Our Ref: 12S13040000

19 November 2012

Tamworth Regional Council
PO Box 555
TAMWORTH NSW 2340

Attention: Mr. Warren Faulkner (Manager Infrastructure Planning)

Dear Warren

ADDITIONAL ANALYSIS FOR REZONING SOUTH TAMWORTH

GTA Consultants (GTA) has recently undertaken a study of the traffic and transport management of Tamworth commissioned for the NSW Roads and Maritime Service (RMS), in partnership with the Tamworth Regional Council (TRC). As part of the traffic assessment, GTA developed a strategic transport model to replicate the existing and future road network, to test infrastructure options under future conditions.

TRC have engaged GTA to further utilise and extend the Tamworth Strategic Transport Model (TSTM) to include the proposed rezoning of rural area south of Tamworth.

The key objective of the modelling are to identify the transport related impacts resulting from future growth development south of Tamworth, in particular the impacts on Burgmanns Lane, Goonoo Goonoo Road and Calala Lane.

This letter sets out the findings of the assessment. In reviewing this letter reference should be made to the GTA report dated 15th March 2012 which outlines the development of the TSTM

Tamworth Strategic Model

The TSTM is an AM peak two hour model which was developed using the Cube TRIPS platform. It focused on future demands and how the demands could be expected to change as a result of land use and economic development, and network changes, both within Tamworth and the broader region. The expected future year changes were then used to arrive at future traffic demands across the network to define the broad traffic pattern changes.

Model Assumptions

The following assumptions were made with regard to the redevelopment of the model:

- Matrix estimation used a comparison with screen line data from traffic counting data.
- Capacity restrain trip assignment was adopted.
- Four step planning was undertaken with land use data for internal and external zones.
- Employment densities were based on external sources and GTA analysis.

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Land Use Proposed

TRC provided GTA with the future land use changes in the South Tamworth Rural Area, and included the following land uses:

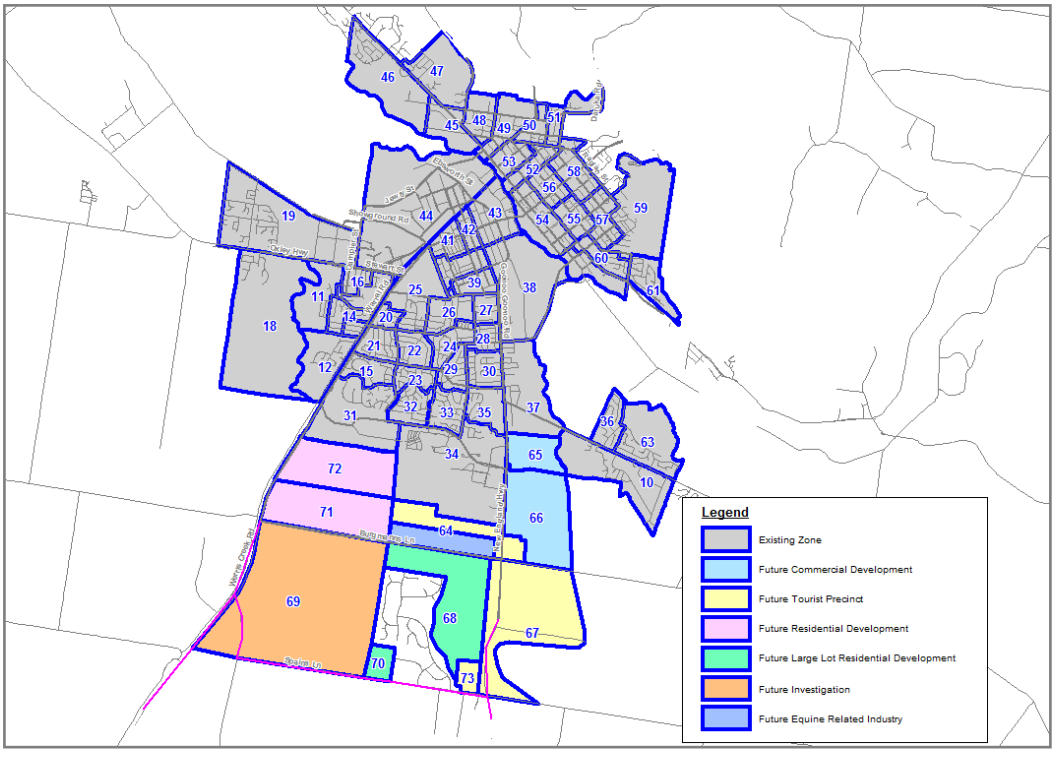
- tourist precinct
- residential
- commercial
- industrial
- rural
- future investigation.

A summary of the South Tamworth Rural Lands is presented in Table 1 and illustrated in Figure 1

Table 1: Tamworth Land Use Data

No.	Land Use	Location	Stage	Area (m²)
64.	Future Tourist Precinct	North of Burgmanns Lane	1-5 years	673,200
	Future Equine Related Industry		1-5 years	514,480
65.	Future Commercial Development	South of Calala Lane	1-5 years	325,600
66.	Future Commercial Development	North of Burgmanns Lane	1-5 years	585,090
67.	Future Tourist Precinct	South of Burgmanns Lane	5-10 years	501,704
68.	Future Large Lot Residential Development	South of Burgmanns Lane	5-10 years	1,013,252
69.	Future Investigation	North of Spains Lane	5-10 years	4,634,400
70.	Future Large Lot Residential Development	North of Spains Lane	5-10 years	196,058
71.	Future Residential Development	East of Werris Creek Road	10-15 years	1,432,480
72.	Future Residential Development	East of Werris Creek Road	10-15 years	1,119,760
73.	Future Tourist Precinct	West of Goonoo Goonoo Rd	5-10 years	261,440
Total				**11,257,464**

Figure 1: Tamworth Land Use Plan

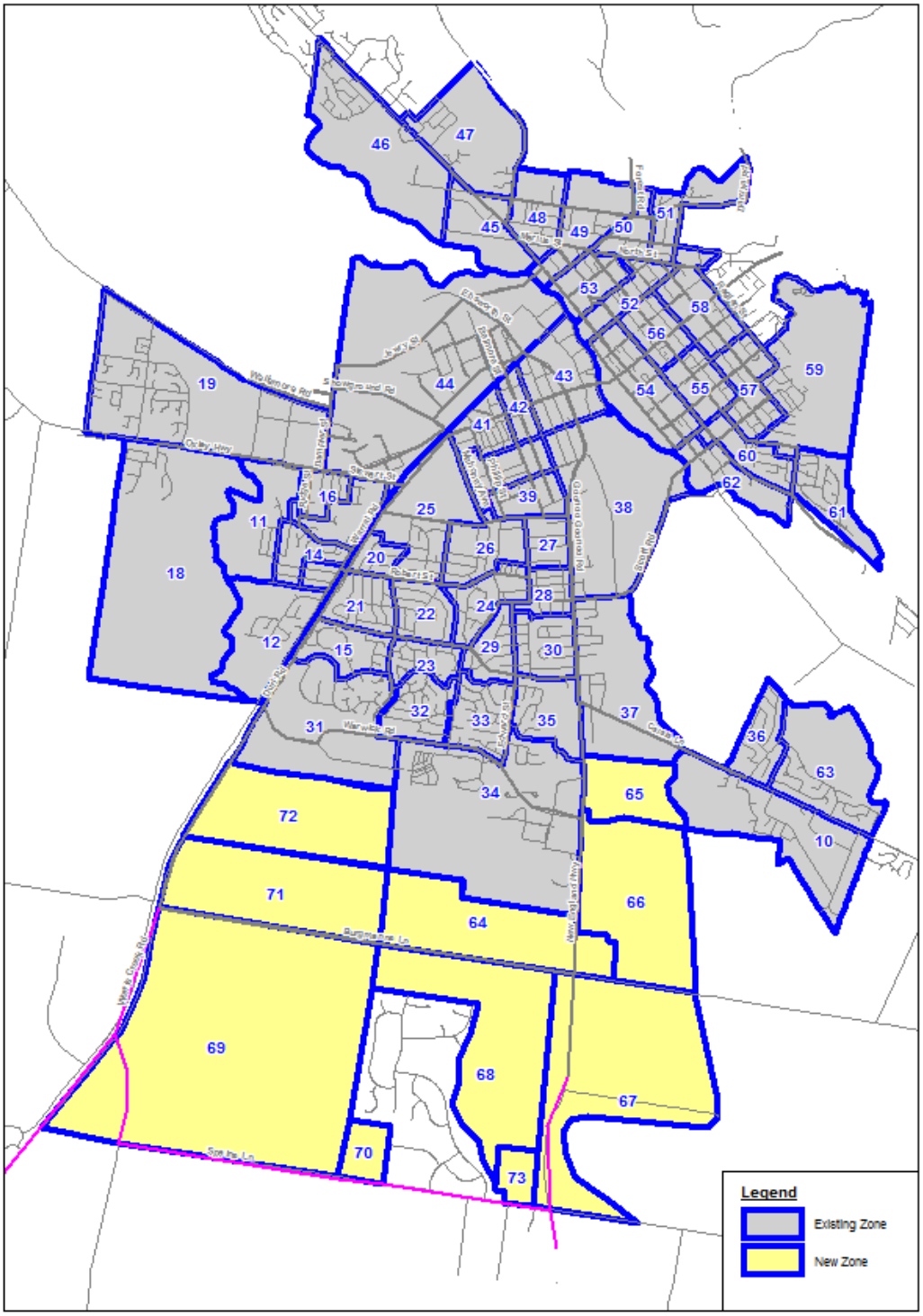


Model Refinements

Zone Structure

Zones were added to compensate for the additional rural area south of Tamworth to the TSTM. A detailed map of these zones is provided in Figure 2. No other changes were made to the zones of the original Tamworth strategic model.

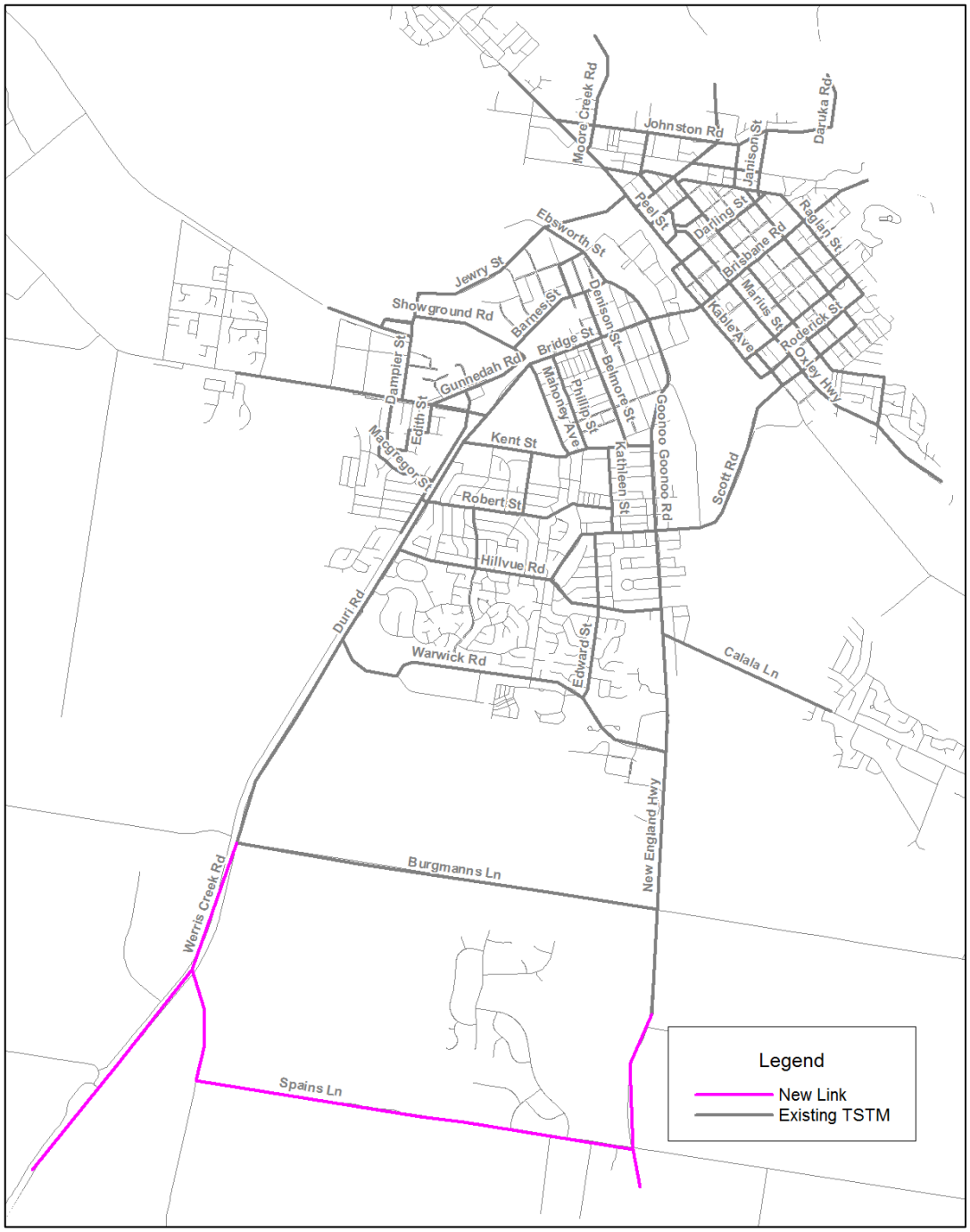
Figure 2: Tamworth Zone Structure



Road Network

The road network adopted for the strategic transport model includes the road network developed as part of the STTM which comprises all major and important roads which connect all significant attraction and production points. New road links have been added to the model which includes the South Tamworth Rural Lands.

Figure 3: Tamworth Road Network



All new links have a capacity of 800 vehicles/hour (1 lane in each direction) and a post speed of 50km/hr. The Tamworth road network showing the existing network as part of the TSTM and new links are shown in Figure 3.

Land Use Scenario

The South Tamworth Rural Land Uses (zone 64 to 73) provided in Table 1 has been included in the model testing. Full details of the Land Use Scenario is summarised in Table 2.

Table 2: Tamworth Strategic Model Scenario 1

Zone	Land Use	Number of Households				Number of Employees			
		2010	2020	2030	2040	2010	2020	2030	2040
64	Future Tourist Precinct	-	100	100	100	-	285	285	285
	Future Equine Related Industry								
65	Future Commercial Development	-	50	50	50	-	2,065	2,065	2,065
66	Future Commercial Development	-	100	100	100	-	3,847	3,847	3,847
67	Future Tourist Precinct	-	-	-	-	-	64	64	64
68	Future Large Lot Residential Development	-	253	253	253	-	-	-	-
69	Future Investigation	-	232	232	232	-	-	-	-
70	Future Large Lot Residential Development	-	49	49	49	-	-	-	-
71	Future Residential Development	-	-	2,387	2,387	-	-	-	-
72	Future Residential Development	-	-	1,866	1,866	-	-	-	-
73	Future Tourist Precinct	-	-	-	-	-	35	35	35
Total		**-**	**784**	**5,038**	**5,038**	**-**	**6,295**	**6,295**	**6,295**

By way of comparison, the entire Tamworth Strategic Transport Model has 13,519 dwellings and 16,142 employments.

Strategic Model Results Summary

The following results have been obtained from the modelling in order to develop an understanding of the operation of each option:

- Total Number of Trips – the sum of all trips during the modelled time period.
- Vehicle Kilometres Travelled (VKT) – the total travel distance for all completed trips during the modelled period.
- Vehicle Hours Travelled (VHT) – the total time travelled by all completed trips during the modelled period.
- Average Speed (km/hr) – average travel speed for all completed trips during the specified time period

A summary of the overall performance of the road network within the study area under existing conditions and future growth scenarios is presented in Table 3 for the AM peak period 7:00-9:00.

Table 3: Tamworth Strategic Model Summary

Year	Total Number of Trips	Vehicle Kilometres Travelled (km)	Vehicle Hours Travelled (hr)	Average Speed (km/hr)
2010	29,519	109,948	4,130	26.62
2020	33,468	145,429	4,871	33.47
2030	42,099	202,385	13,318	42.10
2040	44,982	222,235	18,030	44.98

Table 3 indicates that by 2020, the distance travelled (VKT) will increase by approximately 32% whilst the average network speed will also increase by more than 25%. This is due to the additional road links in the model, as there are less traffic volumes and higher speeds in the revised model.

However, by 2030 and 2040, due to a growth of residential development, there is an increase of 84% and 100% respectively to the distance travelled (VKT) to those established in year 2010. As a result, the average network speed for both year options increases by approximately 60% in contrast to the average speed in the base year.

Level of Service Results

The level of service (LOS) for each of the links in the network has been obtained based the degree of saturation for each link within the network. The level of service plots provide an overview of the network congestion and highlight locations within the network that will experience poor operating conditions.

Table 4 sets out the volume to capacity ratio utilised to determine the level of service.

Table 4: Level of Service Criteria

LOS	Volume-Capacity Ratio (DOS)	Colour Coding
A	0.00 to 0.35	
B	0.35 to 0.50	
C	0.50 to 0.75	
D	0.75 to 0.90	
E	0.90 to 1.00	
F	>1.00	

The level of service plots are summarized in Figure 4 whilst full plots of the level of service characteristics are provided in the attachments to this letter.

Figure 4: Level of Service Year 2020 Scenario 1 and Scenario 2

The plots shown in Figure 4 indicate that by 2020, the majority of congestion is expected to occur in the northern part of Tamworth around Jewry Street, Peel Street and to a lesser extent Johnston Street.

As a result of the increase in residential development by 2030 and 2040, Edward Street, Werris Creek Road, New England Highway and Scotts Road will undergo a decrease of level of service resulting in congestion of links travelling north. Burgmanns Lane will exceed its capacity, causing further delay.

Link Volumes

The following link volumes have been obtained from the strategic model for the future year options. They are colour coded to reflect the level of service of each link and are shown in Table 5. The locations of links are illustrated in attachment 1.

Table 5: 2 Hours AM Peak Link Volume and LOS (Colour Coded)

No.	Road Name	Location	Direction	2010	2020	2030	2040
1	Burgmanns Lane	Between Werris Creek Rd and Yuilles Rd	EB	183	210	707	703
			WB	6	220	1683	1664
2	Burgmanns Lane	Between Yuilles Rd and New England Hwy	EB	183	547	1742	1750
			WB	6	102	251	234
3	New England Highway	Between Burgmanns Ln and The Ringers Rd (south)	NB	734	1561	2900	3067
			SB	399	568	690	744
4	New England Highway	Between Greg Norman Drive and The Ringers Rd (north)	NB	886	1214	1931	2052
			SB	392	966	972	1003
5	Calala Lane	East of Goonoo Goonoo Rd	EB	529	602	766	881
			WB	1080	1348	1401	1537
6	Scott Road	Between Goonoo Goonoo Rd and Locks Ln	EB	1021	1090	1791	1857
			WB	795	1168	1248	1236
7	Werris Creek Road	Between Burgmanns Ln and 0.3km North	NB	314	788	2070	2223
			SB	275	417	1476	1602
8	Werris Creek Road	Between Bylong Rd and 1.0km South	NB	314	788	3280	3451
			SB	274	417	963	1114
9	Duri Road	Between Dandaloo St and Hillvue Rd	NB	373	794	1903	1964
			SB	673	793	1447	1584
10	Edward Street	Between Warwick Rd and Wilburtree St	NB	167	308	1577	1692
			SB	346	750	792	834

Refer to Table 4 for LOS colour values.

The following comments are provided in relation to the link volume presented in Table 5:

i By 2020, all roads will remain under their theoretical capacity. Traffic bound for Tamworth CBD on New England Highway (between Greg Norman Drive and The Ringers Road) and Calala Lane suggest that future congestion and increase in delays will begin to be observed.

ii Continuous growth by 2030 demonstrates some roads reaching or exceeding their capacity causing an undesirable traffic environment. In particular Scott Road, Werris Creek Road, Duri Road, Burgmanns Lane, New England Highway (between Burgmanns Lane and The Ringers Road) and Goonoo Goonoo Road (between Greg Norman Drive and The Ringers Road) whom all have a maximum capacity of 1600 vehicles/ 2 hours, are likely to problematic as they are approaching or exceed their capacity. This increase is due to the residential developments producing additional vehicle trips

iii By 2040, 90% of the key arterial roads analysed exceed their capacity in at least one direction causing congestion. Scott Road, Werris Creek Road and Duri Road surpass otherwise reach their theoretical capacity in both directions and additional capacity may be necessary to accommodate the future year demands.

Summary

Based on the results for both scenarios presented in this letter, it is clear that the additional population and employment forecasted for South Tamworth will have an impact on the road network with the following comments provided:

- By 2020, the road network should operate satisfactorily, with the exception of Goonoo Goonoo Road and Calala Lane.
- Due to an increase in residential development by 2030 a number of key roads will require consideration for an upgrade.
- By 2040, continuous growth will put more pressure on Werris Creek Road and Scott Road. Almost all key roads will exceed their capacity.

It is noted that the results presented in this letter are purely a result of the increase in land use forecast and consideration of them should be given for any future decisions.

Naturally, should you have any questions or require any further information, please do not hesitate to contact me in our Melbourne office on (03) 9851 9600.

Yours sincerely

GTA CONSULTANTS

Reece Humphreys
Director

Attachment 1: Link Volume Location