



Proposed Mixed Commercial Development

**813 - 815 South Western Highway,
Byford**

Transport Impact Statement

**PREPARED FOR:
Metrowest**

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1.0 Introduction

This Transport Impact Statement has been prepared by Transcore on behalf of Metrowest with regard to the proposed mixed commercial development to be located at 813 – 815 South Western Highway, Byford in the Shire of Serpentine-Jarrahdale.

The Transport Impact Assessment Guidelines (WAPC, Vol 4 – Individual Developments, August 2016) states: “A *Transport Impact Statement* is required for those developments that would be likely to generate moderate volumes of traffic¹ and therefore would have a moderate overall impact on the surrounding land uses and transport networks”. **Section 5.0** of Transcore’s report provides details of the estimated trip generation for the proposed development. Accordingly, as the total peak hour vehicular trips are estimated to be less than 100 trips, a Transport Impact Statement is deemed appropriate for this development.

The subject site of approximately 2,950m² total site area is located between South Western Highway and George Street as shown in **Figure 1**.

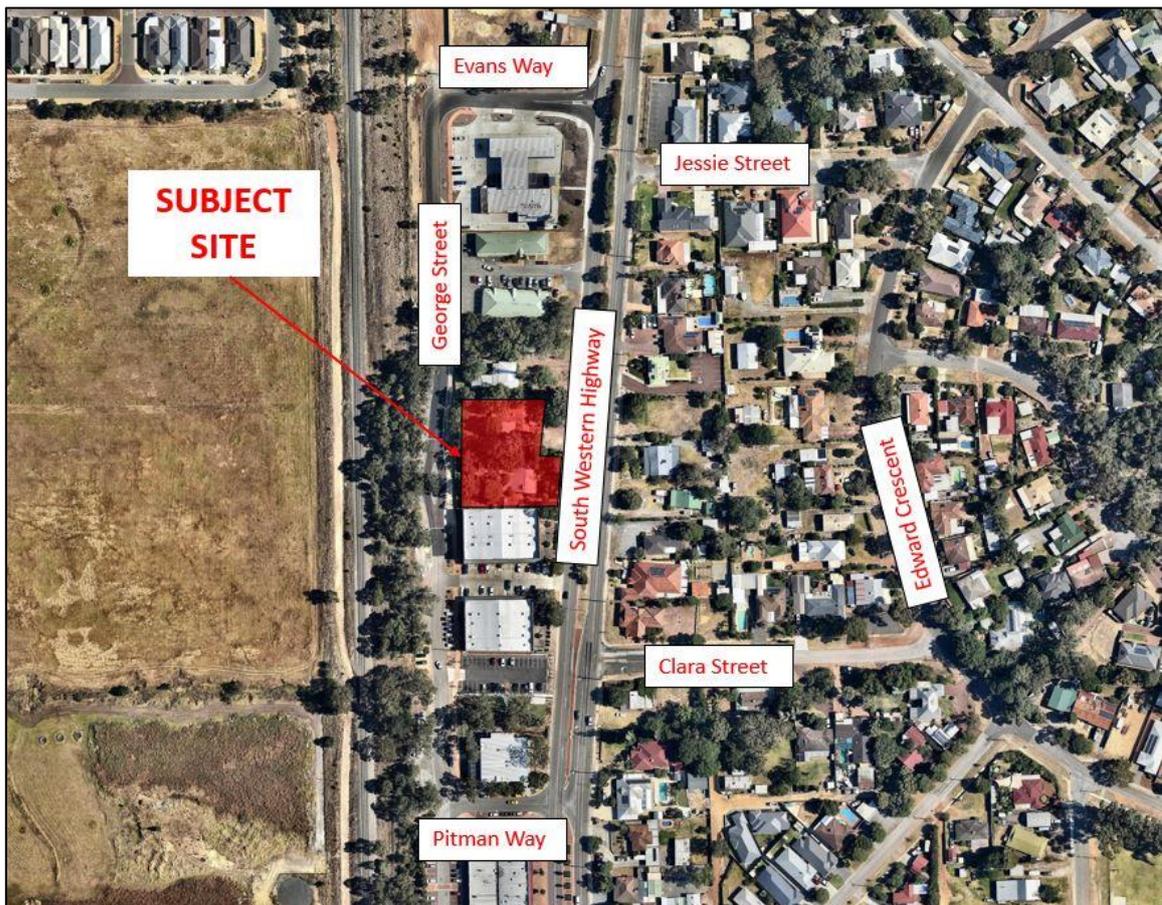


Figure 1. Location of the subject site

¹ Between 10 and 100 vehicular trips per hour

The subject site is bound by South Western Highway to the east, George Street to the west, existing residential development to the immediate north and commercial development to the immediate south. Unpaved vehicle accesses to the site are currently available from South Western Highway.

The subject site is presently occupied by two residential houses and is located within an area comprising predominantly residential and commercial developments with some retail developments mostly along South Western Highway.

Pedestrians currently access the subject site via existing pedestrian footpaths along South Western Highway. It is anticipated that the pedestrian footpath network will also be connected along George Street in future.

Key issues that will be addressed in this report include the traffic generation and distribution of the proposed development, parking and access.

2.0 Proposed Development

The Development Application (DA) for the subject site proposes replacement of the existing uses at the site with mixed commercial development including swimming school, child play centre and play centre café with associated car park on the ground floor and fitness centre with associated car park on the first floor. The breakdown of floorspace for each land use component is detailed in **Table 1**:

Table 1. Land Use Schedule

Level	Facility	Area (m ²)
Ground floor	Swimming School	300
	Child Play Centre	927
Common Area		57
First floor	Fitness Centre	802
Total		2,086

Vehicle access to the parking areas will be provided by two driveway crossovers on George Street, as detailed in **Section 3.1** of this report.

A total of nine bicycle racks (18 bicycle spaces) have been provided for the patrons of the development. The bicycle storage areas are located adjacent to the fitness centre on level 1 and adjacent to child play centre on the ground floor for convenience. Therefore, patrons can easily access the fitness centre after securely parking their bikes.

The bin storage area is located on the ground floor at the northwest corner of the child play centre. It is anticipated that the waste collection will take place on George Street.

Refer to **Appendix A** for plans of the proposed development.

3.0 Vehicle Access and Parking

3.1 Access

According to the plans prepared by Modus Design, the proposed development will be served by two full-movement driveway crossovers on George Street. **Figure 2** illustrates the locations of the proposed crossovers. The northern crossover will provide access for the first floor car park and the southern crossover will provide access to the ground floor car park.

The proposed crossovers on George Street have been assessed in accordance with *Australian Standard AS 2890.1 Parking facilities – Part 1: Off-street car parking*. The proposed crossovers satisfy the requirements of *Figure 2.8: Circulation roadway and ramp cross sections* and *Table 3.1: Selection of access facility category* and *Table 3.2: Access driveway widths* of the Standard. The proposed northern crossover provides 6.2m driveway width with approximately 175mm wide walls on both sides of the driveway. The proposed southern crossover also provides 6m driveway width with adequate 1.2m path width on both sides of the crossover and driveway.

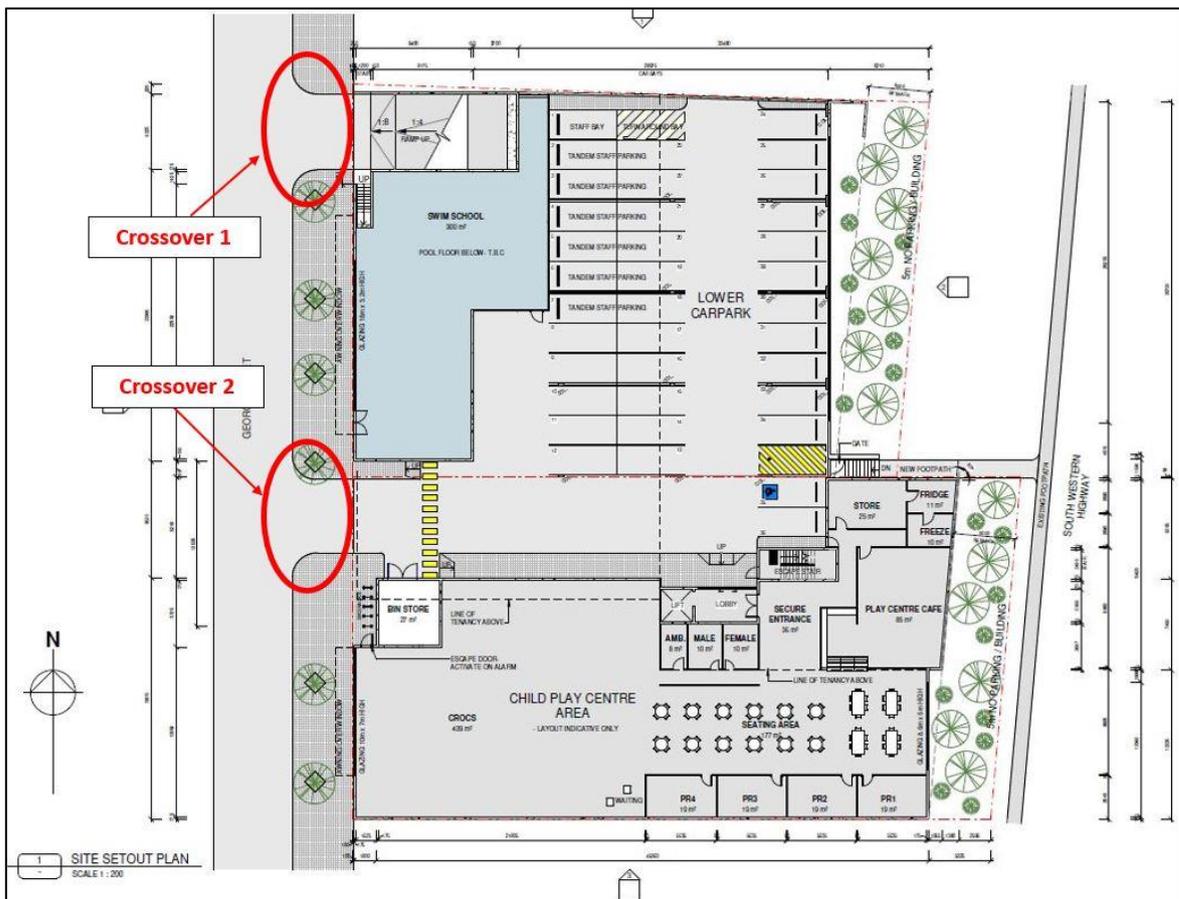


Figure 2: Proposed development crossovers

3.2 *Parking Demand and Supply*

As part of the development proposal a total of 61 parking bays (including two ACROD parking bays and 12 tandem staff parking bays) and one turn around bay are proposed to address the parking demand. This will include 36 parking bays at ground floor level and 25 parking bays at first floor level.

The car parking bays can be directly accessed from two proposed crossovers on George Street. The access for the first-floor car park is proposed at the northern crossover via a proposed ramp and the access for the ground floor car park is proposed at the southern crossover.

The Site Plan prepared by Modus Design at **Appendix A** includes parking calculations indicating a total requirement of 86 parking bays. Based on the advice to Transcore from Urbis, the appropriate parking rate for this site is provided by the Local Structure Plan in lieu of the Local Planning Strategy. The rate is applied irrespective of the use and is as follows:

“One bay for every 20.sq.m gross leasable area (GLA), less any on-street parking adjoining the site.”

Therefore, for a total GLA of approximately 1,725 sq.m, there is a requirement for 87 bays. The development proposes 61 bays. Accordingly, there is a 26 bays shortfall on the subject site.

3.2.1 *Parking Demand Study*

Since the land use of the proposed development is primarily a fitness centre, a *Plus Fitness Studios Parking Demand Study* report prepared by Gennaoui Consulting Pty Ltd was referenced to provide a realistic estimate of actual parking demand for the proposed development.

The Parking Demand Study for Plus Fitness Studios (hereafter PDS) states that *“An analysis of the results indicated that there is no statistically valid relationship between the peak parking demand and the gross floor area of studios. Similarly, there is no statically valid relationship between the peak parking demand and the total membership of a studio.*

However when including both the gross floor area and the total membership levels together with the land use of the surrounding area and the availability of public transport with the land use of the surrounding area and the availability of public transport, the strong relationships (high correlation coefficient) were determined from a regression analysis of the data included in Table 8” (of the document).

The study further states that:

“For new studios, it may be difficult to estimate the future number of members. In this situation, the following relationship (very high correlation coefficient) was determined from a regression analysis of the data excluding the membership levels:

Peak Parking demand = $9.108 + 0.0368 X2 - 2.842 X3 - 2.967 X4$
 With $R^2 = 0.93$ and where
 $X2 = \text{Gross Floor area GFA } m^2$
 $X3 = \text{Land use}$
 $X4 = \text{Availability of Public Transport''}$

Table 2: Land use and availability of public transport (PDS)

Land Use		Public Transport	
Shopping Centre/ Commercial	1	NIL	0
Industrial	2	Bus	1
Residential	3	Bus Train	2
Industrial Commercial	4		
Residential Commercial	5		

Therefore, it is calculated that the total of 67 parking bays are required for the proposed mixed commercial development. The proposed development provides a total of 61 parking spaces with a parking shortfall of **6** bays.

3.2.2 Existing Parking Utilisation

To address the issue of on site parking shortfall, Transcore has undertaken a detailed parking inventory and utilisation survey of the area within 500m walking distance from the subject site to establish the existing public parking supply and demand within the immediate locality.

The parking survey area was divided into two discrete zones labelled A and B, as detailed in **Figure 3**. The parking inventory survey area includes on-street parking on both sides of George Street between the subject site and Abernethy Road.

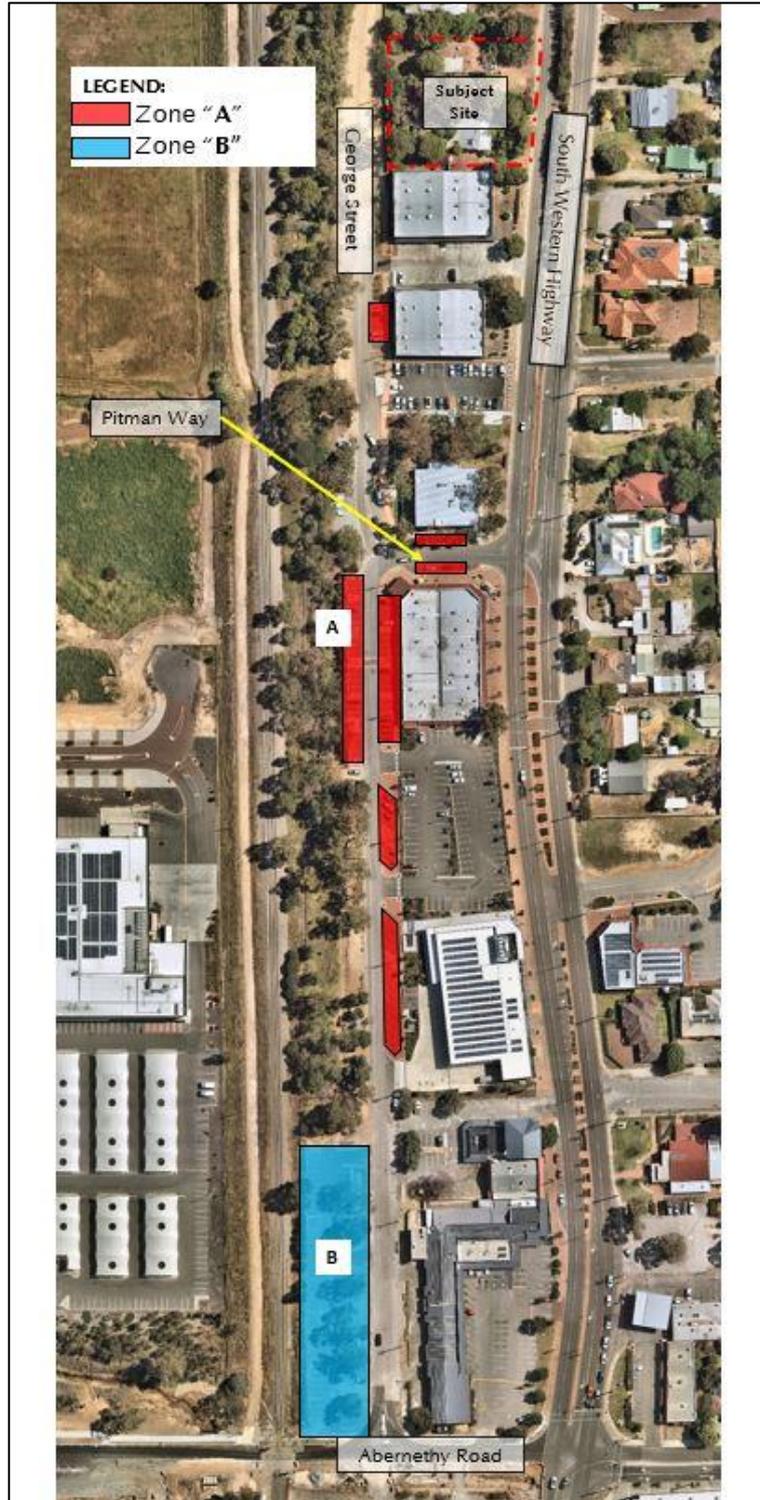


Figure 3: Parking assessment zones

Two parking utilisation surveys of the parking zones were then undertaken on a weekday and a weekend as follows:

- ✚ Survey 1: Saturday 1 February 2020: 10:00am to 1:00pm; and
- ✚ Survey 2: Monday 3 February 2020: 4:00pm to 7:00pm.

The survey days and times are selected as representative of the peak parking demand periods for the particular type of land use. Parking utilisation surveys were undertaken in 15 minutes intervals.

The parking inventory recorded a total public parking supply of 149 spaces in the survey area within 500m walking distance, between the subject site and Abernethy Road. The surveyed parking inventory is detailed in **Table 3**.

Table 3: Surveyed parking inventory

Zone	Car Parking Supply
A	72 spaces
B	77 spaces
Total	149 spaces

Survey 1: 1 February 2020 Survey Results

The total parking utilisation over the weekend (Saturday) survey period is summarised graphically in **Figure 4** and outlined below:

- ✚ Based on the survey results, between 34% and 40% utilisation was recorded between 11:00am and 12:00pm on Saturday morning;
- ✚ Peak utilisation was recorded between 11:30am to 11:45am when there were 59 cars parked at the surveyed zones with 40% occupancy; and,
- ✚ There were at least 90 car bays available at any time during the survey period.

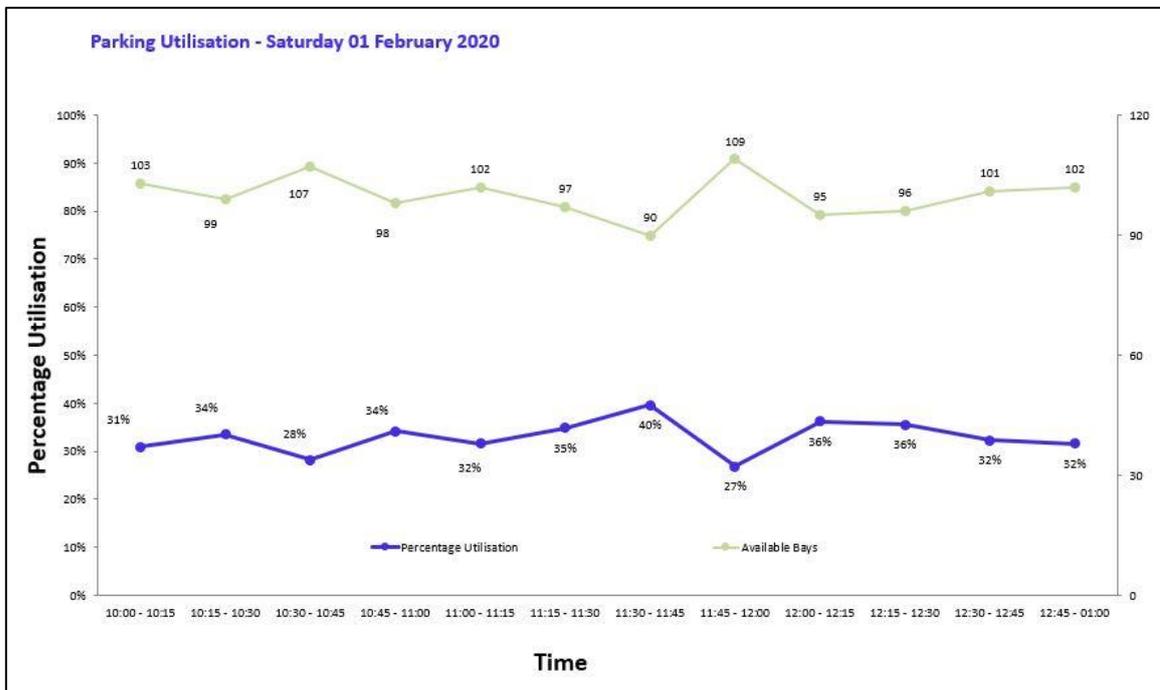


Figure 4: Saturday 1 February 2020 – parking utilisation

Survey 2: 3 February 2020 Survey Results

The total parking utilisation over the weekday (Monday) survey period is summarised graphically in **Figure 5** and outlined below:

- ✚ Based on the survey results, between 28% and 30% utilisation was recorded between 4:00pm and 5:00pm on Monday evening;
- ✚ Peak utilisation was recorded between 4:45pm to 5:00pm when there were 44 cars parked at the surveyed zones with 30% occupancy; and,
- ✚ There were at least 105 car bays available at any time during the survey period.

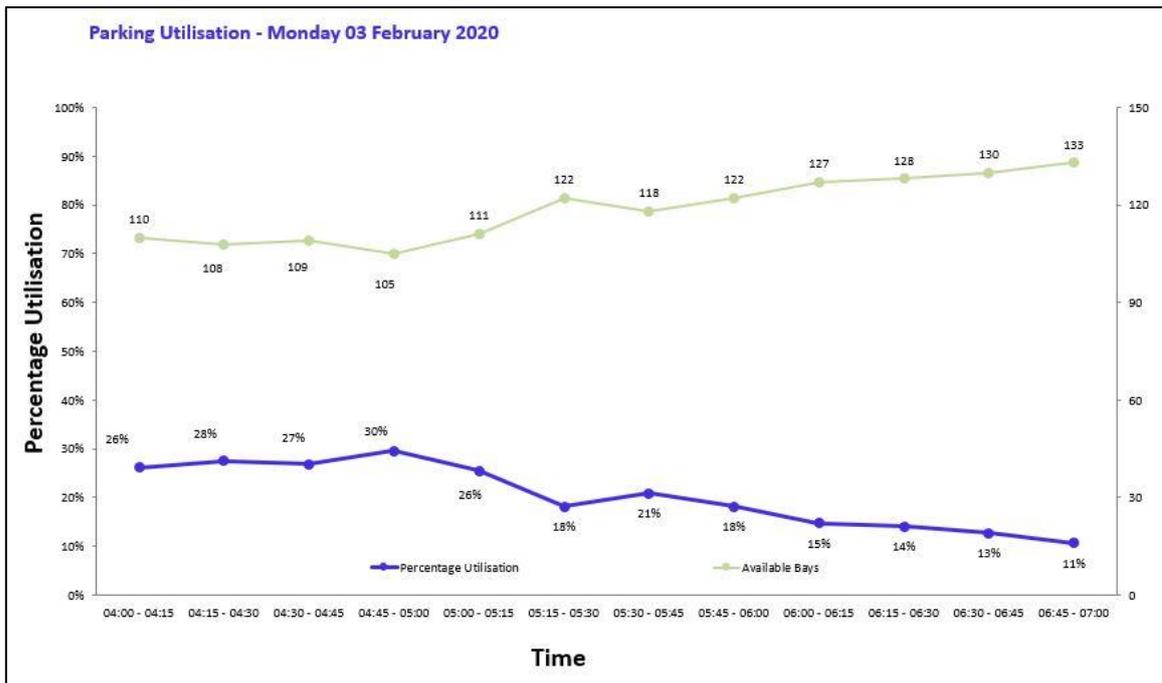


Figure 5: Monday 3 February 2020 – parking utilisation

Overall the peak parking demand was recorded between 11:00am to 12:00pm on Saturday with 59 bays occupied and 90 bays available within comfortable walking distance from the subject site. Therefore, it is concluded that the available free public parking opportunities within the surveyed parking area would more than compensate for the Local Structure Plan car parking shortfall of 26 bays for the proposed development.

The actual anticipated shortfall of only 6 bays would clearly be more than adequately served by available on-street public parking within a short walk from the subject site.

4.0 Provision for Service Vehicles

A bin storage area is proposed on the ground floor at the northwest corner of the child play centre. The waste collection for the proposed development is anticipated to take place on George Street. The rubbish bins will be wheeled out from the bin store and lined up along George Street for pick up on designated collection days.

5.0 Daily Traffic Volumes and Vehicle Types

5.1 Existing Development Trip Generation

The subject site currently consists of two existing residential lots, so it can be assumed as minimal traffic generation.

5.2 Proposed Development Trip Generation

The traffic volumes likely to be generated by the proposed mixed commercial development have been estimated based on the proposed land uses in accordance with the *ITE Trip Generation Manual (10th Edition)* which provides peak hour trip rates and directional traffic split for different types of land uses.

In this particular case, child play centre and swimming pool are assumed conservatively as part of the overall health/ fitness club. Some parents/ guardians who go to the fitness centre or swimming school will leave their children at the child play centre while attending the fitness centre or swimming school. The play centre café operation will mostly be reserved only for patrons of the proposed development, so the trip rate for play centre café is also assumed as health/ fitness club.

The adopted trip rates are conservative resulting in a robust assessment considering the site location, surrounding land uses and adjacent roads traffic.

Accordingly, the trip rates which were used to estimate the proposed development traffic generation are as follows:

Health/ Fitness Club (492) – 1000 Sq. Ft. GFA

- ✚ Weekday AM peak hour: $1.4\text{vph per }1000\text{sqft GFA} / 0.929 = 1.51\text{vph} / 100\text{m}^2$ GFA; and,
- ✚ Weekday PM peak hour: $3.92\text{vph per }1000\text{sqft GFA} / 0.929 = 4.22\text{vph} / 100\text{m}^2$ GFA.

Accordingly, it is estimated that the traffic generations for health/ fitness club are:

- ✚ Weekday AM peak hour: $[1.51 \times 2086 / 100 \text{ (GFA)}] = 32 \text{ vph}$; and,
- ✚ Weekday PM peak hour: $[4.22 \times 2086 / 100 \text{ (GFA)}] = 88 \text{ vph}$.

For commercial developments of various types, the peak hour traffic generation is typically in the order of 10% to 20% of total daily traffic generation. This would indicate daily traffic generation in the range of 5 to 10 times the afternoon peak traffic generation. Assuming conservatively that daily traffic generation is 10 times the afternoon peak hour traffic generation indicates an upper estimate of daily trip generation of $(88 \times 10 = 880)$ trips.

Accordingly, it is estimated that the proposed development would generate a total of approximate **880** vehicular trips per regular weekday with about **32** trips during the typical weekday AM peak hour and **88** trips during the typical weekday PM peak hour. These totals include both inbound and outbound vehicle movements.

The traffic generation and peak hour split detailed in **Table 4** was based on the following directional split assumptions for peak hour periods referenced from ITE Trip Generation Manual:

- ✚ Morning (AM) peak split estimated at 46%/54% for inbound/outbound trips associated with health/ fitness club; and,
- ✚ Afternoon (PM) peak split estimated at 52%/48%, for inbound/outbound trips associated with health/ fitness club.

Table 4. Estimated peak hour trips for the proposed development

Land Use	AM Peak			PM Peak		
	Traffic Split	In	Out	Traffic Split	In	Out
Health/ Fitness Club, Swimming Pool & Child Play Centre	46% in	15		52% in	46	
	54% out		17	48% out		42
Total		32			88	

With respect to the location of the development, permeability and layout of the surrounding road network and the actual traffic operation conditions at local intersections, the assumed distribution for traffic arriving to the site is assumed as follows:

- ✚ 30% from South Western Highway north;
- ✚ 20% from South Western Highway south;
- ✚ 10% from Jessie Street;
- ✚ 10% from Clara Street; and,
- ✚ 30% from George Street south.

The directional morning, afternoon and total daily trip distribution of the development-generated traffic is illustrated in **Figure 6** and **Figure 7**.

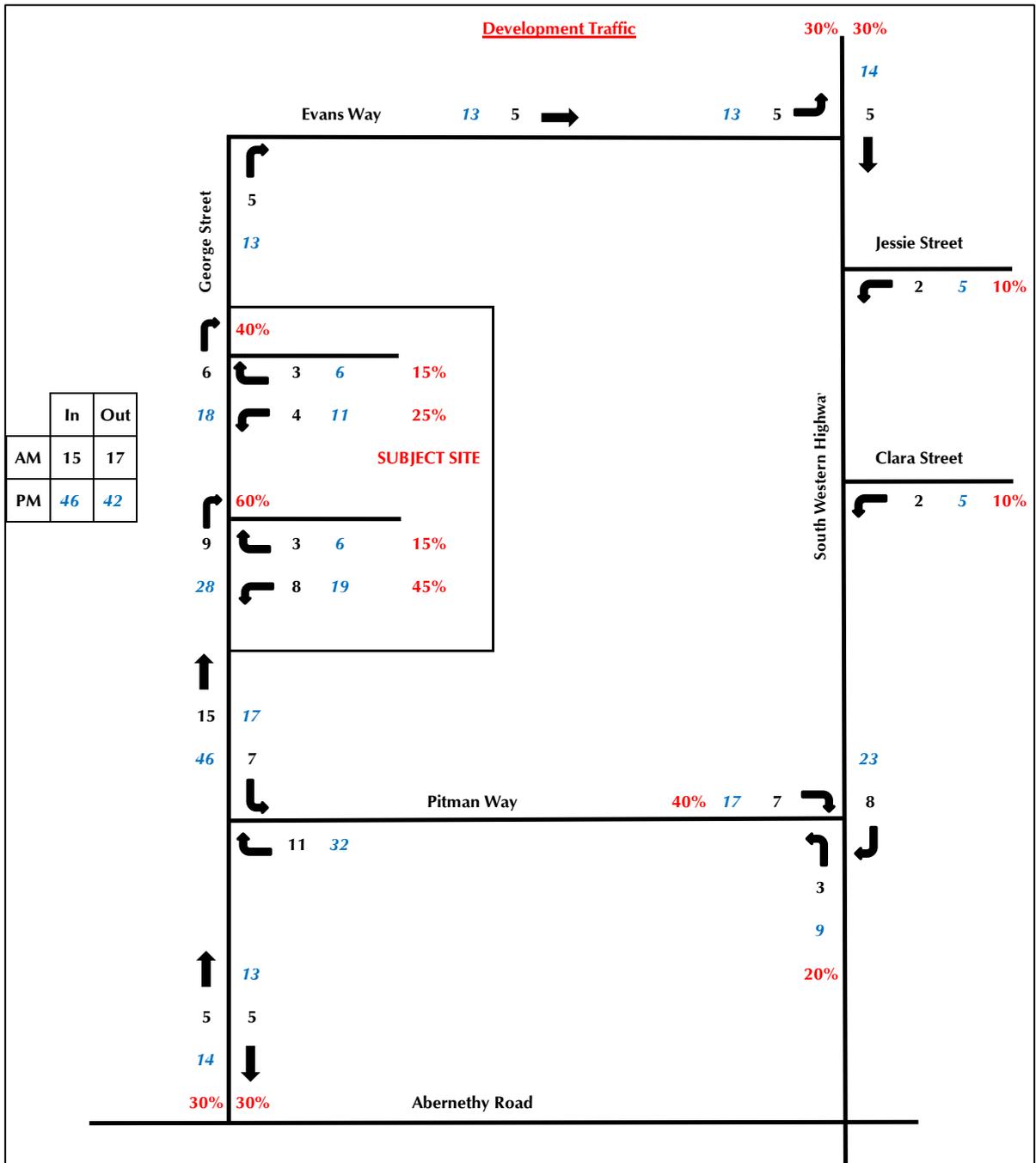


Figure 6. Estimated traffic movements for the subject development – morning and afternoon peak



Figure 7. Estimated traffic movements for the subject development – morning, afternoon peak and total daily trips

5.3 Impact on Surrounding Road Network

The WAPC *Transport Impact Assessment Guidelines (2016)* provides guidance on the assessment of traffic impacts:

“As a general guide, an increase in traffic of less than 10 percent of capacity would not normally be likely to have a material impact on any particular section of road but increases over 10 percent may. All sections of road with an increase greater than 10 percent of capacity should therefore be included in the analysis. For ease of assessment, an increase of 100 vehicles per hour for any lane can be considered as equating to around 10 percent of capacity. Therefore, any section of road where the

development traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis.”

It is clear that the traffic increase from the proposed development would be significantly less than the critical threshold (100vph per lane) with the most pronounced traffic increases being 46vph on George Street (south of the development) and 13vph on George Street (north of the development) during the afternoon peak hour, hence the impact on the surrounding road network is not considered to be significant and does not require further analysis.

6.0 Traffic Management on the Frontage Streets

George Street is a newly constructed, approximately 7.0m wide, single-carriageway, two-lane trafficable road with a pedestrian footpath on the eastern side of the road in this vicinity. Refer to **Figure 8** for more details. George Street operates under the default 50km/h built-up area speed limit. George Street is classified as an *Access Road* in the *Main Roads WA Functional Road Hierarchy*. There are no formal traffic counts available for this road, however, based on its function and the type of land uses it serves, it is estimated that George Street currently carries significantly less than a thousand vehicles per day.

Formal 90-degree on-street parking is currently provided along both sides of George Street south of Pitman Way. The 90-degree parking is paved with red asphalt treatment. Speed humps and a sign posted 20km/h advisory speed limit is provided to calm traffic through the parking area.

George Street continues around a 90-degree bend to become Evans Way which connects to South Western Highway. It is anticipated that sealed pavement of George Street will be extended and a complete link between Abernethy Road and Larsen Road will be constructed in the near future.



Figure 8. Northbound view along George Street

Evans Way is constructed as approximately 9.0m wide, single-carriageway, two-lane road with total length of approximately 85m. A pedestrian footpath is available on the southern side of the road. Refer to **Figure 9** for details.

Evans Way is classified as an *Access Road* in the *Main Roads WA Functional Road Hierarchy*. Evans Way operates under the default 50km/h built-up area speed limit. There are no formal traffic counts available for this road, however, based on its function and the type of land uses it serves, it is estimated that Evans Way currently carries significantly less than a thousand vehicles per day. Evans Way forms a left in / left out 'T' intersection at South Western Highway, controlled by give way sign on Evans Way.



Figure 9. Eastbound view along Evans Way

Pitman Way is also constructed as approximately 7.0m wide, single-carriageway, two-lane road with total length of approximately 50m. Pedestrian footpaths are in place on both sides of the road. Four on-street parking bays including one ACROD bay are in place along the kerbside on the southern side of the road and one on-street parking bay with loading bay on the northern side of the road. Refer to **Figure 10** for details.

Pitman Way is classified as an *Access Road* in the *Main Roads WA Functional Road Hierarchy*. Pitman Way operates under the default 50km/h built-up area speed limit. There are no formal traffic counts available for this road however, based on its function and the type of land uses it serves, it is estimated that Pitman Way currently

carries significantly less than a thousand vehicles per day. Pitman Way forms a full-movement 'T' intersection at South Western Highway, controlled by give way sign on Pitman Way.



Figure 10. Westbound view along Pitman

South Western Highway near the subject site is an approximately 20m wide, four-lane road with an approximately 6m wide raised and kerbed median. Concrete pedestrian footpaths are provided along on both sides of South Western Highway. Refer to **Figure 11** for details.

South Western Highway is classified as a *Primary Distributor* in the Main Roads WA *Functional Road Hierarchy* with a 60km/h posted speed limit in this area.

Based on the available traffic count information sourced from Main Roads WA it is estimated that South Western Highway, south of Jessie Street, carries about 18,234vpd vehicles on a regular weekday (2017/18). The morning and afternoon peaks are between 8:00am – 9:00am and 3:00 – 4:00pm with traffic volumes of 1,373vph and 1,558vph respectively.



Figure 11. Northbound view along South Western Highway

7.0 Public Transport Access

The WAPC Development Control Policy 1.6 – *Planning to Support Transit Use and Transit Oriented Development (January 2006)* indicates that the use of transit facilities is dependent on the walking distance to these facilities. In particular, about 10-15 minutes walking time (800m) would be the ideal walking distance threshold for rail station, transit interchanges or major bus transfer stations/terminals, and about 5 – 7 minutes walking time, or 400m, would be the threshold for bus stops located on bus routes with multiple bus services that are high frequency of 15 minutes or less during peak periods.

The subject site is well served by bus services 251, 252 and 253 operating along on South Western Highway to the east of the subject site. The nearest bus stop is located on South Western Highway approximately 30m to the south of the subject site. The nearest bus stop is accessible from the subject site via existing formal footpaths and pedestrian crossing facilities.

The public transport services available within walking distance of the subject site are listed in **Table 5** and illustrated in the relevant TransPerth service map (see **Figure 12**).

Table 5. Bus services available within the locality

Service #	Facility
251	Armadale Station – Clondyke Dr/ Burgess Dr
252	Armadale Station – Paterson Rd/ Whitby St
253	Armadale Station – Kingsbury Dr/ Jacaranda Ave

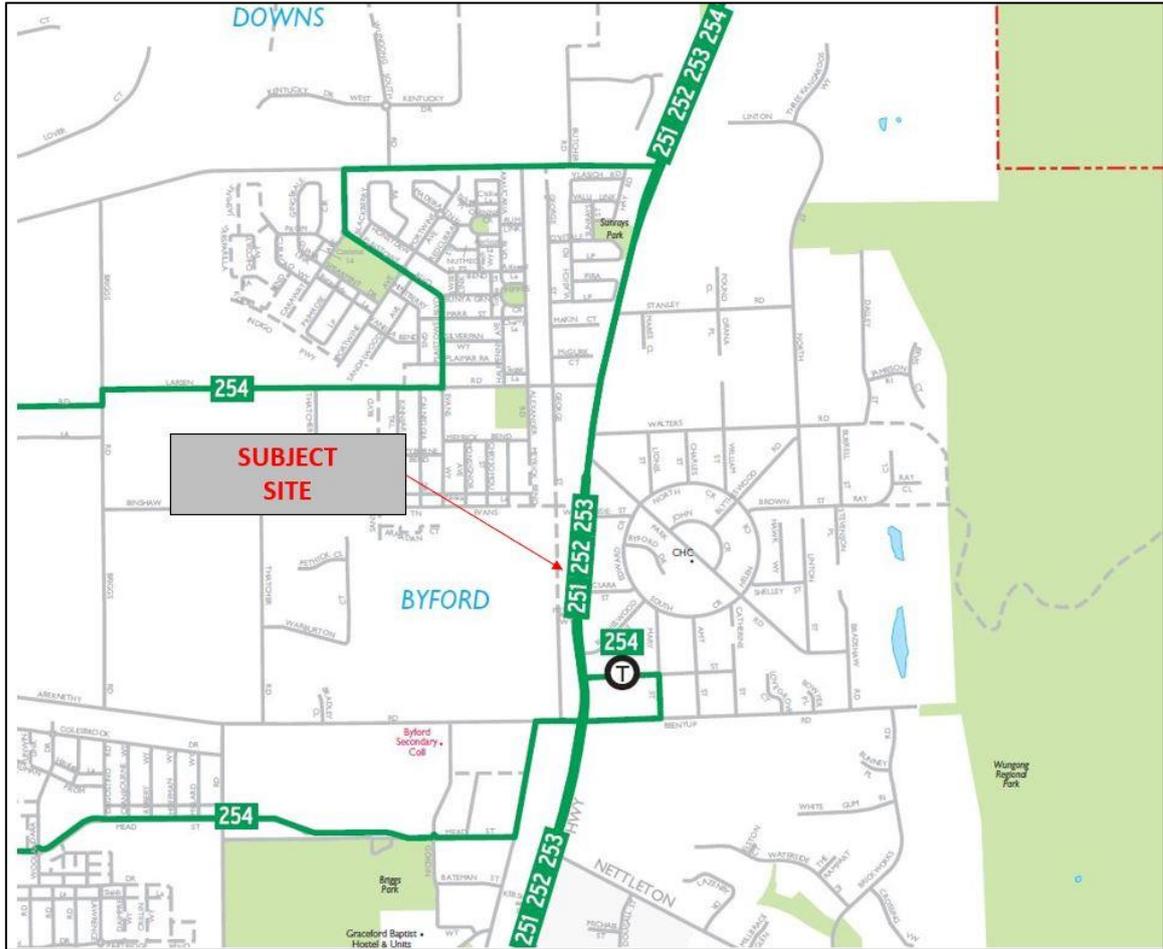


Figure 12. Local bus map (Source: Transperth)

8.0 Pedestrian Access

Pedestrian access to the proposed development is available directly from the existing footpath network on George Street, Pitman Way, South Western Highway and other adjacent streets within the locality. Pedestrian crossing facilities including drop kerb are provided on South Western Highway approximately 140m south of the subject site.

The existing path network within the locality provides direct and convenient access to and from the key local retail, office, commercial, food and beverage places, recreational and other major local attractors.

9.0 Cycle Access

According to the current Department of Transport Bike Maps, the subject site has direct access to the existing bike path network within the locality via the “other shared path” on George Street. This provides further links to a number of recreational paths within the adjacent streets including a link to Abernethy Road which is classified as “good road riding environment”. **Figure 13** shows existing cyclist connectivity to the subject site.

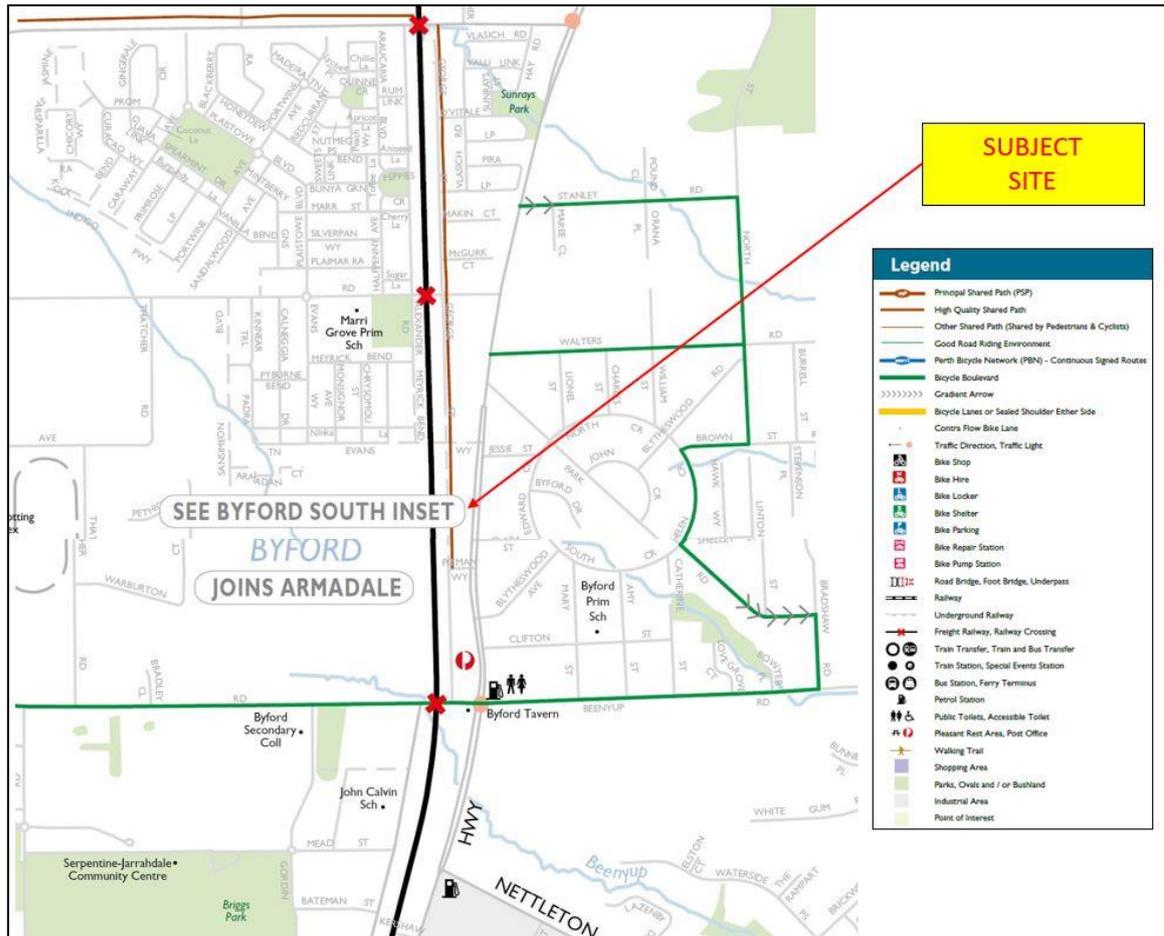


Figure 13. Perth bike map series – local area (source: Department of Transport)

10.0 Site Specific Issues

No particular site-specific issues have been identified for this proposed development.

11.0 Safety Issues

No particular traffic related safety issues have been identified for the proposed development.

12.0 Conclusions

This Transport Impact Statement provides information on the proposed mixed commercial development to be located at 813 - 815 South Western Highway, Byford in the Shire of Serpentine-Jarrahdale. The proposed development comprises fitness centre, swimming pool and child play centre.

A total of 61 parking bays (36 parking bays at ground floor and 25 parking bays at first floor) including two ACROD parking bays and 12 tandem staff parking bays and one turn around bay are provided on site for the use of patrons and employees. The car parking bays can be directly accessed from two proposed driveway crossovers at George Street. The first floor car park will be accessed via a ramp from the northern crossover and the ground floor car park will be accessed via the southern crossover.

The subject site has good accessibility by the existing road network, pedestrian paths and cyclist network and enjoys very good transport coverage through existing bus services operating in close proximity to the subject site.

The traffic analysis undertaken in this report shows that the traffic generation of the proposed development is estimated to be in the order of 880 daily and 32 and 88 morning and afternoon peak hour trips (total of both inbound and outbound movements), respectively. Accordingly, the traffic impact of the proposal on the surrounding road network will not be significant.

No particular transport or safety issues have been identified for the proposed development.

Finally, it is concluded that traffic-related issues should not form an impediment to the approval of the proposed development.