



Proposed Child Care Centre Development

**Lot 1062 Tuberosse Road, Piara
Waters**

Transport Impact Statement

**PREPARED FOR:
Lou Di Virgilio Designs**

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Author: Waihin Tun

Project manager: Behnam Bordbar

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1.0 Introduction

Transcore has been commissioned to prepare a Transport Impact Statement for a proposed 97-place childcare centre, to be located within the north-east quadrant of the roundabout intersection of Wright Road/Tuberose Road, Piara Waters in the City of Armadale.

This assessment has been prepared in accordance with the City of Armadale's *Town Planning Scheme No. 4, Local Planning PLN 3.2: Childcare Premises and Family Day Care*, the *WAPC Planning Bulletin 72/2009: Childcare Centres* and the *WAPC Transport Impact Assessment Guidelines - Vol. 4: Individual Developments (2016)* as well as in the context of documented car parking demand surveys and established information relating to long-stay childcare centres throughout the Perth Metropolitan Area and endorsed structure planning for the Piara Waters urban cell.

The site is located at the north-east corner of the roundabout intersection of Wright Road/Tuberose Road with Laperla Street forming the eastern boundary of the site within the Development Area No. 35 of the North Forrestdale (Stage 3/South) Structure Plan as shown in **Figure 1**. The site is located approximately 5km east of the Cockburn Central urban development area and 10km west of the Armadale City Centre.

A site visit was conducted on 1st July 2020 to identify any potential traffic-related issues associated with the proposal and to observe existing traffic patterns at the intersection of Wright Road/Tuberose Road.

The key issues that are addressed in this report include the traffic generation and distribution of the proposed development, parking and access and egress movement patterns.

2.0 Scope of Assessment

This report has been prepared in accordance with the Western Australian Planning Commission's *Transport Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016)* as well as relevant Council guidelines and policies.

Specifically, this report aims to assess the impacts of the proposed development on the boundary road network in the vicinity of the site to identify any modifications, to site or road layout, which may be required to serve the proposed site. In addition, the assessment considers the proposed access, circulation, and egress arrangements to and from the site.

For this purpose, the traffic operations on the adjacent and broader local road network have been assessed under both existing and future proposed traffic conditions with regard to the potential impacts from additional traffic generated by the proposed development of the site. **Figure 1** shows the location of the site and **Figure 2** shows the general metropolitan context of the site.

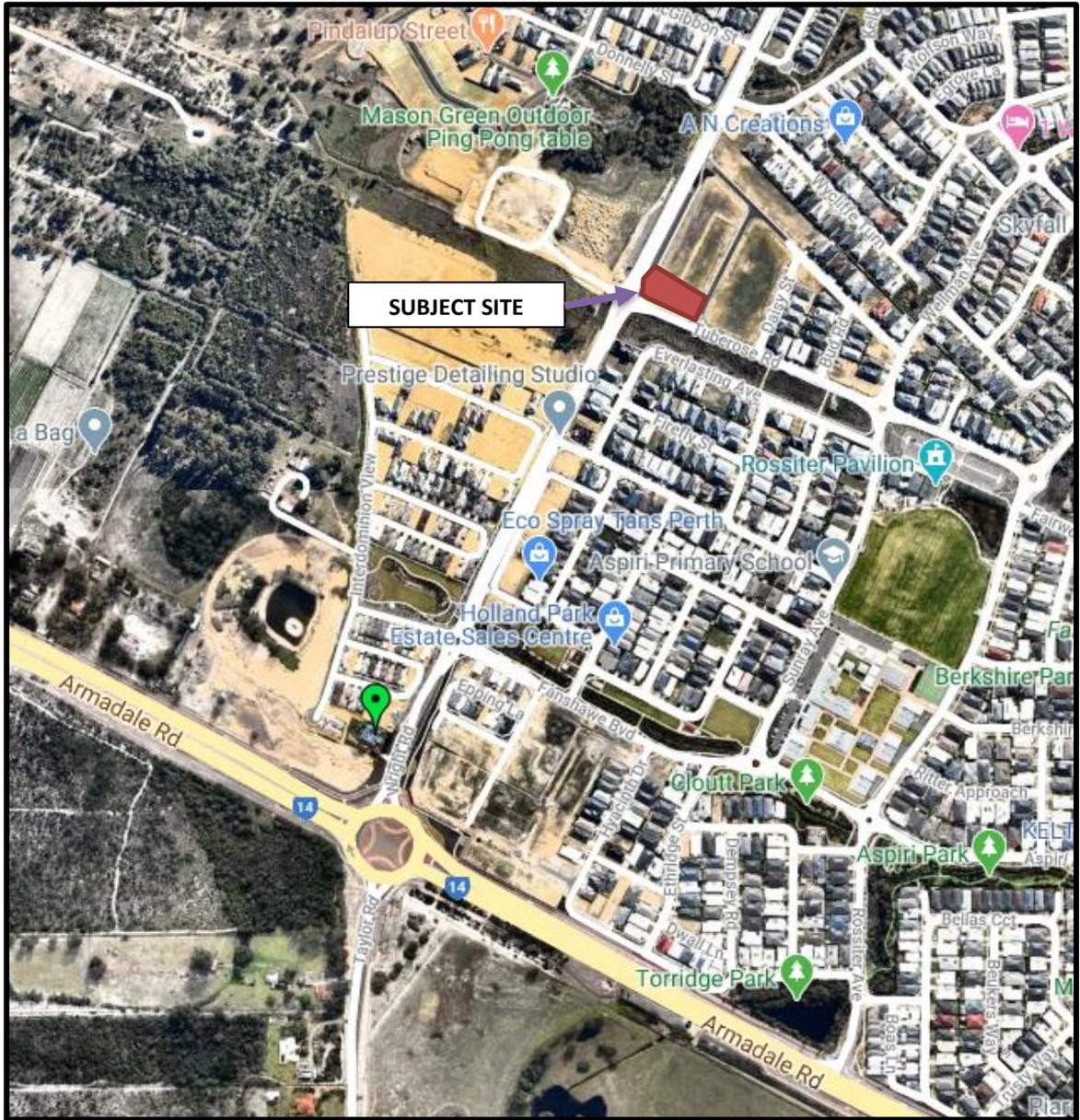


Figure 1: Location of the Subject Site

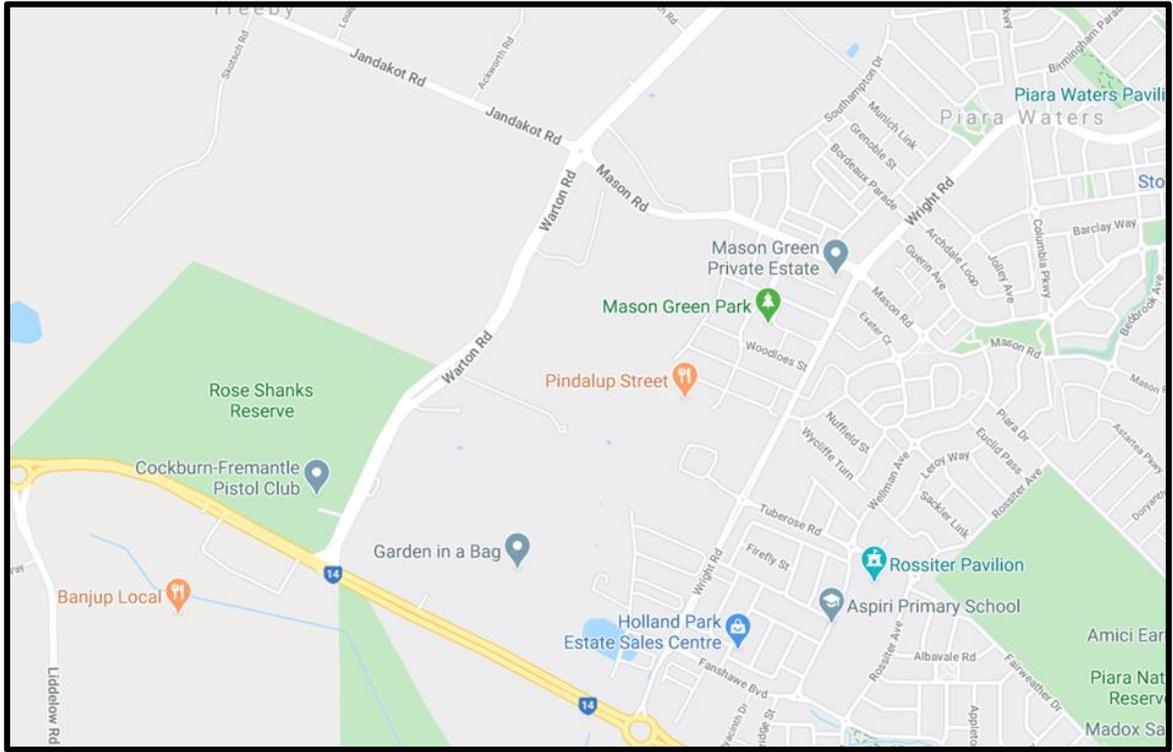


Figure 2: General Metropolitan Context of the Site

3.0 Proposed Development

The subject site is presently vacant. The proposed development entails the construction of a childcare centre at the subject site. The proposed child care centre would accommodate up to 97 children and 12 staff.

The subject site will be accessed via a full movement crossover to the western side of Laperla Street, between Tuberose Road and Bouquet Road. The crossover will be constructed to Council requirements and in accordance with the relevant AS 2890.1 standard.

The proposed development will provide 27 bays including one ACROD bay and 12 (6 x 2) tandem bays for staff parking.

Pedestrian access to the proposed childcare centre is available directly via the existing path network on Wright Road, Tuberose Road, Bouquet Road and Laperla Street.

A copy of the proposed development plan is included for reference in **Appendix A**.

4.0 Vehicle Access and Parking

4.1 Access

The proposed childcare centre will be accessed via a new full movement crossover to the western side of Laperla Street along the eastern boundary of the property. This proposed crossover will be located approximately 20m north of the uncontrolled intersection of Tuberose Road and Laperla Street.

According to the City of Armadale strategic transport model developed by Transcore, the 2031 traffic projections on this section of Wright Road would be in the order of 10,000vpd on Wright Road which corresponds to Integrator B classification in the WAPC Liveable Neighbourhoods policy with traffic volumes on Tuberose Road/Bouquet Road and Laperla Street anticipated to be in the order of 2,500vpd and less than 1,000vpd, respectively.

4.2 Parking Supply and Demand

The City of Armadale *Town Planning Scheme No.4, Schedule 7A* outlines the parking requirements for various land uses. The required parking supply applicable to the proposed childcare centre is:

- ✚ 1 space per every 8 children allowed under maximum occupancy; plus,
- ✚ 1 space per employee or staff member.

The proposed childcare centre accommodates up to 97 children and 12 staff. In accordance with the policy a total of 25 bays should be provided for the proposed childcare centre.

The proposed development will provide 27 parking bays (inclusive of one ACROD bays and one overflow bay) which exceeds Council requirements.

The proposed on-site supply will consist of 15 right-angle bays oriented along the northern and eastern boundaries of the property to cater to visitors and caregivers/parents with the staff bays to be arranged in a 6 x 2 tandem arrangement along the western façade of the building. This proposed tandem arrangement is considered to be an efficient way to provide staff car parking on-site in order to cater to long-term turnover whilst the balance of the supply on the site can cater to visitors and pick-up/drop-off activities.

5.0 Provision for Service Vehicles

The proposed development will provide a bin store near the southern boundary of the property flanking the north side of Tuberose Road approximately half-way along the site frontage of the subject site as shown on the proposed development plan in **Appendix A**.

General deliveries can be accommodated within the site. These activities will occur outside the childcare centre peak operating periods so that car parking areas are available for the safe manoeuvring of these vehicles into and out of the property. As access is proposed to the lower order road Laperla Street, entry and exit via this crossover in forward gear can be comfortably provided with no conflict with other vehicles or impacts to the risk profile of the boundary road network.

It is anticipated that waste collection will occur on verge, similar to other existing and future properties in the area.

6.0 Hours of Operation

The proposed childcare centre is proposed to operate during weekdays between 6:30AM to 6:30PM Monday to Friday.

7.0 Traffic Volumes

7.1 Existing Development Trip Generation

The subject site is presently vacant and for the purposes of this assessment, no discount has been applied for any existing traffic generation of the site.

7.2 Proposed Development Trip Generation

In order to establish an accurate traffic generation rate for the proposed childcare centre, traffic count surveys undertaken by Transcore at similar centres in the Perth metropolitan area were sourced.

Discussions with the respective centre managers revealed that the peak drop-offs and pick-ups for each of these centres occur between the hours of 7:00AM–10:00AM and 3:00PM–6:00PM.

From the total number of children at each of the centres on the surveyed days, the following average generation rates were established for the morning and afternoon surveyed periods:

- ✚ 7:00AM–10:00AM: 1.58 trips per child (52% in / 48% out); and,
- ✚ 3:00PM–6:00PM: 1.67 trips per child (47% in / 53% out).

From this information, the traffic generation rate for the combined period of 7:00AM–10:00AM and 3:00PM–6:00PM was calculated as 3.25 trips per child. To convert this figure to a daily generation rate, this figure was increased to 3.5 trips per child to account for any trips outside of the surveyed times. It was assumed that the daily in and out split for vehicle trips was 50/50.

Furthermore, the following average peak hour generation rates were established from the surveys for the Childcare Centres:

- ✚ AM peak hour: 8:00AM – 9:00AM: 0.75 trips per child (52% in / 48% out); and,
- ✚ PM peak hour: 4:30PM – 5:30PM: 0.49 trips per child (43% in/ 57% out);

Comparison of the six-hour generation rates and the peak hour generation rates confirms that the distribution of traffic from these centres is spread over the peak periods and that full concentration of traffic does not occur in the peak hour. The AM peak hour represents 47% of the 3-hour AM peak period traffic generation and the typical school PM and road network PM peak hours represent 36% and 29% of the 3-hour PM peak period traffic generation, respectively. As such, childcare centres operate quite differently to schools as their peak period is spread out.

Accordingly, the following number of trips was estimated for the proposed childcare centre, assuming a maximum scenario of 97 children being present (i.e. Centre at full capacity):

- ✚ AM peak hour: 73 trips generated (38 in / 35 out);
- ✚ PM peak hour: 48 trips generated (21 in / 27 out); and,
- ✚ Daily traffic generation: 340 trips generated (170 in / 170 out).

7.3 Traffic Flow and Impacts on Surrounding Roads

The vast majority of traffic will access the site via intersections on Wright Road onto roads leading to Laperla Street with the balance of site-generated traffic originating from the surrounding residential areas.

Based upon the existing traffic patterns in the area and the spatial distribution of adjacent land uses, the following distribution for the proposed 'new' development generated traffic has been assumed:

- 40% to and from the north via Wright Road, Bouquet Road and Laperla Street;
- 40% to and from the south via Armadale Road, Wright Road, Tuberosa Road and Laperla Street; and
- 20% from within the local community utilising the local road network.

The number of trips entering / exiting the site via the proposed site crossover has been assigned based upon the most logical route for vehicles to take given their origin / destination.

The anticipated site-generated traffic was then assigned to the respective crossover to Laperla Street based upon the existing proportions for both the weekday a.m. and p.m. peak hours. The resultant increases in weekday daily and a.m. and p.m. peak hour-generated traffic under the 'worst case' scenario for the boundary road network would be as follows:

Armadale Road:

- Daily: +136 vehicular trips
- A.M. Peak Hour: +29 vehicular trips
- P.M. Peak Hour: +19 vehicular trips

Wright Road (North):

- Daily: +136 vehicular trips
- A.M. Peak Hour: +29 vehicular trips
- P.M. Peak Hour: +19 vehicular trips

Wright Road (South):

- Daily: +136 vehicular trips
- A.M. Peak Hour: +29 vehicular trips
- P.M. Peak Hour: +19 vehicular trips

Bouquet Road:

- Daily: +170 vehicular trips
- A.M. Peak Hour: +37 vehicular trips
- P.M. Peak Hour +24 vehicular trips

Tuberose Road:

- Daily: +170 vehicular trips
- A.M. Peak Hour: +36 vehicular trips
- P.M. Peak Hour: +24 vehicular trips

Laperla Street:

- Daily: +340 vehicular trips
- A.M. Peak Hour: +73 vehicular trips
- P.M. Peak Hour: +48 vehicular trips

These increases in daily and a.m./p.m. peak hour volumes will have a minimal impact on existing traffic operations in the area and can be comfortably accommodated within the practical capacities of the respective links on the boundary road network. The roundabout intersections of Armadale Road/Wright Road and Wright Road/Tuberose Road as well as the uncontrolled intersections of Bouquet Road/Laperla Street and Tuberose Road/Laperla Street and the crossover to Laperla Street are expected to continue to operate effectively and efficiently during peak periods with no vehicular queuing or delays expected.

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 per cent of capacity would not normally be likely to have a material impact on any particular section of road but increases over 10 per cent may. All sections of road with an increase greater than 10 per cent 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 per cent of capacity. Therefore, any section of road where development traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis.”

The proposed development will not increase traffic flows anywhere near the quoted WAPC threshold to warrant further detailed analysis. The proposed development will not increase traffic on any lanes on the surrounding road network by more than 100vph, therefore the impact on the surrounding road network will be insignificant.

Austrroads' Guide to Traffic Management provides advice on the capacity of unsignalized intersections. For minor roads where there are relatively low volumes of turning traffic, capacity considerations are usually not significant and capacity analysis is unnecessary. Intersection volumes below which capacity analysis is unnecessary are indicated in **Table 1**.

Table 1: Threshold Analysis Parameters (Austroads, 2009)

Type of Road	Light cross and turning volumes maximum design hour volumes (vehicles per hour – two way)		
Two-lane major road	400	500	650
Cross road/ Site crossover	250	200	100

It can therefore be concluded that the proposal's site-generated traffic can be comfortably accommodated within the practical capacity of the local road network with a negligible impact on traffic operations in the area.

8.0 Traffic Management on the Frontage Streets

Armadale Road, located to the south-west of the subject site, is constructed as a four-lane divided carriageway with a 4m Principal Shared Path on the north side of the road. Due to the recent Armadale Road upgrades, traffic control at the Armadale Road/ Taylor Road/ Wright Road intersection has been upgraded to a dual circulating 4-way roundabout.

Armadale Road is classified as a *Primary Distributor Road* in the Main Roads WA *Metropolitan Functional Road Hierarchy* and operates under the speed limit of 60km/h.

Traffic count data obtained from Main Roads WA indicates that Armadale Road west of Nicholson Road carried average weekday traffic flows of 19,936 vehicles per day (vpd) in 2017/2018. The morning and afternoon peaks were recorded between 7:15AM-8:15AM and 3:15PM-4:15PM with a total of 1,564 vph and 1,500 vph, respectively.

Wright Road, fronting the subject site, has recently been constructed to its current dual carriageway standard including a central median, two 3.5m traffic lanes and shared paths on both sides of the road. The existing two lanes on Wright Road tapers back to one lane each way north of the roundabout intersection with Fanshawe Boulevard and Baltic Approach. A service road has also been constructed along the eastern side of Wright Street to provide direct access to future urban development fronting onto the road.

Wright Road is classified as a *Local Distributor Road* in the Main Roads WA *Metropolitan Functional Road Hierarchy* and operates under the default built up area speed limit of 50km/h. However, as part of the Structure Planning process undertaken for the North Forrestdale urban cell and the future function of this road, it is likely that Wright Road functions as the higher end of the Local Distributor road classification such as a Neighbourhood Connector A, as defined in Liveable Neighbourhoods guidelines which is consistent with the endorsed Structure Plan for the area. The intersection of Wright Road with Tuberose Road has been constructed as a single circulating 3-way roundabout but will be upgraded to a 4-way roundabout once urban development is delivered on the west side of Wright Road opposite the site.

Tuberose Road, Laperla Street and Bouquet Road have all been classified as *Access Roads* under the Main Roads *Metropolitan Functional Road Hierarchy*; however, Tuberose Road has been designated as a Higher Order Access Road within the endorsed Structure Plan with the balance of the roads likely to be designated as Lower Order Access Roads.

According to the City of Armadale, there are no recent traffic counts available for Wright Road as this road recently opened as part of the recent Armadale Road upgrade works; however, its practical capacity is in the order of 7,000 to 10,000 vpd in the vicinity of the site and 10,000 to 15,000 vpd at the southern terminus at Armadale Road. Similarly, there are no recent counts for the access roads in the area; however, the practical capacity of Tuberosa Road and Bouquet Road is in the order of 2,500 to 3,000 vpd and 1,000 to 1,500 vpd for Laperla Street.

9.0 Public Transport Access

The closest bus stops are in place to the west and east on Wright Road near Tuberose Road within a 1-minute walk of the site. Route 518 (Murdoch-Cockburn Station via Piara Waters and Harrisdale) provides line haul bus services along Wright Road and then west along Armadale Road with weekday peak hour frequency of 15 to 20-minutes and 30-minutes during the midday and off-peak evening periods. This service provides a direct connection to the Cockburn Central Railway Station which provides high frequency rail services to and from major destinations along the Mandurah Railway Line. **Figure 3** shows the public transport infrastructure in the vicinity of the site.

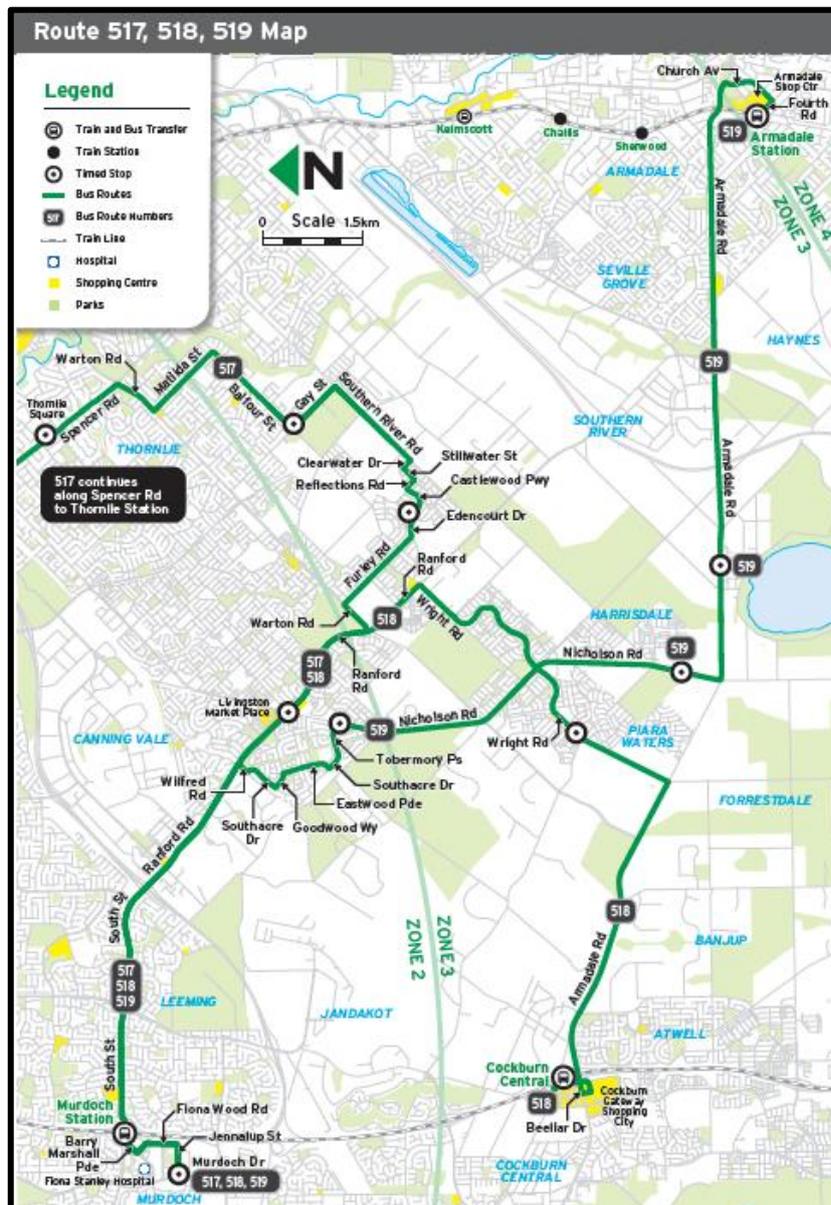


Figure 3: Public Transport Services

10.0 Pedestrian Access

Pedestrian access to the subject site is available via the external path network along Wright Road, on Tuberose Road and on Bouquet Road and on the west side of Laperla Street.

Pedestrian crossing opportunities are available adjacent to the western and southern boundaries of the site via both Wright Road and Tuberose Road, respectively.

11.0 Cycle Access

The Perth Bicycle Network Map which is prepared in 2016 indicates cyclist connectivity to the subject site as shown in **Figure 4**. This network map does not show the existing shared path on both sides of Wright Road which connects to Armadale Road. A bicycle lane is also currently in place on the north side of Armadale Road.



Figure 4: Extract from Perth Bicycle Network (Department of Transport)

12.0 Site Specific Issues

No site-specific issues were identified within the scope of this assessment.

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13.0 Safety Issues

A review of the crash history for the 5-year reporting period 2015-2019 indicates no crashes along the respective site frontages of Wright Road, Tuberose Road and Laperla Street or at the intersections of Wright Road/Tuberose Road, Wright Road/Bouquet Road, Bouquet Road/Laperla Street and Tuberose Road/Laperla Street. This is mainly due to the fact that urban development within the area has been relatively recently commissioned; however, the road network has been designed and constructed to a high standard and to its ultimate road configuration.

A review of sightline requirements, in accordance with Austroads AGRD Part 4A indicates that adequate sightlines are in place for entering and exiting vehicles as well as for vehicles travelling along both Tuberose Road and Bouquet Road to enter Laperla Street and access the site crossover.

14.0 Conclusions

This Transport Impact Statement has been prepared by Transcore on behalf of Lou Di Virgilio Designs with regards to the proposed 97-place childcare centre to be located on Lot 1062, Tuberose Road, Piara Waters in the City of Armadale.

The subject site is presently vacant with the proposed development entailing the construction of a new childcare centre.

The subject site will be accessed via a new full movement crossover to the western side of Laperla Street along the eastern boundary of the site between Tuberose Road and Bouquet Road. The crossover will be constructed in accordance with both the City of Armadale's requirements as well as in accordance with the relevant AS 2890.1 standard. The proposed crossover and car park design will allow ingress and egress to and from the site in forward gear to and from Laperla Street and then onto the higher order road network safely and efficiently.

The proposed development will accommodate up to 97 children with a total of 12 staff.

The site features good connectivity via the existing road network, path network and has a convenience access to public transport service.

Based on the assessment undertaken in this report, the proposed parking supply of 27 bays (inclusive of one ACROD bay) complies with the anticipated demands for parking on the site as well as being entirely compliant with the City's policy requirements.

The traffic analysis undertaken in this report shows that the traffic generation of the proposed development is relatively low and as such would not have any significant impact on the surrounding road network.

It is concluded that the findings of this Transport Impact Statement are supportive of the proposed childcare centre.

Appendix A

PROPOSED DEVELOPMENT PLAN

