

An aerial photograph of a rural landscape. A road runs diagonally from the bottom left towards the center. The landscape is divided into various colored fields, mostly in shades of brown, tan, and green. There are some small clusters of buildings or structures scattered throughout the fields.

ARCADIA EAST RESIDENTIAL SUBDIVISION

TRANSPORT IMPACT ASSESSMENT

**PREPARED FOR CSO ENGINEERS PTY LTD
25 MAY 2023 | 300304303**

Arcadia East Residential Subdivision

Revision	Date	Description	Author	Quality Check	Approver
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Arcadia East Residential Subdivision

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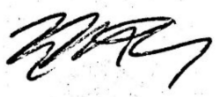


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1 Introduction

1.1 Background

A Development Application is to be lodged with Tamworth Regional Council for a residential subdivision as part of the Arcadia Estate in Tamworth. The Arcadia Residential Precinct is located south of the Tamworth urban area and comprises separate east and west lots, as shown in Figure 1. The eastern subdivision is the subject of this application and includes 959 lots.

Figure 1: Arcadia Precinct overview



Base image source: Stantec, Arcadia Traffic Modelling Update Strategic and Intersection Modelling Transport Impact Assessment, dated 11 February 2022

This report follows previous assessments completed by Stantec (formerly GTA Consultants) for Tamworth Regional Council outlined below:

- *Tamworth Strategic Transport Model (TSTM)* (initial report prepared in 2017 and revised in 2019/2020) – Strategic modelling report outlining the impacts of future growth in the Tamworth region.
- *Arcadia Traffic Modelling Update Strategic and Intersection Modelling Transport Impact Assessment* (11 February 2022) – Further updates to the TSTM to include modelling of key Arcadia precinct access points on the surrounding road network.

CSO Engineers Pty Ltd engaged Stantec in September 2022 to prepare a Transport Impact Assessment to accompany a Development Application for the Arcadia East subdivision, with the western subdivision to be covered by a separate planning application.

1.2 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposed development, including consideration of the following:

- existing traffic and parking conditions surrounding the site
- parking requirements for future residential dwellings within the subdivision
- waste/ loading vehicle requirements
- suitability of the internal road network
- performance of key internal site intersections.

1.3 References

In preparing this report, reference has been made to the following:

- Tamworth Regional Development Control Plan 2010 (DCP 2010)
- Tamworth Regional Local Environmental Plan 2010 (LEP 2010)
- *Arcadia Traffic Modelling Update Strategic and Intersection Modelling Transport Impact Assessment*, completed by Stantec (formerly GTA Consultants), dated 11 February 2022
- Locality Plan, Drawing No. G001, Revision A, Dated 12 May 2023 prepared by CSO Engineers
- Overall Site Plan, Drawing No. G002, Revision A, Dated 12 May 2023 prepared by CSO Engineers
- other documents and data as referenced in this report.



2 Existing Conditions

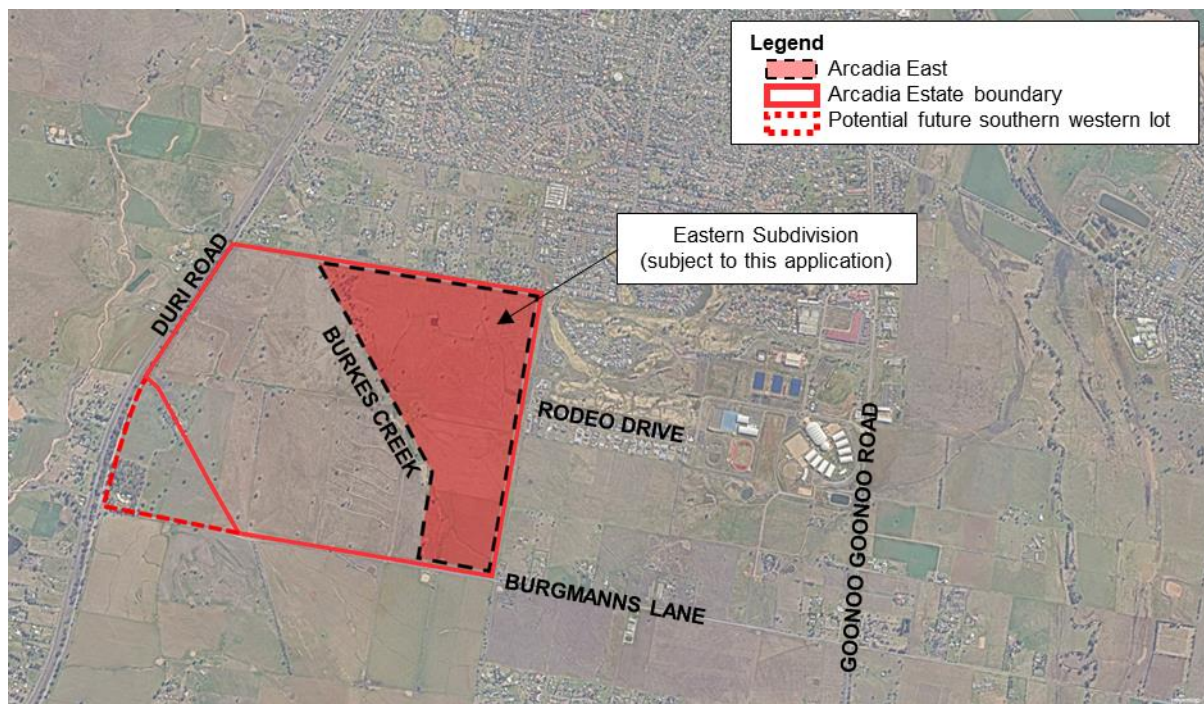
2.1 Location

The broader Arcadia Estate is located on the southern boundary of the suburb of Hillvue about six kilometres south of Tamworth town centre. The estate is comprised of a western and eastern lot divided by Burkes Gully which runs in a northwest-southeast direction. The proposed Arcadia East Residential Subdivision (subject of this application and herein referred to as the subject site) comprises Lot 1 DP 1213875 and Lot 2 DP 1213875 and covers 3.86 hectares.

The subject site is zoned R1 – General Residential and R2 – Low Density Residential. The surrounding properties include a mix of residential housing types (including small and large lot low density detached dwellings), recreational and undeveloped/ rural land uses.

The location of the subject site and its surrounding environs is shown in Figure 2 and the land use classification map shown in Figure 3.

Figure 2: Subject site and its environs



Base image source: Nearmap

Arcadia East Residential Subdivision 2 Existing Conditions

Figure 3: Land use classification map



Base image source: LEP 2010

2.2 Transport Network

2.2.1 ROAD HIERARCHY

Roads are classified according to the functions they perform. The main purpose of defining a road's functional class is to provide a basis for establishing the policies which guide the management of the road according to their intended service or qualities.

In terms of functional road classification, State roads are strategically important as they form the primary network used for the movement of people and goods between regions, and throughout the State. Transport for NSW (TfNSW) is responsible for funding, prioritising and carrying out works on State roads. State roads generally include roads classified as freeways, state highways, and main roads under the Roads Act 1993, and the regulation to manage the road system is stated in the Australian Road Rules.

TfNSW defines four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility, to high accessibility and low mobility. These road classes are:

- Arterial Roads – Controlled by TfNSW, typically no limit in flow and designed to carry vehicles long distance between regional centres.
- Sub-Arterial Roads – Managed by either Council or TfNSW under a joint agreement. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their aim is to carry through traffic between specific areas in a sub region or provide connectivity from arterial road routes (regional links).



Arcadia East Residential Subdivision




2 Existing Conditions

- Collector Roads – Provide connectivity between local sites and the sub-arterial road network, and typically carry between 2,000 and 10,000 vehicles per day.
- Local Roads – Provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.

2.2.2 SURROUNDING ROAD NETWORK


Key roads surrounding the site include Goonoo Goonoo Road to the east, Duri Road, Burgmanns Lane and Rodeo Drive. A summary of these roads is provided in Table 1.

Table 1: Surrounding road network

Road	Classification	Description	Photo
Goonoo Goonoo Road	State Road	<ul style="list-style-type: none"> • Aligned in a north-south direction east of the site. • Two-way road configured with one traffic lane in each direction, set within an approximate 10-metre-wide carriageway. • Informal parking on the road shoulder observed along the road corridor. 	
Duri Road	Local Road	<ul style="list-style-type: none"> • Aligned in a north-south direction west of the site. • Two-way road configured with one traffic lane in each direction, set within an approximate 10-metre-wide carriageway. • Parking generally not permitted on each side given topography, alignment etc. 	
Burgmanns Lane	Local Road	<ul style="list-style-type: none"> • Aligned in an east-west direction south of the site. • Two-way road configured with one traffic lane in each direction, set within an approximate 8-metre-wide carriageway. • Parking generally not permitted on each side given topography, alignment etc. 	

Arcadia East Residential Subdivision

2 Existing Conditions

Road	Classification	Description	Photo
Rodeo Drive	Local Road	<ul style="list-style-type: none"> Aligned in east-west direction, east of the site. Two-way road configured with one traffic lane in each direction, set within an approximate 8-metre-wide carriageway. Kerbside parking generally permitted on both sides. 	

2.2.3 GOONOO GOONOO ROAD UPGRADES

The Australian and NSW Governments are investing \$40 million into the Goonoo Goonoo Road (New England Highway) duplication between Jack Smyth Drive and Calala Lane at the southern end of Tamworth. The duplication will address existing congestion, provide for future traffic growth, and improve road safety. Key features of the proposal as they relate to the site include:

- Upgrades to Calala Lane intersection including:
 - conversion of roundabout to signals
 - one dedicated right turning lane and one shared right/ left turn lane from Calala Lane
 - dedicated right and left turning lanes from Goonoo Goonoo Road into Calala Lane.
- Upgrades to Craigends Lane intersection including:
 - conversion of T-intersection to roundabout
 - addition of a fourth leg to the roundabout to allow for future development of the area on the eastern side of Goonoo Goonoo Road.
- Upgrades to The Ringers Road intersection including:
 - restriction to left out only from The Ringers Road
 - provision of right turning bay for southbound traffic into The Ringers Road
- Upgrades to Greg Norman Drive intersection including:
 - creating a two-stage intersection ("seagull" arrangement) across Goonoo Goonoo Road into Greg Norman Drive
 - retaining egress arrangement from Greg Norman Drive.
- Installing a central median to separate oncoming traffic.
- Improving pedestrian and cycling facilities.
- New signage and line marking.



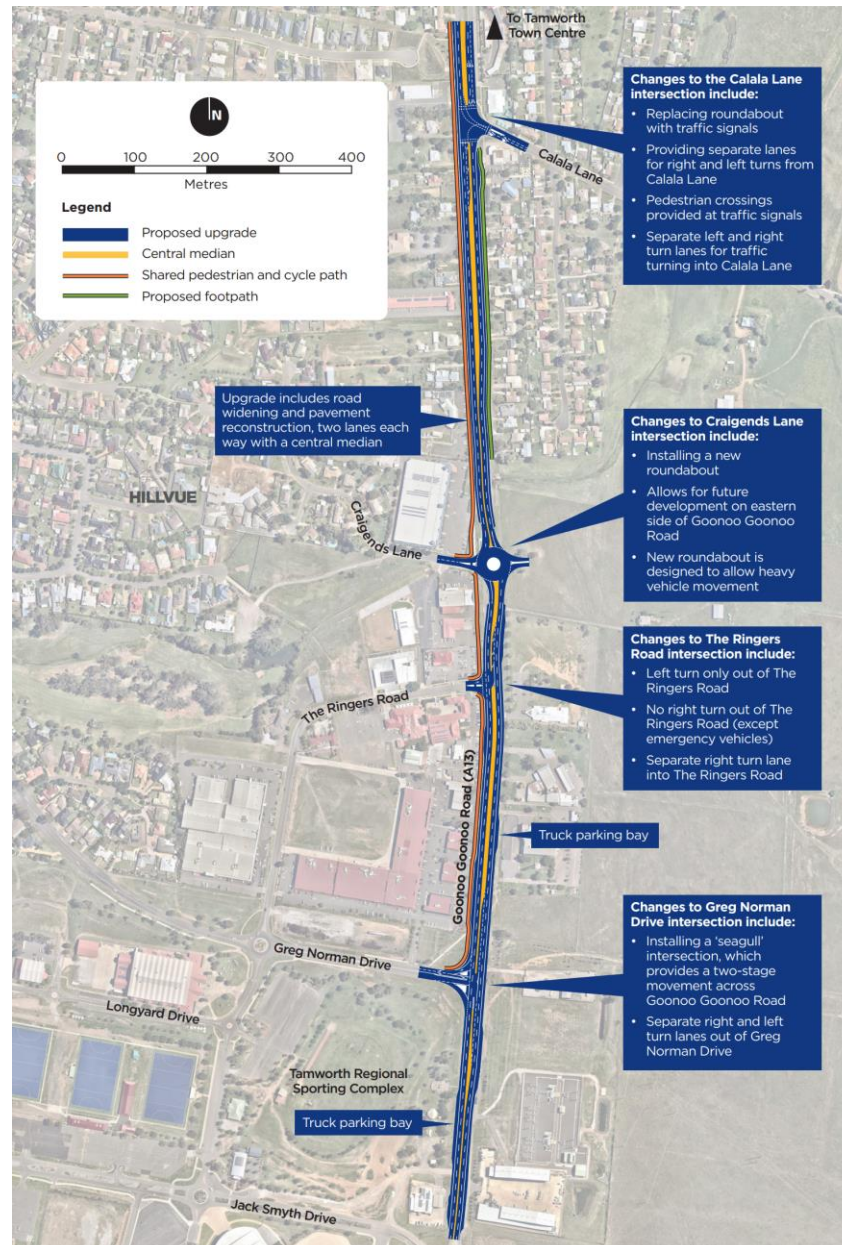
Arcadia East Residential Subdivision

2 Existing Conditions

- Road widening and pavement reconstruction to provide two traffic lanes in each direction with a central median between the area immediately north of Calala Lane, and Jack Smyth Drive.

Construction is expected to commence in 2023 with all works expected to be completed within 12 months. Future precinct access would mostly be via the upgraded Goonoo Goonoo Road to the east. The Goonoo Goonoo Road network upgrade works are shown in Figure 4.

Figure 4: Goonoo Goonoo Road upgrades



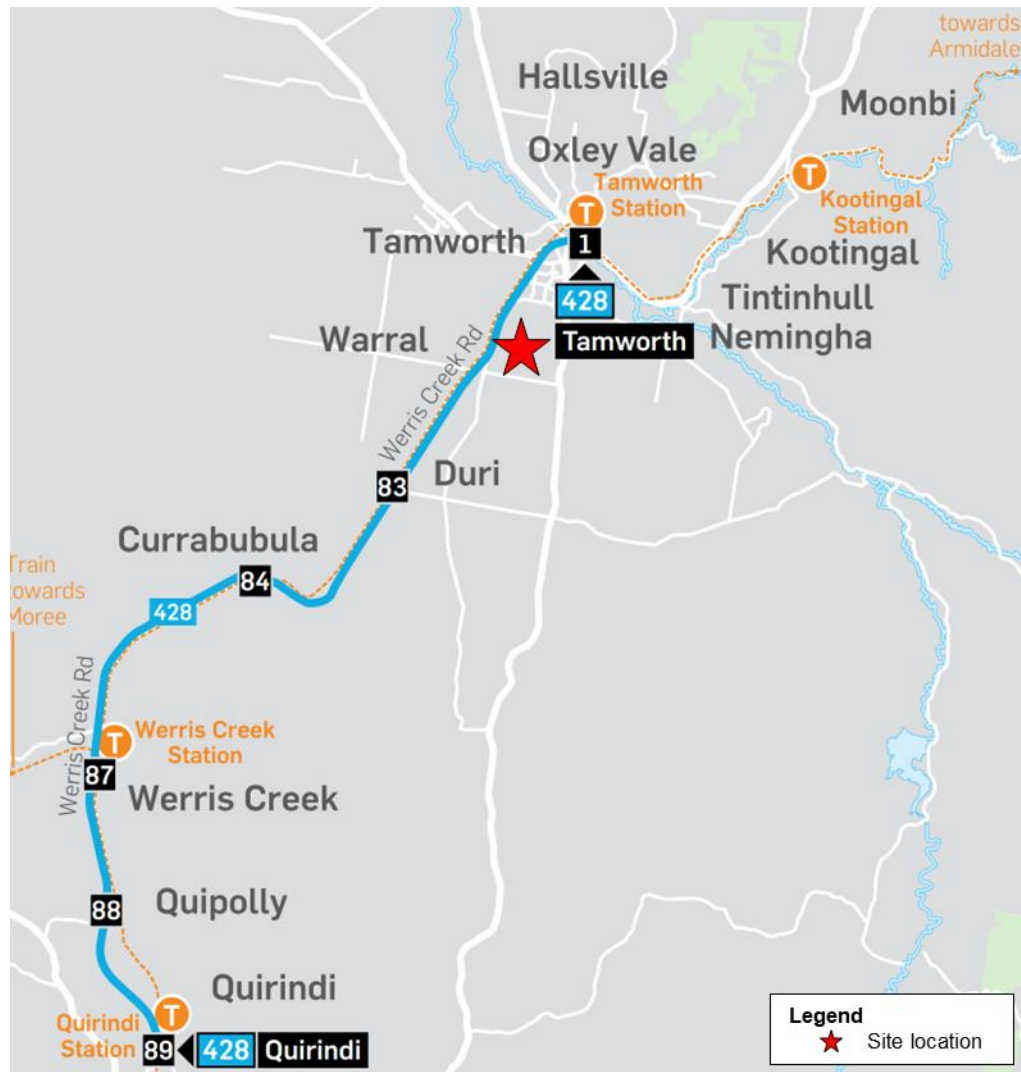
Source: TfNSW, [Proposed improvements to Goonoo Goonoo Road \(New England Highway\) in Tamworth](#), dated November 2021

2.3 Public Transport

The site has relatively limited connection to surrounding public transport services, with the closest bus stop located on Duri Road opposite to Morilla Street about 1.2 kilometres to the north-east. This bus stop is serviced by the 428 bus that runs between Tamworth and Quirindi with services running every one to two hours. The 428 service in the immediate vicinity is shown in Figure 5.



Figure 5: Route 428 immediately adjacent to the site



Base image source: Tamworth Buslines, accessed 12 December 2022

The site is also about six kilometres south of Tamworth Station which is serviced by regional rail and several local bus services. Tamworth Station is on the Regional Trains Network with trains running between Armidale and Central via Tamworth. Services are generally infrequent with about one service in each direction per day. Other local bus services are more frequent and generally run between several Tamworth suburbs and the town centre. Some routes, including the 433 and 435 run immediately north of the subject site with future accessibility dependent on future pedestrian facilities as part of the broader Arcadia Estate subdivision.

2.4 Walking and Cycling Infrastructure

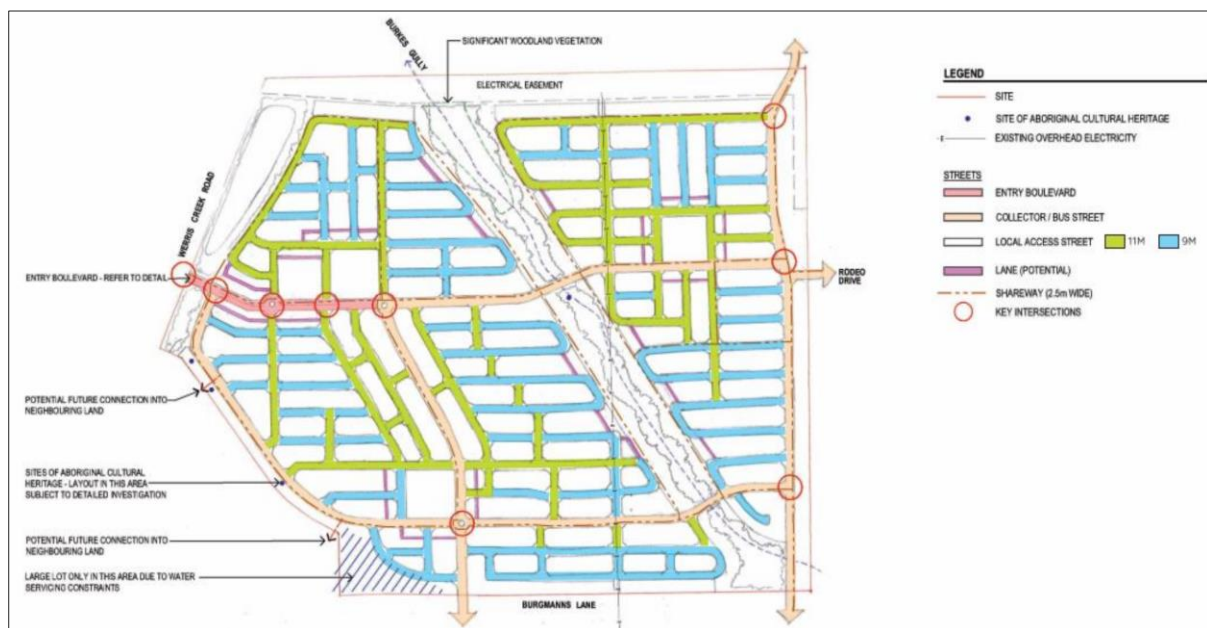
There is limited existing walking and cycling infrastructure in vicinity of the site noting however that improvements are incorporated into the broader Arcadia Estate subdivision. In this regard, all higher order streets will provide a 2.5-metre-wide shared use path on one side of the road and all other lower order streets will include a 1.2-metre-wide footpath (with the exception of small laneways).

2.5 Arcadia Site Specific DCP

As discussed, the site forms part of the broader Arcadia Estate subdivision which is covered by a site-specific Development Control Plan (DCP) (Chapter 4, DCP 2010). The Arcadia Estate boundary is consistent with the lot boundaries shown in Figure 1.

Figure 6 outlines the envisaged road network for the entire Arcadia Estate subdivision (both east and west precincts). This comprises a mixture of entry boulevards, collector roads, local access streets and laneways.

Figure 6: Arcadia Estate Road Network



Source: DCP 2010

DCP 2010 also outlines the proposed footpath network through the precinct. This indicates that 2.5-metre-wide shared paths are envisaged on one side of entry boulevards and collector/ bus streets, as shown in Figure 6. 1.2-metre-wide footpaths would be provided on one side of most other lower order internal roads, with the exception of the laneways.

3 Development Proposal

3.1 Land Uses

The Development Application comprises a 959-lot residential subdivision located within the Arcadia East precinct on the eastern side of Burkes Gully. Several internal roads will provide connection to the public road network including access to Bylong Road to the north, Rodeo Drive to the east and Burgmanns Lane to the south. Internal connections to the adjacent Arcadia West precinct would also be provided via two east-west collector/ bus streets.

All lots will be afforded direct connections with the fronting streets and facilitate off-street parking in garages and driveways. Loading and waste collection would occur on-street, consistent with low density residential developments.

Internal roads have been designed to Council standards and either include a 1.2-metre-wide footpath on the lower order streets (local access streets) or 2.5-metre-wide shared used path for higher order streets (entry boulevard, collection/ bus street, perimeter/ bus street) one side of the road.

The subdivision plan is shown in Figure 7.

Arcadia East Residential Subdivision 3 Development Proposal

Figure 7: Subdivision plan



Source: Overall Site Plan, Drawing No. G002, Revision A, Dated 12 May 2023 prepared by CSO Engineers



4 Parking, Loading and Layout Assessment

4.1 Car Parking

As a residential subdivision, the development itself does not generate any on-site parking demand, however on-site car parking will be further assessed as part of planning approvals for each residential lot.

The car parking requirements for different development types are set out in DCP 2010 which are summarised below:

- one bedroom dwelling – one parking space (enclosed)
- two-bedroom dwelling – one parking space (enclosed)
- three-bedroom dwelling – two parking spaces (at least one enclosed).

Parking in a stacking arrangement is acceptable and should be set back behind the building line. These requirements can be readily achieved within each residential lot.

4.2 Loading and Servicing

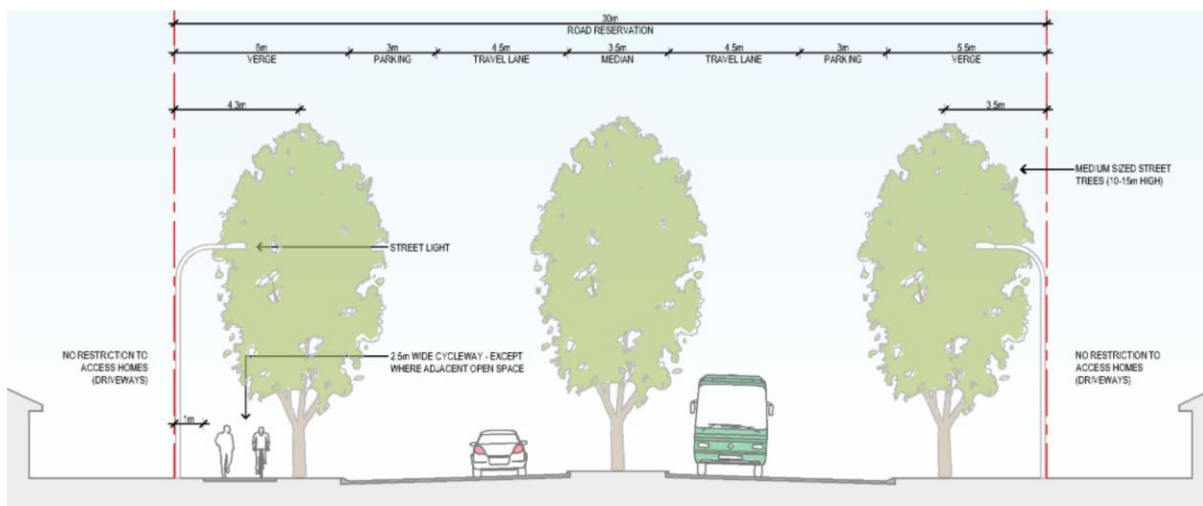
No specific loading dock provision rates are included in DCP 2010. Waste collection and servicing would occur on-street and typical for low density residential areas. Internal roads have been designed to Council standards with minimum 3.5-metre-wide travel lanes in one direction which can suitably accommodate service vehicles. Laneways will have three-metre-wide lanes.

4.3 Road Layout

DCP 2010 provides guidance on the internal road hierarchy and layout of the Arcadia precinct, as defined in Figure 6. This comprises a mix of entry boulevards, collector roads, local access streets and laneways.

A summary of Council's road design standards is included in Figure 8 to Figure 12.

Figure 8: Entry Boulevard characteristics



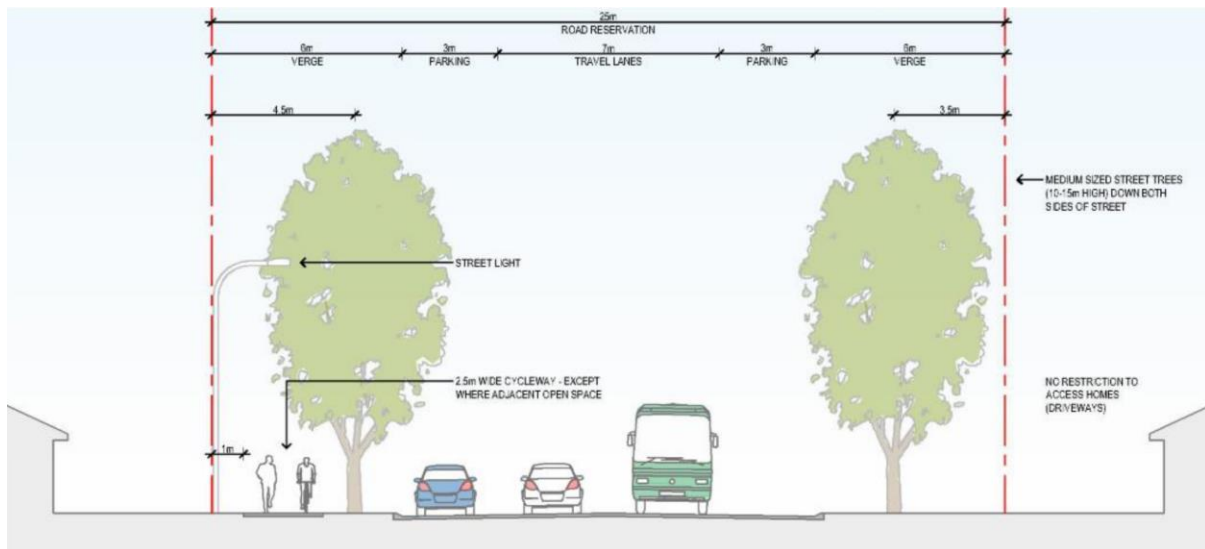
Source: DCP 2010



Arcadia East Residential Subdivision

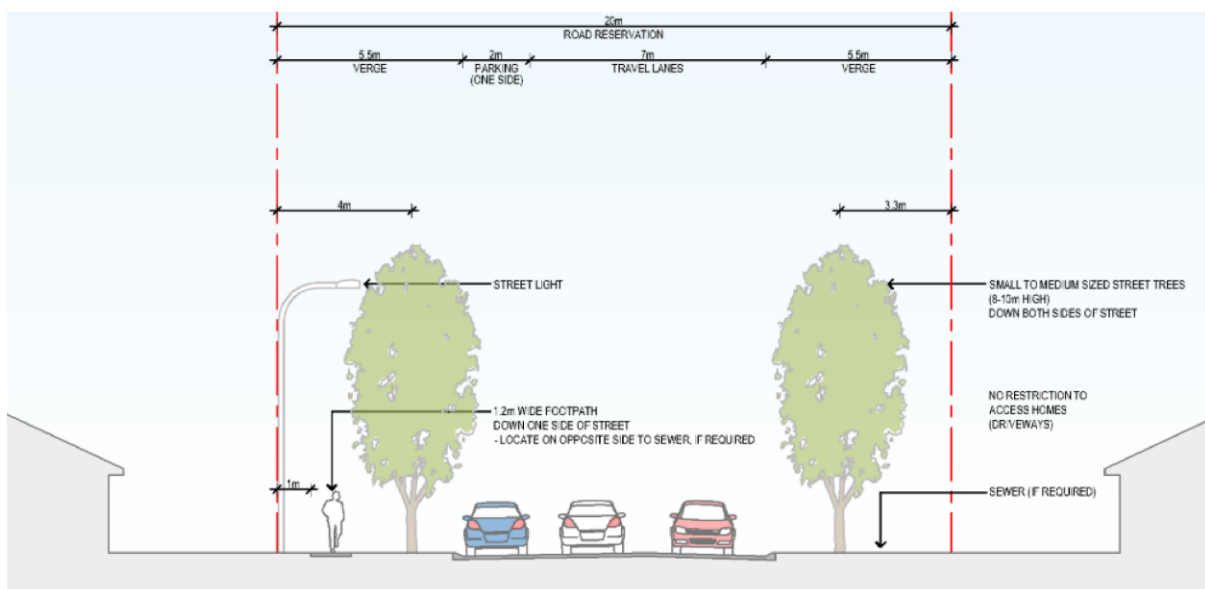
4 Parking, Loading and Layout Assessment

Figure 9: Collector/ Bus Street characteristics



Source: DCP 2010

Figure 10: Local Access Street (9m carriageway) characteristics

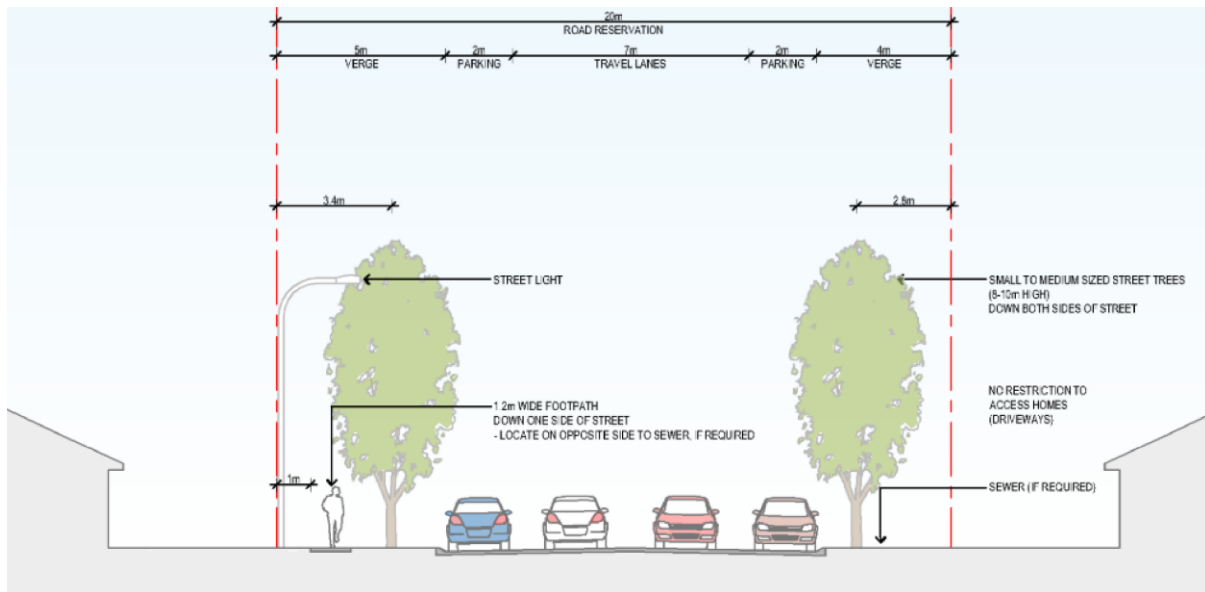


Source: DCP 2010

Arcadia East Residential Subdivision

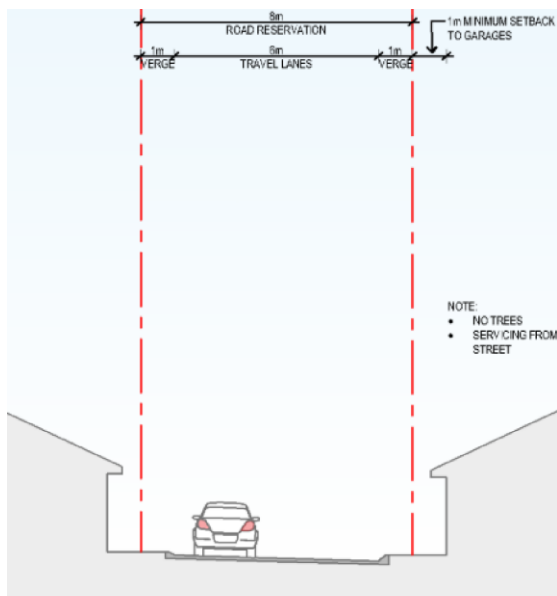
4 Parking, Loading and Layout Assessment

Figure 11: Local Access Street (11m carriageway) characteristics



Source: DCP 2010

Figure 12: Laneway characteristics



TYPICAL SECTION - LANE ACCESS

Source: DCP 2010

The proposed roads through the site have been designed in accordance with Tamworth Regional DCP.

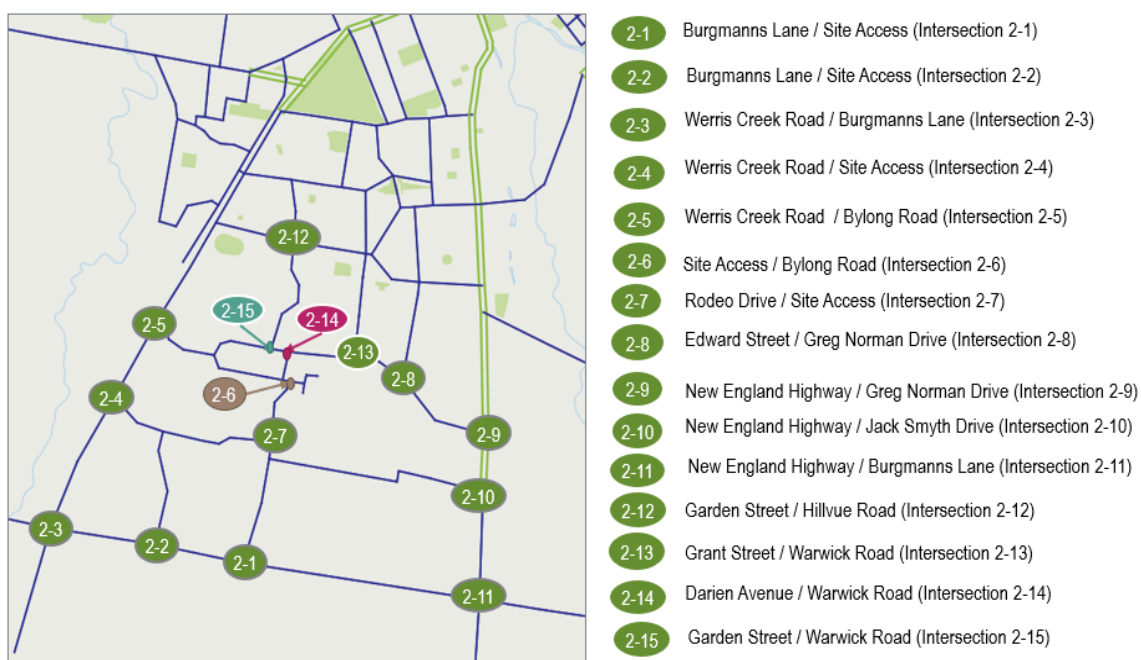


5 Traffic Impact Assessment

5.1 Overview

As outlined in Section 1.1, Stantec (formerly GTA Consultants) previously prepared the *Arcadia Traffic Modelling Update Strategic and Intersection Modelling Transport Impact Assessment* (11 February 2022). The report provides an assessment of the anticipated operation and performance of the new and existing intersections related to the Arcadia precinct for existing and future year scenarios. The report concludes that the results of the SIDRA assessment for the anticipated and proposed operational performance of all 15 intersections will operate at desirable levels. The locations of the modelled intersections are shown in Figure 13.

Figure 13: Intersection Locations



Source: Arcadia Traffic Modelling Update, Strategic and Intersection Modelling Transport Impact Assessment prepared by GTA Consultants, now Stantec dated 11 February 2022

This assessment focuses on the operation of the key internal intersection between the east-west and north-south collector/ bus street within the Arcadia East precinct, the location of which is shown in Figure 14. This intersection is to be priority-controlled, with the intersection layout as modelled shown in Figure 15.

Arcadia East Residential Subdivision
5 Traffic Impact Assessment

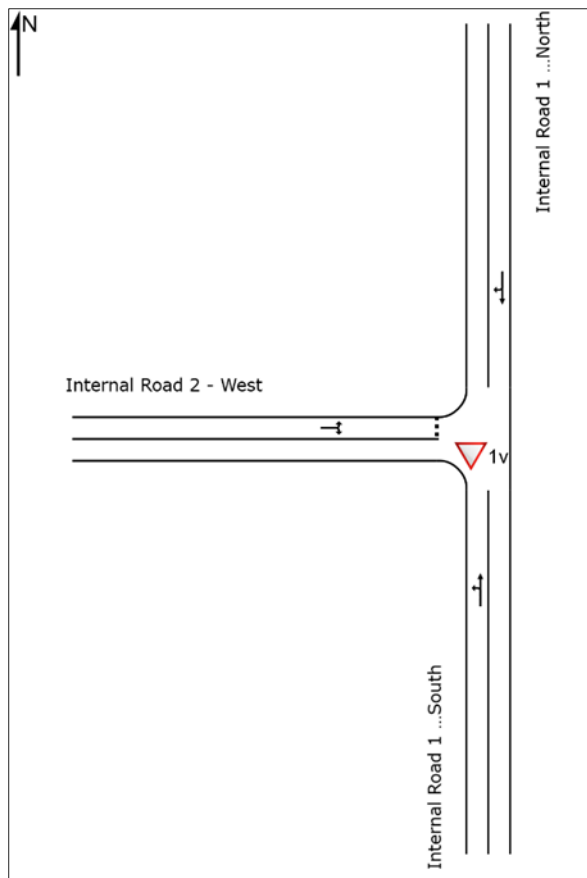
Figure 14: Key East Precinct internal intersection



Source: Overall Site Plan, Drawing No. G002, Revision A, dated 12 May 2023 prepared by CSO Engineers



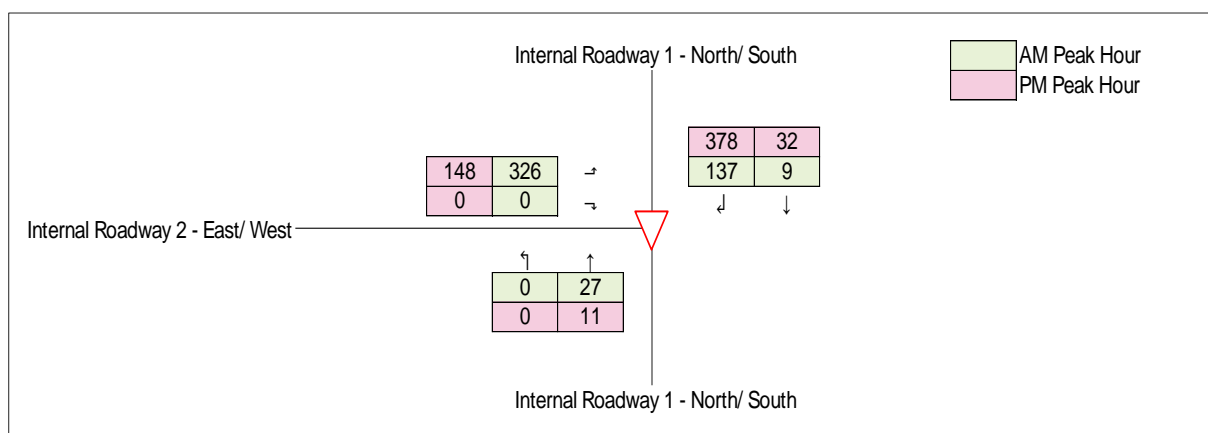
Figure 15: Indicative intersection layout



5.2 Traffic Generation

Internal traffic volumes through this intersection were estimated as part of the *Arcadia Traffic Modelling Update Strategic and Intersection Modelling Transport Impact Assessment* (11 February 2022) for the 2040 scenario. This includes both Arcadia East and Arcadia West at full completion, with the volumes reproduced in Figure 16.

Figure 16: Estimated 2040 weekday AM and PM peak hour traffic volumes



Arcadia East Residential Subdivision

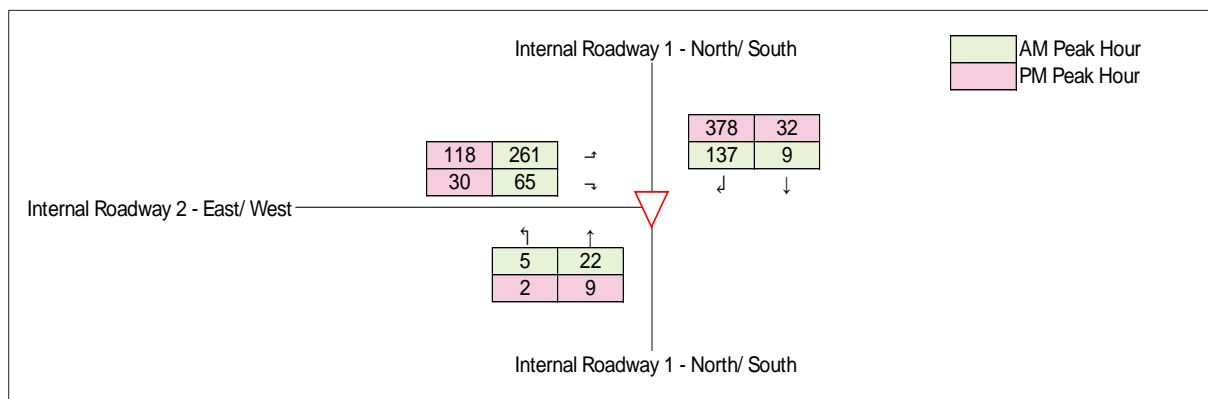
5 Traffic Impact Assessment

It is understood that the traffic distributions adopted by the model prepared as part of the *Arcadia Traffic Modelling Update Strategic and Intersection Modelling Transport Impact Assessment* directs traffic according to the shortest route. That is, for all destination nodes the model would select the shortest route and allocate vehicles accordingly. The model determined that vehicles would access the public road network via Bylong Road (to the north) or Burgmanns Lane (to the south) as opposed to travelling through the precinct. As such, no traffic volumes were allocated to left and right turning movements in and out of the east-west internal roadway (as shown in Figure 16).

To provide a robust assessment and to account for variations in travel routes, 20 per cent of northbound and eastbound traffic has been distributed to these movements. This is a conservative assessment given that the right turn from the minor road onto the major road is typically the 'worst' performing movement at a priority-controlled intersection. The adjusted traffic volumes are shown in Figure 17.

More recent modifications to the delivery and layout/ alignment of the connection onto Burgmanns Lane directly south of the Arcadia East site will also not discernibly change the traffic distribution. Based on the above shortest route strategy, it is expected that vehicles travelling towards Burgmanns Lane will continue to travel south via the alternate route.

Figure 17: Adjusted estimated 2040 weekday AM and PM peak hour traffic volumes



5.3 Traffic Impact

The operation of the key internal intersection under the 2040 scenario (full completion) has been assessed using SIDRA INTERSECTION (SIDRA), a computer-based modelling package which calculates intersection performance.

The commonly used measure of intersection performance, as defined by TfNSW, is vehicle delay. SIDRA determines the average delay that vehicles encounter and provides a measure of the level of service.

Table 2 shows the criteria that SIDRA adopts in assessing the level of service.

Arcadia East Residential Subdivision
5 Traffic Impact Assessment

Table 2: SIDRA level of service criteria

Level of service (LOS)	Average delay per vehicle (secs/veh)	Traffic signals, roundabout	Give way & stop sign
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	Near capacity	Near capacity, accident study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

Table 3 provides a summary of the anticipated intersection operation under the 2040 scenario.

Table 3: 2040 scenario (full completion) intersection operating conditions

Peak	Leg	Degree of saturation (DOS)	Average delay (sec)	95th percentile queue (m)	Level of service (LOS)
AM	South	0.02	6	0	A
	North	0.09	6	3	A
	West	0.23	6	8	A
PM	South	0.01	6	0	A
	North	0.24	6	10	A
	West	0.11	8	3	A

Table 3 indicates that the key internal intersection within the Arcadia East precinct would operate well at Level of Service A (LOS A) with ample spare capacity under the proposed priority-controlled arrangement. There would be minimal delays and queuing on all approaches.

Considering this key intersection is expected to operate well under a typical give-way arrangements, it can be expected that all other intersections within the Arcadia East precinct would also operate well under similar arrangements given comparatively less traffic through those intersections.



6 Conclusion

Based on the analysis contained in this report the following conclusions are made:

- A Development Application is to be lodged with Tamworth Regional Council for a residential subdivision within the eastern precinct of the Arcadia Estate in Tamworth. The application includes the subdivision of 959 lots.
- As a residential subdivision, the development itself does not generate any on-site parking demand, however on-site car parking be further assessed as part of planning approvals for each residential lot. In this regard, DCP 2010 recommends of the following:
 - one bedroom dwelling – one parking space (enclosed)
 - two-bedroom dwelling – one parking space (enclosed)
 - three-bedroom dwelling – two parking spaces (at least one enclosed).

The above requirements can be readily achieved within each residential lot.

- Waste collection and servicing would be on-street and consistent with low density residential areas. Internal roads have been designed to Council standards with minimum 3.5-metre-wide travel lanes in one direction which can suitably accommodate service vehicles. The laneways would include three-metre-wide lanes.
- The proposed roads internal to the East Precinct have been designed in accordance with Tamworth Regional DCP 2010.
- Traffic impacts of the entire Arcadia Estate (both eastern and western precincts) on the external road network have been assessed as part of the previously prepared *Arcadia Traffic Modelling Update Strategic and Intersection Modelling Transport Impact Assessment* (11 February 2022).
- SIDRA modelling has been completed at the key internal intersection based on traffic volumes determined in the *Arcadia Traffic Modelling Update Strategic and Intersection Modelling Transport Impact Assessment* (11 February 2022).
- Traffic modelling confirms that the key intersection within the Arcadia East precinct would operate well at Level of Service A under the proposed give-way controlled arrangement, with minimal delays and queuing for all approaches.
- Considering this key intersection is expected to operate well under typical give-way control, it is similarly expected that all other intersections within the Arcadia East precinct would also operate well under similar arrangements given comparatively less traffic through those intersections.

Appendix A SIDRA Results



MOVEMENT SUMMARY

Site: 1v [Internal Road 1/ Internal Road 2 - AM - 2040 (Site Folder: General)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Internal Road 1 - South														
1	L2	5	0.0	5	0.0	0.015	5.5	LOS A	0.0	0.0	0.00	0.11	0.00	57.4
2	T1	22	0.0	23	0.0	0.015	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	59.0
Approach		27	0.0	28	0.0	0.015	1.0	NA	0.0	0.0	0.00	0.11	0.00	58.7
North: Internal Road 1 - North														
8	T1	9	0.0	9	0.0	0.087	0.1	LOS A	0.4	2.9	0.10	0.53	0.10	55.0
9	R2	137	0.0	144	0.0	0.087	5.5	LOS A	0.4	2.9	0.10	0.53	0.10	53.1
Approach		146	0.0	154	0.0	0.087	5.2	NA	0.4	2.9	0.10	0.53	0.10	53.2
West: Internal Road 2 - West														
10	L2	261	0.0	275	0.0	0.233	5.6	LOS A	1.1	7.5	0.08	0.56	0.08	53.4
12	R2	65	0.0	68	0.0	0.233	6.3	LOS A	1.1	7.5	0.08	0.56	0.08	52.9
Approach		326	0.0	343	0.0	0.233	5.8	LOS A	1.1	7.5	0.08	0.56	0.08	53.3
All Vehicles		499	0.0	525	0.0	0.233	5.3	NA	1.1	7.5	0.08	0.53	0.08	53.5

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

MOVEMENT SUMMARY

Site: 1v [Internal Road 1/ Internal Road 2 - PM - 2040 (Site Folder: General)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Internal Road 1 - South														
1	L2	2	0.0	2	0.0	0.006	5.5	LOS A	0.0	0.0	0.00	0.11	0.00	57.4
2	T1	9	0.0	9	0.0	0.006	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	59.0
Approach		11	0.0	12	0.0	0.006	1.0	NA	0.0	0.0	0.00	0.11	0.00	58.7
North: Internal Road 1 - North														
8	T1	32	0.0	34	0.0	0.241	0.0	LOS A	1.4	9.5	0.07	0.53	0.07	55.2
9	R2	378	0.0	398	0.0	0.241	5.5	LOS A	1.4	9.5	0.07	0.53	0.07	53.3
Approach		410	0.0	432	0.0	0.241	5.1	NA	1.4	9.5	0.07	0.53	0.07	53.4
West: Internal Road 2 - West														
10	L2	118	0.0	124	0.0	0.114	5.6	LOS A	0.5	3.2	0.02	0.57	0.02	53.3
12	R2	30	0.0	32	0.0	0.114	7.5	LOS A	0.5	3.2	0.02	0.57	0.02	52.8
Approach		148	0.0	156	0.0	0.114	6.0	LOS A	0.5	3.2	0.02	0.57	0.02	53.2
All Vehicles		569	0.0	599	0.0	0.241	5.2	NA	1.4	9.5	0.06	0.53	0.06	53.5

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

MOVEMENT SUMMARY

 **Site: 1 [Internal Road 1/ Internal Road 2 - AM - 2040 (Site Folder: General)]**

Site Category: -
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Internal Road 1 - North/ South														
1	L2	1	0	1	0.0	0.015	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	58.2
2	T1	27	0	28	0.0	0.015	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach		28	0	29	0.0	0.015	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
North: Internal Road 1 - North/ South														
8	T1	9	0	9	0.0	0.087	0.1	LOS A	0.4	2.9	0.10	0.53	0.10	55.0
9	R2	137	0	144	0.0	0.087	5.5	LOS A	0.4	2.9	0.10	0.53	0.10	53.1
Approach		146	0	154	0.0	0.087	5.2	NA	0.4	2.9	0.10	0.53	0.10	53.2
West: Internal Road 2 - East/ West														
10	L2	326	0	343	0.0	0.216	5.6	LOS A	1.0	7.2	0.10	0.55	0.10	53.3
12	R2	1	0	1	0.0	0.216	6.3	LOS A	1.0	7.2	0.10	0.55	0.10	52.8
Approach		327	0	344	0.0	0.216	5.6	LOS A	1.0	7.2	0.10	0.55	0.10	53.3
All Vehicles		501	0	527	0.0	0.216	5.2	NA	1.0	7.2	0.10	0.51	0.10	53.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: 1 [Internal Road 1/ Internal Road 2 - PM - 2040 (Site Folder: General)]**

Site Category: -
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: Internal Road 1 - North/ South														
1	L2	1	0	1	0.0	0.007	5.5	LOS A	0.0	0.0	0.00	0.05	0.00	57.9
2	T1	11	0	12	0.0	0.007	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.5
Approach		12	0	13	0.0	0.007	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.4
North: Internal Road 1 - North/ South														
8	T1	32	0	34	0.0	0.241	0.0	LOS A	1.4	9.5	0.07	0.53	0.07	55.2
9	R2	378	0	398	0.0	0.241	5.5	LOS A	1.4	9.5	0.07	0.53	0.07	53.3
Approach		410	0	432	0.0	0.241	5.1	NA	1.4	9.5	0.07	0.53	0.07	53.4
West: Internal Road 2 - East/ West														
10	L2	148	0	156	0.0	0.111	8.1	LOS A	0.5	3.3	0.05	0.96	0.05	51.8
12	R2	1	0	1	0.0	0.111	10.2	LOS A	0.5	3.3	0.05	0.96	0.05	51.3
Approach		149	0	157	0.0	0.111	8.1	LOS A	0.5	3.3	0.05	0.96	0.05	51.7
All Vehicles		571	0	601	0.0	0.241	5.8	NA	1.4	9.5	0.07	0.63	0.07	53.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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