



Tamworth Traffic Study Tamworth Strategic Transport Model Modelling Report

Client // Tamworth Regional Council and Roads and Maritime Services
Office // VIC
Reference // 16S12550000
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Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A-Dr	18/05/2016	Draft	Darren Bayfield	Reece Humphreys	Reece Humphreys	
A-Dr2	26/05/2016	Draft 2	Mark Stephens	Reece Humphreys	Reece Humphreys	
A-Dr3	01/06/2016	Draft 3	Mark Stephens	Reece Humphreys	Reece Humphreys	
A	06/09/2016	Final	Mark Stephens	Reece Humphreys	Reece Humphreys	

5. Stage 2 - Arcadia Development

5.1 Background

Arcadia Estate is located on the southern outskirts of Tamworth and (once fully developed) will yield 1669 lots. After rezoning of the Bylong Road rural residential area takes place, there will be an additional 250 lots.

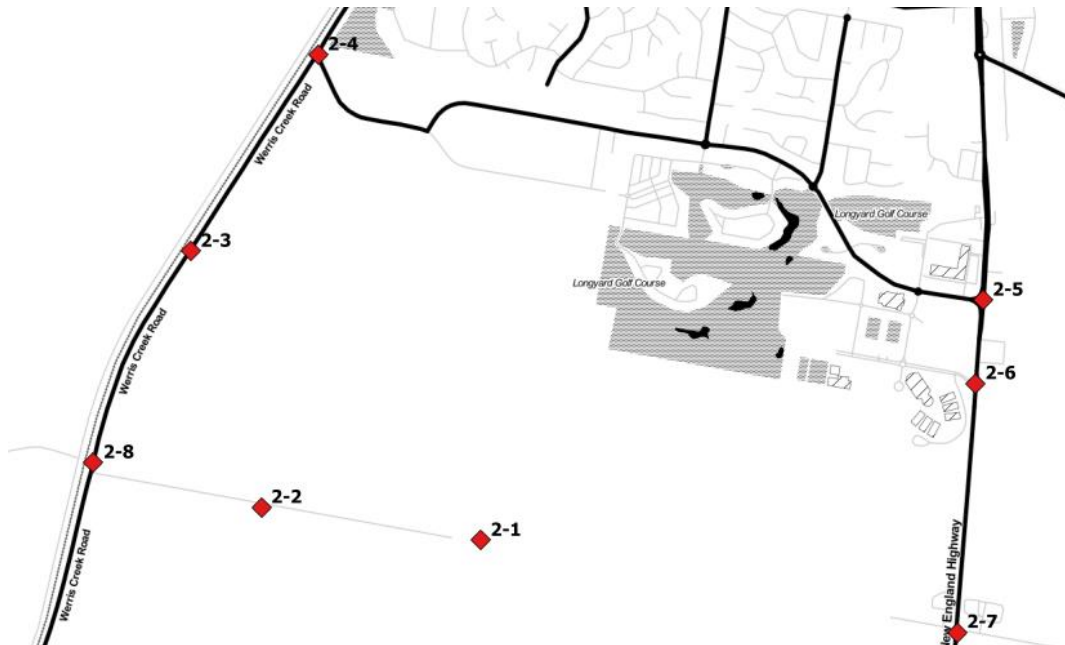
The land is currently rural land that generates low traffic numbers. The exception is the Australian Equine and Livestock Events Centre (AELEC) precinct which is home to AELEC, Tamworth Regional Entertainment and Convention Centre (TRECC), the Tamworth Hockey facility and the Tamworth Sports Dome (Indoor sports centre). The Longyard Golf Course is also located in this general area.

The purpose of these analyses is to assist Tamworth Regional Council to understand the broad impact of the proposal, including the following:

- Determine the split of traffic utilising each of the possible access and egress points from Arcadia Estate, as well as those travelling through the network.
- Assess and provide recommendations for each of the intersection treatments that interface this site with the external network.
- The intersections that will be analysed are as follows:
 - Burgmanns Lane / Site Access 1 (Intersection 2-1)
 - Burgmanns Lane / Site Access 2 (Intersection 2-2)
 - Werris Creek Road / Site Access 3 (Intersection 2-3)
 - Werris Creek Road / Bylong Road (Intersection 2-4)
 - New England Highway / Greg Norman Drive (Intersection 2-5)
 - New England Highway / Jack Smyth Drive (Intersection 2-6)
 - New England Highway / Burgmanns Lane (Intersection 2-7)
 - Werris Creek Road / Burgmanns Lane (Intersection 2-8)

The locations of these intersections are illustrated in Figure 5.1.

Figure 5.1: Arcadia Estate Intersection Locations



5.2 Strategic Model Outputs

The 2020, 2030 and 2040 proportional splits for traffic generated by the Arcadia development between the key intersections are illustrated in Figure 5.2 to Figure 5.4.

Figure 5.2: 2020 Arcadia Proportional Splits

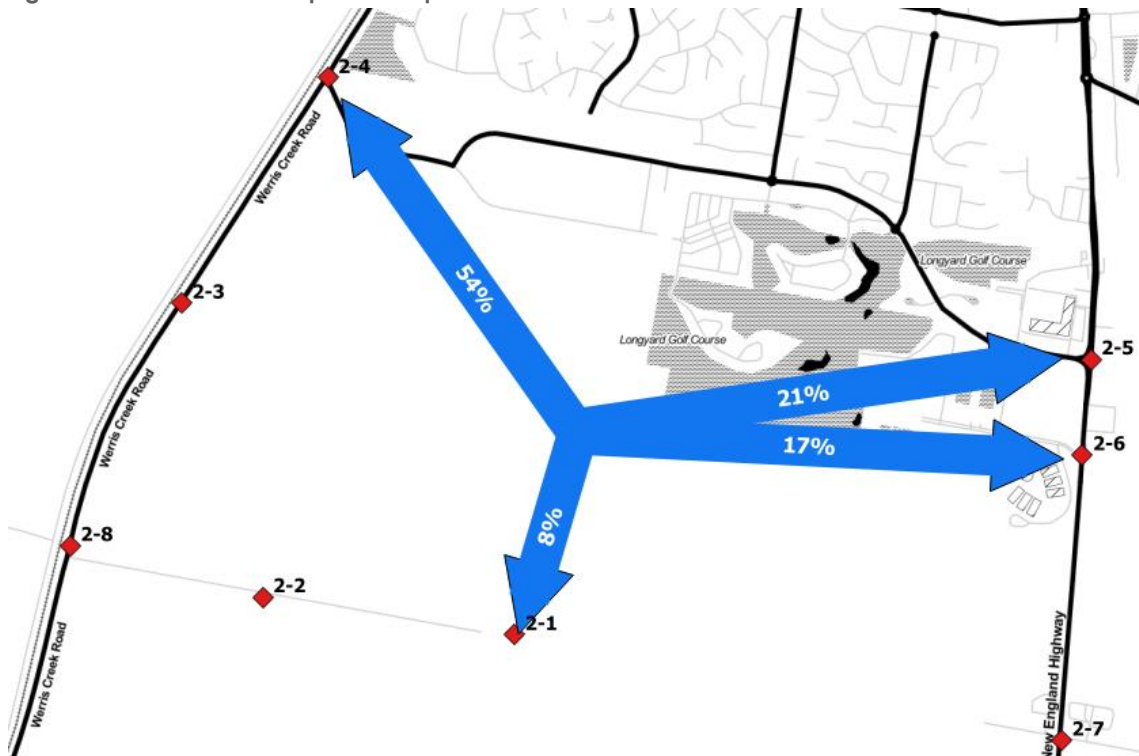


Figure 5.3: 2030 Arcadia Proportional Splits

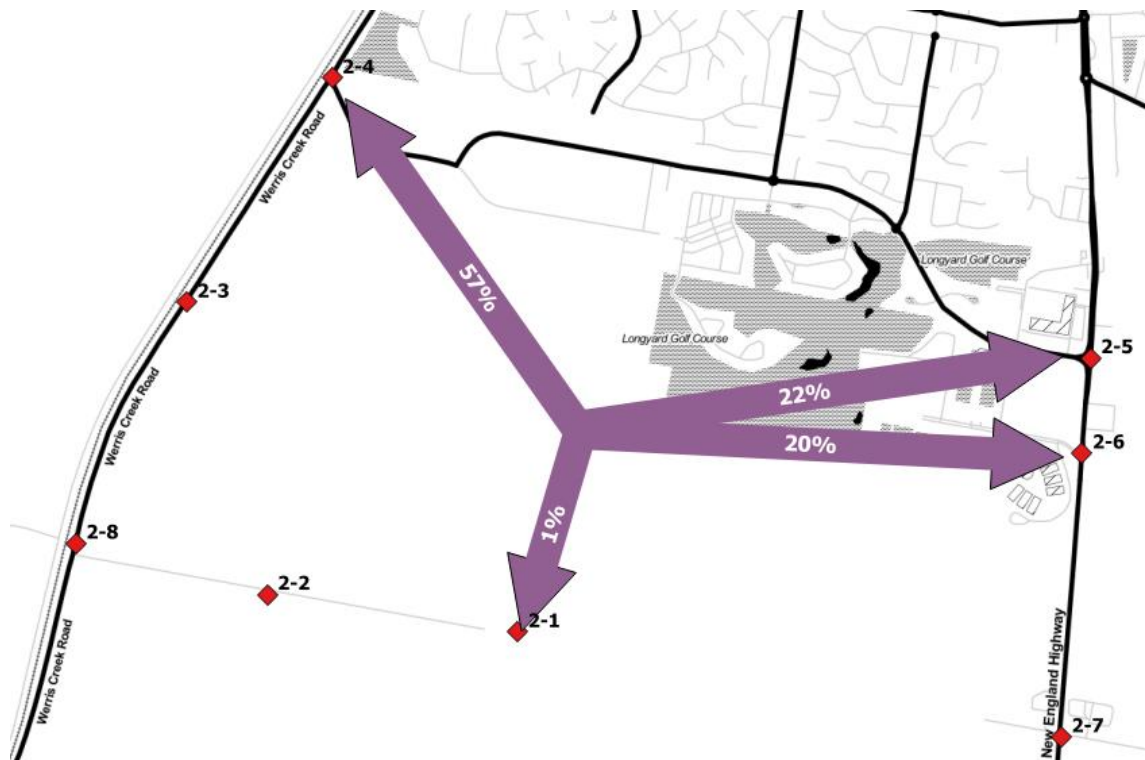
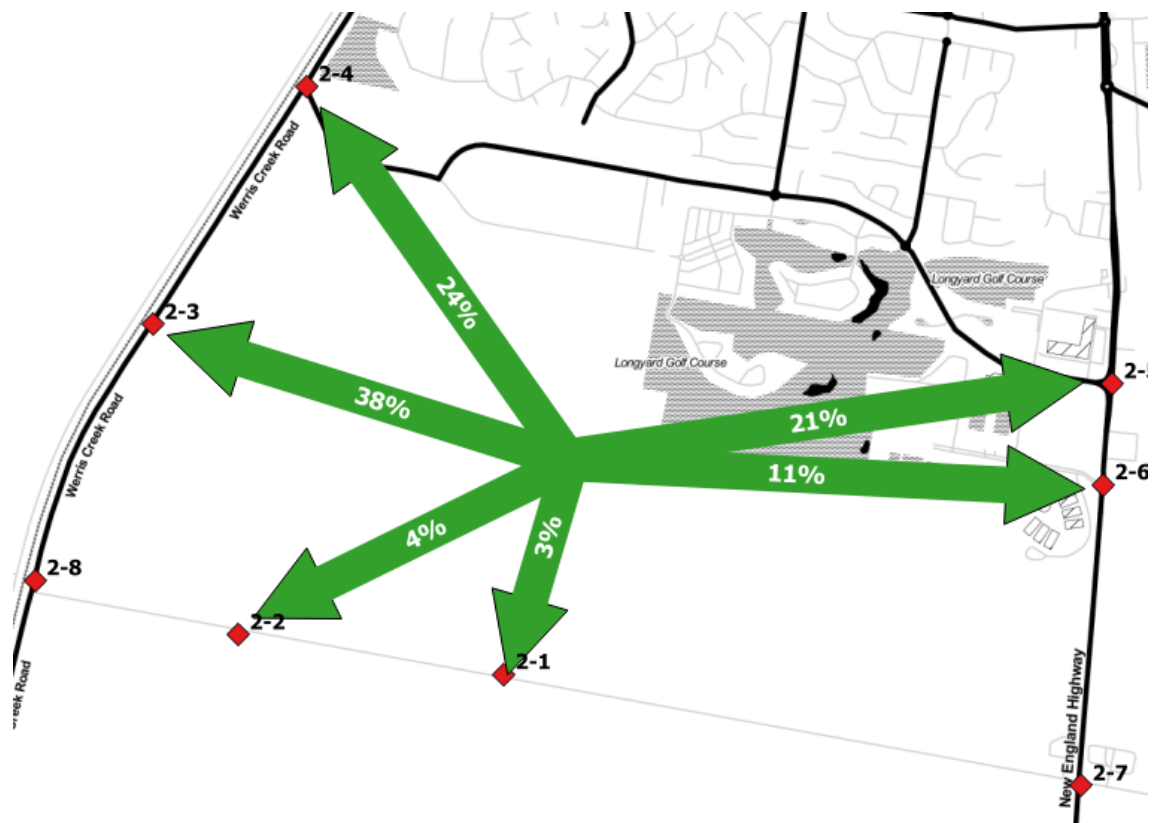


Figure 5.4: 2040 Arcadia Proportional Splits



The strategic model results for the fully developed Arcadia site, show that the majority of traffic is expected to travel via New England Highway (32%) and Werris Creek Road (62%).

5.3 Intersection Assessments

5.3.1 Methodology

Scenario models were developed within TSTM for the Arcadia development. These scenario models were based upon the 2015 base case model and the 2020, 2030 and 2040 reference case models.

The turning volumes at a number of key intersections were then extracted from the strategic model and used to carry out intersection analyses using SIDRA.

5.3.2 Assumptions

The following assumptions have been used in developing the turning volumes for the Stage 2 assessment:

- Future year (2020, 2030 and 2040) reference case scenarios modelled with the new Callala connection road in place (Stage 1 Option 3)
- In the 2020 and 2030 scenarios only the Eastern Side of Burkes Creek Gully will be developed therefore intersections 2-2 and 2-3 are not active in this scenario
- The 2040 scenario features the full development of the Arcadia Site, including the parcels of land on each side of the Burkes Creek Gully
- Posted speed limits for Future Years are assumed to be the same as per existing
- For giveway priority controlled intersections, the worst LOS for any movement is reported, as SIDRA does not give an intersection LOS for two-way sign control intersections
- Turn volumes have been taken directly from future year Strategic model outputs, with some minor adjustments for movements as described in Section 3.3.

5.4 Intersection Analysis Results

The turning volumes have been extracted from the TSTM 2016 and used to perform intersection analyses using Sidra. The outcomes of these analyses are presented in the following sections.

5.4.1 Burgmanns Lane / Site Access 1

The Burgmanns Lane / Site Access 1 intersection will be required to operate as a priority controlled intersection, as shown in Figure 5.5, with the SIDRA results summarised in Table 5.1.

Figure 5.5: Intersection 2-1, Burgmanns Lane / Site Access 1 Intersection Layout Requirements

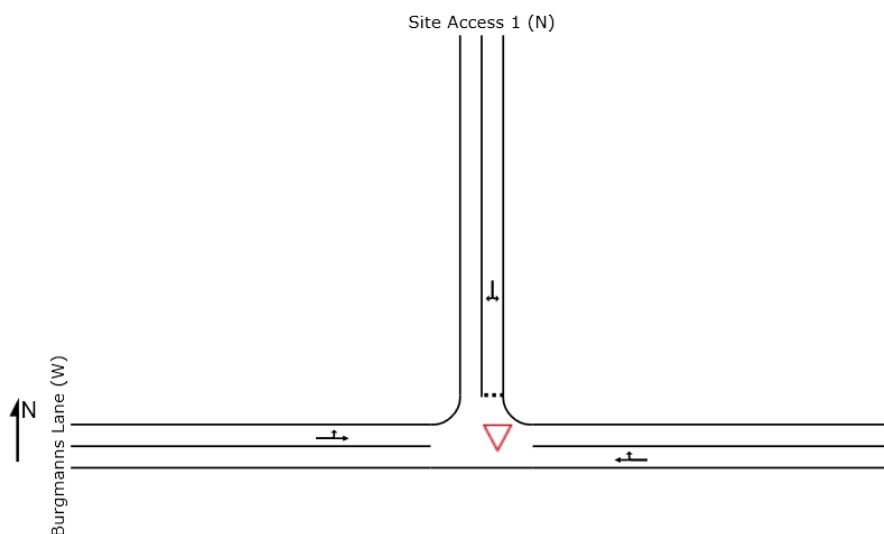


Table 5.1: Burgmanns Lane / Site Access 1 Intersection Analysis Results Summary

Time Period		2020		2030		2040	
		DOS	LOS	DOS	LOS	DOS	LOS
2-1	AM Peak Hour	0.03	LOS A	0.04	A	LOS A	A
2-1	PM Peak Hour	0.03	LOS A	0.04	A	LOS A	A

Table 5.1 indicates that the intersection will operate satisfactorily during both peak periods for all of the analysis years in each of the options with acceptable levels of DOS and LOS.

5.4.2 Burgmanns Lane / Site Access 2

The Burgmanns Lane / Site Access 2 intersection will only be activated with the full development of Arcadia (including the parcel of land West of Burkes Gully) which is assumed to occur in 2040. The Burgmanns Lane / Site Access 2 intersection will be required to operate as a priority controlled intersection and is shown in Figure 5.6, with the results of the SIDRA modelling summarised in Table 5.2.

Figure 5.6: Burgmanns Lane / Site Access 2

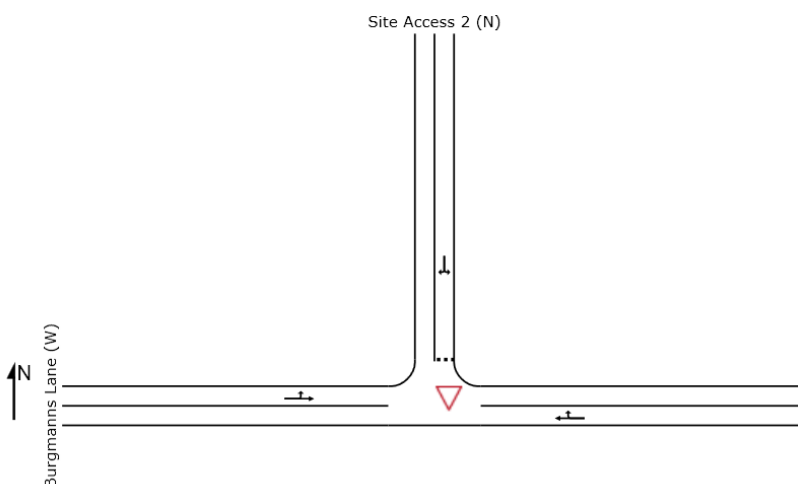


Table 5.2: Burgmanns Lane / Site Access 2 - Intersection Analysis Results Summary

Time Period		2020		2030		2040	
		DOS	LOS	DOS	LOS	DOS	LOS
2-2	AM Peak Hour	N/A	N/A	N/A	N/A	0.04	A
2-2	PM Peak Hour	N/A	N/A	N/A	N/A	0.04	A

*N/A – Intersection not assessed in these design years

Table 5.2 indicates that the intersection will operate satisfactorily during both peak periods for the 2015 and 2030 analysis years in each of the options and the existing conditions scenario with excellent levels of DOS and LOS.

5.4.3 Werris Creek Road / Site Access 3

The Werris Creek Road / Site Access 3 intersection will only be activated with the full development of Arcadia (including the parcel of land West of Burkes Gully) which is assumed to be 2040. It will be required to operate as a priority controlled intersection, based on the forecast traffic volumes and Austroads guidance, and will require a channelized left turn lane for the left turn from Werris Creek Road. The layout requirements of the intersection are shown in Figure 5.7, and the results of the SIDRA modelling are summarised in Table 5.3.

Figure 5.7: Werris Creek Road / Site Access 3

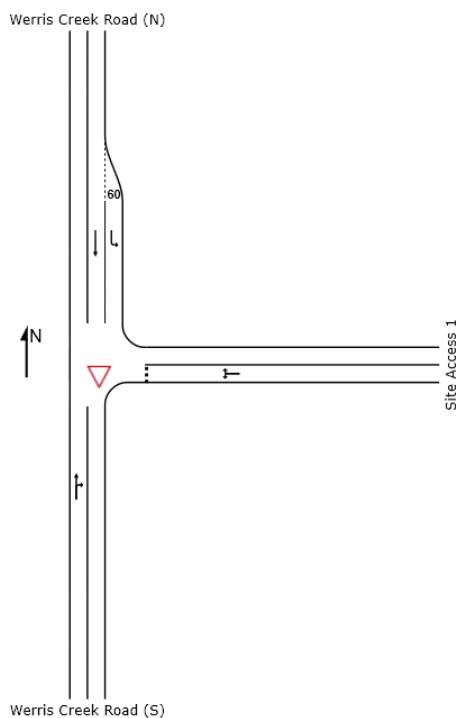


Table 5.3: Werris Creek Road / Site Access 3 – Intersection Analysis Results Summary

Time Period		2020		2030		2040	
		DOS	LOS	DOS	LOS	DOS	LOS
2-3	AM Peak Hour	N/A	N/A	N/A	N/A	0.11	A
2-3	PM Peak Hour	N/A	N/A	N/A	N/A	0.12	A

*N/A – Intersection not assessed in these design years

Table 5.3 indicates that the intersection will operate satisfactorily during both peak periods for all of the analysis years in each of the options with excellent levels of DOS and LOS.

5.4.4 Werris Creek Road / Bylong Road

The Werris Creek Road / Bylong Road intersection will be required to operate as a priority controlled intersection. Based on the forecast traffic volumes and Austroads guidance the intersection will require:

- The left turn lane from Werris Creek Road into Bylong Road requires an auxiliary lane.
- The right turn lane from Werris Creek Road into Bylong Road requires a channelized right turn lane.

The layout requirements of the intersection are shown in Figure 5.8, and the results of the SIDRA modelling are summarised in Table 5.4.

Figure 5.8: Werris Creek Road / Bylong Road

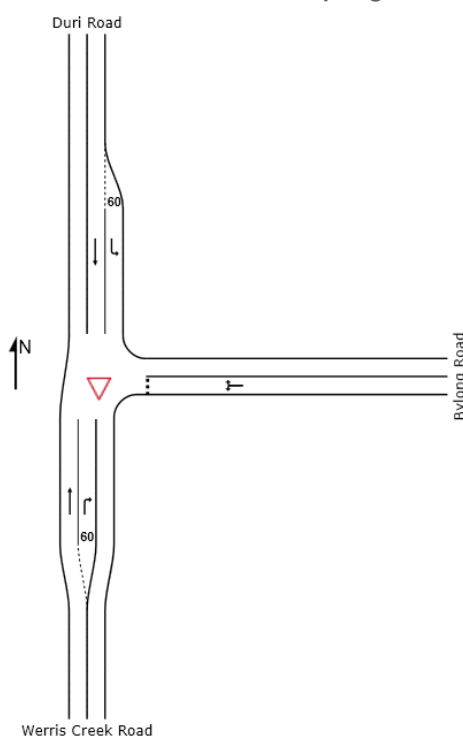


Table 5.4: Intersection 2-4 Werris Creek Road / Bylong Road Intersection Analysis Summary

Time Period		2020		2030		2040	
		DOS	LOS	DOS	LOS	DOS	LOS
2-4	AM Peak Hour	0.17	A	0.20	A	0.35	A
2-4	PM Peak Hour	0.09	A	0.10	A	0.17	A

Table 5.4 indicates that the intersection will operate satisfactorily during both peak periods for all of the analysis years in each of the options with excellent levels of DOS and LOS.

5.4.5 New England Highway / Greg Norman Drive

The existing intersection arrangement at New England Highway (Goonoo Goonoo Road) / Greg Norman Drive is sufficient to cater for the 2040 full Arcadia development traffic volumes, and has been utilised for this assessment. The layout of the intersection is shown in Figure 5.9, and the SIDRA results summarised in Table 5.5.

Figure 5.9: Goonoo Goonoo Road / Greg Norman Drive

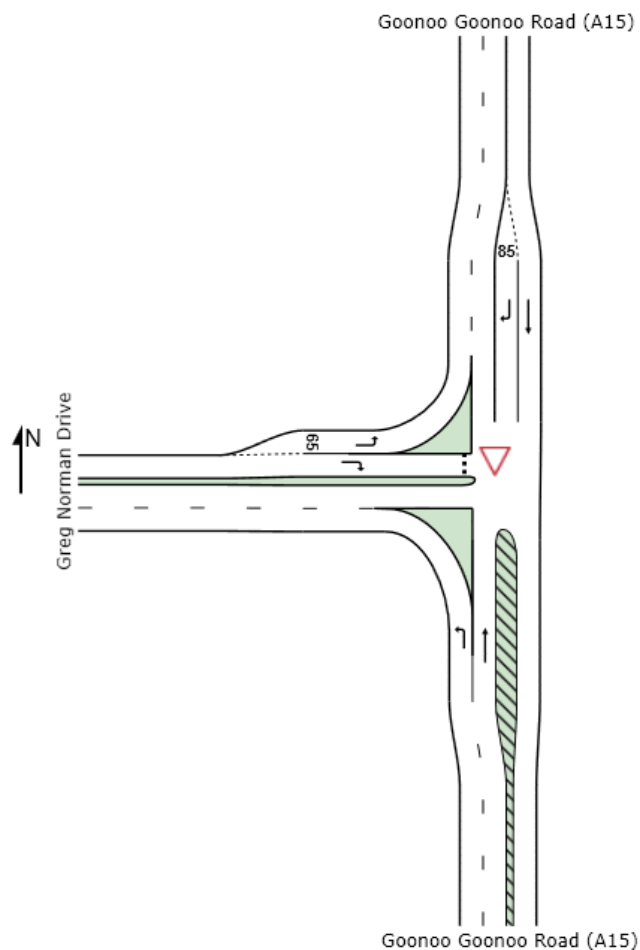


Table 5.5: Intersection 2-5 New England Highway / Greg Norman Drive Intersection Analysis Summary

Time Period		2020		2030		2040	
		DOS	LOS	DOS	LOS	DOS	LOS
2-5	AM Peak Hour	0.12	A	0.14	A	0.16	B
2-5	PM Peak Hour	0.14	A	0.15	B	0.17	B

Table 5.5 indicates that the intersection will operate satisfactorily during both peak periods for all of the analysis years in each of the options with excellent levels of DOS and LOS.

5.4.6 New England Highway / Jack Smyth Drive

The existing intersection arrangements at New England Highway (Goonoo Goonoo Road) / Jack Smyth Drive has been determined to be sufficient to cater for the 2040 full Arcadia development traffic volumes, the layout requirements of the intersection are shown in Figure 5.10 with the SIDRA results summarised in Table 5.6.

Figure 5.10: Goonoo Goonoo Road / Jack Smyth Drive

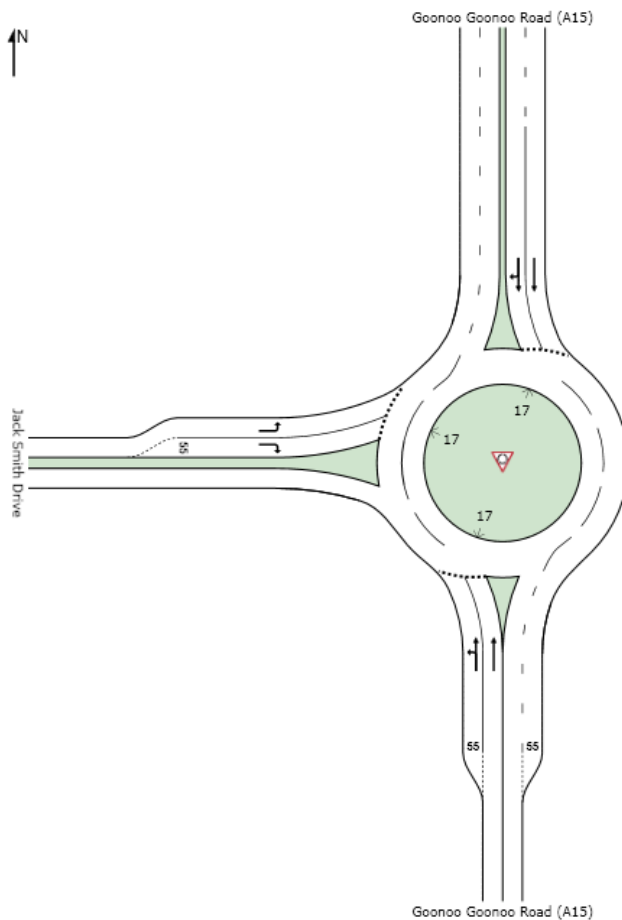


Table 5.6: Goonoo Goonoo Road / Jack Smyth Drive Intersection Analysis Summary

Time Period		2020		2030		2040	
		DOS	LOS	DOS	LOS	DOS	LOS
2-6	AM Peak Hour	0.12	A	0.15	A	0.47	A
2-6	PM Peak Hour	0.15	B	0.16	B	0.16	B

Table 5.6 indicates that the intersection will operate satisfactorily during both peak periods for all of the analysis years in each of the options with excellent levels of DOS and LOS.

5.4.7 New England Highway / Burgmanns Lane

The existing intersection arrangements at New England Highway (Goonoo Goonoo Road) / Burgmanns Lane has been determined to be sufficient to cater for the 2040 forecast traffic volumes. The layout requirements of the intersection are shown in Figure 5.11 with the SIDRA results summarised in Table 5.7.

Figure 5.11: Goonoo Goonoo Road / Burgmanns Lane

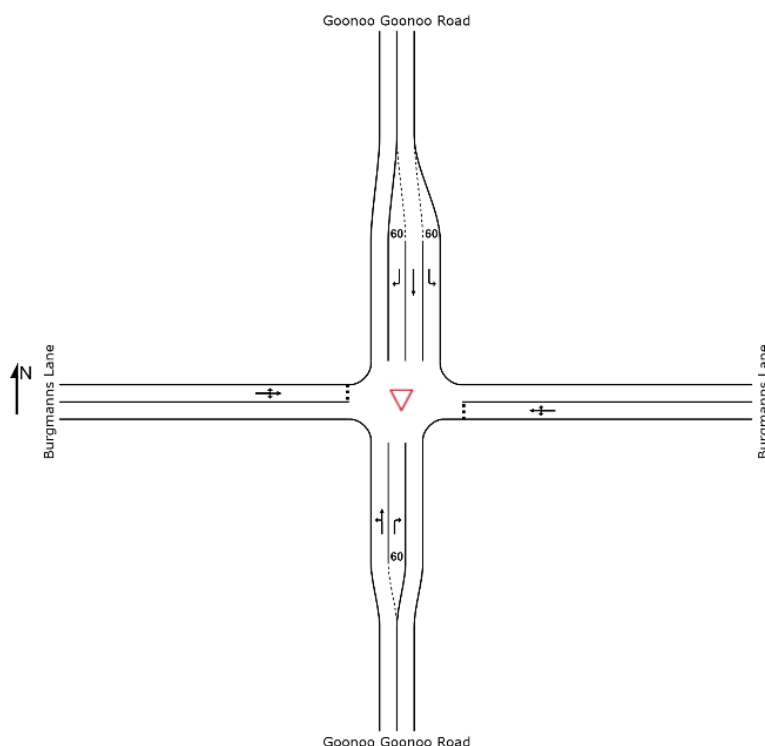


Table 5.7: Intersection 2-7 New England Highway / Burgmanns Lane Intersection Analysis Summary

Time Period		2020		2030		2040	
		DOS	LOS	DOS	LOS	DOS	LOS
2-7	AM Peak Hour	0.13	B	0.13	B	0.17	B
2-7	PM Peak Hour	0.16	B	0.18	B	0.214	B

Table 5.7 indicates that the intersection will operate satisfactorily during both peak periods for all of the analysis years in each of the options with excellent levels of DOS and LOS.

5.4.8 Werris Creek Road / Burgmanns Lane

The existing intersection arrangements at Werris Creek Road / Burgmanns Lane have been determined to be sufficient to cater for the 2040 forecast traffic volumes. The layout requirements of the intersection are shown in Figure 5.12, and the SIDRA results summarised in Table 5.8.

Figure 5.12: Werris Creek Road / Greg Norman Drive

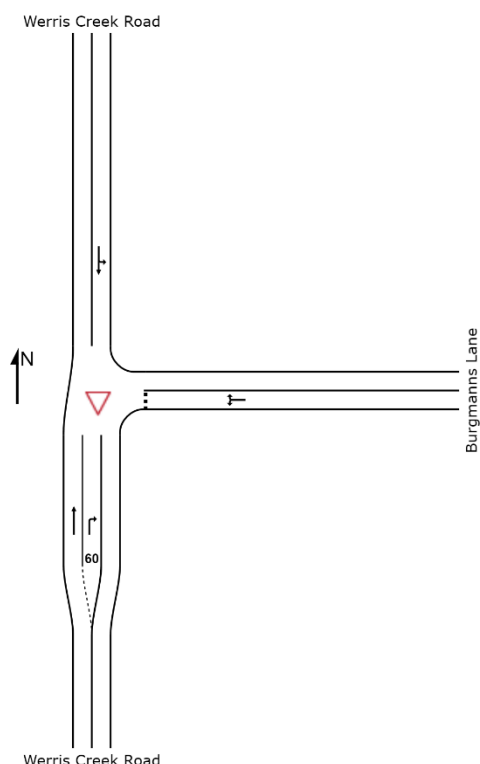


Table 5.8: Intersection 2-8 Werris Creek Road / Burgmanns Lane – Intersection Analysis Results Summary

Time Period		2020		2030		2040	
		DOS	LOS	DOS	LOS	DOS	LOS
2-8	AM Peak Hour	0.09	A	0.10	A	0.10	A
2-8	PM Peak Hour	0.10	A	0.10	A	0.10	A

Table 5.8 indicates that the intersection will operate satisfactorily during both peak periods for all of the analysis years in each of the options with excellent levels of DOS and LOS.

5.5 Summary

The analysis of the Arcadia estate presented in this section has highlighted that the majority of traffic is expected to access the site via New England Highway and Werris Creek Road. In order to facilitate access, a number of intersections were investigated and are considered to have sufficient capacity, subject to further detailed design in line with Austroads requirements, to accommodate the demands of the development.