Transport Impact Statement

Project:	Proposed Child Care Centre Lot 13 (#2) Walters Road Byford
Client:	IQ Constructions
Author:	Tony Shaw
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CONSULTING CIVIL AND TRAFFIC ENGINEERS
1 ST. FLOOR, 908 ALBANY HIGHWAY, EAST VICTORIA PARK WA 6101.
PHONE|+61 8 9355 1300
FACSIMILE| +61 8 9355 1922
EMAIL| admin@ shawmac.com.au

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1	T Shaw	P. Nguyen	T Shaw	30/10/2019

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1. Introduction

1.1. Background

Shawmac has been engaged to prepare a Transport Impact Statement for a proposed child care centre to be located at 2 Walters Road in Byford. The site is within the City of Serpentine Jarrahdale. This Transport Impact Statement has been prepared in accordance with the Western Australian Planning Commission document *Transport Assessment Guidelines for Development: Volume 4 – Individual Developments* (WAPC TIA Guidelines).

1.2. Location

The site address is Lot 13 (No. 2) Walters Road Byford and the site has frontage to Walters Road on the southern boundary and South Western Highway on the western boundary. The western portion of the lot is designated "Public Open Space" under a Local Structure Plan and the proposed development is planned to occupy the eastern portion of the lot. The general location of the site shown in **Figure 1** and an aerial photo of the site is shown in **Figure 2**.

Figure 1: General Site Location

Figure 2: Site Location and Layout

2. Proposed Development

The proposal development is a child care centre accommodating up to 75 children aged three and over and 10 staff. The proposed operating hours are from 6.30am to 6.30pm Monday to Friday. There is an existing single residential building on the site and adjacent to the site, land use is predominantly residential.

The site plan is shown in **Figure 3**.

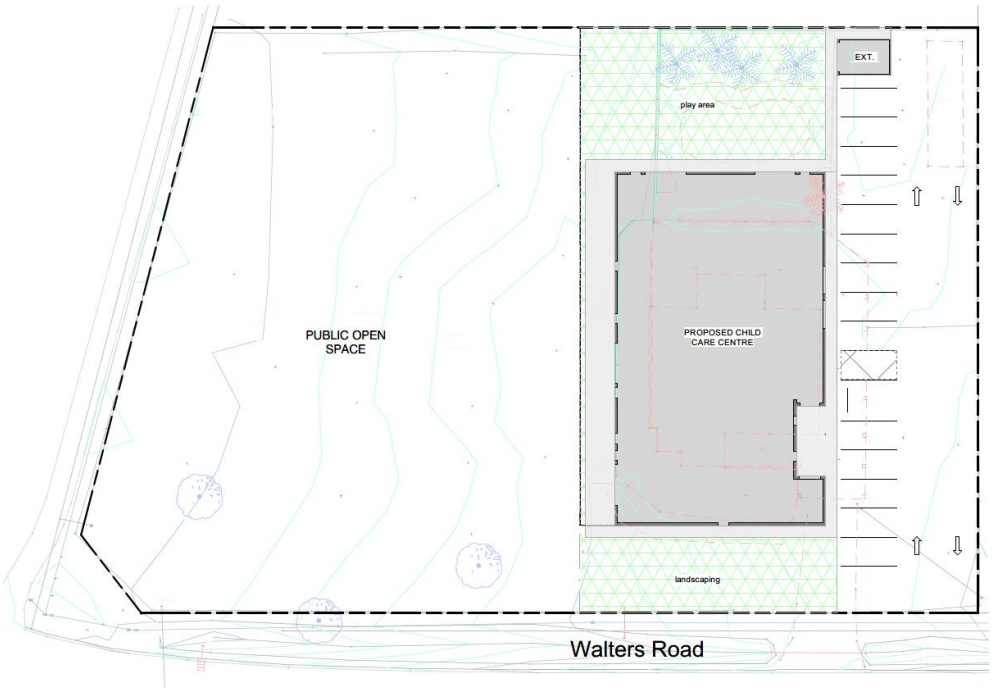


Figure 3: Site Plan

3. Traffic Management on Frontage Streets

3.1. Road Layout and Hierarchy

The layout and hierarchy of the surrounding road network as obtained from the MRWA *Road Information Mapping System* is shown in **Figure 4**.

Figure 4: Road Network Layout and Hierarchy

The road cross sections and pavement widths of the surrounding road network are summarised in **Table 1**.

Table 1: Road Configuration

Road	Classification	Cross Section	Speed Limit
Walters Road	Local Distributor Road	Single carriageway – 2 lanes	50km/h
South Western Highway	Primary Distributor	Single carriageway – 2 lanes	60km/h

3.2. Intersections

The intersection of Walters Road and South Western Highway may be impacted by the development. It is currently configured as a channelised unsignalised "T" junction.

3.3. Existing Traffic Volumes

Traffic volumes recorded by a MRWA camera survey in February 2019 are shown in **Figure 5**, **Figure 6** and

Figure 7 for the 24 hour period and morning and afternoon peak hours.

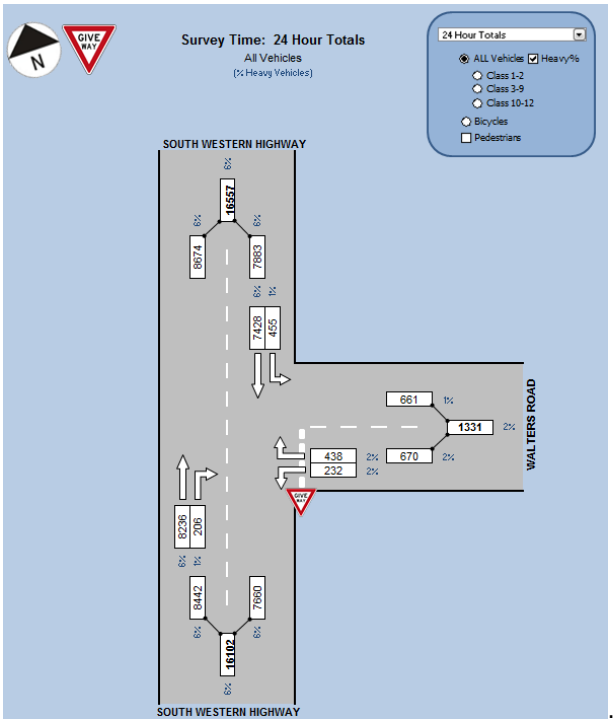


Figure 5: 24 Hour Traffic Volume

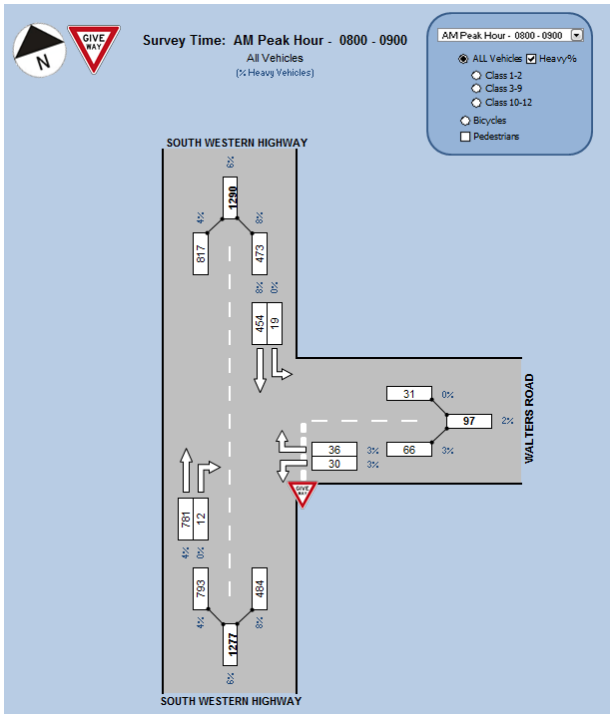


Figure 6: AM Peak Hour Volumes

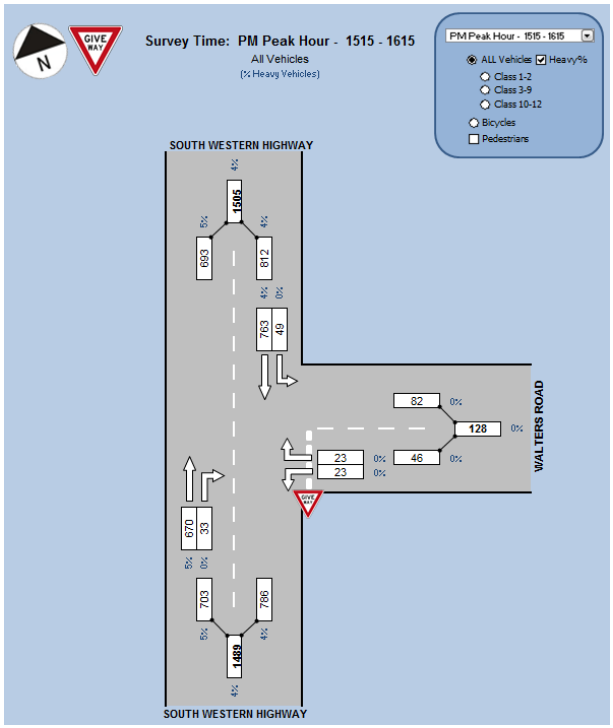


Figure 7: PM Peak Hour Volumes

4. Vehicle Access and Parking

4.1. Proposed Access and Parking

Vehicle access will be via a new crossover off Walters Road located adjacent to the eastern property boundary which services a ninety degree parking area. On-site parking will consist of 16 ninety degree parking bays along the driveway including 1 universal access bay.

The proposed access and parking layout is shown in **Figure 8**.

Figure 8: Vehicle Access and Parking Layout

4.2. Parking Demand

The Shire of Serpentine Jarrahdale Town Planning Scheme No.2 requires one parking bay per five children accommodated to be provided for 'Child Minding Centres'. Based on a maximum capacity of 75 children, the proposal needs to include a minimum of 15 parking bays. The plans provided indicate the proposal would be compliant, having 16 parking bays on site.

4.3. Access and Parking Layout

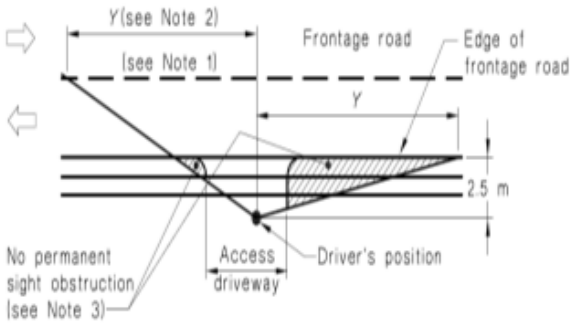
4.3.1. Parking

The layout and dimensions of the car park have also been assessed for compliance with the requirements of Australian Standard AS 2890.1. For short term high turnover parking the Standard recommends a bay length of 5.4 metres and an aisle width of 5.8 metres. The parking area shown on the drawings has a kerb to kerb width of 12.09 metres which is sufficient to accommodate a compliant bay and aisle. Bay width of 2.6 metres is required and this can be accommodated in the parking area shown.

4.4. Access Sight Distance

Figure 3.2 of AS2890.1, shown as **Figure 9** prescribes the minimum required stopping sight distance (SSD) for access driveways based on the approach speed of vehicles on the frontage road. Based on the 50km/h

frontage speed along Walters Road, the minimum required SSD from the proposed crossovers is 83 metres.



		Other than domestic		Domestic
Frontage road speed	Km/h	Desirable gap (m)	Minimum gap (m)	Minimum gap (m)
	60	83	65	55

NOTES:
1 Centre-line or centre of road (undivided road), or right hand edge of right hand through lane (divided road)
2 A check to the left is not required at a divided road where the median is wide enough to shelter a vehicle leaving the
3 Parking on this side of the frontage road may need to be restricted on either side of the driveway so that the sight distance

Figure 9: AS2890.1 – Access Sight Distance Requirements

As shown in **Figure 10**, the sight distance is achieved towards the east and the west.

Figure 10: AS2890.1 – Access Sight Distance

4.5. Provision for Service Vehicles

Waste will be collected from Walters Road verge by council waste collection vehicles.

5. Traffic Volumes and Vehicle Types

5.1. Trip Generation

The volume of traffic generated by the child care centre has been estimated using trip generation rates from the NSW Roads and Maritime Services (formerly RTA) *Guide to Traffic Generating Developments*. The proposed child care centre can be classified as a "Long day-care centre" with peak periods of traffic generation generally coinciding with the peak period of traffic on the road network from 7 to 9 am and from 4 to 6 pm. The trip generation rate is 0.8 vehicle trips per child in the morning and 0.7 vehicle trips per child in the afternoon.

Based on the 75 child capacity, the development is estimated to generate approximately 60 vehicle trips during the morning peak period and 53 vehicle trips during the afternoon peak period.

Based on the location of the site and the layout of the road network and the access arrangement the site generated traffic is expected to be distributed generally as shown in **Figure 11**.

Figure 11: Traffic Distribution

This distribution assumes that all traffic arriving in the morning will drop off children and leave by the same reverse route; noting that this does not allow for staff whose arrival would typically be in the morning and departure typically in the afternoon or parents that would drop children off in the morning and head off to work via a route different from the reverse of the arrival route. As such the distribution shown is likely to overstate movements and is considered to be conservative.

The impact on Walters Road would be greatest to the west of the site where traffic flow could increase by up to

180 vehicles per day bringing the total daily flow from 1,330 vpd to 1,510 vpd. This is well within the capacity of a Local Distributor road and no adverse impact is predicted.

5.2. Vehicle Types

The site is only expected to generate car trips.

5.3. Intersections

The increase in traffic is likely to have some impact on the intersection of South Western Highway and Walters Road and in order to assess the likely effects; the intersection was modelled using SIDRA 8.0 software for both the morning and afternoon peaks based on the volumes indicated in **Figure 12** and **Figure 15** and the results are shown in **Figure 13**, **Figure 14**, **Figure 16** and **Figure 17**.

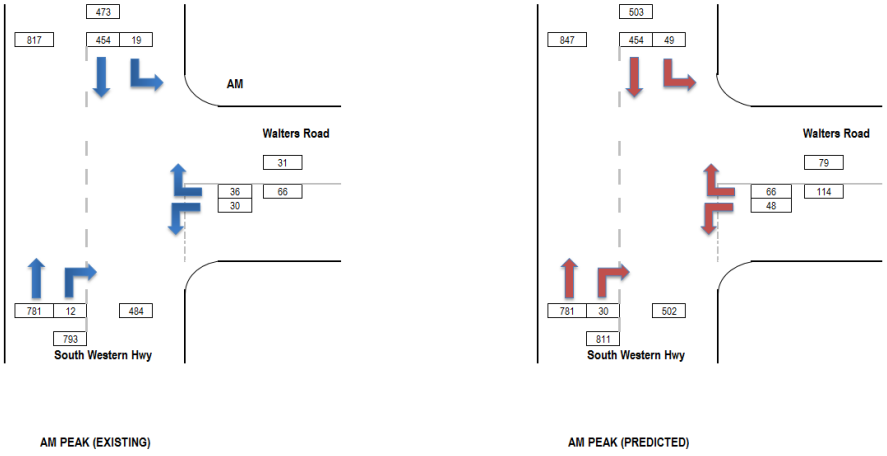


Figure 12: AM Volumes

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: South Western Hwy											
2	T1	822	6.0	0.419	0.2	LOS A	0.3	2.5	0.03	0.01	59.7
3	R2	13	6.0	0.419	10.6	LOS B	0.3	2.5	0.03	0.01	57.5
Approach		835	6.0	0.419	0.3	NA	0.3	2.5	0.03	0.01	59.6
East: Walters Road											
4	L2	32	2.0	0.032	7.5	LOS A	0.1	0.8	0.47	0.65	52.1
6	R2	38	2.0	0.167	19.6	LOS C	0.5	3.4	0.84	0.93	44.4
Approach		69	2.0	0.167	14.1	LOS B	0.5	3.4	0.67	0.81	47.6
North: South Western Hwy											
7	L2	20	6.0	0.011	5.6	LOS A	0.0	0.0	0.00	0.57	53.4
8	T1	478	6.0	0.255	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		498	6.0	0.255	0.3	NA	0.0	0.0	0.00	0.02	59.6
All Vehicles		1402	5.8	0.419	1.0	NA	0.5	3.4	0.05	0.05	58.9

Figure 13: AM Existing Peak Hour Results

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: South Western Hwy											
2	T1	822	6.0	0.445	0.5	LOS A	0.9	6.8	0.09	0.02	59.1
3	R2	32	6.0	0.445	11.2	LOS B	0.9	6.8	0.09	0.02	56.9
Approach		854	6.0	0.445	0.9	NA	0.9	6.8	0.09	0.02	59.0
East: Walters Road											
4	L2	51	2.0	0.051	7.5	LOS A	0.2	1.4	0.47	0.67	52.1
6	R2	69	2.0	0.323	23.0	LOS C	1.0	7.2	0.87	0.98	42.7
Approach		120	2.0	0.323	16.5	LOS C	1.0	7.2	0.70	0.85	46.2
North: South Western Hwy											
7	L2	52	6.0	0.029	5.6	LOS A	0.0	0.0	0.00	0.57	53.4
8	T1	478	6.0	0.255	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		529	6.0	0.255	0.6	NA	0.0	0.0	0.00	0.06	59.2
All Vehicles		1503	5.7	0.445	2.0	NA	1.0	7.2	0.11	0.10	57.8

Figure 14: AM Predicted Peak Hour Results

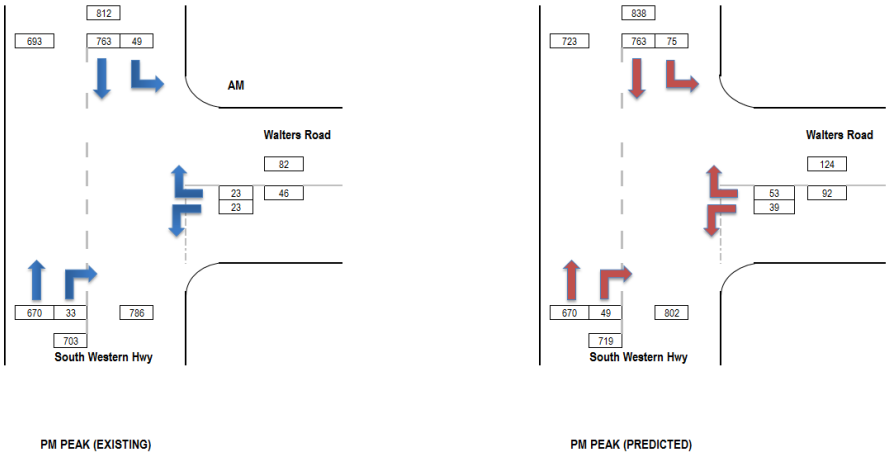


Figure 15: PM Volumes

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: South Western Hwy											
2	T1	705	6.0	0.426	2.0	LOS A	1.9	13.8	0.20	0.03	57.4
3	R2	35	6.0	0.426	18.0	LOS C	1.9	13.8	0.20	0.03	55.4
Approach		740	6.0	0.426	2.7	NA	1.9	13.8	0.20	0.03	57.3
East: Walters Road											
4	L2	24	2.0	0.040	10.1	LOS B	0.1	1.0	0.63	0.81	50.2
6	R2	24	2.0	0.151	25.8	LOS D	0.4	2.9	0.88	0.95	41.3
Approach		48	2.0	0.151	17.9	LOS C	0.4	2.9	0.76	0.88	45.3
North: South Western Hwy											
7	L2	52	6.0	0.029	5.6	LOS A	0.0	0.0	0.00	0.57	53.4
8	T1	803	6.0	0.428	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		855	6.0	0.428	0.4	NA	0.0	0.0	0.00	0.03	59.4
All Vehicles		1643	5.9	0.428	2.0	NA	1.9	13.8	0.11	0.06	58.0

Figure 16: PM Existing Peak Hour Results

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: South Western Hwy											
2	T1	705	6.0	0.471	3.2	LOS A	3.0	22.0	0.30	0.05	56.1
3	R2	52	6.0	0.471	19.1	LOS C	3.0	22.0	0.30	0.05	54.1
Approach		757	6.0	0.471	4.2	NA	3.0	22.0	0.30	0.05	56.0
East: Walters Road											
4	L2	41	2.0	0.068	10.2	LOS B	0.2	1.7	0.64	0.84	50.1
6	R2	56	2.0	0.364	31.3	LOS D	1.1	7.8	0.91	1.00	38.9
Approach		97	2.0	0.364	22.4	LOS C	1.1	7.8	0.80	0.94	43.0
North: South Western Hwy											
7	L2	79	6.0	0.044	5.6	LOS A	0.0	0.0	0.00	0.57	53.4
8	T1	803	6.0	0.428	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		882	6.0	0.428	0.6	NA	0.0	0.0	0.00	0.05	59.2
All Vehicles		1736	5.8	0.471	3.4	NA	3.0	22.0	0.18	0.10	56.6

Figure 17: PM Predicted Peak Hour Results

As shown, the intersection is predicted to operate at a satisfactory level during both peak periods with relatively minor increases in delay and queueing compared to the existing operation.

It is noted that Tonkin Highway is planned for extension from Thomas Road through to South Western Highway, south of Mundijong. The extension will be a four-lane dual carriageway with intersection upgrades at Thomas Road, Orton Road, Mundijong Road and South Western Highway. The project is currently in planning and construction is estimated to be completed in late 2023. It is likely that some of the existing traffic along South Western Highway will transfer to Tonkin Highway which would increase the capacity of South Western Highway.

6. Public Transport Access

The following bus services are currently available within reasonable walking distance from the site:

- Transperth Bus Route 251 operating on a route between Armadale Station and Clondyke Drive.
- Transperth Bus Route 252 operating on a route between Armadale Station and Whitby Street.
- Transperth Bus Route 253 operating on a route between Armadale High School and Kingsbury Drive.

The site is also about 300 metres walking distance to bus stops on South Western Highway as shown in **Figure 18.** The existing service is considered adequate to meet the likely public transport demand of the proposed development.

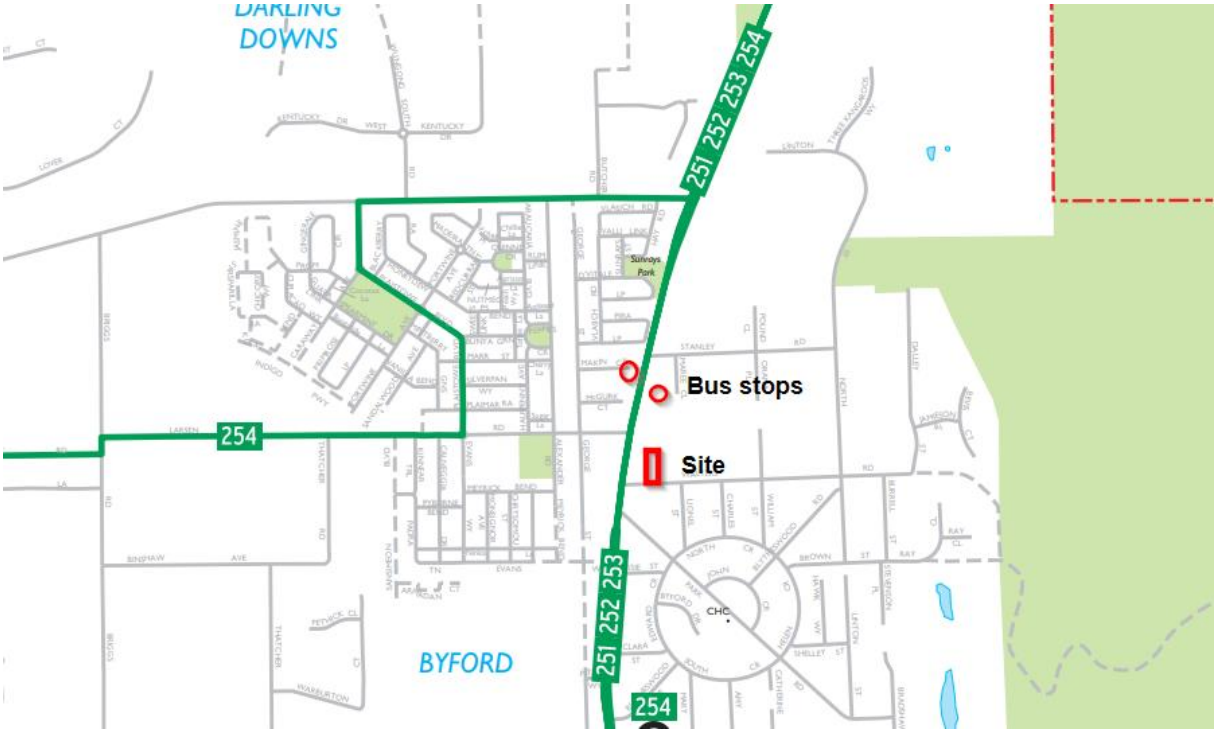


Figure 18: Public Transport

7. Pedestrian and Cyclist Access

There is an existing path along the south side of Walters Road which connects to another path along the western side of South Western Highway. The structure plan for the site and surrounding area proposes a new shared path along the north side of Walters Road. Ultimately, a footpath connection should be provided between the site and this future path to enhance accessibility for pedestrians.

No formal cycling facilities are provided; however given the nature of the intended land use cycling demand is expected to be low.

Existing facilities are considered to be adequate for now and no upgrades are warranted.

8. Site Specific and Safety Issues

8.1. Crash History

The crash history for the intersection of South Western Highway and Walters Road within the five-year period ending December 2018 was sourced from the MRWA *Reporting Centre* and this indicated that a total of 6 crashes were reported. Of these, 3 were rear end crashes, 1 was a right angle crash, 1 was a right turn through crash and the nature of 1 crash was unknown. 5 crashes resulted in property damage only while 1 required medical treatment.

The number of recorded crashes is considered to be relatively low for the volume of traffic on the adjacent roads and do not suggest any particular safety issue with the existing road layout. The volume of traffic expected to be generated by the development is low and not considered to increase the risk of crashes above acceptable levels.

9. Conclusions

A transport assessment of the proposed child care centre to be located at 2 Walters Road in Byford has concluded the following:

- There is adequate capacity in the existing road network to accommodate the expected development traffic.
- The proposed car parking supply satisfies the minimum requirements as outlined by the Shire of Serpentine Jarrahdale's Town Planning Scheme.
- The parking bay dimensions comply with the requirements of Australian Standard AS2890.1.
- There is adequate sight distance from the proposed crossover towards the east and west.
- The existing available public transport service is considered adequate to meet the likely public transport demand of the development.
- Pedestrian entry will be from Walters Road and the existing path network surrounding the site is considered to be adequate.
- A review of the crash history adjacent to the site did not indicate any safety issues with the road network and the additional traffic generated by the proposed development is not likely to increase the risk of crashes.