



Lot 5131 Jandakot Road, Treeby

Local Structure Plan

Transport Impact Assessment

PREPARED FOR:
Perron Developments

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1.0 Introduction and Background

This Transport Impact Assessment (TIA) report has been prepared by Transcore on behalf of Perron Developments with regard to the proposed Local Structure Plan (LSP) at Lot 5131 Jandakot Road, Treeby in City of Cockburn.

Transcore prepared a TIA report in 2016 on behalf of Perron Developments with respect to the Treeby (Banjup) District Structure Plan (DSP). The Treeby DSP was endorsed by the City of Cockburn in September 2017.

Transcore prepared a TIA in 2018 on behalf of Perron Developments with regard to the proposed Metropolitan Region Scheme (MRS) Amendment for Lot 5131 Jandakot Road. The principles of the MRS amendments for Lot 5131 Jandakot Road were supported by endorsed DSP. **Appendix A** shows the approved Treeby DSP. The MRS amendment was approved recently.

For the purpose of this TIA report and in order to be consistent with the outcome of the strategic planning for the DSP area, the transport model developed for the Banjup (Treeby) DSP area was utilised and the LSP for Lot 5131 Jandakot Road has been coded into this model.

The subject site is currently vacant and is located at the south east corner of the existing roundabout intersection of Fraser Road, Jandakot Road and Solitaire Road. The location of LSP in the context of the MRS is shown in **Figure 1**. As evident the LSP area is now zoned Urban under the MRS.

This TIA will review the future traffic flows that would be generated by the proposed LSP, establish traffic volumes on the internal road network and through the proposed external intersections and review the LSP for:

- Compatibility with the approved MRS amendment;
- Suitability of the proposed road connections; and,
- External and internal road hierarchy and adequacy of the internal road reserves.

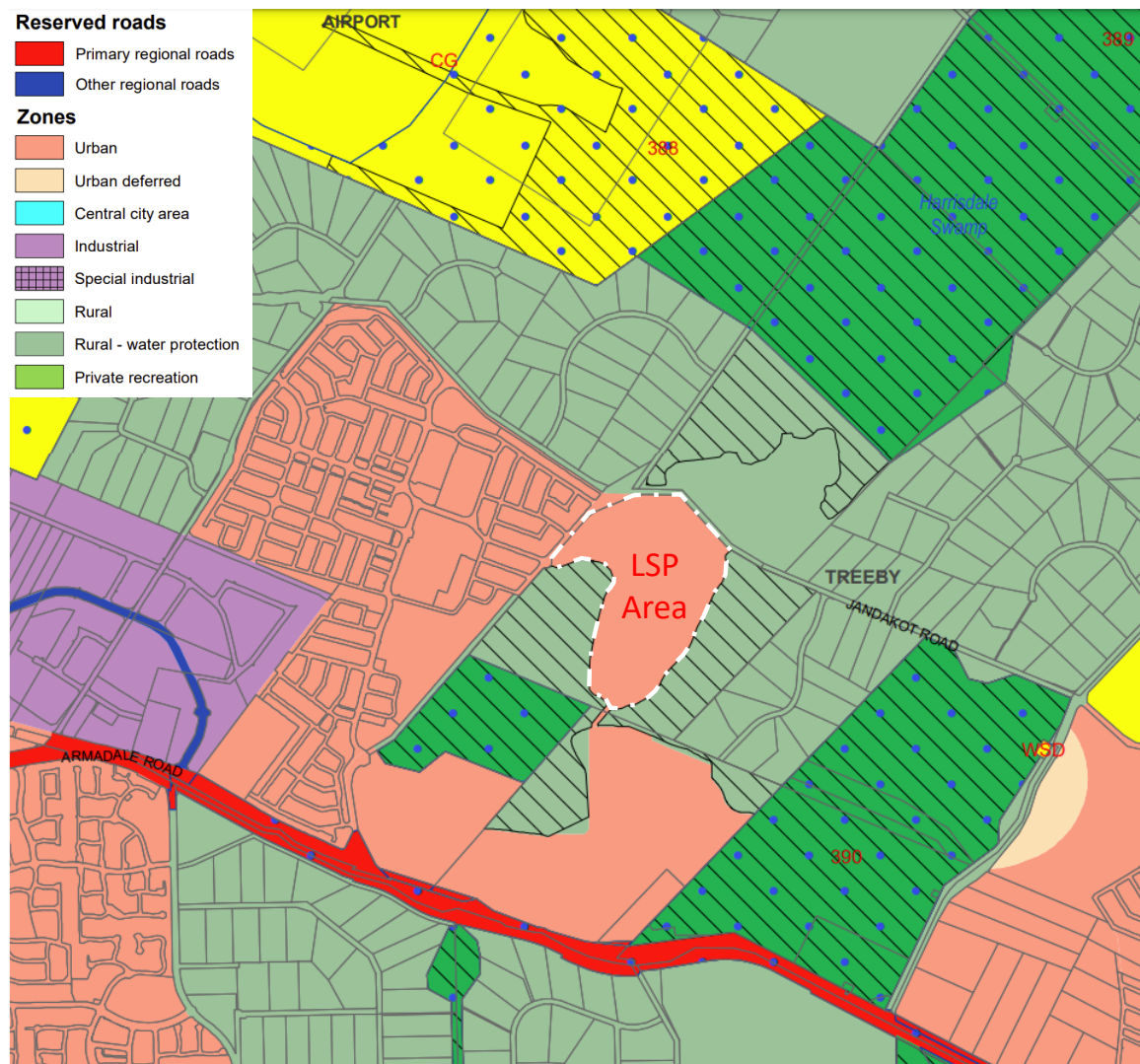
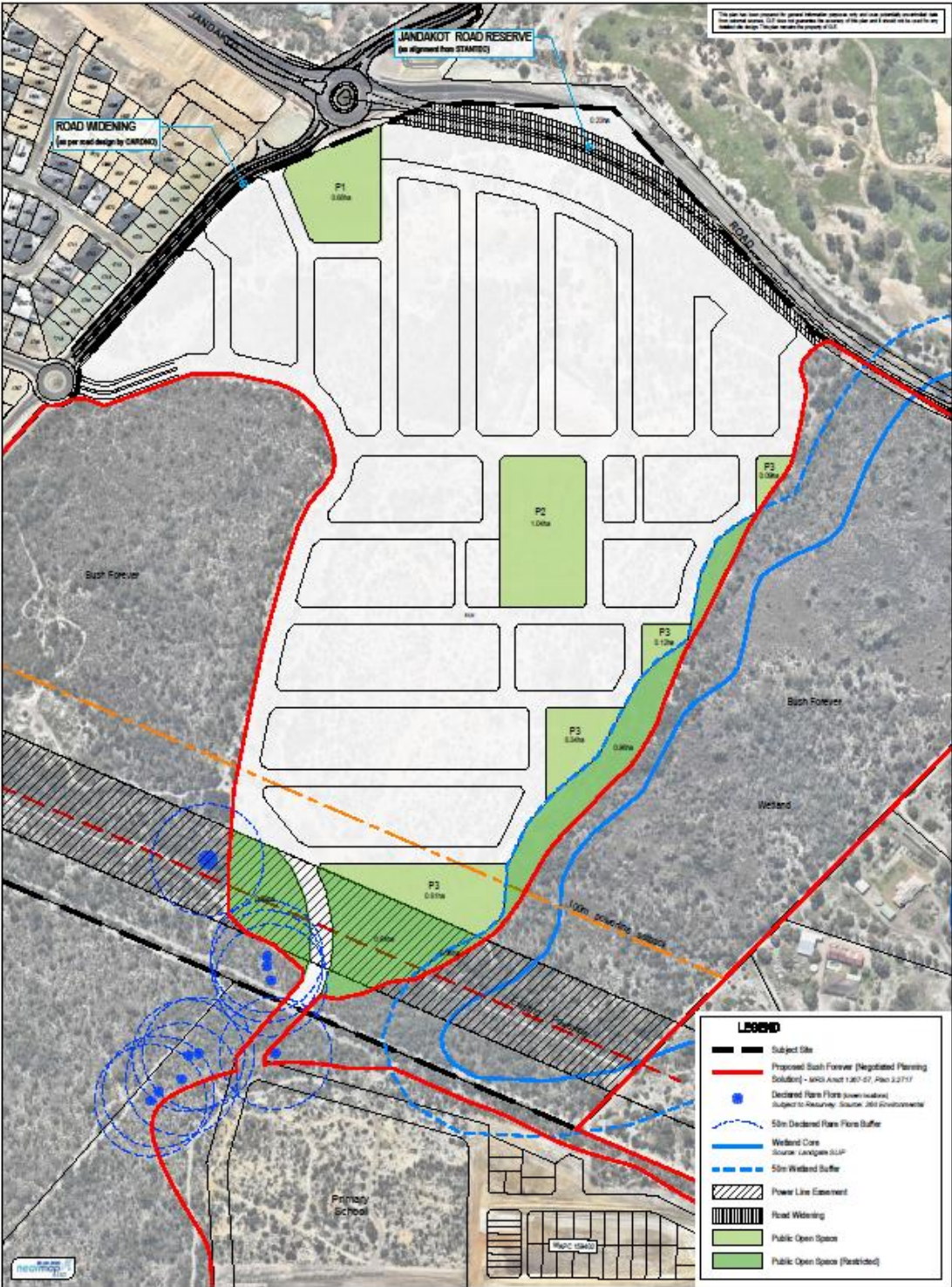


Figure 1: Location of the subject site



The proposed LSP layout doesn't depart considerably from the approved MRS amendment layout for this area.

The proposed LSP includes access from the proposed neighbourhood connector road which forms the south western boundary of the subject site and connects the LSP area to the Calleya development to the west and Lot 705 (previously Lot 4) Armadale Road to the south.

The proposed LSP also shows a direct connection to Jandakot Road from the north-eastern corner of the site. The layout and control of this intersection is discussed further in section 5.4 of this report.

The proposed LSP also shows Jandakot Road reserve (including 4 lanes) and the proposed realignment of Jandakot Road fronting the LSP area.

3.0 Existing Situation

3.1 Existing Land Use

The site currently is vacant.

3.2 Existing Road Network

Jandakot Road is currently of a single carriageway standard with a speed limit of 80km/h in the vicinity of the subject site. According to Main Roads WA functional road hierarchy, Jandakot Road is classified as a Regional Distributor and classified as a District Distributor (B) in accordance with City of Cockburn classification.

Traffic counts sourced from Main Roads WA indicates that Jandakot Road East of Berrigan Drive carried about 18,261vpd in 2019/2020.

Figure 3 illustrates the traffic flow pattern along this section of Jandakot Road during a typical day.

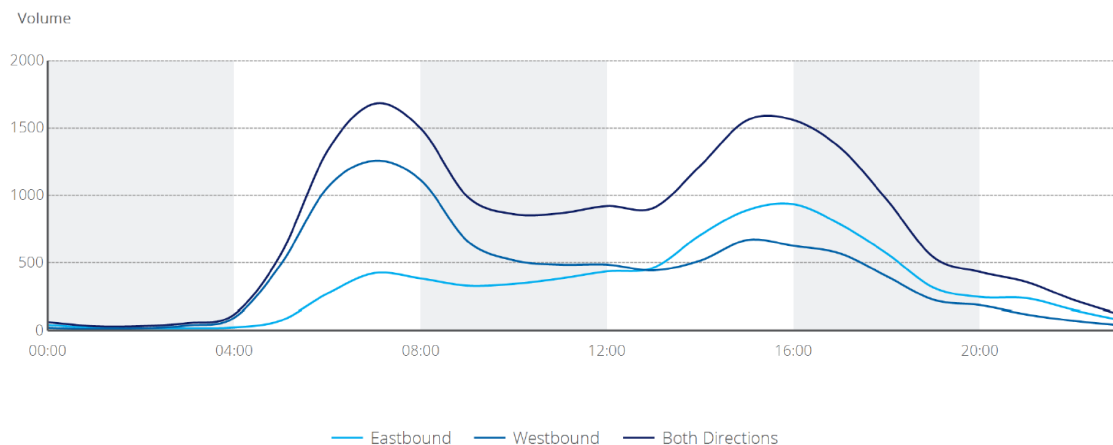


**Figure 3: Traffic flow pattern during a typical day
(Jandakot Road East of Berrigan Drive 2019/2020)**

The roundabout intersection of Jandakot Road / Solitaire Road / Fraser Road has been recently constructed. Transcore undertook video traffic counts at this roundabout intersection on Tuesday 4th of May 2021 during the AM (7:00-8:00) and PM (3:00-4:00) peak hours.

Figure 4 illustrates the existing traffic counts at the roundabout intersection.

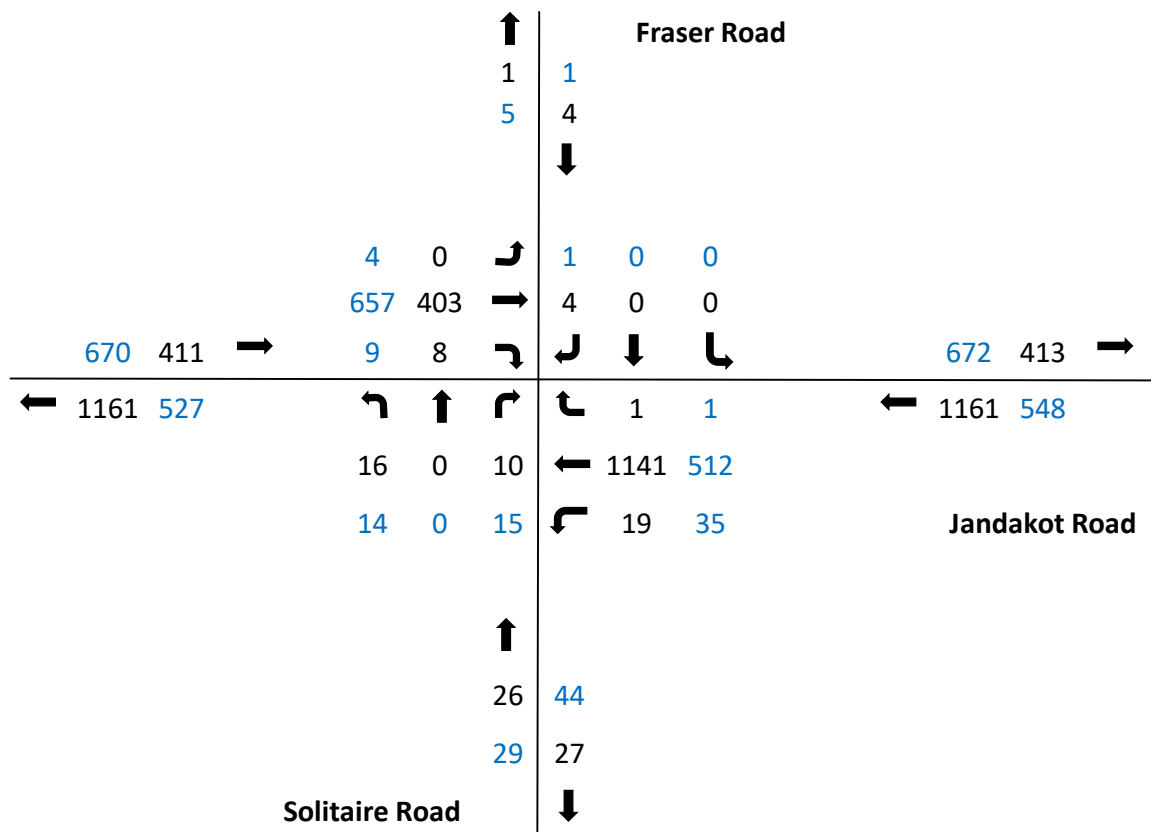


Figure 4: Traffic counts at the roundabout intersection of Jandakot Road / Solitaire Road / Fraser Road, AM/ PM peak hours

Solitaire Road at this locality is constructed as a two- lane divided road with a concrete/landscape median. On road cycle lanes are provided on both sides of the road fronting the LSP area.

Solitaire Road forms a roundabout intersection with Jandakot Road and Fraser Road to the north-west of the LSP area.

3.3 Public Transport

Public transport services in the vicinity of LSP area are illustrated in **Figure 5**. Currently there are no bus services along Jandakot Road. The closest bus routes in the vicinity of the subject site are the existing bus routes 518 (From Murdoch to Cockburn Station) and 233 (Cockburn Station to Gosnells Station) along Armadale Road. A new PTA bus route between Cockburn and Calleya Estate (Bus route 523) is also traversing to the west of the LSP area.

The closest train station in the vicinity of the subject site is the Cockburn Central train station which is located about 3km to the west of the LSP area.

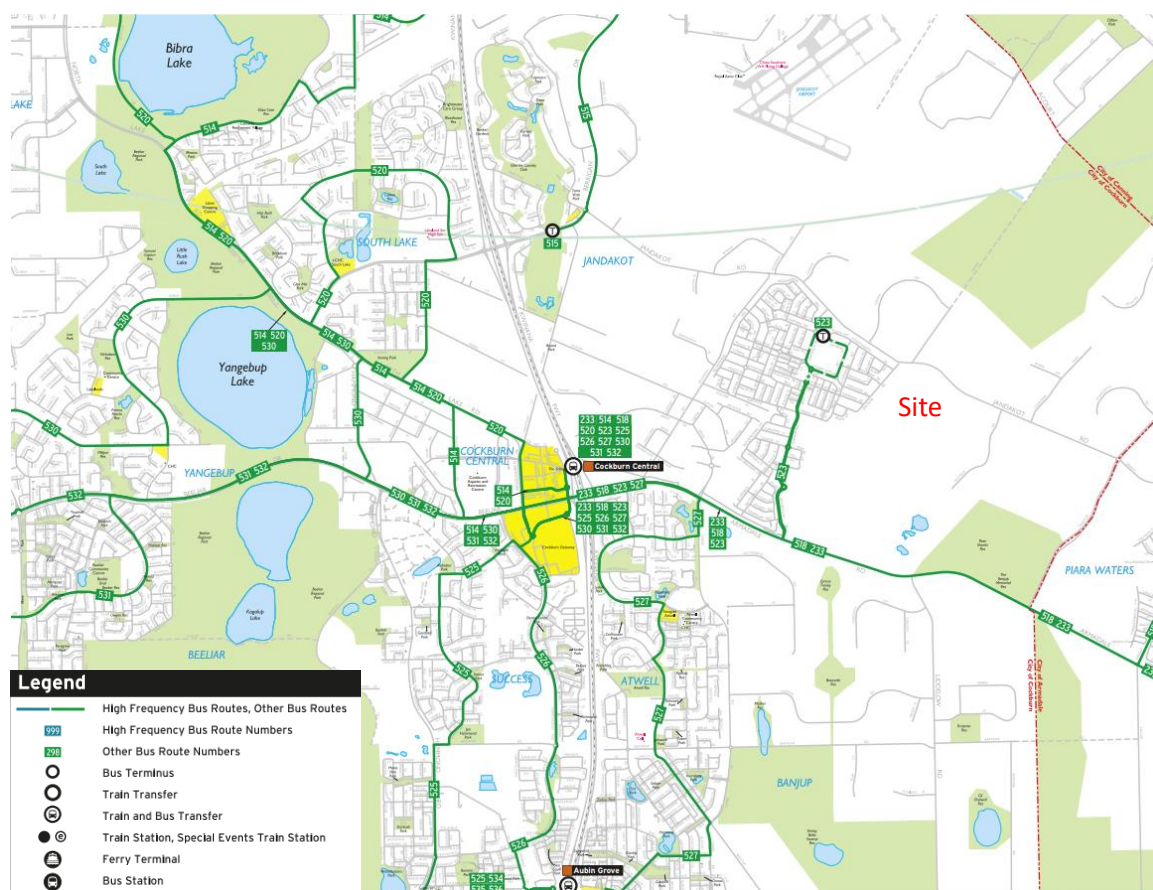


Figure 5: Existing Bus Routes

3.4 Pedestrian and Cyclist Facilities

The Perth Bicycle Network Map illustrated in **Figure 6** shows the existing cycling facilities in the vicinity of the LSP area. According to this map, sealed shoulders are available on either side of Jandakot Road that can be used by cyclists.

This map was prepared in 2016 and since then substantial residential developments has been progressed within the surrounding area. Currently, on road cycle lanes are provided on the eastern side of Fraser Road between Jandakot Road and Torwood Avenue. A shared path is also provided along Jandakot Road fronting Calleya Estate. It is expected that a similar shard path with the same standard would be provided on Jandakot Road fronting the proposed LSP area.



Figure 6: Bike Map

3.5 Changes to the Surrounding Road Network

There are regional and local proposed changes to the surrounding road network in this area. Armadale Road is currently undergoing roadworks associated with the Armadale Road to North Lake Road Bridge project. This project will upgrade this section of Armadale Road to dual carriageway standard (two lanes each way) with a 4m-wide Principal Shared Path along the northern side.

Jandakot Road is also expected to be upgraded to 4 lanes in future to provide another strong east-west link parallel to Armadale Road. The ultimate standard of Jandakot Road is expected to entail two traffic lanes each way and 6m median. Potential realignment of Jandakot Road as shown in the LSP is also expected in this locality.

Other proposed local changes include the provision of a new left in/ left out intersection on Jandakot Road at the north-east corner of the LSP area.

3.6 Public Transport Network Planning

As part of the Calleya Master Plan project, a new PTA bus route between Cockburn and Calleya Estate has been established which is now operating (bus route 523).

At the time of Calleya Master Plan project, PTA suggested that in the event that residential development extends east of the Calleya area and sufficient demand arises for secondary bus services, then there is likely to be a need for a supplementary bus route. The route would likely operate from Cockburn Central, along Armadale Road,

then north- south through the eastern development (east of the Calleya Estate) across to the proposed Calleya Neighbourhood Activity Centre.

Perth and Peel @ 3.5million – The Transport Network (Department of Transport, et al. March 2018) document shows Armadale Road as a “proposed high-priority transit corridor” from Armadale to Cockburn Central. This reflects the previous 2011 Department of Transport plan, Public Transport for Perth in 2031, which envisaged a future bus rapid transit route from Armadale to Cockburn Central providing a cross-suburban link between the Mandurah and Armadale railway lines.

4.0 Proposed Transport Network

4.1 Road Hierarchy

The proposed hierarchy of roads within and around the proposed LSP is illustrated in **Figure 7** using the road hierarchy classification from WAPC Liveable Neighbourhoods guidelines (2007) and in line with the approved rezoning.

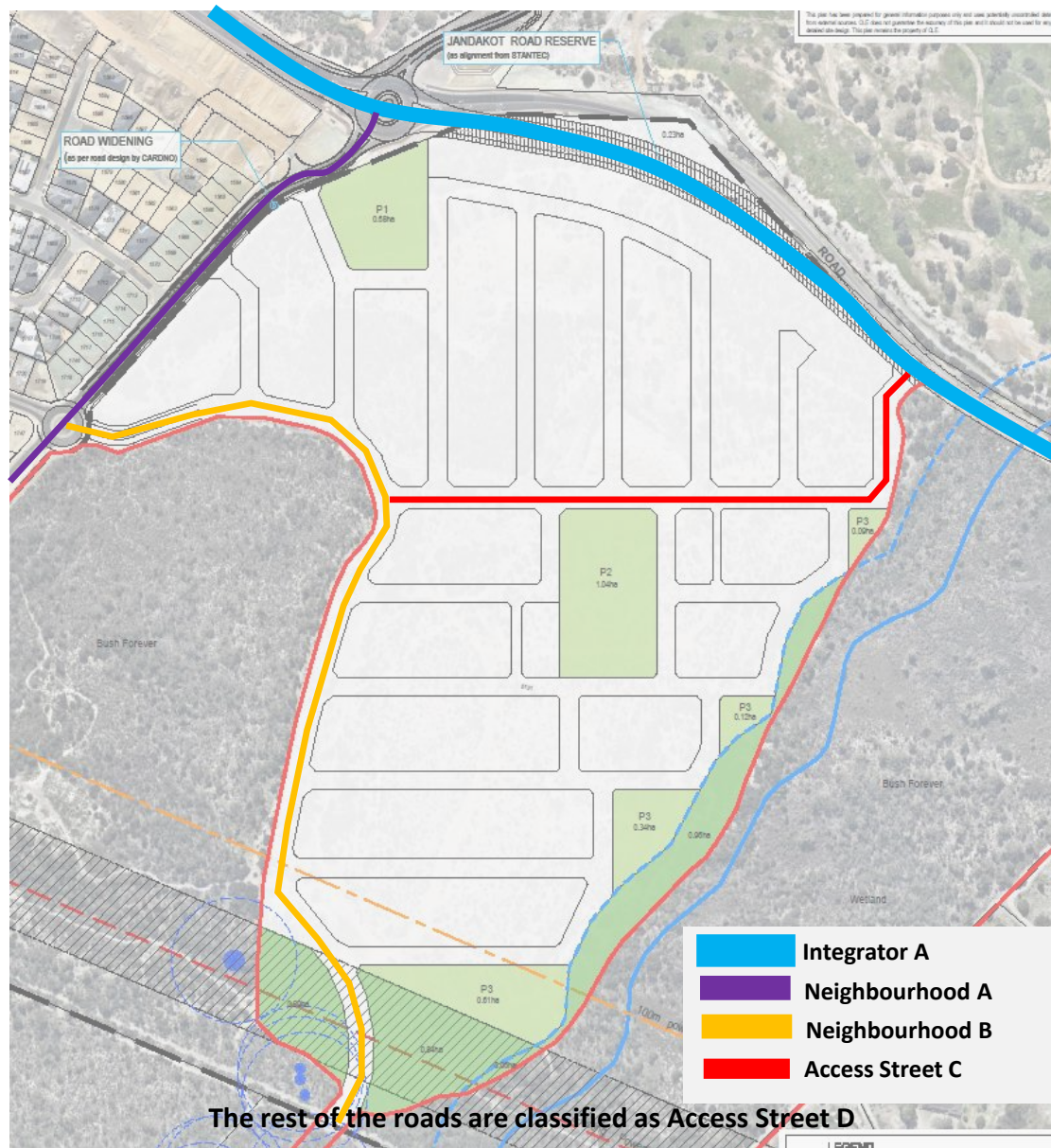


Figure 7: Proposed Road Hierarchy

Some key characteristics of the relevant road classifications have been summarised in **Table 1** below. These are generally based on Liveable Neighbourhoods guidelines

although the proposed widths would vary slightly from the standard Liveable Neighbourhoods cross-section diagrams.

Table 1: Key Characteristics for the Proposed Road Classifications

Road Classification	Indicative upper volume (vpd)	Indicative road reserve width (m)	Indicative road pavement width (m)
Integrator A	35,000	40m	2 x 8.5m (incl. cycle lanes) + 6m median
Neighbourhood Connector B	3,000	20m	7.4m and embayed parking
Access Street C	3,000	16m	6m (plus embayed parking) or 7.2m (with no embayed parking)
Access Street D	1,000	15m	6m

Integrator A

Jandakot Road is expected to carry about 20,000vpd to 30,000vpd in the vicinity of the subject site in 2031 and therefore is classified as Integrator A of dual divided carriageway standard. The ultimate standard of Jandakot Road would include two traffic lanes each way and a 6m median. This standard has already been constructed for the section of Jandakot Road to the west of the LSP area fronting Calleya Estate.

Neighbourhood Connector

Traffic flows along the southern boundary of the LSP are estimated to be below 3,000vpd, so it is appropriate for this road to be classified as Neighbourhood Connector B road. The continuation of this road to south provides a strong connection between the proposed LSP area and Lot 705 Armadale Road. Whilst the DSP showed this road as a Neighbourhood Connector A, detailed modelling based on the LSP confirms that projected traffic volumes will be significantly less than the Neighbourhood Connector A threshold for the northern part of this road. Although the road provides an important connection between Calleya, proposed LSP and Lot 705 Armadale Road, the northern section of this road (including the section fronting the LSP area) can function adequately with a Neighbourhood Connector B cross section in an 18m-20m reserve.

Solitaire Road to the south of Jandakot Road is classified as Neighbourhood Connector A and has already been constructed to this standard.

Access Streets

The basic standard of Access Street D roads within the LSP area is a 6m wide carriageway in a 15m road reserve. This Access Street D results in 4.5m verges on both sides, with embayed parking accommodated in the verges where required, such as to provide visitor parking on one side for lots serviced by rear laneways. This road standard

is proposed where the future total traffic volumes are less than 1,000vpd. It is anticipated that most of the access streets shown in the LSP would be of this category.

The east-west access street is expected to carry future traffic volumes over 1,000vpd and will be designed as an Access Street C. This is based on a 16m road reserve with either a 7.2m carriageway width or a 6m carriageway plus embayed parking where required.

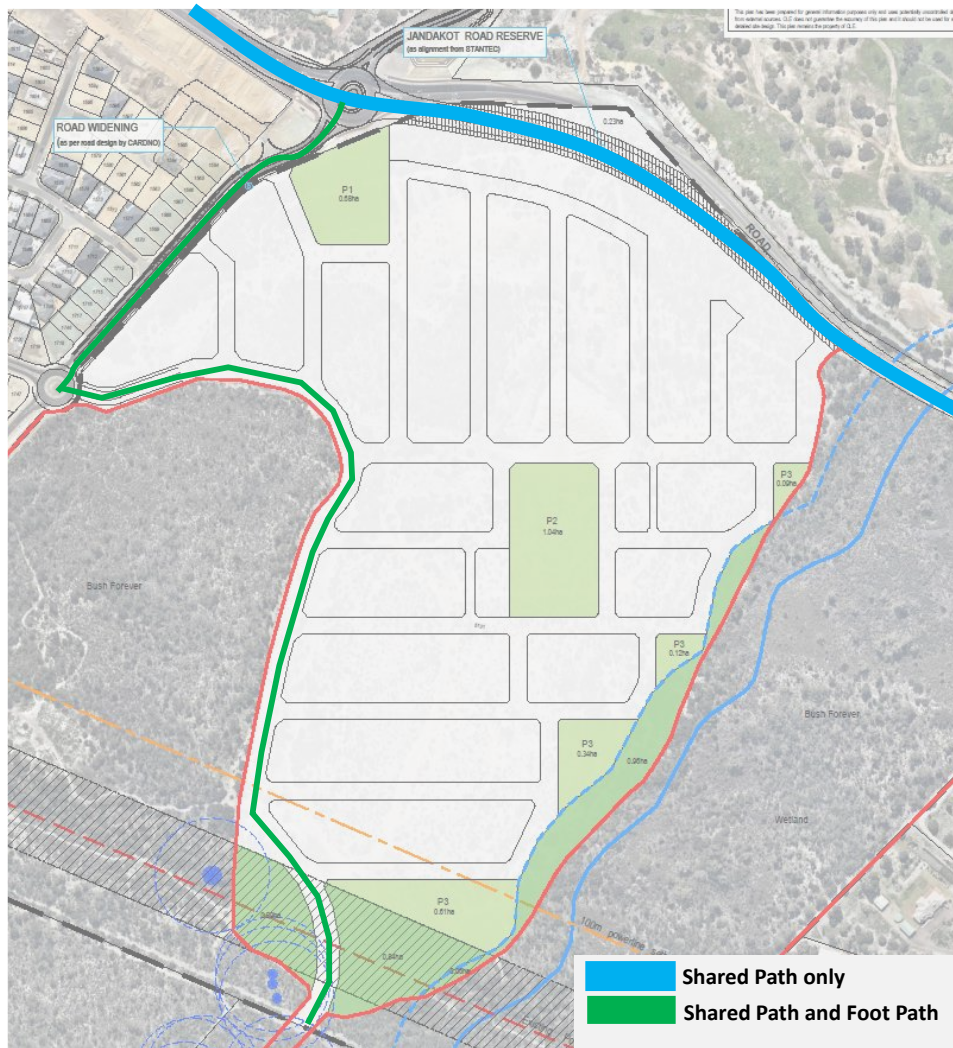
4.2 Public Transport

Existing bus services in this area are described in section 3.3 of this report and current planning by the Public Transport Authority is discussed in section 3.6.

4.3 Pedestrian and Cyclist Facilities

Figure 8 outlines the proposed pedestrian and cyclist network for the proposed LSP area. The proposed pedestrian and cyclist facilities aim to provide a permeable road network within the subject site and create excellent opportunities for the provision of good pedestrian and cyclist facilities that maximise the use of non-motorised transport modes.

According to Liveable Neighbourhood Guidelines Shared Paths and Footpaths are proposed along all Neighbourhood Connector roads. Shared Paths are also proposed along Jandakot Road.



4.4 Integration with Surrounding Area

The proposed land uses for the subject site are residential which are in line with the existing and future surrounding land uses in this area and the endorsed DSP.

The road network of the proposed LSP will connect to the surrounding road network including Solitaire Road and Jandakot Road at a number of intersections. This will include three connections to Solitaire Road and one connection to Jandakot Road. The proposed pedestrian and cyclist facilities within the subject site would provide connections to the proposed shared paths along Jandakot Road.

5.0 Analysis of the Transport Network

5.1 Assessment Period

The assessment year that has been adopted for this analysis is 2031, with full development of the LSP area assumed by this year.

5.2 Traffic generation and distribution

The daily traffic generation rate used for the LSP area is 8 vehicle trips per day (vpd) per dwelling, which corresponds to peak hour trip generation rates recommended in the Western Australian Planning Commission (WAPC) Transport Assessment Guidelines for Development (2016).

The anticipated 440 dwellings of the proposed LSP will therefore generate approximately 3,500vpd.

The distribution of these trips is established in proportion to the location of trip productions and attractors for work trips, education trips and other trips (shopping, social, recreational, etc.) within the Banjup DSP and surrounds.

5.3 Traffic Flow Forecasts

Figure 9 illustrates the future daily traffic flows estimated for the road network of the LSP area based on the road network and intersection arrangements shown in the Treeby DSP (refer Appendix A).

The 2031 peak hour traffic volumes at the roundabout intersection of Jandakot Road / Solitaire Road / Fraser Road were established by converting the daily traffic volumes to peak hour volumes. For the conversion of the daily traffic volume to peak hour volumes, it was assumed that the in/ out traffic split for residential traffic would be 20%/ 80% during the weekday AM peak hour and reverse during the PM peak hour. **Figure 10** illustrates the total 2031 traffic volumes at the external abutting roads and key LSP internal road.

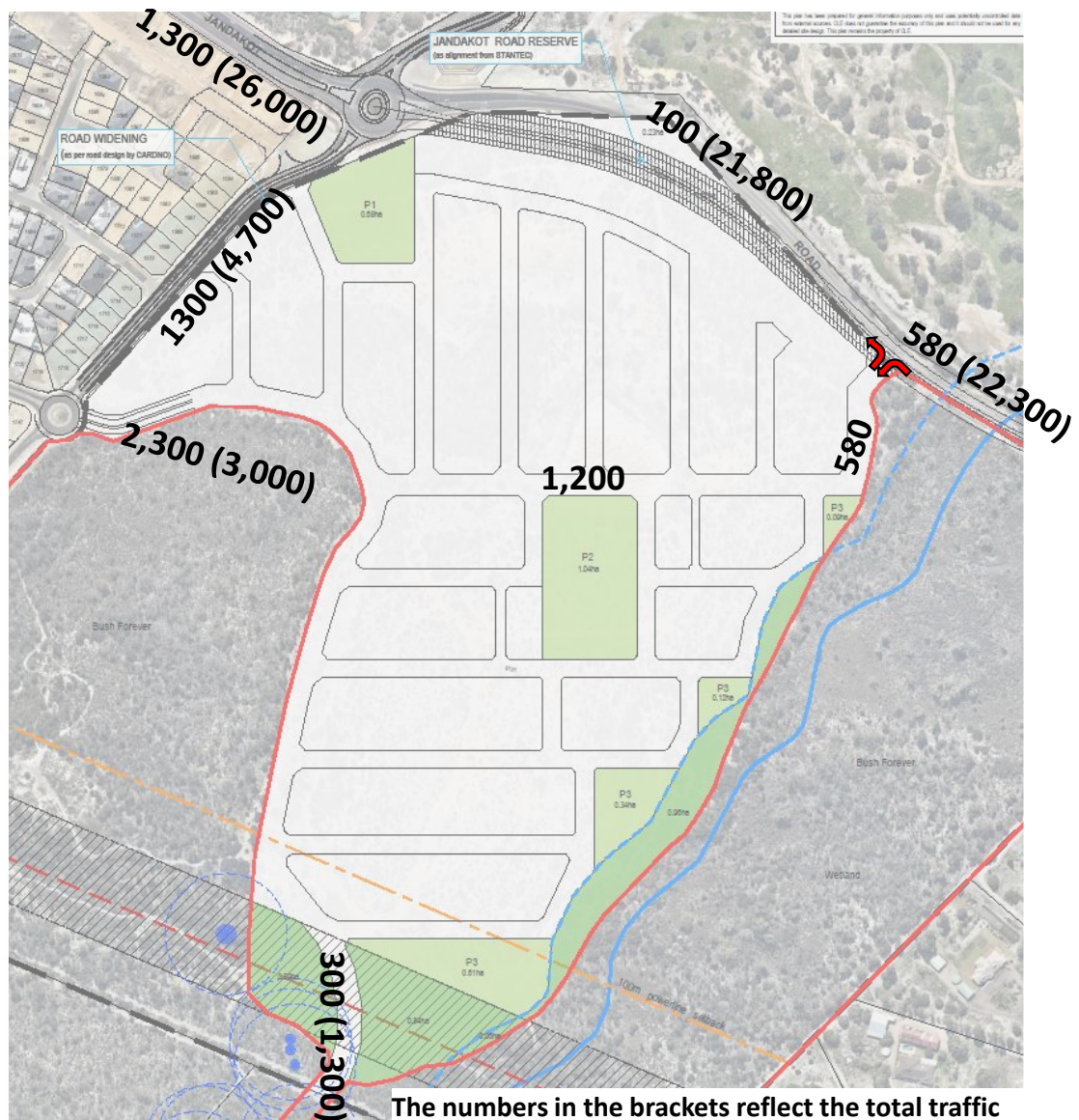


Figure 9: Projected 2031 daily traffic volumes, LSP traffic and (total traffic)

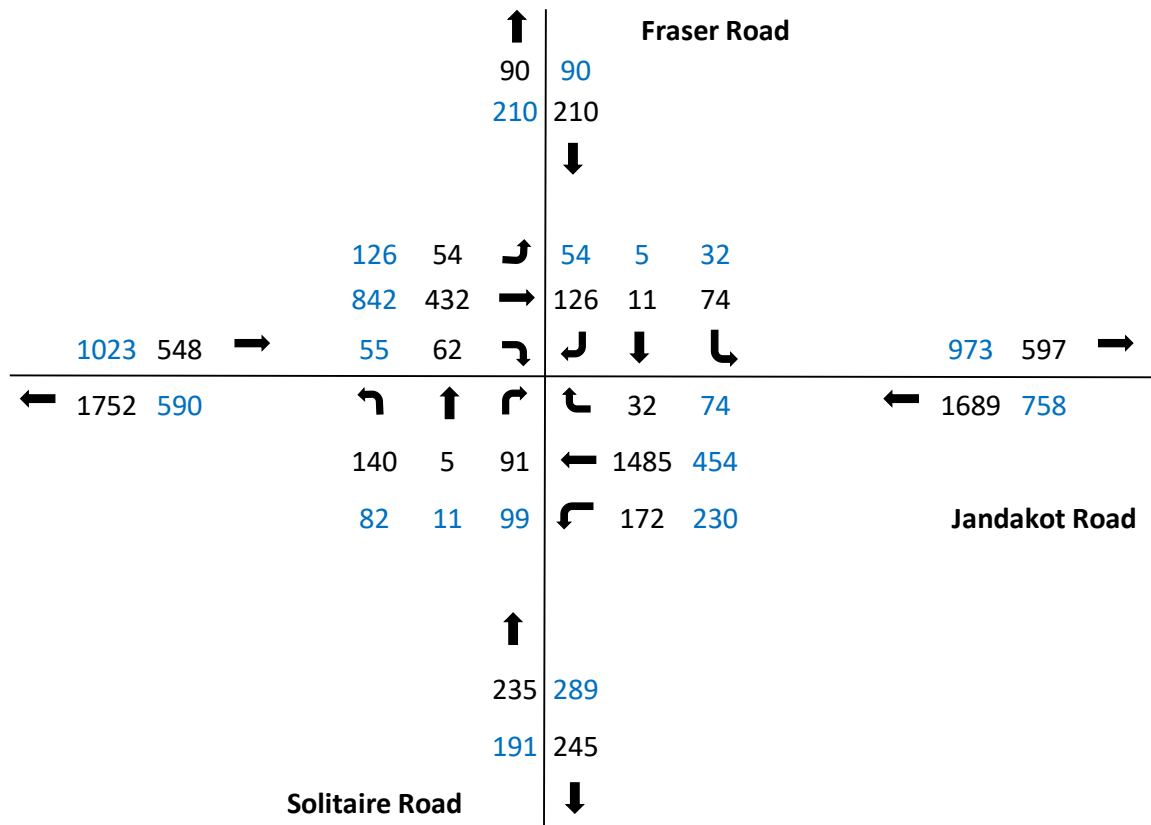


Figure 10: 2031 total traffic projections at the roundabout intersection of Jandakot Road / Solitaire Road / Fraser Road, AM and PM peak hours

5.4 Roads and Intersections

The proposed future proposed road network of the LSP area has been detailed in section 4 of this report including the details of the proposed road hierarchy.

Figure 11 details the proposed intersection controls for key intersections for the LSP area.

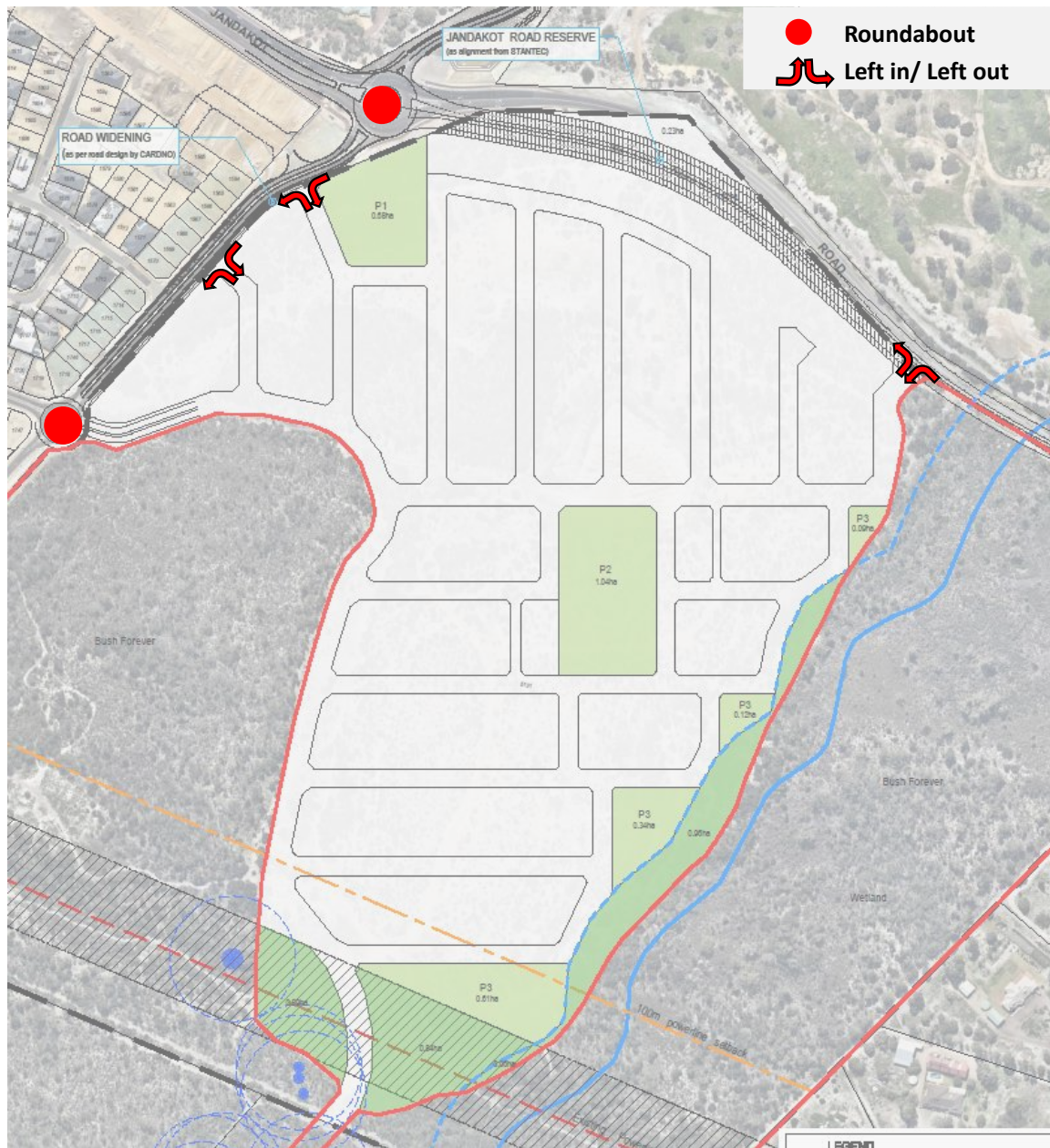


Figure 11: Intersection Treatments

The intersection of Jandakot Road/ Solitaire Road/ Fraser Road is constructed as a dual lane roundabout intersection. The proposed LSP provides two left in/ left out intersections on Solitaire Road.

The new intersection to the north east corner of Jandakot Road is proposed to operate as left in/left out. This intersection will improve the traffic operation of the roundabout intersection of Jandakot Road/ Solitaire Road/ Fraser Road and also improves the permeability and accessibility of the LSP area.

The exact location and layout of the proposed left in/ left out intersection on Jandakot Road will be investigated during the detailed design stage of the project.

5.5 Intersection Analysis

Traffic operations of the existing roundabout Intersection of Jandakot Road/ Solitaire Road/ Fraser Road has been assessed for existing and 2031 AM and PM peak hours.

Capacity analysis was undertaken using the SIDRA computer software package. SIDRA is an intersection modelling tool commonly used by traffic engineers for all types of intersections. SIDRA outputs are presented in the form of Degree of Saturation, Level of Service, Average Delay and 95% Queue. These characteristics are defined as follows:

- ✚ **Degree of Saturation (DoS):** is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The Degree of Saturation ranges from close to zero for varied traffic flow up to one for saturated flow or capacity.
- ✚ **Level of Service (LoS):** is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. In general, there are 6 levels of service, designated from A to F, with Level of Service A representing the best operating condition (i.e. free flow) and Level of Service F the worst (i.e. forced or breakdown flow).
- ✚ **Average Delay:** is the average of all travel time delays for vehicles through the intersection.
- ✚ **95% Queue:** is the queue length below which 95% of all observed queue lengths fall.

The results of the SIDRA analysis are attached in **Appendix C** and briefly discussed in the following paragraphs.

The SIDRA analysis results indicate that the existing roundabout Intersection of Jandakot Road/ Solitaire Road/ Fraser Road presently operates satisfactorily and with an overall LoS A with minimum queues and delays during both weekday peak hours. This situation is confirmed by the video surveys.

The SIDRA assessment for 2031 during AM and PM peak periods rendered similar results to the existing situation with marginal increases in delays and queues and no significant changes to the Level of Service for any of the movements. Importantly, this intersection retains ample spare capacity for further future traffic growth.

5.6 Access to Frontage Properties

The WAPC *Liveable Neighbourhoods* policy requires that “Development along integrator B and neighbourhood connector streets with ultimate vehicle volumes over 5,000 vehicles per day should be designed either so vehicles entering the street can do so travelling forward, or are provided with alternative forms of vehicle access. Wider lots with paired driveways and protected reversing areas in the parking lane may be used on streets with up to 7,000 vehicles per day.”

All of the neighbourhood connector roads around the proposed LSP area are estimated to carry less than 5,000vpd, so no restriction on vehicular access is required on the proposed neighbourhood connector roads.

5.7 Pedestrian / Cycle Networks

The proposed network of shared paths for pedestrians and cyclists is described in section 4.3 of this transport assessment. This network of paths will provide an excellent level of accessibility and permeability for pedestrians and cyclists within the LSP area, and provides connectivity to neighbouring precincts at strategic locations.

5.8 Access to Public Transport

The WAPC Transport Impact Assessment Guidelines for Developments (2006) suggest that it is desirable for at least 90 per cent of dwellings to be within 400m straight line distance of a bus route.

The proposed potential secondary bus route suggested by PTA within the residential developments to the east of Calleya Estate would cover the majority of the proposed residential dwellings within the LSP area.

6.0 Conclusions

This Transport Impact Assessment is prepared for the proposed Local Structure Plan (LSP) for Lot 5131 Jandakot Road, Treeby.

The MRS amendment for Lot 5131 Jandakot Road has been approved recently. The principles of the MRS amendments for Lot 5131 Jandakot Road were supported by 2017 endorsed Treeby (Banjup) District Structure Plan (DSP).

The road network of the LSP area is in accordance with the proposed road hierarchy developed for the approved MRS Amendment and is designed based on WAPC Liveable Neighbourhoods guidelines to accommodate the future traffic flows that will be generated in this area.

The proposed LSP road network layout doesn't depart significantly from the approved MRS Amendment layout for this area. The standards and road reserves for the proposed internal roads are established to be satisfactory to accommodate the LSP traffic.

The LSP area is estimated to accommodate approximately 440 dwellings and estimated to generate traffic flows of approximately 3,500vpd.

The SIDRA analysis results indicate that the existing roundabout Intersection of Jandakot Road/ Solitaire Road/ Fraser Road presently operates satisfactorily and with an overall LoS A with minimum queues and delays during both weekday peak hours.

The SIDRA assessment for 2031 during AM and PM peak periods rendered similar results to the existing situation with marginal increases in delays and queues and no significant changes to the Level of Service for any of the movements. Importantly, this intersection retains ample spare capacity for further future traffic growth.

The proposed LSP area provides a network of shared paths and footpaths to encourage and facilitate non-motorised travel.

A left in/ left out intersection is proposed to the north east corner of the LSP area. This intersection will improve the traffic operation of roundabout intersection of Jandakot Road/ Solitaire Road/ Fraser Road and also improves the permeability and accessibility of the LSP area. The exact location and layout of this intersection would need to be reviewed and confirmed during the detailed design stage of the project.

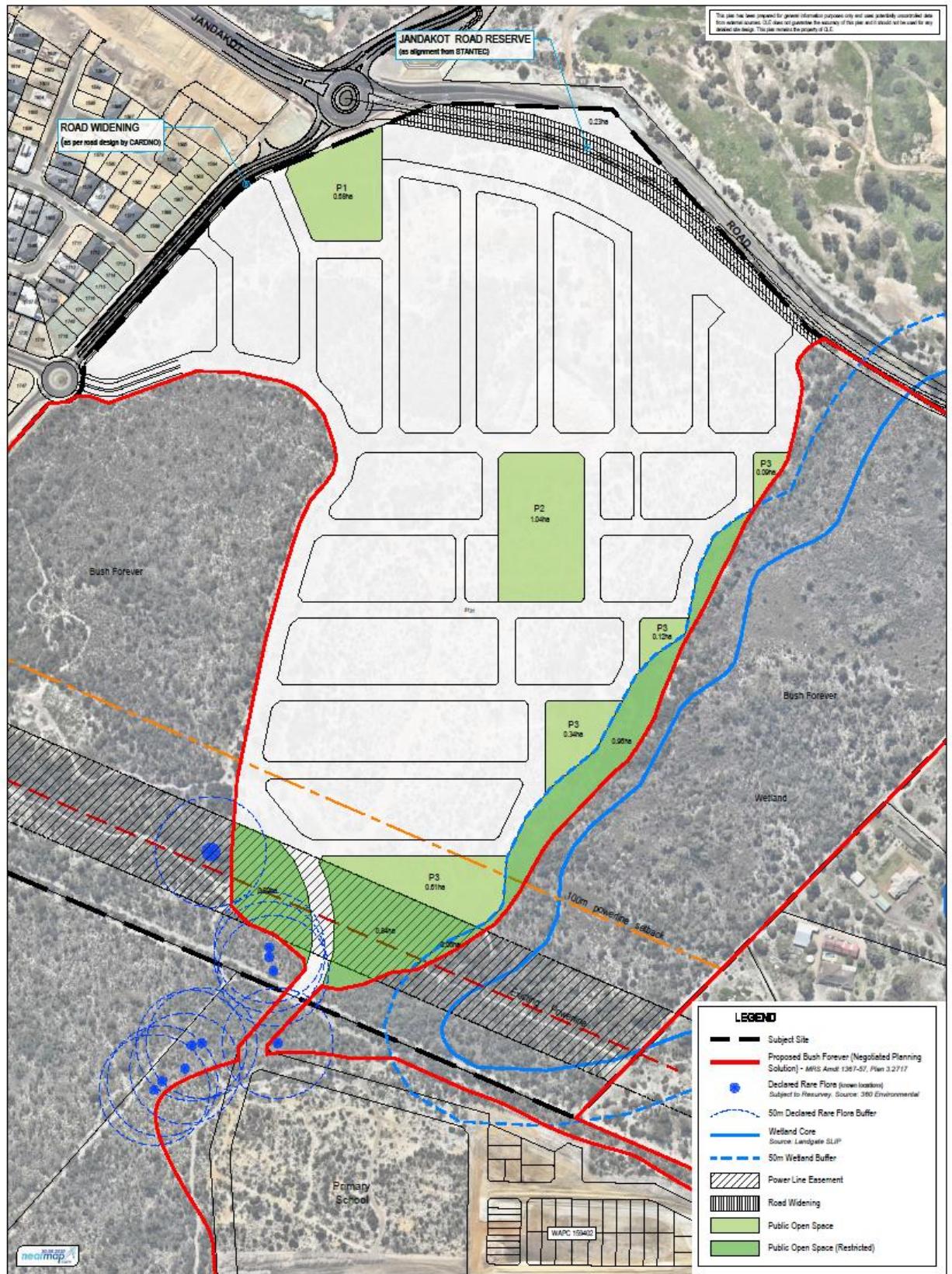
Appendix A

Approved Treeby (Banjup) District Structure Plan



Appendix B

Proposed Local Structure Plan



Appendix C

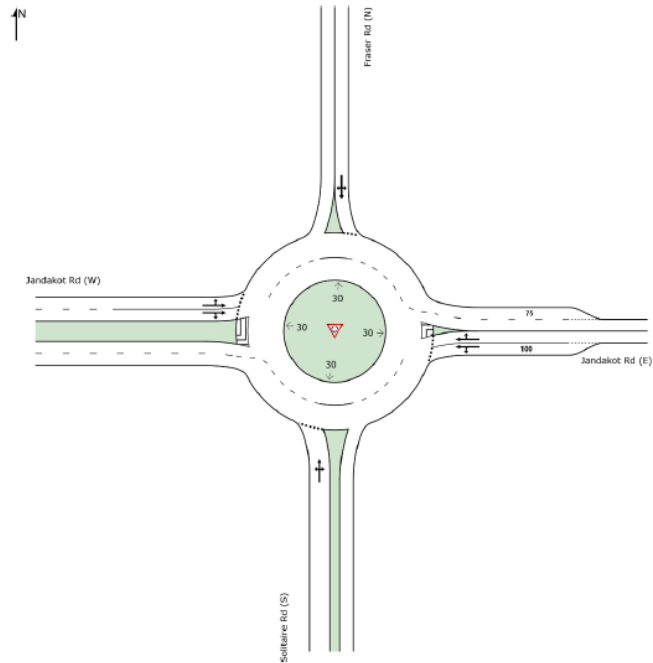
Intersection Analysis

SITE LAYOUT

Site: [Jandakot Rd & Fraser Rd & Solitaire Rd - Existing - AM (Site Folder: General)]

Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.

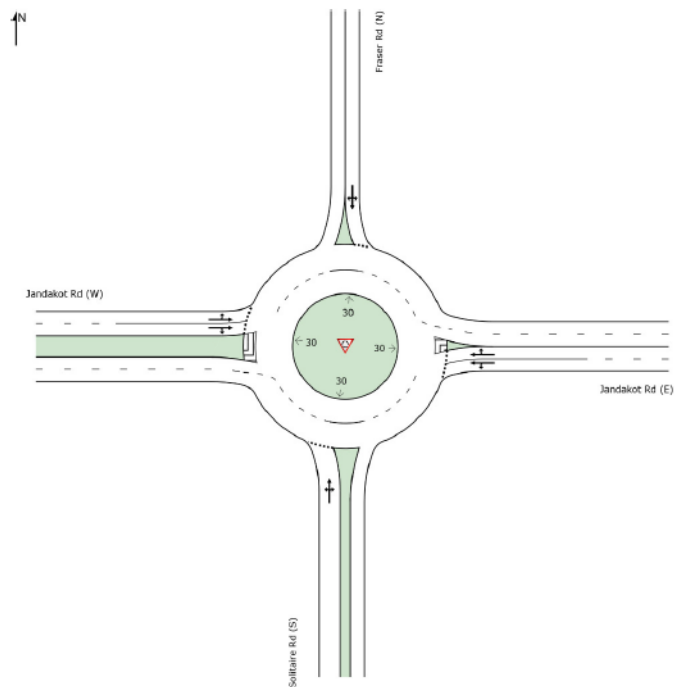


SITE LAYOUT

Site: [Jandakot Rd & Fraser Rd & Solitaire Rd - 2031 - AM (Site Folder: General)]

Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

 Site: [Jandakot Rd & Fraser Rd & Solitaire Rd - Existing - AM (Site Folder: General)]

Site Category: (None)
Roundabout

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: Solitaire Rd (S)														
10	L2	16	2.0	17	2.0	0.032	4.6	LOS A	0.1	0.8	0.50	0.66	0.50	49.2
11	T1	1	2.0	1	2.0	0.032	4.3	LOS A	0.1	0.8	0.50	0.66	0.50	47.7
12	R2	10	2.0	11	2.0	0.032	9.7	LOS A	0.1	0.8	0.50	0.66	0.50	50.7
Approach		27	2.0	28	2.0	0.032	6.5	LOS A	0.1	0.8	0.50	0.66	0.50	49.7
East: Jandakot Rd (E)														
1	L2	19	2.0	20	2.0	0.402	3.6	LOS A	2.9	23.3	0.11	0.33	0.11	51.9
2	T1	1141	8.0	1201	8.0	0.402	3.6	LOS A	2.9	23.5	0.11	0.33	0.11	55.7
3	R2	1	2.0	1	2.0	0.402	9.3	LOS A	2.9	23.5	0.12	0.33	0.12	54.3
Approach		1161	7.9	1222	7.9	0.402	3.6	LOS A	2.9	23.5	0.11	0.33	0.11	55.6
North: Fraser Rd (N)														
4	L2	1	2.0	1	2.0	0.006	4.2	LOS A	0.0	0.2	0.40	0.55	0.40	48.7
5	T1	1	2.0	1	2.0	0.006	3.3	LOS A	0.0	0.2	0.40	0.55	0.40	47.2
6	R2	4	2.0	4	2.0	0.006	8.8	LOS A	0.0	0.2	0.40	0.55	0.40	50.2
Approach		6	2.0	6	2.0	0.006	7.1	LOS A	0.0	0.2	0.40	0.55	0.40	49.4
West: Jandakot Rd (W)														
7	L2	1	2.0	1	2.0	0.107	3.6	LOS A	0.6	5.1	0.10	0.33	0.10	51.9
8	T1	403	10.8	424	10.8	0.185	3.8	LOS A	1.2	9.7	0.09	0.34	0.09	55.0
9	R2	8	2.0	8	2.0	0.185	9.2	LOS A	1.2	9.7	0.09	0.34	0.09	54.4
Approach		412	10.6	434	10.6	0.185	3.9	LOS A	1.2	9.7	0.09	0.34	0.09	55.0
All Vehicles		1606	8.5	1691	8.5	0.402	3.8	LOS A	2.9	23.5	0.11	0.34	0.11	55.3

MOVEMENT SUMMARY

 **Site: [Jandakot Rd & Fraser Rd & Solitaire Rd - Existing - PM (Site Folder: General)]**

Site Category: (None)
Roundabout

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: Solitaire Rd (S)														
10	L2	14	2.0	15	2.0	0.029	3.2	LOS A	0.1	0.5	0.30	0.56	0.30	49.4
11	T1	1	2.0	1	2.0	0.029	2.9	LOS A	0.1	0.5	0.30	0.56	0.30	47.9
12	R2	15	2.0	16	2.0	0.029	8.3	LOS A	0.1	0.5	0.30	0.56	0.30	51.0
Approach		30	2.0	32	2.0	0.029	5.8	LOS A	0.1	0.5	0.30	0.56	0.30	50.2
East: Jandakot Rd (E)														
1	L2	35	2.0	37	2.0	0.191	3.6	LOS A	1.1	8.6	0.08	0.34	0.08	52.0
2	T1	512	8.0	539	8.0	0.191	3.6	LOS A	1.1	8.6	0.08	0.34	0.08	55.9
3	R2	1	2.0	1	2.0	0.191	9.2	LOS A	1.1	8.6	0.08	0.33	0.08	54.5
Approach		548	7.6	577	7.6	0.191	3.6	LOS A	1.1	8.6	0.08	0.34	0.08	55.6
North: Fraser Rd (N)														
4	L2	1	2.0	1	2.0	0.004	5.6	LOS A	0.0	0.1	0.49	0.52	0.49	49.3
5	T1	1	2.0	1	2.0	0.004	4.1	LOS A	0.0	0.1	0.49	0.52	0.49	47.8
6	R2	1	2.0	1	2.0	0.004	9.6	LOS A	0.0	0.1	0.49	0.52	0.49	50.9
Approach		3	2.0	3	2.0	0.004	6.4	LOS A	0.0	0.1	0.49	0.52	0.49	49.3
West: Jandakot Rd (W)														
7	L2	4	2.0	4	2.0	0.173	3.7	LOS A	1.0	8.4	0.12	0.33	0.12	51.8
8	T1	657	10.8	692	10.8	0.301	4.0	LOS A	2.0	16.7	0.12	0.34	0.12	54.9
9	R2	9	2.0	9	2.0	0.301	9.2	LOS A	2.0	16.7	0.12	0.34	0.12	54.3
Approach		670	10.6	705	10.6	0.301	4.1	LOS A	2.0	16.7	0.12	0.34	0.12	54.9
All Vehicles		1251	9.1	1317	9.1	0.301	3.9	LOS A	2.0	16.7	0.11	0.34	0.11	55.0

MOVEMENT SUMMARY

 Site: [Jandakot Rd & Fraser Rd & Solitaire Rd - 2031 - AM
(Site Folder: General)]

Site Category: (None)
Roundabout

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: Solitaire Rd (S)														
10	L2	140	2.0	147	2.0	0.491	9.0	LOS A	2.8	21.0	0.85	0.99	1.03	46.5
11	T1	5	2.0	5	2.0	0.491	8.7	LOS A	2.8	21.0	0.85	0.99	1.03	45.2
12	R2	91	2.0	96	2.0	0.491	14.1	LOS B	2.8	21.0	0.85	0.99	1.03	47.9
Approach		236	2.0	248	2.0	0.491	11.0	LOS B	2.8	21.0	0.85	0.99	1.03	47.0
East: Jandakot Rd (E)														
1	L2	172	2.0	181	2.0	0.729	5.6	LOS A	8.0	63.4	0.71	0.57	0.72	49.3
2	T1	1485	8.0	1563	8.0	0.729	6.3	LOS A	8.5	68.5	0.73	0.61	0.77	52.5
3	R2	32	2.0	34	2.0	0.729	12.4	LOS B	8.5	68.5	0.76	0.66	0.82	51.1
Approach		1689	7.3	1778	7.3	0.729	6.3	LOS A	8.5	68.5	0.73	0.61	0.76	52.2
North: Fraser Rd (N)														
4	L2	74	2.0	78	2.0	0.248	4.5	LOS A	1.1	8.1	0.55	0.73	0.55	48.5
5	T1	11	2.0	12	2.0	0.248	4.2	LOS A	1.1	8.1	0.55	0.73	0.55	47.0
6	R2	126	2.0	133	2.0	0.248	9.7	LOS A	1.1	8.1	0.55	0.73	0.55	50.0
Approach		211	2.0	222	2.0	0.248	7.6	LOS A	1.1	8.1	0.55	0.73	0.55	49.3
West: Jandakot Rd (W)														
7	L2	54	2.0	57	2.0	0.228	4.2	LOS A	1.5	12.3	0.37	0.42	0.37	50.7
8	T1	432	10.8	455	10.8	0.228	4.3	LOS A	1.5	12.3	0.38	0.45	0.38	53.3
9	R2	62	2.0	65	2.0	0.228	9.9	LOS A	1.5	11.8	0.39	0.49	0.39	52.2
Approach		548	8.9	577	8.9	0.228	4.9	LOS A	1.5	12.3	0.38	0.45	0.38	52.9
All Vehicles		2684	6.7	2825	6.7	0.729	6.5	LOS A	8.5	68.5	0.66	0.62	0.69	51.6

MOVEMENT SUMMARY

 Site: [Jandakot Rd & Fraser Rd & Solitaire Rd - 2031 - PM
(Site Folder: General)]

Site Category: (None)
Roundabout

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: Solitaire Rd (S)														
10	L2	82	2.0	86	2.0	0.199	3.7	LOS A	0.7	5.1	0.43	0.63	0.43	49.0
11	T1	11	2.0	12	2.0	0.199	3.3	LOS A	0.7	5.1	0.43	0.63	0.43	47.6
12	R2	99	2.0	104	2.0	0.199	8.8	LOS A	0.7	5.1	0.43	0.63	0.43	50.6
Approach		192	2.0	202	2.0	0.199	6.3	LOS A	0.7	5.1	0.43	0.63	0.43	49.7
East: Jandakot Rd (E)														
1	L2	230	2.0	242	2.0	0.300	4.1	LOS A	2.0	15.5	0.35	0.44	0.35	50.9
2	T1	454	8.0	478	8.0	0.300	4.3	LOS A	2.0	15.5	0.36	0.46	0.36	54.1
3	R2	74	2.0	78	2.0	0.300	9.9	LOS A	1.9	15.5	0.37	0.47	0.37	52.4
Approach		758	5.6	798	5.6	0.300	4.8	LOS A	2.0	15.5	0.36	0.45	0.36	52.9
North: Fraser Rd (N)														
4	L2	32	2.0	34	2.0	0.135	5.4	LOS A	0.6	4.4	0.65	0.81	0.65	48.0
5	T1	5	2.0	5	2.0	0.135	5.1	LOS A	0.6	4.4	0.65	0.81	0.65	46.6
6	R2	54	2.0	57	2.0	0.135	10.6	LOS B	0.6	4.4	0.65	0.81	0.65	49.5
Approach		91	2.0	96	2.0	0.135	8.5	LOS A	0.6	4.4	0.65	0.81	0.65	48.8
West: Jandakot Rd (W)														
7	L2	126	2.0	133	2.0	0.439	4.7	LOS A	3.2	26.1	0.49	0.48	0.49	50.2
8	T1	842	10.8	886	10.8	0.439	4.9	LOS A	3.2	26.1	0.50	0.50	0.50	52.9
9	R2	55	2.0	58	2.0	0.439	10.6	LOS B	3.1	25.6	0.52	0.52	0.52	52.0
Approach		1023	9.2	1077	9.2	0.439	5.2	LOS A	3.2	26.1	0.50	0.50	0.50	52.5
All Vehicles		2064	6.9	2173	6.9	0.439	5.3	LOS A	3.2	26.1	0.45	0.51	0.45	52.2