

Technical Note: No 2bDate: 20/08/2024Project No: t21.266Project: Proposed Service Station – 41 - 43 Angove Street, North PerthSubject: Traffic Generation and Site Functionality

1 Introduction

This Technical Note (TN) has been prepared by Transcore on behalf of PC Infrastructure Pty Ltd with regard to the proposed redevelopment of the existing motor vehicle repair store with the sale of fuel facility for 41 – 43 Angove Street, North Perth. Transcore has also prepared a Transport Impact Statement (TIS), dated February 2023, with respect to the Development Application (DA) of the abovementioned project.

The City of Vincent has advised that traffic management treatment works at the intersection of Angove Street and Woodville Street are proposed to provide a solid median island on Angove Street. The proposed City's concept plan dated November 2022 is included in **Appendix A**.

This TN is prepared to provide information on the traffic generation and distribution of the proposed redevelopment traffic and provide commentary on the functionality of the proposed site layout.

The subject site is presently unoccupied and is bound by Angove Street to the north, Woodville Street to the east, a rear laneway and existing residential properties to the south and a multi-level building to the west, as shown in Figure 1. The proposed redevelopment plan is included in Appendix B.



Figure 1: Subject Site

2 Traffic Generation

2.1 Proposed Redevelopment Traffic Generation

Based on general advice received from various service station operators that the trip rates published in ITE 11 (an American trip generation source) significantly overestimate the actual patronage numbers, Transcore has undertaken detailed traffic surveys during 2022 at a total of 15 service stations in Perth metropolitan area, in order to establish an accurate traffic generation rate for this type of land use in Metropolitan Perth, Western Australia. All the surveyed sites were standalone service stations with varying numbers of filling points and different operators. The surveys were undertaken on Mondays, Tuesdays and Wednesdays to cover trade activity during the discounted fuel days as well.

Accordingly, the following weekday peak-hour trip rates have been derived from the survey data:

- Weekday AM peak trip generation of 8.78 trips per filling point;
- Weekday PM peak trip generation of 11.12 trips per filling point; and,
- Daily trip generation of 150 trips per filling point (using the ratio between peak hour and daily trips in ITE 11).

For this assessment, a 50/50 inbound/outbound traffic flow was assumed during both peak hour periods.

Accordingly, it is conservatively estimated that the proposed development would generate a total of approximately **1200** vehicular trips per regular weekday, with about **70** and **89** trips (both inbound and outbound) during the weekday morning and afternoon peak hour periods, respectively.

Trips associated with the proposed redevelopment also comprise a significant portion of passing-trade trips (and diverted trips), which are trips already present on the road network and not specifically generated by the proposed redevelopment. Passing trade factors of 60% are typically applied for a service station in line with relevant sources. Therefore, the proposed redevelopment when accounting for passing trade generates an additional **480** trips per regular weekday, with **28** and **36** trips during the weekday morning and afternoon peak hour period, respectively.

It should be noted that the net traffic increase as a result of the proposed redevelopment will be less than that reported in this technical note because for a robust and conservative assessment the traffic generation of the previous land use on this site has not been deducted from the proposed redevelopment traffic.

2.2 Traffic Flow

With respect to the proposed solid median island on Angove Street, the location of the development, permeability and layout of the surrounding road network, the assumed distribution for additional traffic as a result of the proposed service station is as follows:

Passing Trade Traffic (inbound)

- 30% from northbound on Woodville Street (Crossover 2)
- 20% from westbound on Angove Street (Crossover 2)
- 50% from westbound on Angove Street (Crossover 1)

Passing Trade Traffic (outbound)

• 100% to the west on Angove Street (Crossover 1)

Non-passing Trade (inbound)

- 30% from the south on Woodville Street (Crossover 2)
- 20% from the east on Angove Street (Crossover 2)
- 50% from the east on Angove Street (Crossover 1)

Non-passing Trade (outbound)

• 100% to the south on Woodville Street (Crossover 2)

The directional morning, afternoon and total daily trip distribution of the redevelopment-generated traffic for the proposed redevelopment is illustrated in **Figure 2**.



Figure 2. Estimated traffic movements for the proposed redevelopment – morning, afternoon peak hours and total daily trips

2.3 Impact on Surrounding Roads

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.", and "Service Stations generally rely on very high levels of passing trade, and do not normally require a full TIA".

It is clear that the traffic increase from the proposed redevelopment, even without reduction of the previous site traffic and passing trade, would be less than the critical threshold (100vph per lane), with the most pronounced increases being 17 vph on Woodville Street during the afternoon peak hour. Therefore, the impact of the development traffic on the surrounding road network is considered to be insignificant.

3 Site Functionality

Turn path analysis undertaken by PCI and provided in **Appendix C** demonstrates satisfactory traffic operations entry and exit movements for a B99 vehicle, 8.8m service vehicle, 10.2m service vehicle and a 13.9m fuel tanker.

It should be noted that most vehicles including service vehicles will turn left from Angove Street into Woodville Street and then, turn right into the site. Also, it should be noted that the fuel tanker and service vehicles will access a service station of this size only 2 to 3 times per week. The timing for the visitation of these vehicles will be subject to appropriate regulatory framework such as noise regulations in order to minimise any impact on the surrounding land uses.

Further, the shop component of the proposal will, in effect, provide a convenient local shop for the community, which can be easily and conveniently accessed by foot. It is anticipated that the vast majority of patronage to the shop will be by local residents walking to the site and by vehicles which have already accessed the site for fuel.

The latest redevelopment plan has removed the previously proposed crossover on the rear laneway, thereby reducing the traffic on the rear laneway and any impact on residents abutting the laneway.

4 Conclusion

The conservatively estimated traffic generation of the proposed development will have insignificant impact on the surrounding road network in accordance with WAPC Guidelines. Further, the proposal will provide a convenience to the community and if this redevelopment does not go ahead, the community will have to travel further by vehicles or on foot to other destination which provide similar services.

APPENDIX A

EXTRACT FROM CITY OF VINCENT ORDINARY COUNCIL MEETING AGENDA (13 DECEMBER 2022)



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APPENDIX B

PROPOSED REDEVELOPMENT PLAN



41-43 ANGOVE STREET, NORTH PERTH, WA

REFURBISHED SERVICE STATION COMPLEX



ADS Architects

93 Gilles Street Adelaide 5000 T:82232244

APPENDIX C

TURN PATH PLANS (PROVIDED BY PCI)



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