615	1630	1645	1700	1715	1730	1745	1800	End	L		Lime	1700	1715	1730	1745	1800		HOUR			L		4		1				• 1		© Copyright ROAR DATA		
		Vahicles	Time Per	1600 - 1615	1615 - 1630	1630 - 1645	1645 - 1700	1700 - 1715	1715 - 1730	1730 - 1745	1745 - 1800	Period End			Peak Time	1600 - 1700	1615 - 1715	1630 - 1730	1645 - 1745	1700 - 1800		PEAK HOUR				533				72					ht ROA		
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	10	EAST		0		0	0	0	0	1	0	2	FAST	Creek R		,		0	,		·	-							÷.			,	eek R				
				-	3	5	-	8	-	1	2	<u>5</u>	ľ	Murtlo		2	14	12	- !	12		12							-	~	c	N	Murtle Creek Rd				
	-	_	-	0	-	0	0	2	9	0	0	<u>б</u>	┢		-		с С	8	00	8		8										12	MVI				
	019	HIUUS		69	66	87	96	96	85	77	82	658	SOUTH	Remembrance	F	318	345	364	354	340		340		è	- 5	283	÷		┚╺← ┡	·	¥	I	⊾ <mark>י</mark> א		281	— →ბ	
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Result	b.041		<u>e</u>	0	0	-	0	1	0	-	ŝ	9			2	-	2	~	I N	5		5		Pomembrance Dr			264		•				4	340		i53 ↓ Remembrance Dr	
ntic F	19, Mo	WEST		0	-	0	0	0	o	0	0		WEST	Vork St		-	-	0	0	0		0		Dom		T 472	16		Ī				↓	പ	←	353 Rem	
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R. L origii	847, F	HI											HT	ance.		165		203	-			264 7			Γ	KI 8	1	York St		,							
R.O.A.R. DATA Reliable, Original & Authentic Results	Ph.88196847, Fax 88196849, Mob.0418-239019	HINUN		31	4	rī	5	Ū.	51	Ó	87	429	NORTH	Remembrance			$\left \right $	20	233	264		2£				<u>PEAK HOUR</u> 0800 - 0900		~	126 —			ć	77				
R.(Reli	Ph.6	Q		0		0		0	0	5		~		Ren		0		0		3		с С			L	<u>PE/</u> 080			12								
		<u>Ail</u> Vehicles	Time Per	0700 - 0715	0715 - 0730	0730 - 0745	0745 - 0800	0800 - 0815	0815 - 0830	0830 - 0845	0845 - 0900	Period End			Peak Time	0700 - 0800	0715 - 0815	0730 - 0830	0745 - 0845	0800 - 0900		PEAK HOUR															
	¥7	Ve	Ē	020	071.	073	074	080	081	083	084	Per			Pe	020	071	073	074	080		PEA															



Reliable, Original & Authentic Results R.O.A.R. DATA

Ph.88196847, Fax 88196849, Mob.0418-239019

	M	WEST	10S	SOUTH	EAST	ST	
	Noo	Moorland	River Rd	r Rd	River Rd	r Rd	
Time Per	Т	<u>א</u>	L	R		μ	101
0700 - 0715	ę	-	2	2	¥	1	8
0715 - 0730	2	0	0	-	0	۱.	4
0730 - 0745	ε	0	0	1	1	2	7
0745 - 0800	1	0	*	2	ţ	1	9
0800 - 0815	9	0	0	2	0	5	13
0815 - 0830	9	0	0	Ļ	0	2	6
0830 - 0845	4	2	2	0	0	2	10
0845 - 0900	8	0	0	2	0	5	15
Period End	31	3	5	11	3	19	22

	IM	WEST	HTUOS	JTH	EAST	ST	
	Moo	Noorland	Rive	River Rd	River Rd	r Rd	
Peak Per	Ī	R	ī	RI	L	Τ	TOTAL
0700 - 0800	2	1	3	9	3	5	25
0715 - 0815	12	0	ł	6	2	6	30
0730 - 0830	16	0	4	9	2	10	35
0745 - 0845	17	2	3	5	1	10	38
0800 - 0900	24	2	2	5	0	14	47

47	
14	
0	
 S	
2	
HR 24 2	
24	
PEAK HR 24 2 2	



: Arup	: 3250 -
Client	Job No/Name

: 3250 TAHMOOR Traffic Counts : Thursday 26th August 2010 Day/Date

All Vehicles

AL

	WEST	ST	SOI	SOUTH	EAST	ST	
	Moorland	land	River Rd	r Rd	River Rd	r Rd	
Time Per	T	R	L	ЖI	Ĩ	Ы	TOTAL
1600 - 1615	10	3	1	1	4	7	26
1615 - 1630	5	1	,0	0	٢	4	11
1630 - 1645	5	٢	2	1	0	3	12
1645 - 1700	9	1	2	0	0	8	17
1700 - 1715	1	0	0	0	0	2	3
1715 - 1730	4	1	0	0	1	6	12
1730 - 1745	3	1	0	0	٥	თ	13
1745 - 1800	5	0	1	1	1	6	14
Period End	39	8	ę	3	7	45	108

and River Rd River Rd TOTAL R L R L T TOTAL 6 5 2 5 22 66 3 4 1 1 17 43 3 4 1 1 19 44 3 2 0 1 25 45 3 2 0 1 26 45 3 2 0 1 26 45 3 2 1 1 26 45	5	WEST	SOI	SOUTH	БA	EAST	
L R L I 5 2 5 22 4 1 1 17 4 1 1 19 2 0 1 25 1 1 2 23 2 2 2 25 3 1 1 19 1 1 2 25 3 1 2 23	ō	Moorland	Ríve	r Rd	Rive	r Rd	
5 2 5 22 4 1 1 1 17 4 1 1 1 19 2 0 1 25 1 1 1 1 19 1 1 1 1 25 1 1 1 1 25 1 1 1 2 23 1		R	Ē	R	Ē	Ţ	TOTAL
1 1 1 17 1 1 1 19 1 0 1 25 1 1 1 2 23 1 1	26	6	5	2	S	22	66
		3	4	١	Ł	i7	43
	16	3	4	1	٢	19	44
	14	3	2	0	Ł	25	45
		2	1	1	2	23	42

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26

PEAK HR

River Rd 28►	► ⁵ • ²⁷	2 1600 - 1700
	<u>نې</u>	
Moorland Rd 32 ─► 26 ─►	6 − − 27 6 − −	- 2J

River Rd

Copyright ROAR DATA

River Rd

Appendix B

Sidra Results

Remembrance Dr & River Road Giveway Intersection Existing Weekday AM Peak Giveway / Yield (Two-Way)

Moven	ieni Pe	ntormance - [\]	Vehicles								
Mov ID	Tum	Demand Flow veh/h	HW %	Deg Sata V/c	Average Delay	Level of Service	95% Back o Vehicles veh	Distance	Prop. Queued	Effective Stop Rate por veh	Avenage Speed Rm/n
South: F	River Rd	TANK TO THE TANK THE									
1	L	16	0.0	0.132	12.6	LOS A	0.5	3.8	0.56	0.71	39.4
3	R	51	0.0	0.132	13.2	LOS A	0.5	3.8	0.56	0.86	41.8
Approac	ch	66	0.0	0,131	13.0	LOS A	0.5	3.8	0.56	0.83	41.2
East: Re	emembr	ance Dr (east)								·	
4	L	16	0.0	0.164	10.1	LOS A	0.0	0.0	0.00	1.34	57.1
5	Т	297	3.0	0.164	2.6	LOS A	0.0	0.0	0.00	0.22	71.0
Approad	ch	313	2.8	0.164	3.0	LOS A	0.0	0.0	0.00	0.27	70.2
West: R	ememb	rance Dr (west))								
11	т	508	3.0	0.270	1.1	LOS A	2.1	15.1	0.42	0.00	54.1
12	R	5	0.0	0.263	8.8	LOS A	2.1	15.1	0.42	1.08	49.2
Approad	ch	514	3.0	0.270	1,2	LOS A	2.1	15.1	0.42	0.01	54.1
All Vehi	cles	893	2.7	0.270	2.7	NA	2.1	15.1	0.28	0.16	57.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

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Remembrance Dr & River Road Giveway Intersection Existing Weekday PM Peak Giveway / Yield (Two-Way)

Mover	nenttee	erformance - `	Vehicles								
Mov ID	Tum	Demand Flow veh/h	HV 2/a	Deg Sain V/c	Average Delay Sec	Level of Service	9,5% Back o Vehicles Veh	n Queue Distance m	Prop. Quented	Effective Stop Rate	Average Sprece bm/b
South: I	River Ro	d (south)								1115539 səsələri də də bə	12202020204444444444
1	L	11	0.0	0.063	13.2	LOS A	0.2	1.7	0.62	0.81	38,9
3	R	18	0.0	0.063	13.8	LOS A	0.2	1.7	0.62	0.88	41.4
Approa	ch	28	0.0	0.063	13.6	LOS A	0.2	1.7	0.62	0.86	40.5
East: Re	emembr	ance Dr (east)									
4	L	54	0.0	0.316	10.1	LOS A	0.0	0.0	0.00	1.34	57.1
5	Т	548	3.0	0.316	2.6	LOS A	0.0	0.0	0.00	0.21	71.0
Approa	ch	602	2.7	0.316	3.3	LOS A	0.0	0.0	0.00	0.31	69.6
West: R	Rememb	rance Dr (west)	1								
11	Т	348	3.0	0.190	2.4	LOS A	1.7	12.3	0.56	0.00	51.6
12	R	8	0.0	0.191	10.1	LOS A	1.7	12.3	0.56	1.10	48.9
Approac	ch	357	2.9	0.190	2.5	LOS A	1.7	12.3	0.56	0.03	51.5
All Vehi	cles	987	2.7	0.316	3.3	NA	1.7	12.3	0,22	0.22	60.0

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LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW),

Approach LOS values are based on the worst delay for any vehicle movement.

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INTERSECTION

Remembrance Dr & River Road Giveway Intersection Existing Saturday AM Peak Giveway / Yield (Two-Way)

000000		monnance -	Valbraias								
Mov (D)		Demand Flow veh/h	HV	Deg. Sain V/e	Average Delay Sco	Level of Service	95% Back o Vehieles veh	f Queue Distance m		Effective Stop Rate per veh	Average Speed Km/h
South:	River Ro	i (south)									
1	L	16	0.0	0.102	10.6	LOS A	0.4	3.0	0.46	0.64	40.9
3	R	51	0.0	0.102	11.1	LOS A	0.4	3.0	0.46	0.81	43.3
Approa	ch	66	0.0	0.102	11.0	LOS A	0.4	3.0	0.46	0.77	42.7
East: R	emembi	rance Dr (east)									
4	L	16	0.0	0.125	10.1	LOS A	0.0	0.0	0.00	1.34	57.1
5	Т	223	3.0	0.125	2.6	LOS A	0.0	0.0	0.00	0.21	71.0
Approa	ch	239	2.8	0.125	3.1	LOS A	0.0	0.0	0.00	0.29	69.9
West: F	Rememb	rance Dr (west)								
11	Т	382	3.0	0.203	0.7	LOS A	1.4	10.1	0.34	0.00	55,8
12	R	5	0.0	0.202	8.5	LOS A	1.4	10.1	0.34	1.09	49.0
Approa	ch	387	3.0	0.203	0.8	LOS A	1.4	10.1	0.34	0.01	55.7
All Vehi	icles	693	2.6	0.203	2.6	NA	1.4	10.1	0.23	0.18	57.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW). Approach LOS values are based on the worst delay for any vehicle movement.

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Remembrance Dr & River Road Giveway Intersection Existing Sunday PM Peak Giveway / Yield (Two-Way)

Moven	nentiPe	anformance - '	Velnicles								
Mov IB	Tum	Demand Flow	HV	Deg. Sain	Average Delay	Level of Service	95% Back o Vehieles	Distance	12 A 1 A 1 A 1 A 1 A 1 A 1 A 1 A 1 A 1 A	Effective Step/Reite	Awenaga Spicari
South: I	River Ro	vehilin i (south)	¥6	VIC.	5(20		veh	m		(ore) i sV(elo)	Kini/itu
1	L.	6	0.0	0.025	9.8	LOS A	0.1	0.7	0.44	0.65	41.5
3	R	12	0.0	0.025	10.3	LOS A	0.1	0.7	0.44	0.74	43.9
Approa	ch	18	0.0	0.025	10.1	LOS A	0.1	0.7	0.44	0.71	43.1
East: Re	emembr	ance Dr (east)									•
4	L	33	0.0	0.190	10.1	LOS A	0.0	0.0	0.00	1.34	57.1
5	Т	329	3.0	0.190	2.6	LOS A	0.0	0.0	0.00	0.21	71.0
Approad	ch	362	2.7	0.190	3.3	LOS A	0.0	0.0	0.00	0.31	69.5
West: R	Rememb	rance Dr (west))								
11	т	209	3.0	0.113	1.0	LOS A	0.8	5.6	0.39	0.00	54.6
12	R	5	0.0	0.114	8.8	LOS A	0.8	5.6	0.39	1.07	49.1
Approad	ch	215	2.9	0.113	1.2	LOS A	0.8	5.6	0.39	0.03	54.5
All Vehi	cles	595	2.7	0.190	2.7	NA	0.8	5.6	0.16	0.22	61.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

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Remembrance Dr & River Road Giveway Intersection Future Weekday AM Peak (Oct 2010) Giveway / Yield (Two-Way)

Mover	nente	arformance - \	Vehicles								
		Demand		Deg	Average	Level of	95% Brajekko	22 C C C C C C C C C C C C C C C C C C	Phole.	Effective	AVCINEIGC
Wav ID	abulan.	Flaw veh/h	H-W 96	Sata v/c	Dieley Sec	Senvice	Vehioles veh	B)(Stopple) Itt	(0)3[5]3[6]3]	Stop Rate per veh	Sjaicicial Hani/in
South: I	River Ro	d (south)				and a subsection of the		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
1	L	16	0.0	0.259	14.1	LOS A	1,2	8.6	0.64	0.79	38.3
3	R	105	0.0	0.258	14.7	LOS B	1.2	8.6	0,64	0.91	40.7
Approa	ch	121	0.0	0,258	14.6	LOS B	1.2	8.6	0.64	0.90	40.4
East: R	emembi	rance Dr (east)									
4	L	29	0.0	0.171	10.1	LOS A	0.0	0.0	0.00	1.34	57.1
5	Т	297	3.0	0.171	2.6	LOS A	0.0	0.0	0.00	0.21	71.0
Approa	ch	326	2.7	0.171	3.3	LOS A	0.0	0.0	0.00	0,31	69.5
West: F	Rememb	orance Dr (west))								
11	Т	508	3.0	0.270	1.1	LOS A	2.1	15.2	0.43	0.00	53.9
12	R	5	0.0	0.263	8.9	LOS A	2.1	15.2	0.43	1.08	49,2
Approa	ch	514	3.0	0.270	1.2	LOS A	2.1	15.2	0.43	0.01	53.9
All Vehi	icles	961	2.5	0.270	3.6	NA	2.1	15.2	0.31	0.22	55.4

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Friday, 22 October 2010 2:18:04 PM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RemembranceDr&RiverRdIntersection.sip 8000045, ARUP PTY LTD, FLOATING

Remembrance Dr & River Road Giveway Intersection Future Weekday PM Peak (Oct 2010) Giveway / Yield (Two-Way)

Mover	nent Pe	rformance -	Vehicles								
		Demand		(B)c(g)	Average	Levellof	95% Backa		Prop.	Bitentive	AWereige
M@V-IB	TOTAL	Flow veh/h	HV	Selin	Dielisy stete	Service	Vehiteles vehi	Distance	(Olaiciaicia)	Stop Rote	်ချစ(ခ)ခုရှိ ကြားကြီး
South:	River Rd			977 5	-1-1-		14-16 No. 1			o(c)r V(c)a	lani/i i
1	L	11	0.0	0.125	14.8	LOS B	0.5	3.5	0.69	0.88	37.8
3	R	39	0,0	0.125	15.3	LOS B	0.5	3.5	0.69	0.90	40.3
Approa	ch	49	0.0	0.125	15.2	LOS B	0.5	3.5	0.69	0.90	39.8
East: R	emembra	ance Dr (east)									
4	L	101	0.0	0.341	10.1	LOS A	0.0	0.0	0.00	1.33	57.1
5	Т	548	3.0	0.341	2.6	LOS A	0.0	0.0	0.00	0.20	71.0
Approa	ch	649	2.5	0.341	3.8	LOS A	0.0	0.0	0.00	0.38	68.5
West: R	Remembr	ance Dr (west)								
11	Т	348	3.0	0.191	2.7	LOS A	1.8	12.9	0.58	0.00	51.2
12	R	8	0.0	0.191	10.4	LOS A	1.8	12.9	0.58	1,11	48.7
Approa	ch	357	2.9	0.191	2.8	LOS A	1.8	12.9	0.58	0.03	51.1
All Vehi	icles	1056	2.5	0.341	4.0	NA	1.8	12.9	0.23	0.28	59.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Friday, 22 October 2010 2:18:04 PM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RemembranceDr&RiverRdIntersection.sip 8000045, ARUP PTY LTD, FLOATING

Remembrance Dr & River Road Giveway Intersection Future Saturday AM Peak (Oct 2010) Giveway / Yield (Two-Way)

Moven	nenti Pel	formance -	Vehicles								
Mov ID		Demand Filow	HV	Deg. Salo	Average Delay	Level of Service	95% Barek o Vehieles	i Queue Distance	Prop. Queveel	Effective Stop Rate	/AV/c)rc(gl0 /Sjajc(c(a
		veh/h	3/6	viic	\$1016		v/c}i	(11)		pien viele	lisina//bi
South: I	River Rd	(south)									
1	L	16	0.0	0.172	11.2	LOS A	0.8	5.3	0.52	0.67	40.4
З	R	89	0.0	0.171	11.8	LOS A	0.8	5.3	0.52	0.85	42.8
Approa	ch	105	0.0	0.171	11,7	LOS A	0.8	5.3	0.52	`0.82	42.4
East: R	emembra	ance Dr (east)									
4	L	45	0.0	0.141	10.1	LOS A	0.0	0.0	0.00	1.33	57.1
5	Т	223	3.0	0.141	2.6	LOS A	0.0	0.0	0.00	0.20	71.0
Approa	ch	268	2.5	0.141	3.9	LOS A	0.0	0.0	0.00	0.39	68.3
West: F	Remembra	ance Dr (west)								
11	т	382	3.0	0.203	0.8	LOS A	1.4	10.3	0.36	0.00	55.3
12	R	5	0.0	0.202	8.6	LOS A	1.4	10.3	0.36	1.09	49.0
Approa	ch	387	3.0	0.203	0.9	LOS A	1.4	10.3	0.36	0.01	55.2
All Vehi	icles	761	2,4	0.203	3.5	NA	1.4	10.3	0.26	0.26	56.3

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

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Processed: Friday, 22 October 2010 2:18:04 PM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RemembranceDr&RiverRdIntersection.sip 8000045, ARUP PTY LTD, FLOATING

Remembrance Dr & River Road Giveway Intersection Future Sunday PM Peak (Oct 2010) Giveway / Yield (Two-Way)

Mover	ment Pe	normannee -	Vehicles								
Mov ID	Tura	Dreimenid	HM	Deg.	Average	Level of	915% Back o		Pirop.	Effective	Avenage
Citile Alle		Elew vehi/h	0/s	Siatin V/c	Delay	Signylae	Wehildles veh	ID)(starnee ITT	(0)(8)(2)(8)(2)(8)	Siloip Rate ach veh	Sjalateki Kontila
South:	River Rd										NER CALLARY CONTRACTOR
1	L	6	0.0	0.090	10.7	LOS A	0.4	2.7	0.51	0.71	40.8
3	R	52	0.0	0.090	11.2	LOS A	0.4	2.7	0.51	0.81	43.2
Approa	ch	58	0.0	0.090	11.2	LOS A	0,4	2.7	0.51	0.80	42.9
East: R	emembra	ance Dr (east)									
4	L	62	0,0	0.206	10.1	LOS A	0.0	0.0	0.00	1.33	57.1
5	Т	329	3.0	0.206	2.6	LOS A	0.0	0.0	0.00	0.20	71.0
Approa	ch	392	2.5	0.206	3.8	LOS A	0.0	0.0	0.00	0.38	68.5
West: F	Remembr	ance Dr (west)								
11	Ť	209	3.0	0.114	1.2	LOS A	0.8	5.8	0.41	0.00	54.3
12	R	5	0.0	0.114	8.9	LOS A	0.8	5.8	0.41	1.07	49.1
Approa	ch	215	2.9	0.114	1.3	LOS A	0.8	5.8	0.41	0.03	54.2
All Vehi	icles	664	2.4	0.206	3.6	NA	0.8	5.8	0.18	0.30	59.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Friday, 22 October 2010 2:18:04 PM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RemembranceDr&RiverRdIntersection.sip 8000045, ARUP PTY LTD, FLOATING

Remembrance Dr & Myrtle Cr Dr & York St Giveway Intersection Existing Weekday AM Peak (8am - 9am) Giveway / Yield (Two-Way)

Mover	nent Pe	normance -	Vehicles								
		Demand		Deg	Average	Level of	95% Backo	f Queue	Prop.	Effective	Avenage
hM@y4[B	Tum	Flow	HW	Sain	Dellay	Service	Vehicles	Distance		Stop Rette	Special
0	D	v(cln//n	2/6 41-)	vilo	S(0)C		Vclá			[0(c)/ \(c)n)	lim#i
South:		rance Dr (sou	•	0.405	0.2	LOS A	1,4	9.9	0.37	0.72	49,0
1	L	5	0.0	0.195	8.3	LOS A	1.4	9.9 9,9	0.37	0.00	49.0 53.3
2 3	T R	358	3.0	0.196	0.9	LOS A	1.4	9.9 9.9	0.37	1.07	49.0
-		8	0.0	0.196	8.6						49.0 53.2
Approa	cn	372	2.9	0.196	1.1	LOS A	1.4	9.9	0.37	0.03	55.2
East: N	lyrtle Cr I	Dr (east)									
4	L	13	0.0	0.043	11.0	LOS A	0.2	1.2	0.46	0.63	40.6
5	Т	1	0.0	0.042	8.9	LOS A	0.2	1.2	0.46	0.67	40.7
6	R	12	0.0	0.043	11.3	LOS A	0.2	1.2	0.46	0.82	40.5
Approa	ch	25	0.0	0.043	11.0	LOS A	0.2	1.2	0.46	0.72	40.6
North: I	Rememb	rance Dr (nortl	h)								
7	L	3	0.0	0.166	9.4	LOS A	1.6	11.6	0.52	0.53	49.0
8	т	278	3.0	0.164	2.0	LOS A	1.6	11.6	0.52	0.00	50.9
9	R	17	0.0	0.164	9.7	LOS A	1.6	11.6	0.52	1.02	48.9
Approa	ch	298	2.8	0.164	2.5	LOS A	1.6	11.6	0.52	0.06	50.8
West: \	/ork St (v	vest)									
10	L	127	0.0	0.135	8.8	LOS A	0.6	4.1	0.40	0.69	42.4
11	Т	1	0.0	0.132	6.7	LOS A	0.6	4.1	0.40	0.65	42.4
12	R	5	0.0	0.135	9.1	LOS A	0.6	4.1	0,40	0.82	42.3
Approa	ch	134	0.0	0.135	8.8	LOS A	0.6	4.1	0.40	0.70	42.4
All Veh	icles	828	2.3	0.196	3.2	NA	1.6	11.6	0.43	0.17	49.8

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW). Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Wednesday, 1 September 2010 9:30:30 AM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RemembranceDr&MyrleCrRd&YorkStIntersection.sip 8000045, ARUP PTY LTD, FLOATING

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Remembrance Dr & Myrtle Cr Dr & York St Giveway Intersection Existing Weekday PM Peak (4.45pm - 5.45pm) Giveway / Yield (Two-Way)

Move	meni Pe	nformance -	Vehicles								
messer	anomen e	Demand		Deg	Average	Level of	95% Back o	f Queue	Prop.	Effective	Average
(MGW)[D	i Thum	Flow	HV	Sato	Delay	Senvice	Vehicles	Distance	(0)1/(e)1/(e)d	Siop Rate	Specield
	<u> </u>	v/elh//h	96		5(6)6		Vela	m		i lett Velij	Banilia
		prance Dr (sou	•	0.475	<u> </u>						
1	L	7	0.0	0.175	9.4	LOS A	1.4	10.4	0.52	0.53	49.0
2	Ť	303	3.0	0,175	1.9	LOS A	1.4	10.4	0.52	0.00	50.9
3	R	15	0.0	0.175	9.7	LOS A	1.4	10.4	0.52	1.06	49.0
Approa	ich	325	2.8	0.175	2.4	LOS A	1.4	10.4	0.52	0.06	50.8
East: N	lyrtle Cr I	Dr (east)									
4	L	22	0.0	0.058	11.6	LOS A	0.2	1.6	0.54	0.75	40.3
5	т	3	0.0	0.057	9.5	LOS A	0.2	1.6	0.54	0.76	40.3
6	R	7	0.0	0.058	11.8	LOS A	0.2	1.6	0.54	0.86	40.1
Approa	ch	33	0.0	0.058	11.4	LOS A	0.2	1.6	0.54	0.77	40.2
North: I	Rememb	rance Dr (nort	h)								
7	L	11	0.0	0.310	9.4	LOS A	3.3	24.0	0.56	0,49	49.1
8	т	521	3.0	0.306	2.0	LOS A	3.3	24.0	0.56	0.00	50.4
9	R	29	0.0	0.307	9.8	LOS A	3.3	24.0	0.56	1.00	49,1
Approa	ch	561	2.8	0.306	2.5	LOS A	3.3	24.0	0.56	0.06	50.3
West: Y	/ork St (v	vest)									
10	L	76	0.0	0.122	9.8	LOS A	0.5	3.7	0.42	0.68	41.7
11	т	14	0.0	0.122	7.7	LOS A	0.5	3.7	0,42	0.70	41.9
12	R	6	0.0	0.121	10.1	LOS A	. 0.5	3.7	0.42	0.83	41.5
Approa	ch	96	0.0	0.122	9.5	LOS A	0.5	3.7	0.42	0.69	41.7
All Vehi	icles	1015	2.4	0.306	3.5	NA	3.3	24.0	0.53	0.14	49.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW). Approach LOS values are based on the worst delay for any vehicle movement.

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Remembrance Dr & Myrtle Cr Dr & York St Giveway Intersection Existing Saturday AM Peak Giveway / Yield (Two-Way)

		.									
IN(OAE)	ment PO	formance - Demand	Weinigles.	Dea.	Average	Level of	95% Back of	Olivenie	Photo.	Effective	Average
(M)6V/10	Tiqm	Flow	HW	Sain	Delay	Service		Distance	Ciricite	Sitos Reite	Stateletal
		weh/h	<u>%</u>	\//c	SIGIO		vicit	(0)		(p(c)r)V/elhi	kin/ii
South:	Rememb	rance Dr (sou	th)								
1	Ľ	5	0.0	0.150	8.0	LOS A	1.0	6.8	0.30	0.79	48.9
2	Т	268	3.0	0.149	0.6	LOS A	1.0	6.8	0.30	0.00	54.4
3	R	8.	0.0	0.148	8.3	LOS A	1.0	6.8	0.30	1.07	48.8
Approa	ich	282	2.9	0.149	0.9	LOS A	1.0	6.8	0.30	0.05	54.2
East: N	Ayrtle Cr [Dr (east)									
4	L	13	0.0	0.036	9.8	LOS A	0.1	1.0	0.38	0.60	41.5
5	т	1	0.0	0.036	7.8	LOS A	0.1	1.0	0.38	0.60	41.8
6	R	12	0.0	0.036	10.1	LOS A	0.1	1.0	0.38	0.77	41.4
Approa	ich	25	0.0	0.036	9.9	LOS A	0.1	1.0	0.38	0.68	41.5
North:	Rememb	rance Dr (norti	h)								
7	L	3	0.0	0.126	8.8	LOS A	1.1	7.9	0.43	0.62	48.9
8	Т	208	3.0	0.126	1.3	LOS A	1.1	7.9	0.43	0.00	52.3
9	R	17	0.0	0.126	9.1	LOS A	1.1	7.9	0.43	1.00	48.9
Approa	ach	228	2.7	0.126	2.0	LOS A	1.1	7.9	0.43	0.08	52.0
West:	York St (v	vest)									
10	L	127	0.0	0.122	8.3	LOS A	0.5	3,8	0.34	0.65	42.6
11	т	1	0.0	0.117	6.2	LOS A	0.5	3.8	0.34	0.60	42,7
12	R	5	0.0	0.122	8.6	LOS A	0.5	3.8	0.34	0.79	42.6
Approa	ach	134	0.0	0.122	8.3	LOS A	0.5	3.8	0.34	0.66	42.6
All Vel	nicles	669	2.1	0.149	3.1	NA	1.1	7.9	0.35	0.20	50.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW). Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Thursday, 2 September 2010 8:30:55 AM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RemembranceDr&MyrleCrRd&YorkStIntersection.sip 8000045, ARUP PTY LTD, FLOATING

Remembrance Dr & Myrtle Cr Dr & York St Giveway Intersection Existing Sunday PM Peak Giveway / Yield (Two-Way)

Mover	menti Pe	- eonamion	Vehicles								
Mov/ID		Demand Flow	HM	Deg. Satn	Average Delay	Level of Service	95% Black o Vehicles	f Quetre Distance	Prop. Queued	Effective Stop Rate	Awejraigio Sipieicid
		vielb//n	9/6	Vic	\$(6;0		veh	m		jo(e)r v(ela	km/k
South:		prance Dr (sou									
1	L	5	0.0	0.105	8.3	LOS A	0.7	4.9	0.37	0.70	48,9
2	Т	182	3.0	0.105	0.9	LOS A	0.7	4.9	0.37	0.00	53.3
3	R	9	0.0	0.105	8.6	LOS A	0.7	4.9	0.37	1.03	48.9
Approa	ich	197	2.8	0.105	1.5	LOS A	0.7	• 4.9	0.37	0.07	52.9
East: N	/yrtle Cr I	Dr (east)									
4	L	14	0.0	0.026	9.2	LOS A	0.1	0.7	0.40	0.63	42.1
5	Т	2	0.0	0.026	7.1	LOS A	0.1	0.7	0.40	0.60	42.3
6	R	5	0.0	0.026	9.5	LOS A	0.1	0.7	0.40	0.76	41.9
Approa	ich	21	0.0	0.026	9.1	LOS A	0.1	0.7	0,40	0.66	42.1
North: I	Rememb	rance Dr (nort	h)								
7	L	6	0.0	0.180	8.3	LOS A	1.6	11.3	0.37	0.70	48.9
8	Т	313	3.0	0.182	0.9	LOS A	1.6	11.3	0.37	0.00	53.3
9	R	18	0.0	0.183	8.7	LOS A	1.6	11.3	0.37	1.02	48.9
Approa	ch	337	2.8	0.182	1.5	LOS A	1.6	11.3	0.37	0.07	52.9
West: Y	/ork St (v	vest)									
10	L	46	0.0	0.058	8.4	LOS A	0.2	1.7	0.28	0.62	42.8
11	Т	8	0.0	0.058	6.3	LOS A	0.2	1.7	0,28	0.59	43.0
12	R	4	0.0	0.058	8.7	LOS A	0.2	1.7	0.28	0.76	42.6
Approa	ch	59	0.0	0.058	8.1	LOS A	0.2	1.7	0.28	0.62	42.8
All Vehi	icles	614	2.4	0.182	2.4	NA	1.6	11.3	0.36	0.14	51.3

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW). Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Thursday, 2 September 2010 8:30:55 AM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RemembranceDr&MyrleCrRd&YorkStIntersection.sip 8000045, ARUP PTY LTD, FLOATING

SIDRA -----INTERSECTION

Remembrance Dr & Myrtle Cr Dr & York St Giveway Intersection Future Weekday AM Peak (Oct 10) Giveway / Yield (Two-Way)

			Vanadioa								
anitoxye)a	nem Pe	erformance - Demand	vennes.	Dea	Average	Level of	95% Back o	f Onene	Prop.	Effective	Average
W(ev. (D	Repo	Flaw	HM.	Sein	Delay	Service	Vehiøles	Distance		Stop Rate	Speed
		v/elii/lii	9%	-v//c	S(9)6		vəli			0(0)) \(0)6)	tamin s
South:	Remem	brance Dr (sou									
1	L	28	0.0	0.209	8.3	LOS A	1.5	10.6	0.38	0.67	48.9
2	т	358	3.0	0.208	0.9	LOS A	1.5	10.6	0.38	0.00	53.0
3	R	8	0.0	0.211	8.6	LOS A	1.5	10.6	0.38	1.02	48.9
Approa	ch	395	2.7	0.208	1.6	LOS A	1.5	10.6	0.38	0.07	52.6
East: M	lyrtle Cr	Dr (east)									
4	L	13	0.0	0.043	11.0	LOS A	0.2	1.2	0.46	0.63	40.6
5	Т	1	0.0	0.042	8.9	LOS A	0.2	1.2	0.46	0.67	40.7
6	R	12	0.0	0.043	11.3	LOS A	0.2	1.2	0.46	0.82	40.5
Approa	ch	25	0.0	0.043	11,1	LOS A	0.2	1.2	0,46	0.72	40.6
North: F	Rememb	orance Dr (nort	h)								
7	L	3	0.0	0.166	9.6	LOS A	1.7	11.9	0.54	0.51	48.9
8	т	278	3.0	0.165	2.2	LOS A	1.7	11.9	0.54	0.00	50.7
9	R	17	0.0	0.165	9.9	LOS A	1.7	11.9	0.54	1.02	48.8
Approa	ch	298	2.8	0.165	2.7	LOS A	1.7	11.9	0.54	0.06	50.5
West: Y	ork St (west)									
10	L	127	0.0	0.149	9.0	LOS A	0.7	4.6	0.42	0.70	42.3
11	т	1	0.0	0.150	6.9	LOS A	0.7	4.6	0.42	0.68	42.3
12	R	11	0.0	0.148	9.3	LOS A	0.7	4.6	0.42	0.83	42.1
Approa	ch	139	0.0	0.149	9.0	LOS A	0.7	4.6	0.42	0.71	42.2
All Veh	icles	857	2.2	0.208	3.4	NA	1.7	11.9	0.44	0.19	49.5

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW). Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Friday, 22 October 2010 2:26:40 PM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RemembranceDr&MyrleCrRd&YorkStIntersection.sip 8000045, ARUP PTY LTD, FLOATING

Remembrance Dr & Myrtle Cr Dr & York St Giveway Intersection Future Weekday PM Peak (Oct 2010) Giveway / Yield (Two-Way)

Mover	ment Pe	- somance	Vehicles								
		Demand		Deg,	Average	Level of	95% Back of	Queue	Pirop	Effective	AWelfelee
\/ ox/ [D	Tum	Elevi	HM	Sain	Delay	Service		D)ISI@In(ec	(Q)8(c)8(c(d	Si(op)Ralic	Spiciciai
South	Domomb	veli//ii rance Dr (sou	(//) (th.)	vie	Sic(6)		voli	m		(e))/ (e))	ismilini
300001. 4	L	16 16	0.0	0.179	9.4	LOS A	1.5	10.7	0.53	0.50	40.0
2	т Т	303	0.0 3.0	0.179	9.4 1.9	LOS A				0.52	49.0
2	R						1.5	10.7	0.53	0.00	50.7
=		15	0.0	0.180	9.7	LOS A	1.5	10.7	0.53	1.04	48.9
Approa	ch	334	2.7	0.180	2.6	LOS A	1.5	10,7	0.53	0.07	50.6
East: N	lyrtle Cr [Dr (east)									
4	L	22	0.0	0.058	11.6	LOS A	0.2	1.6	0.54	0.75	40.3
5	·Τ	3	0.0	0.057	9.5	LOS A	0.2	1.6	0.54	0.76	40.3
6	R	7	0.0	0.058	11.9	LOS A	0.2	1.6	0.54	0,86	40.1
Approa	ch	33	0.0	0.058	11.4	LOS A	0.2	1.6	0.54	0.77	40.2
North: F	Rememb	ance Dr (nort	h)								
7	L	11	0.0	0.310	9,5	LOS A	3.4	24.2	0.57	0,48	49,1
8	т	521	3.0	0.307	2.1	LOS A	3,4	24,2	0.57	0.00	50.2
9	R	29	0.0	0.307	9.8	LOS A	3.4	24.2	0.57	1.00	49.1
Approa	ch	561	2.8	0.307	2.6	LOS A	3.4	24.2	0.57	0.06	50.2
West: Y	′ork St (w	(est)									
10	L	76	0.0	0.183	11.1	LOS A	0.8	5.5	0,48	0.70	40.6
11	Т	14	0.0	0.182	9.1	LOS A	0.8	5.5	0.48	0.73	40.7
12	R	26	0.0	0.183	11.4	LOS A	0.8	5.5	0.48	0.85	40.5
Approa		116	0,0	0,183	10,9	LOS A	0,8	5.5	0.48	0.73	40.6
, opiou	01.	.10	5.0	0,,00	1010	2007	0.0	0.0	0.40	0.10	-10.0
All Vehi	icles	1043	2.4	0.307	3.8	NA	3.4	24.2	0.54	0.16	48.6

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW). Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Friday, 22 October 2010 2:26:40 PM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RemembranceDr&MyrleCrRd&YorkStIntersection.sip 8000045, ARUP PTY LTD, FLOATING SIDRA -

Remembrance Dr & Myrtle Cr Dr & York St Giveway Intersection Future Saturday AM Peak (Oct 10) Giveway / Yield (Two-Way)

Mover	nent Pe	rformance -	Vehieles								
		Demand		Bielej.	Average	Level of	95% Baickin	of Queue	Piroje	Ellective	/A\V(0)\$3(9(0
-{(√(a)√/(D)	Tam	FIGW/	IHW	Statin	Delay	Sielävide	Vehicles	Distance	(a)#fe}#fe(d)	SlopeRence	ချစ်ဆုံးခြ
	_	vahyh	%	v//o	୍ୟାର୍ଡ		(Vela)	liit		iologi Viela	Routh
		prance Dr (sou	•					7.0	0.00	0.70	40 7
1	۴.	44	0.0	0.169	8.0	LOS A	1,1	7.9	0.32	0.70	48.7
2	т	268	3.0	0.170	0.6	LOS A	1.1	7.9	0.32	0.00	53.8
3	R	8	0.0	0.168	8.4	LOS A	1.1	7,9	0.32	0.97	48.6
Approa	ch	321	2.5	0.170	1.8	LOS A	1.1	7.9	0.32	0.12	53.0
East: M	lyrtle Cr i	Dr (east)									
4	L	13	0.0	0.036	9.9	LOS A	0.1	1.0	0.38	0.60	41.5
5	т	1	0.0	0.036	7.8	LOS A	0.1	1.0	0.38	0.60	41.7
6	R	12	0.0	0.036	10.1	LOS A	0.1	1.0	0.38	0.77	41,4
Approa	ch	25	0.0	0.036	9.9	LOS A	0.1	1.0	0.38	0.68	41.5
North: I	Rememb	rance Dr (nort	h)								
7	L	3	0.0	0.126	9.0	LOS A	1.1	8.2	0,46	0.59	48.9
8	т	208	3.0	0.127	1.5	LOS A	1.1	8.2	0.46	0.00	51.7
9	R	17	0.0	0.127	9.3	LOS A	1.1	8.2	0.46	1.00	49.0
Approa		228	2.7	0.127	2.2	LOS A	1.1	8.2	0.46	0,08	51.5
Mest. N	/ork St (\	Nest)									
10	L	127	0.0	0.178	9.0	LOS A	0.8	5.6	0.40	0.67	42.2
11	T	1	0.0	0.175	6.9	LOS A	0.8	5.6	0.40	0.66	42.4
12	R	35	0.0	0.178	9,3	LOS A	0.8	5.6	0.40	0.82	42.1
Approa		163	0.0	0.179	9.1	LOS A	0.8	5.6	0.40	0.70	42.2
All Veh	icles	738	1.9	0.179	3.8	NA	1.1	8.2	0.38	0.26	49.3

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW). Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Friday, 22 October 2010 2:26:41 PM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RemembranceDr&MyrleCrRd&YorkStIntersection.sip 8000045, ARUP PTY LTD, FLOATING

Remembrance Dr & Myrtle Cr Dr & York St Giveway Intersection Future Sunday PM Peak (Oct 10) Giveway / Yield (Two-Way)

Move	memi Pe	rformance -	Vehicles								
		Demand		Deg,	Average	Level of	95% Back of	Queue	Prop	Effective	Average
WoW40	i Tara	How	HM	Satin	Delay	Service		Distantea	Quietherd	Stop Rate	େ ବିହାରାକାର୍ଶ
South	Domomh	v/e)i/fi prance Dr (sou	96 ith)	V/(6	\$(0)0		v(e)ii	(11)		(a)(a) (V(c))	Kinili
30001.	L	44	0.0	0.126	8.4	LOS A	0.8	6.0	0.40	0.50	40 E
2	ц. Т	182	3.0	0.126	0.4 0,9	LOS A	0.8	6.0 6.0	0.40	0.59 0.00	48.5 52.4
3	R	9	0.0	0.126	0.9 8.7	LOS A	0.8	6.0	0.40	0.00	
		236	2.3	0.120	2.6	LOS A	0.8				48.5
Approa		230	2.0	0.120	2.0	LOSA	0.8	6.0	0.40	0.15	51.5
East: N	lyrtle Cr I	Dr (east)									
4	L	14	0.0	0.026	9.2	LOS A	0.1	0.7	0.40	0.63	42.1
5	Т	2	0.0	0.026	7.2	LOS A	0.1	0.7	0.40	0.61	42.3
6	R	5	0.0	0.026	9.5	LOS A	0.1	0.7	0.40	0.76	41.9
Approa	ch	21	0.0	0.026	9.1	LOS A	0.1	0.7	0.40	0.66	42.0
North: I	Rememb	rance Dr (nort	h)								
7	L	6	0.0	0.180	8.6	LOS A	1.6	11.7	0.41	0,65	48.9
8	Т	313	3.0	0.182	1.1	LOS A	1.6	11.7	0.41	0.00	52.6
9	R	18	0.0	0.183	8.9	LOS A	1.6	11.7	0.41	1.01	48.9
Approa	ch	337	2.8	0.182	1.7	LOS A	1.6	11.7	0.41	0.07	52.3
West: \	/ork St (w	vest)									
10	L	46	0.0	0.112	9.5	LOS A	0.5	3.4	0.37	0.62	41.8
11	Т	8	0.0	0.112	7.5	LOS A	0.5	3.4	0.37	0.64	42.0
12	R	33	0.0	0.113	9.8	LOS A	0.5	3.4	0.37	0.80	41.6
Approa	ch	87	0.0	0.112	9.4	LOS A	0.5	3.4	0.37	0.69	41.8
All Veh	icles	681	2.2	0.182	3.2	NA	1.6	11.7	0.40	0.19	50.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW). Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Friday, 22 October 2010 2:26:41 PM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RemembranceDr&MyrleCrRd&YorkStIntersection.sip 8000045, ARUP PTY LTD, FLOATING SIDRA INTERSECTION

River Rd & Moorland Rd Giveway Intersection Existing Weekday AM Peak (8am - 9am) Giveway / Yield (Two-Way)

Moven	nemt Pe	rformance - V	/ehicles								
Mov ID	Tum	Demand Flow veh/h	HV	Deg Satu v/c	Average Delay see	Level of Service	95% Back of Vehicles	Queue Distance m	Prop. Queuea	Effective Stop Rate per vehi	Avenage Speed Km/h
South: F	River Rd	*************	20		2.(912		A.1			2022) (3374 <i>0</i> 2666688	
1	L.	2	0.0	0.006	6.5	LOS A	0.0	0.2	0.08	0.55	43.0
3	R	5	0.0	0.006	6.9	LOS A	0.0	0.2	0.08	0.63	42.7
Approad	ch	7	0.0	0.006	6.8	LOS A	0.0	0.2	0.08	0.61	42.8
East: Ri	iver Rd (east)									
4	L	1	0.0	0.008	6.4	LOS A	0.0	0.0	0.00	0.89	43.3
5	Т	15	0.0	0.008	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approad	ch	16	0.0	0.008	0.4	LOS A	0.0	0.0	0.00	0.06	49.5
West: M	loorland	Rd (west)									
11	Т	25	0.0	0.014	0.0	LOS A	0.1	0.5	0.06	0.00	49.3
12	R	2	0.0	0.014	6.8	LOS A	0.1	0,5	0.06	0.95	43.0
Approac	ch	27	0.0	0.014	0.6	LOS A	0.1	0.5	0.06	0.07	48.7
All Vehi	cles	51	0.0	0.014	1.4	NA	0.1	0.5	0.04	0.15	48.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

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Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

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River Rd & Moorland Rd Giveway Intersection Existing Weekday PM Peak (4pm - 5pm) Giveway / Yield (Two-Way)

Moven	nent Pel	normance - \	Vehicles								
Mov/ID	Tura	Demand	(4) <i>(</i>	Deg.	Average	kevelof	951% Back of			Effective	/AV(e)/e(g)e
101000410	TOPH	Flow veh/h	HV %	Satn Vic	Delay See	Service		Distance III	(Qluicinterd	Stop Rate	Stateleral Rann/fit
South: I	River Rd	فالمار ومعارضتها بمراجعة ومستهاري والمتعارية والمتعارية والمستعار والمتارك والمتعار والمراجع								NON SEILINI MISANGERI	2022220033143424533
1	L	5	0.0	0.006	6.5	LOS A	0.0	0.2	0.08	0.57	43.0
3	R	2	0.0	0.006	6.9	LOS A	0.0	0.2	0.08	0.65	42.7
Approa	ch	7	0.0	0.006	6.6	LOS A	0.0	0.2	0.08	0.59	42.9
East: Ri	iver Rd (e	east)									
4	L	5	0.0	0.015	6.4	LOS A	0.0	0.0	0.00	0,84	43.3
5	Т	23	0.0	0.015	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approad	ch	28	0.0	0.015	1.2	LOS A	0.0	0.0	0.00	0.16	48.6
West: N	loorland	Rd (west)									
11	·Τ	27	0.0	0.018	0.1	LOS A	0.1	0.6	0.08	0.00	48.9
12	R	6	0.0	0.018	6.8	LOS A	0.1	0.6	0.08	0.88	42.9
Approac	ch	34	0.0	0.018	1.3	LOS A	0.1	0.6	0.08	0.16	47.7
All Vehi	cles	69	0.0	0.018	1.8	NA	0.1	0.6	0.05	0.21	47.5

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

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River Rd & Moorland Rd Giveway Intersection Existing Saturday AM Peak Giveway / Yield (Two-Way)

Moven	nent Pe	riormance - \	Vehicles								
May, ID		Demand Flaw, veh/h	HW Z	B(cg) Sain v/c	Average Delay	licevel of Scivice	95% Back of Vehicles Veh	Queue Distance m		Efferenve Stop Rate per veh	Avenage Speecid Km/h
South: F	River Rd	Account of the second									
1	L	2	0.0	0.006	6.5	LOS A	0.0	0.2	0.07	0.56	43.0
3	R	5	0.0	0.006	6.9	LOS A	0.0	0.2	0.07	0.63	42.7
Approa	ch	7	0.0	0.006	6.8	LOS A	0.0	0.2	0.07	0.61	42.8
East: Ri	iver Rd (east)									
4	L	1	0.0	0.006	6.4	LOS A	0.0	0.0	0.00	0.88	43.3
5	Τ	12	0.0	0.007	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approa	ch	13	0.0	0.007	0.5	LOS A	0.0	0.0	0.00	0.07	49.4
West: N	/loorland	Rd (west)									
11	Т	19	0.0	0.011	0.0	LOS A	0.1	0.4	0.05	0.00	49.3
12	R	2	0.0	0.011	6.8	LOS A	0.1	0.4	0.05	0.94	43.0
Approa	ch	21	0.0	0.011	0.7	LOS A	0.1	0.4	0.05	0.09	48.6
All Vehi	icles	41	0.0	0.011	1.7	NA	0.1	0.4	0.04	0.18	47.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

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River Rd & Moorland Rd Giveway Intersection Existing Sunday PM Peak Giveway / Yield (Two-Way)

Mover	ment Pe	ntormanice -	Vehicles								
Mavita	Tum	Demand Flow	HV	Deg Satn	Average Delay	Level of Service	95% Back o Vehicles	Distance		Effective Stop Rate	AVerege Spieled
South:	River Rd	(south)	//6	V/C	S(0(0)		v(elii	00		i)e)r V(eli)	500/i
1	L	3	0.0	0.004	6.5	LOS A	0.0	0.1	0.07	0.57	43.1
3	R	2	0.0	0.004	6.8	LOS A	0.0	0.1	0.07	0.64	42.8
Approa	ich	5	0.0	0.004	6.6	LOS A	0.0	0.1	0.07	0.60	42.9
East: R	tiver Rd (east)	,								
4	Ľ,	3	0.0	0.009	6.4	LOS A	0.0	0.0	0.00	0.84	43.3
5	Т	15	0.0	0.009	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approa	ch	18	0.0	0.009	1.1	LOS A	0.0	0.0	0.00	0.15	48.7
West: N	Moorland	Rd (west)									
11	Т	17	0.0	0.011	0.0	LOS A	0.1	0.4	0.06	0.00	49,2
12	R	4	0.0	0.011	6.8	LOS A	0.1	0.4	0.06	0,88	42.9
Approa	ch	21	0.0	0.011	1.4	LOS A	0.1	0.4	0.06	0.18	47.8
All Vehi	icles	. 44	0.0	0.011	1.9	NA	0.1	0.4	0.04	0.22	47.5

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

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River Rd & Moorland Rd Giveway Intersection Future Weekday AM Peak (Oct 10) Giveway / Yield (Two-Way)

Moven	nemt Po	rformance - \	Vehicles								
Mev (D		Demand Flow	HM	Deg. Sam	Average Delay	Level of Service	95% Backlo Vehieles	i Queue Distance	Prop. Queued	Effective Step Rate	Average: Speed
		Vicibilia	- 9%	v//c	\$(6)6)		Welji	(0)		(a)(a)(* \V(a))	landi -
South: I	River Ro	d (south)									
1	L	25	0.0	0.071	6.6	LOS A	0.3	2.3	0.10	0.55	42.9
3	R	60	0.0	0.071	6.9	LOS A	0.3	2,3	0.10	0.63	42.6
Approa	ch	85	0.0	0.071	6.8	LOS A	0.3	2.3	0.10	0.61	42.7
East: R	iver Rd	(east)									
4	L	15	0.0	0.015	6.4	LOS A	0.0	0.0	0.00	0.73	43.3
5	т	15	0.0	0.015	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approa	ch	29	0.0	0.015	3.2	LOS A	0.0	0.0	0.00	0.37	46.4
West: N	Aoorland	I Rd (west)									
11	Т	25	0.0	0.017	0.1	LOS A	0.1	0.6	0.08	0.00	48.9
12	R	7	0.0	0.017	6.8	LOS A	0.1	0.6	0.08	0.86	42.9
Approa	ch	33	0.0	0.017	1.6	LOS A	0.1	0.6	0,08	0.19	47.4
All Vehi	icles	147	0.0	0.071	5.0	NA	0.3	2.3	0.08	0.47	44,4

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Friday, 22 October 2010 2:35:50 PM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RiverRd&MoorlandRdIntersection.sip 8000045, ARUP PTY LTD, FLOATING

River Rd & Moorland Rd Giveway Intersection Future Weekday PM Peak (Oct 10) Giveway / Yield (Two-Way)

Wiewein Wiewille		erformance - \ Demand Flow veh/h	Venicies BM	Bicigi Sicilin V/c	Average Delay	Lievel of Service	95% Back o Mehioles veh	fi Queue Distance	Prop Otenició	Effective Stop Refe	Avenage Speed Km/h
South: I	River Ro	d (south)								SERVERS IN TARIES AND A CARACTER	CONSIGNATION OF THE OWNER OF THE
1	L	14	0.0	0.031	6.7	LOS A	0.1	1.0	0.15	0.55	42.7
3	R	23	0.0	0.031	7.1	LOS A	0.1	1.0	0.15	0.63	42.5
Approa	ch	37	0.0	0.031	7.0	LOS A	0.1	1.0	0.15	0.60	42.6
East: R	iver Rd	(east)									
4	L	53	0.0	0.040	6.4	LOS A	0.0	0.0	0.00	0.68	43.3
5	Т	23	0.0	0.040	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approa	ch	76	0.0	0.040	4.5	LOS A	0.0	0.0	0.00	0.47	45.1
West: N	loorland	I Rd (west)									
11	Т	27	0.0	0.029	0.2	LOS A	0.2	1.1	0.14	0.00	47.9
12	R	26	0.0	0.029	6.9	LOS A	0.2	1.1	0.14	0.73	42,7
Approa	ch	54	0.0	0.029	3.5	LOS A	0.2	1.1	0.14	0.36	45.2
All Vehi	cles	166	0.0	0.040	4.7	NA	0.2	1,1	0.08	0.46	44.6

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Friday, 22 October 2010 2:35:51 PM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RiverRd&MoorlandRdIntersection.sip 8000045, ARUP PTY LTD, FLOATING

River Rd & Moorland Rd Giveway Intersection Future Saturday AM Peak (Oct 10) Giveway / Yield (Two-Way)

Moven	nent Pe	nformance - \	Vehicles								
1\/@\/{D	Tialan	Demand Flow	HV	ibleg. Statin	Average Deley	kevel of Senvice	95% Backo Vehiales	frictioner Distance	Prop. Outened	Bifecelive Siten Relie	Awichicigic Statefold
		Vein/In	%		390		vcin ····	(\$1)		pich Wein	an a
South: I	River Rd	l (south)									
1	L	41	0.0	0.069	6.6	LOS A	0.3	2.2	0.10	0.56	42.9
3	R	44	0.0	0.069	7.0	LOS A	0.3	2.2	0.10	0.64	42,7
Approa	ch	85	0.0	0.069	6.8	LOS A	0.3	2.2	0.10	0.60	42.8
East: R	iver Rd ((east)									
4	L	31	0.0	0.022	6.4	LOS A	0.0	0.0	0.00	0.67	43.3
5	т	12	0.0	0.022	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approa	ch	42	0.0	0.022	4.6	LOS A	0.0	0.0	0.00	0.49	45.0
West: N	loorland	Rd (west)									
11	т	19	0.0	0.028	0.1	LOS A	0.1	1.0	0.10	0.00	48.4
12	R	32	0.0	0.028	6.8	LOS A	0.1	1.0	0.10	0.70	42.8
Approa	ch	51	0.0	0.028	4.3	LOS A	0.1	1.0	0.10	0.44	44.7
All Vehi	icles	178	0.0	0.069	5.6	NA	0.3	2.2	0.08	0.53	43.8

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Friday, 22 October 2010 2:35:51 PM SIDRA INTERSECTION 5.0.2.1437 Project: J:\220887 - Tahmoor Rezoing Traffic\13 Sidra\RiverRd&MoorlandRdIntersection.sip 8000045, ARUP PTY LTD, FLOATING

River Rd & Moorland Rd Giveway Intersection Future Sunday PM Peak (Oct 10) Giveway / Yield (Two-Way)

Mover	ment Per	rormance -	Vehicles								
Mavila	Tura	Demand	1-117	Deg.	Average	Levelof	95% Back o		Prop.	Effective	Avenale
10/10/01/0	nunn	Filow Volnih	HM	Sam v/c	Dieliay See	Service	Vehieles Veh	Distance	(Q) M(C) M(C)	Sitep Rette per vela	Sible(a)
South:	River Rd	and a second second second second second second					N 4918			191-119-11-1193	an a
1	L	42	0.0	0.068	6.6	LOS A	0.3	2.2	0.11	0.56	42.9
3	R	42	0.0	0.068	7.0	LOS A	0.3	2.2	0.11	0.64	42.6
Approa	ch	84	0.0	0.068	6.8	LOS A	0.3	2.2	0.11	0.60	42.8
East: R	liver Rd (e	east)									
4	L	33	0.0	0.025	6.4	LOS A	0.0	0.0	0.00	0.68	43.3
5	Т	15	0.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approa	ch	47	0.0	0.025	4.4	LOS A	0.0	0.0	0.00	0.47	45.2
West: N	loorland i	Rd (west)									
11	Т	17	0.0	0.027	0.1	LOS A	0.1	1.0	0.11	0.00	48.3
12	R	33	0.0	0.027	6.9	LOS A	0.1	1.0	0.11	0.69	42.7
Approa	ch	49	0.0	0.027	4.6	LOS A	0.1	1.0	0.11	0.46	44.5
All Vehi	icles	181	0.0	0.068	5.6	NA	0.3	2.2	0.08	0.53	43.8

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

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