Reference: 13.500l01v01

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02 December 2013

John Corbett
PO Box 899
Picton NSW 2571

Attention: John Corbett,

Re: 2-6 Coull Street, Picton; Residential Rezoning Planning Proposal – Traffic Assessment

Dear John,

We refer to the subject site and the proposed rezoning of the site for the purposes of R3 Medium Density Residential development from its current IN2 Light Industrial zoning. The site is flood affected and is understood to result in an indicative yield of between 12-20 dwellings should it be rezoned for residential purposes.

Existing Site

The site is located on the corner of Coull Street and Crakanthorp Lane as shown by **Figure 1** below. Specifically, the site is known as 2-6 Coull Street, Picton and is legally described as Lot 102 in DP 1092990.

It has a site area of approximately 5,680m^2 and is generally undeveloped having not, at this stage, taken advantage of its current industrial zoning.

The site extends to the rear of Lot 66 in DP2893 and therefore it is assumed that some form of Right of Carriageway (ROW) or formal agreement applies in this area to provide the current access to Crakanthorp Lane that the King George IV Hotel and other properties currently benefit from. Part of the Hotel car park itself currently extends onto the north east corner of the subject site.

Reference should also be made to the Photographic Record included in **Attachment 1** which provides an appreciation of the site and surrounding roads.

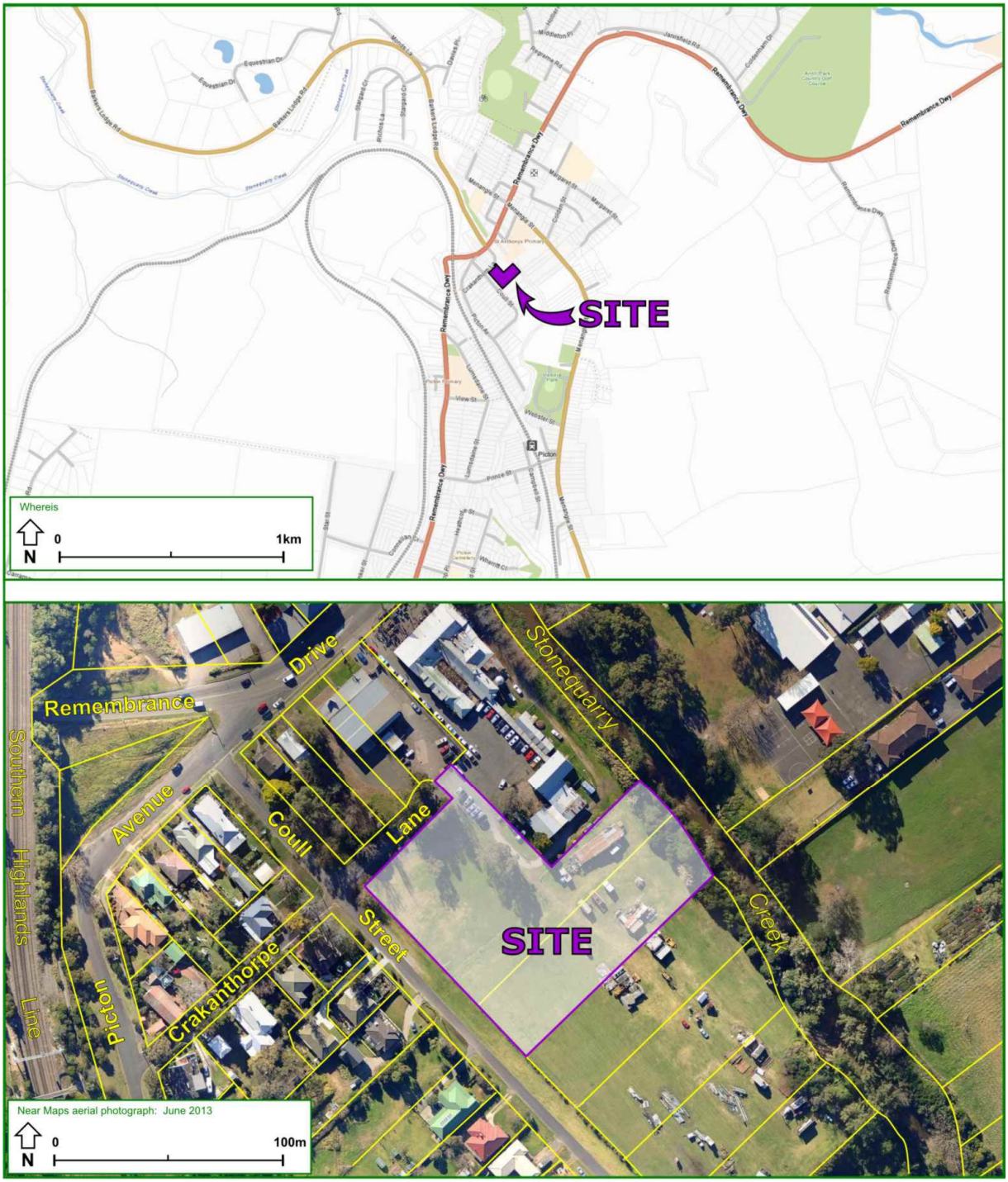


Figure 1: Site Location

Description of Surrounding Roads

The road hierarchy in the vicinity of the site is presented in **Figure 2** below with the following roads of particular interest:

- Argyle Street: a Roads & Maritime Services (RMS) road that generally runs in a north-south direction and forms part of the Remembrance Drive route (MR 620). It is subject to a 50km/hr speed zoning in the vicinity of the site.
- Picton Avenue: a local road that forms the stem of a T-junction with Argyle Street to the west of the site. All access to/from the site is required to traverse this intersection due to constraints associated with the creek to the north and east and the railway viaduct to the south.
- Coull Street: a local road that generally runs in an east-west direction and forms the southern site frontage. It forms a T-junction with Picton Avenue to the south of Picton Avenue.

During site investigations, a traffic survey was undertaken at the critical intersection of Argyle Street and Picton Avenue. The results of this survey, included in **Attachment 2**, were analysed using the SIDRA computer program to determine their performance characteristics under existing traffic conditions. The SIDRA model produces a range of outputs, the most useful of which are the Degree of Saturation (DOS) and Average Vehicle Delay per vehicle (AVD). The AVD is in turn related to a level of service (LOS) criteria. These performance measures and SIDRA modelling outputs for key movements is provided in **Attachment 3**.

Table 1: Intersection Performance Summary – Existing Conditions

Intersection Description	Control Type	Period	Degree of Saturation	Average Delay (secs)	Level of Service
Argyle Street / Picton Avenue	Priority "Give Way"	AM	0.046	11.5	A

It can be seen from Table 1 that the intersection operates satisfactorily under the existing 'base case' scenario, with a Level of Service A and with moderate delays.

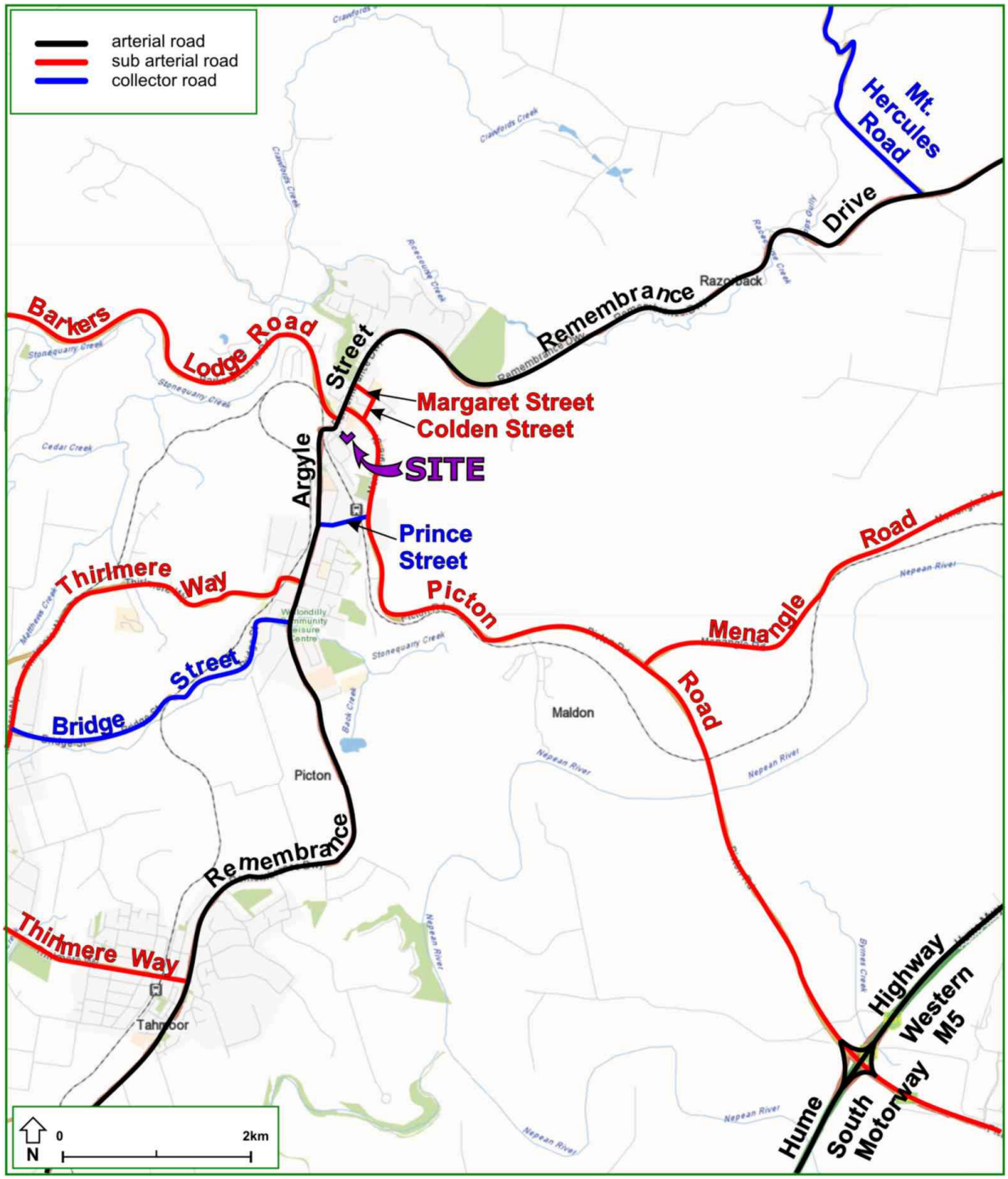


Figure 2: Surrounding Road Hierarchy

Public Transport Accessibility

The site is located in close proximity to a number of bus services operating along Argyle Street in close proximity to the site. Reference should be made to the Picton Buslines route map which is included in **Attachment 4**.

Furthermore, Picton Railway Station is located approximately 1.15km to the southeast of the site, via the reserve and path between Picton Avenue and Webster Street.

The frequency of both bus and train services is not considered to sufficient to result in significant utilisation of these services. Notwithstanding, additional residential development will increase the potential 'catchment' for these services which could be regarded to improve the feasibility of these routes which has benefits for the retention (and potential improvement) of public transport services in the area more generally.

Background & Existing Development Potential

The *Wollondilly Local Environment Plan 2011* (LEP) does not include specific provisions in relation to a permitted floor space ratio (FSR), however Clause 2.2.3 of the *Wollondilly Development Control Plan (DCP) 2011 – Volume 5 – Industrial and Infrastructure uses* states that buildings must not occupy more than 50% of site area, equating to an FSR of 0.5:1.

Having regard for the above, redevelopment of the site for industrial purposes under the current zoning could potentially result in a gross building floor area (GFA) of approximately 2,840m^2.

Proposed Development

Addition controls related to flood affected site and residential development is expected to limit the development potential of the site to less than 20 residential dwellings in the event that it is rezoned for Medium Density Residential (R3) purposes.

Access Opportunities & Constraints

Detailed plans have not been provided indicating the future location of vehicle access to the site(s) which will be subject to further detailed assessment as part of a subsequent Development Application should this Planning Proposal be successful.

Notwithstanding, the site is situated on relatively flat ground and is not considered to suffer any substantial restrictions on suitable access locations from a traffic perspective other than standard prohibitions on access within 6 metres of a public road intersection in accordance with Figure 3.1 of AS2890.1: 2002 that applies to all development through general provisions as part of the Building Code of Australia and Council's DCP.

Traffic Generation & Distribution

The RMS *Guide to Traffic Generating Developments* recommends the following traffic generation rates for medium density developments:

- 0.50 trips / hr for dwelling with up to two (2) bedrooms, and
- 0.65 trips / hr for dwelling with three (3) or more bedrooms.

Application of the higher rate of 0.65 trips per dwelling to the indicative yield of up to 20 dwellings results in a traffic generation of 13 vehicles per hour during peak periods. Assuming an 80:20 split during the morning peak, with these flows reversed in the evening, results in the following distribution of traffic:

- 3 in, 10 out during the AM peak
- 10 in, 3 out during the PM peak

It is anticipated that this traffic will be distributed similarly to the surveyed traffic movements at the intersection of Picton Avenue and Argyle Street. In this regard, the majority (~80%) of this traffic is expected to be distributed towards the north and the Picton town centre.

It should be noted that the current landuse zoning could result in an industrial building of approximately 2,840m^2 floor area. Application of the RMS Guide warehouse traffic generation of 0.5 trips / 100m^2 GFA results in a traffic generation of 14 vehicles per hour associated with the current zoning.

Having regard for the above, the proposed rezoning of the site for residential purposes will result in minimal, if any, change traffic volumes generated by the site should it be developed under current controls.

Traffic Impacts

As discussed above, the proposed rezoning for residential purposes will have minimal impact on future traffic volumes associated with the site when compared to current light industrial controls. Therefore, the proposal will therefore have minimal impact on the surrounding road network.

The potential impacts of the development on the amenity of existing residents is most appropriately assessed having regard to traffic volumes on affected road sections, based upon the concept of 'environmental capacity'. In doing so, it must be acknowledged that the concept of the 'environmental capacity' of a road is not an exact science. It is dependent upon many factors, including the function (classification) of the road, historic traffic levels, traffic composition (notably the percentage of heavy vehicles), vehicle speeds, road widths, road gradients, road surface conditions, distances to building façades and type of building construction. In addition, individual people have different responses to the prevailing conditions so that circumstances that one person finds unacceptable may be acceptable to another. These variables are set out in Section 4.3 of the Roads and Traffic Authority's Guide to Traffic Generating Developments.

Nevertheless, the Roads and Maritime Services (RMS) has formulated design criteria for local and collector residential streets that take due account of amenity and safety considerations. These include an environmental goal and a maximum goal for local and collector roads as follows:

Road Class	Environmental Goal (veh/hr)	Maximum Volume (veh/hr)
Local Street	200	300
Collector Street	300	500

In this regard, it will be noted that both Coull Street and Picton Avenue act as a local roads and as such has an environmental capacity of up to 300 vehicles per hour as defined in the RMS's *Guide to Traffic Generating Developments*. The existing volumes along Picton Avenue, are in the order of 37 veh/hr based on the survey data. Accordingly the proposed increase of 13 veh/hr will result in only a minor absolute increase in volumes and will remain under the RMS Guides's environmental goal of 200 vehicles per hour.

As such, the residential amenity of local roads will not be adversely affected and the roads will continue to operate with a local residential road function, with volumes that are commensurate with this function. Furthermore, a residential landuse would be expected to generate fewer truck movements than might occur under current zonings throughout the day which has road safety and noise benefits which are of particular importance for what is largely a residential neighbourhood.

The Australian Model Code for Residential Development (AMCORD) recommends a carriageway width of 5.0 metres for an access street with an AADT of less than 1,000 vehicles per day, as applicable to Coull Street.

Further to the above, there is sufficient spare capacity at the critical intersection of Argyle Street and Picton Avenue to accommodate the increased traffic associated with a residential rezoning of the subject site. Table 2 below provides a summary of the future intersection performance assuming an increased traffic generation of 20 vehicles per hour during the critical AM peak period. This modelling also adopts an increase background traffic growth on Argyle Street of 2% per annum over 10 years to reflect general traffic growth on the surrounding arterial road network.

Table 2: Intersection Performance Summary (AM Peak)

Intersection Description	Control Type	Scenario	Degree of Saturation	Average Delay (secs)	Level of Service
Argyle Street / Picton Avenue	Priority "Give Way"	Existing	0.046	11.5	A
		Future - Existing plus Background Growth	0.074	14.0	A
		Future plus Development	0.117	14.2	A

It can be seen from Table 2 that the key intersection of Argyle Street and Picton Avenue will continue to operate satisfactorily in the future with acceptable Level of Service and delays. In this regard, the surrounding road network can readily accommodate the traffic impacts associated with the development with no changes to existing infrastructure.

- Conclusions

In summary, the proposed rezoning is considered supportable from a traffic and transport perspective and will have minimal impact on the surrounding road network.

Traffic volumes associated with residential development of the site are commensurate with those that could potentially be generated by the site should it be developed for industrial purposes under current zoning controls. The proposed residential use will result in fewer truck movements throughout the day which is a superior outcome for the amenity of neighbouring residential properties.

We trust the above is of assistance and please contact the undersigned should you have any queries or require any further information regarding the above.

Yours faithfully,

traffix

Tim Lewis
Associate Engineer

Email: tim.lewis@traffix.com.au

Attachment(s): 1) Photographic Record
2) Traffic Survey Results
3) SIDRA Modelling Outputs
4) Picton Buslines Network Map

Attachment 1

View looking east at the site from the intersection of Coull Street and Crakanthorp Lane.

View looking northeast along Crakanthorp Lane from its intersection with Coull Street.

View looking southeast along Coull Street from Picton Avenue.

View looking northeast along Picton Avenue on approach to its intersection with Argyle Street.

View looking south along Argyle Street within the Picton Town Centre.

View looking west along Menangle Street on approach to its intersection with Argyle Street.

Attachment 2

TRAFFIX SURVEYS	
Location:	Argyle St / Picton Ave, Picton
Date:	28-Nov-13
Time:	7.30-8.30am
Weather:	Fine
Surveyor(s):	TL

TRAFFIX

AM Peak	Movement																		*TOTAL*		
	South - Picton Ave						West - Argyle St						East - Argyle St								
	Left			Right			Through			Right			Left			Through					
Time Period (starting)	LV	Truck	*Sub-TOTAL*	LV	Truck	*Sub-TOTAL*	LV	Truck	*Sub-TOTAL*	LV	Truck	*Sub-TOTAL*	LV	Truck	*Sub-TOTAL*	LV	Truck	*Sub-TOTAL*	*LV*	*Truck*	*Sub-TOTAL*
7.30am	0	0	*0*	5	0	*5*	106	12	*118*	0	0	*0*	1	0	*1*	59	9	*68*	*171*	*21*	*192*
7.45am	2	0	*2*	5	0	*5*	121	8	*129*	5	0	*5*	2	0	*2*	66	7	*73*	*201*	*15*	*216*
8.00am	0	0	*0*	6	0	*6*	118	14	*132*	2	0	*2*	2	0	*2*	72	7	*79*	*200*	*21*	*221*
8.15am	2	0	*2*	3	0	*3*	133	12	*145*	0	0	*0*	2	0	*2*	65	10	*75*	*205*	*22*	*227*
Total Hour	**4**	**0**	***4***	**19**	**0**	***19***	**478**	**46**	***524***	**7**	**0**	***7***	**7**	**0**	***7***	**262**	**33**	***295***	***777***	***79***	***856***

Attachment 3

Description of Traffic Modelling Terminology:

Degree of Saturation (DOS) is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DOS approaches 1, it is usual to attempt to keep DOS to less than 0.9. When DOS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at 1.1 can be assumed. For intersections controlled by roundabout or give way/stop control, satisfactory intersection operation is generally indicated by a DOS of 0.8 or less.

Average Vehicle Delay (AVD) for individual intersections provides a measure of the operational performance of an intersection. In general, levels of acceptability of AVD for individual intersections depend on the time of day (motorists generally accept higher delays during peak commuter periods) and the road system being modelled (motorists are more likely to accept longer delays on side streets than on the main road system).

Level of Service (LoS) is a comparative measure which provides an indication of the operating performance of an intersection as shown below:

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

MOVEMENT SUMMARY

Site: Argyle St / Picton Ave_AM_EX

Argyle St / Picton Ave
Period AM
Scenario: 01-Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Picton Ave (south)											
1	L2	4	0.0	0.046	11.2	LOS A	0.1	1.0	0.57	0.81	23.3
3	R2	20	0.0	0.046	11.5	LOS A	0.1	1.0	0.57	0.81	23.3
Approach		24	0.0	0.046	11.5	LOS A	0.1	1.0	0.57	0.81	23.3
East: Argyle St (north-east)											
4	L2	7	0.0	0.175	6.4	LOS A	0.0	0.0	0.00	0.02	49.7
5	T1	311	11.2	0.175	0.0	LOS A	0.0	0.0	0.00	0.02	49.7
Approach		318	10.9	0.175	0.2	NA	0.0	0.0	0.00	0.02	49.7
West: Argyle St (south-west)											
11	T1	552	8.8	0.305	1.7	LOS A	2.4	18.3	0.53	0.01	43.9
12	R2	7	0.0	0.305	8.5	LOS A	2.4	18.3	0.53	0.01	43.9
Approach		559	8.7	0.305	1.8	NA	2.4	18.3	0.53	0.01	43.9
All Vehicles		901	9.2	0.305	1.5	NA	2.4	18.3	0.34	0.04	45.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Argyle St / Picton Ave_AM_FU

Argyle St / Picton Ave
Period AM
Scenario: 02- Future (existing plus 2% p.a. background growth over 10 years)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Picton Ave (south)											
1	L2	5	0.0	0.074	13.7	LOS A	0.2	1.6	0.68	0.85	20.8
3	R2	24	0.0	0.074	14.0	LOS A	0.2	1.6	0.68	0.85	20.8
Approach		29	0.0	0.074	14.0	LOS A	0.2	1.6	0.68	0.85	20.8
East: Argyle St (north-east)											
4	L2	9	0.0	0.213	6.4	LOS A	0.0	0.0	0.00	0.02	49.6
5	T1	378	11.1	0.213	0.0	LOS A	0.0	0.0	0.00	0.02	49.6
Approach		387	10.9	0.213	0.2	NA	0.0	0.0	0.00	0.02	49.6
West: Argyle St (south-west)											
11	T1	673	8.8	0.372	2.7	LOS A	4.0	29.8	0.64	0.01	42.9
12	R2	9	0.0	0.372	9.4	LOS A	4.0	29.8	0.64	0.01	42.9
Approach		682	8.6	0.372	2.8	NA	4.0	29.8	0.64	0.01	42.9
All Vehicles		1099	9.2	0.372	2.2	NA	4.0	29.8	0.41	0.04	44.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Argyle St / Picton Ave_AM_FU+DEV

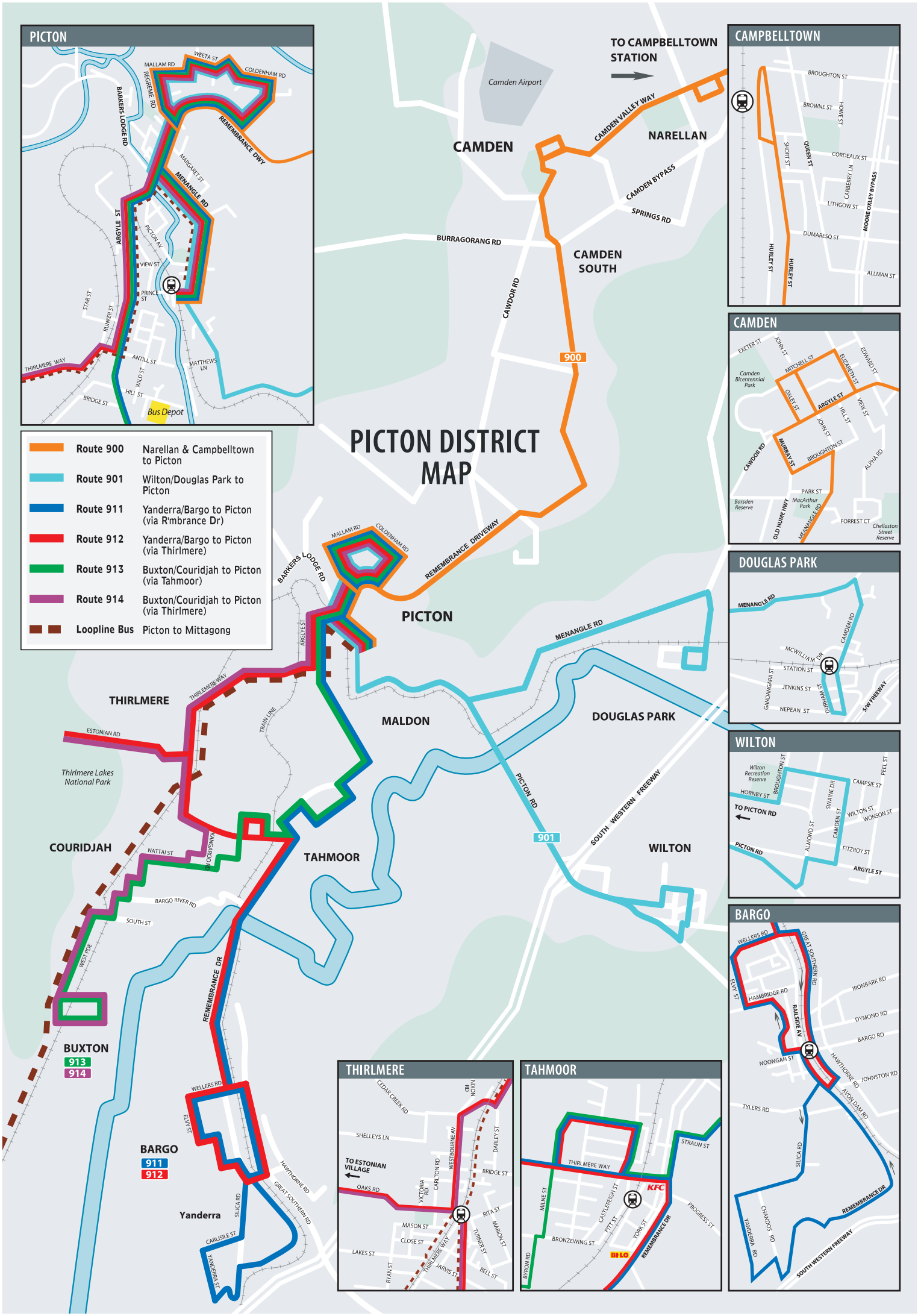
Argyle St / Picton Ave
Period AM
Scenario: 03- Future incl. Development (20 veh/hr)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Picton Ave (south)											
1	L2	8	0.0	0.117	13.9	LOS A	0.4	2.5	0.68	0.86	20.7
3	R2	38	0.0	0.117	14.2	LOS A	0.4	2.5	0.68	0.86	20.7
Approach		46	0.0	0.117	14.2	LOS A	0.4	2.5	0.68	0.86	20.7
East: Argyle St (north-east)											
4	L2	12	0.0	0.214	6.4	LOS A	0.0	0.0	0.00	0.03	49.6
5	T1	378	11.1	0.214	0.0	LOS A	0.0	0.0	0.00	0.03	49.6
Approach		389	10.8	0.214	0.2	NA	0.0	0.0	0.00	0.03	49.6
West: Argyle St (south-west)											
11	T1	673	8.8	0.374	2.7	LOS A	4.0	30.1	0.64	0.02	42.8
12	R2	12	0.0	0.374	9.5	LOS A	4.0	30.1	0.64	0.02	42.8
Approach		684	8.6	0.374	2.8	NA	4.0	30.1	0.64	0.02	42.8
All Vehicles		1120	9.0	0.374	2.4	NA	4.0	30.1	0.42	0.06	43.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Attachment 4


PICTON DISTRICT MAP
PICTON
CAMPBELLTOWN
CAMDEN
DOUGLAS PARK
WILTON
BARGO
THIRLMERE
TAHMOOR
Route 900 Narellan & Campbelltown to Picton
Route 901 Wilton/Douglas Park to Picton
Route 911 Yanderra/Bargo to Picton (via R'mbrance Dr)
Route 912 Yanderra/Bargo to Picton (via Thirlmere)
Route 913 Buxton/Couridjah to Picton (via Tahmoor)
Route 914 Buxton/Couridjah to Picton (via Thirlmere)
Loopline Bus Picton to Mittagong
TO CAMPBELLTOWN STATION
Camden Airport
CAMDEN
NARELLAN
CAMDEN SOUTH
CAMDEN VALLEY WAY
CAMDEN BYPASS
SPRINGS RD
BURRAGORANG RD
CAWDOR RD
900
REMEMBRANCE DRIVEWAY
MENANGLE RD
MALLAM RD
COLDENHAM RD
BARKERS LODGE RD
ARGYLE ST
THIRLMERE WAY
ESTONIAN RD
Thirlmere Lakes National Park
TRAIN LINE
COURIDJAH
NATTAI ST
KANGAROO HILL
BARGO RIVER RD
SOUTH ST
WEST RDE
BUXTON
913
914
REMEMBRANCE DR
WELLERS RD
ELVY ST
BARGO
911
912
Yanderra
SILICA RD
CARLISLE ST
YANDERRA ST
HAWTHORNE RD
GREAT SOUTHERN RD
MALDON
TAHMOOR
DOUGLAS PARK
PICTON RD
901
SOUTH WESTERN FREEWAY
WILTON
MENANGLE RD
MCWILLIAM DR
STATION ST
JENKINS ST
NEPEAN ST
DURHAM ST
GANDANGARA ST
CAMDEN RD
S/W FREEWAY
WEETA ST
REGRENE RD
REMEMBRANCE DRWY
MARGARET ST
ARGYLE ST
PICTON AV
VIEW ST
PRINCE ST
STAR ST
RUNNER ST
ANTILL ST
WILD ST
HILL ST
BRIDGE ST
MATTHEWS LN
Bus Depot
THIRLMERE WAY
BROUGHTON ST
BROWNE ST
HOWE ST
QUEEN ST
SHORT ST
CORDEAUX ST
CARBERRY LN
LITHGOW ST
DUMARESQ ST
ALLMAN ST
HURLEY ST
MOORE OXLEY BYPASS
EXETER ST
JOHN ST
MITCHELL ST
EDWARD ST
ELIZABETH ST
OXLEY ST
ARGYLE ST
VIEW ST
HILL ST
JOHN ST
CAWDOR RD
MURRAY ST
BROUGHTON ST
ALPHA RD
PARK ST
FORREST CT
OLD HUME HWY
MACARTHUR RD
Camden Bicentennial Park
Barsden Reserve
MacArthur Park
Chellaston Street Reserve
Wilton Recreation Reserve
BROUGHTON ST
PEEL ST
CAMPSIE ST
HORNBY ST
SWAINE DR
TO PICTON RD
CAMDEN ST
WILTON ST
WONSON ST
ALMOND ST
FITZROY ST
PICTON RD
ARGYLE ST
WELLERS RD
GREAT SOUTHERN RD
IRONBARK RD
HAMBRIDGE RD
ELVY ST
RAILSIDE AV
DYMOND RD
BARGO RD
NOONGAH ST
HAWTHORNE RD
JOHNSTON RD
TYLERS RD
AVON DAM RD
SILICA RD
CHANDOS RD
YANDERRA RD
REMEMBRANCE DR
SOUTH WESTERN FREEWAY
CEDAR CREEK RD
NIXON RD
SHELLEYS LN
TO ESTONIAN VILLAGE
OAKS RD
VICTORIA RD
CARLTON RD
WESTBOURNE AV
DARLEY ST
BRIDGE ST
RITA ST
MARION ST
MASON ST
CLOSE ST
LAKES ST
TURNER ST
BELL ST
JARVIS ST
RYAN ST
THIRLMERE WAY
THIRLMERE WAY
STRAUN ST
KFC
MILNE ST
CASTLEREIGH ST
PITT ST
YORK ST
PROGRESS ST
BRONZEWING ST
BH-LO
BYRON RD
REMEMBRANCE DR