



1 Peterkin Street, Alexandra

Traffic Impact Assessment Report

Client:

Mr Tom Warne

Project No. 210932

FINAL Report – 8/08/2022

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EXECUTIVE SUMMARY

Mr Tom Warne has engaged Trafficworks to prepare a Traffic Impact Assessment Report (TIAR) for the proposed residential subdivision at 1 Peterkin Street in Alexandra. The TIAR will support a planning permit application to the Murrindindi Shire Council (the Council).

This report outlines the estimated traffic volume the proposed development will generate and the impact on the surrounding road network. A summary of the subject site and the proposed development is shown below.

| | |
|-----------------------------|--|
| Address | 1 Peterkin Street, Alexandra |
| Zoning | General Residential Zone 1 (GRZ1) |
| Proposed development | Residential subdivision <ul style="list-style-type: none"> • 21 residential dwelling lots • reserve, 797 m² passive open space • internal trafficable road network. |
| Road Network | Peterkin Street <ul style="list-style-type: none"> • two-way local rural road • 50 km/h default urban speed limit |
| Traffic Generation | <ul style="list-style-type: none"> • Daily 210 vehicles per day (vpd) • Peak hour 18 vehicles per hour (vph) |
| Recommendations | It is recommended that: <ul style="list-style-type: none"> • Recommendation 1: a minimum radius of 10.0 m be provided for the court bowl per the IDM. • Recommendation 2: the Peterkin Street carriageway is upgraded along the subject site frontage to Council's satisfaction. • Recommendation 3: implement appropriate sign control in consultation with the Council at the Peterkin Street intersection with Johnston Street. |

Referenced documents

References used in the preparation of this report include the following:

- Murrindindi Shire Council Planning Scheme
- Austroads Guide to Road Design:
 - Part 4: Intersections and Crossings - General
 - Part 4A: Unsignalised and Signalised Intersections
- Austroads Guide to Traffic Management
 - Part 8: Local Street Management
- RTA Guide to Traffic Generating Developments, Version 2.2, October 2002
- Local Government Infrastructure Design Association's Infrastructure Design Manual (IDM), Version 5.30 released March 2020
- CFA Requirements for Water Supplies and Access for Subdivisions in Residential 1 and 2 and Township Zones (9 October 2006).

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ATTACHMENT A – DEVELOPMENT PLAN

1 INTRODUCTION

Mr Tom Warne has engaged Trafficworks to prepare a TIAR for the proposed residential subdivision at 1 Peterkin Street in Alexandra.

The traffic impact assessment was conducted to:

- estimate traffic generation and distribution associated with the proposed development
- determine the suitability of the proposed access location onto the adjacent road network
- determine the likely traffic impacts on the existing road network
- identify any necessary mitigating works.

2 EXISTING CONDITIONS

2.1 Subject site

The subject site is located approximately 1 km northwest of the Alexandra town centre and is zoned General Residential – Schedule 1 (GRZ1) under the Council planning scheme. Peterkin Street bounds the subject site to the southeast, Grant Street to the northwest, the Maroondah Highway (located within a Transport Zone 2 – Principal Road Network TPZ2) to the southwest and rural residential properties to the northeast. To the south of the subject, the site is a bus depot.

Two rural dwellings and farmland currently occupy the subject site. Vehicle access to the existing dwellings is provided via crossovers to Peterkin Street. The subject site and surrounding road network are shown in Figures 1 and 2.

Figure 1: Location Plan (reproduced with permission from Nearmap)

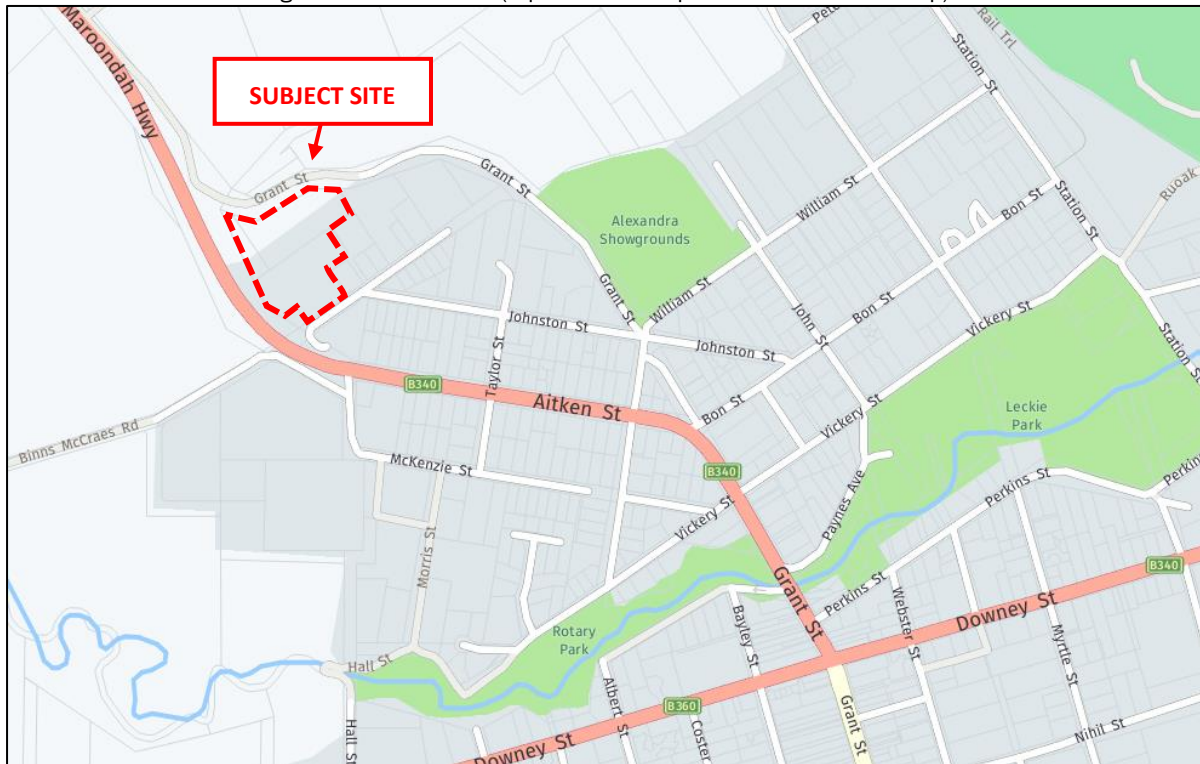
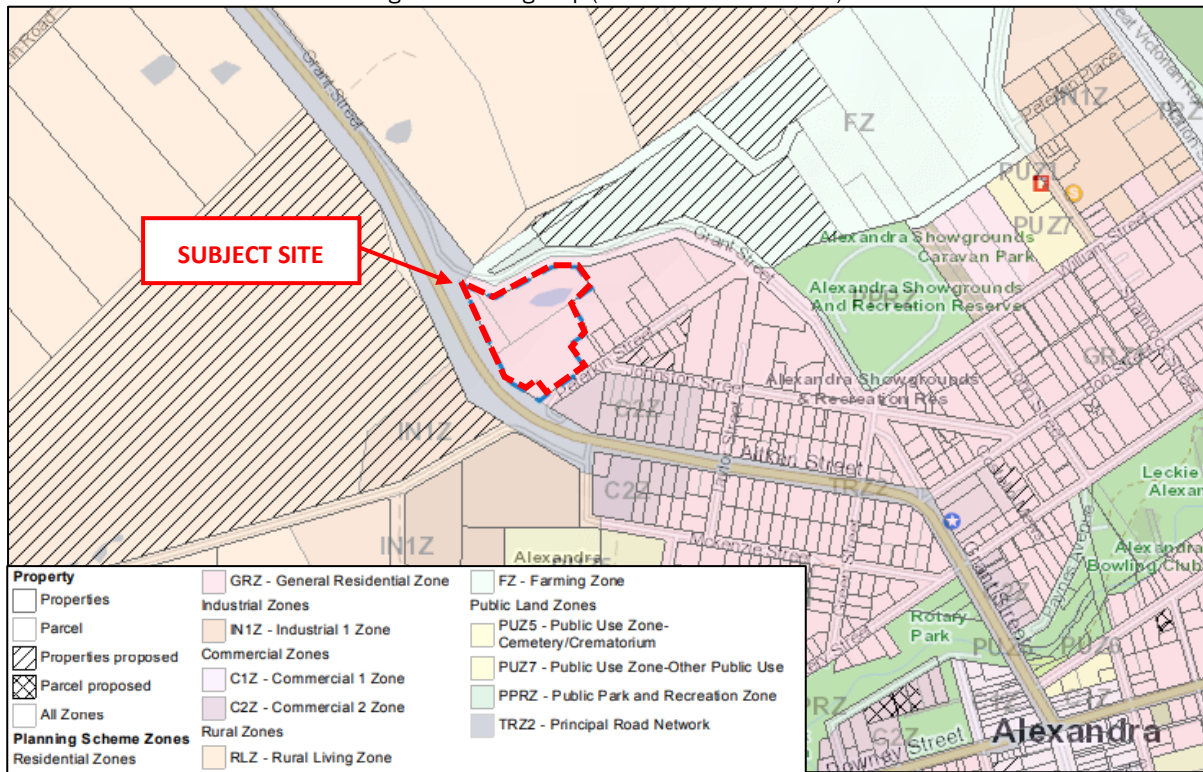


Figure 2: Zoning map (source: VicPlan website)



2.2 Road network

Peterkin Street is a local road under the management of the Council and is aligned in a northeast to southwest direction providing access to residential properties. Peterkin Street has no direct connection with the Maroondah Highway or Grant Street.

Along the frontage to the subject site, Peterkin Street is a two-way road featuring a sealed carriageway width of approximately 5.0 m with open swale drains. To the northeast of the subject site, Peterkin Street transitions to an urban style road with kerb and channel and footpaths on the southeast side. A default urban speed limit of 50 km/h applies to Peterkin Street. A view of Peterkin Street near the subject site is shown in Photo 1¹.

¹ This assessment was desktop only. All site information was provided by the client (like photographs) or via Nearmap aerial photography.

Photo 1: Peterkin Street facing northeast (adjacent to the subject site)



The **Maroondah Highway** (B340 - Aitkin Street) is an arterial road under the management of the Department of Transport (DoT). It is aligned in a northwest to southeast direction near the subject site.

Near the subject site, Maroondah Highway is a three-lane, two-way road featuring two 3.3 m wide northbound lanes (includes a climbing lane) and one 4.8 m wide southbound traffic lane with a 1.5 m wide shoulder on each side. It is noted that there is a significant level difference between the carriageway and the surrounding road reserve (refer to Photo 2).

Photo 2: Maroondah Highway road reserve adjacent to the subject site



Johnston Street is a local road under the management of the Council and is aligned in an east to west direction, providing a connection to Bon Street to the east and Peterkin Street to the west. Near Peterkin Street, Johnston Street is a two-way road with a sealed carriageway width of approximately 7.0 m. A default urban speed limit of 50 km/h applies to Johnston Street. A view of Johnston Street from Peterkin Street is shown in Photo 3.

Photo 3: Johnston Street facing east (near Peterkin Street)



Taylor Street is a local road under the management of the Council and is aligned in a north to south direction, providing a connection to Johnston Street to the north and Maroondah Highway to the south. Near Johnston Street, Taylor Street is a two-way road with a sealed carriageway width of approximately 7.0 m. A default urban speed limit of 50 km/h applies to Taylor Street. A view of Taylor Street near the subject site is shown in Photo 4.

Photo 4: Taylor Street facing south (near Johnston Street)



2.3 Traffic volumes

No traffic data was available for Peterkin Street, Johnston Street or Taylor Street. This report estimates the average daily traffic volumes based on the existing residential dwellings established in the area, as follows:

- Peterkin Street, southwest of Johnston Street: six dwellings and access to the bus depot.

- Johnston Street, between Peterkin Street and Taylor Street: 16 dwellings and two industrial properties
- Taylor Street, between Johnston Street and Maroondah Highway: seven dwellings

Adopting a traffic generation rate of 10 trips per dwelling and assuming 10% of the daily traffic volumes occur during peak hours, the residential dwellings will generate:

- 60 vehicles per day (vpd) and 6 vehicles per hour (vph) along Peterkin Street
- 160 vehicles per day (vpd) and 16 vehicles per hour (vph) along Johnston Street
- 70 vehicles per day (vpd) and 7 vehicles per hour (vph) along Taylor Street

The RTA Guide provides a traffic generation rate for bus depots (road transport terminal) and industrial uses of:

- daily vehicle trips = 5 per 100 m² gross floor area
- peak hour vehicle trips = 1 per 100 m² gross floor area.

The bus depot is anticipated to generate 67 vpd and 14 vph (gross floor area of approximately 1,340 m²), and the industrial uses are expected to generate 95 vpd and 19 vph (gross floor area of about 1,900 m²).

Based on the above, the estimated traffic volumes in the vicinity of the subject site are:

- 127 vehicles per day (vpd) and 20 vehicles per hour (vph) along Peterkin Street
- 382 vehicles per day (vpd) and 55 vehicles per hour (vph) along Johnston Street
- 452 vehicles per day (vpd) and 62 vehicles per hour (vph) along Taylor Street

Conclusion 1: the estimated traffic volumes in the vicinity of the subject site are:

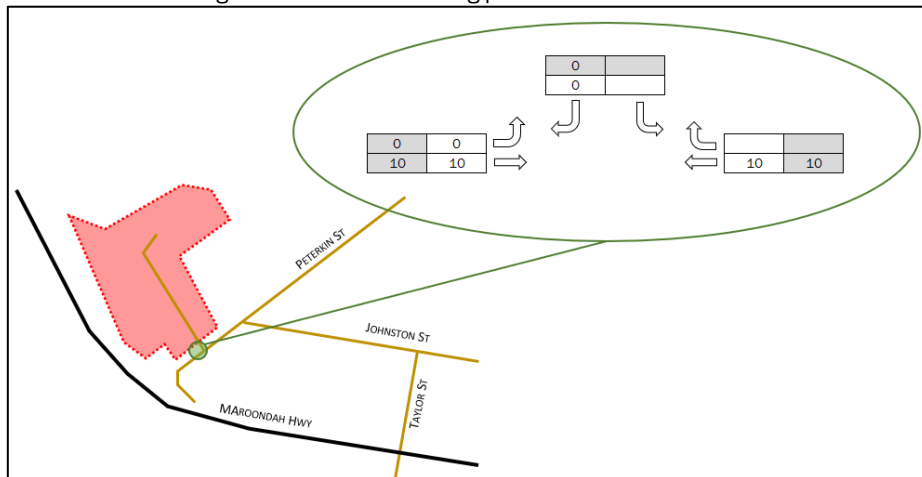
- 127 vehicles per day (vpd) and 20 vehicles per hour (vph) along Peterkin Street
- 382 vehicles per day (vpd) and 55 vehicles per hour (vph) along Johnston Street
- 452 vehicles per day (vpd) and 62 vehicles per hour (vph) along Taylor Street

The DoT, Open Data Portal, indicates that Maroondah Highway in the vicinity of the subject site carries a two-way daily traffic volume of 4,300 vpd, split evening in each direction. Assuming 10% of the daily traffic volumes occur during peak hours, the Maroondah Highway carries 215 vph in each direction.

Conclusion 2: the Maroondah Highway carries two-way traffic volumes of 4,300 vpd and 430 vph (215 vph in each direction).

Based on the above, the estimated existing peak hour traffic volumes are shown in Figure 3.

Figure 3: Estimated existing peak hour traffic volumes



2.4 Crash history

The DoT Open data portal indicates that no casualty crashes have occurred on the roads surrounding the subject site in the last five years of available data.

Conclusion 3: no crash trend is indicated near the subject site.

2.5 Public transport

No bus routes operate on the adjoining road network to the subject site.

2.6 Pedestrians and cyclists

There is no provision for pedestrians and cyclists near the subject site on Peterkin Street. An existing footpath on the northern side of the Maroondah Highway terminates before Peterkin Street.

3 PROPOSED DEVELOPMENT

3.1 Proposed development summary

The proposed development consists of the following:

- 21 residential dwelling lots (lot sizes ranging from 521 m² to 2,272 m²)
- reserve, 797 m² passive open space
- internal trafficable road network.

Vehicular access to the proposed development will be via an internal road connection to Peterkin Street. In addition, Lot 1 will have direct access to Peterkin Street, and Lots 3 and 4 will have access across the Maroondah Highway road reserve (with no direct access to the Highway).

The development plan is shown in Attachment A, and an extract is provided in Figure 4.

Figure 4: Extract of the development plan (11688/01 Version 3)



3.2 Trip generation and distribution

3.2.1 Traffic generation

Anticipated traffic generation levels from dwellings within the proposed development have been established using the daily rate of 10 vehicle movements per day (vpd) from Section 12.3.1 of the Infrastructure Design Manual (IDM). The peak hour rate of 0.85 vehicle movements per hour per dwelling as specified in Section 3.3.1 for Residential Dwelling Houses in the RTA Guide to Traffic Generating Developments has been adopted.

Table 1 shows the summary traffic generation from the proposed development.

Table 1: Development of traffic volumes

| Land use | Measure | RTA Traffic Generation Rate | | Development Traffic Generation | |
|------------------|--------------|-----------------------------|-----------------------|--------------------------------|-----------------------|
| | | Daily vehicle trips (vpd) | Peak hour trips (vph) | Daily vehicle trips (vpd) | Peak hour trips (vph) |
| Conventional lot | 21 dwellings | 10 | 0.85 | 210 | 18 |

Conclusion 4: the proposal is anticipated to generate 210 vehicles per day (vpd) and 18 vehicles per hour (vph) at full development.

3.2.2 Traffic distribution

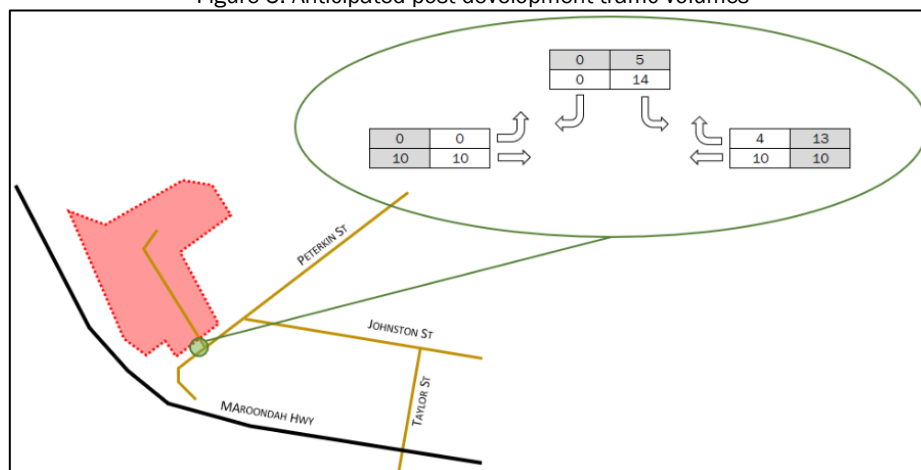
Peak hour traffic flow for the proposed development would generally be distributed as follows:

- AM peak: 80% leaving / 20% entering
- PM peak: 30% leaving / 70% entering.

It is anticipated that traffic would predominately travel southeast (95%) towards Alexandra town centre, and the remaining traffic (5%) will travel northwest. It is anticipated that all development traffic will turn right in / left out of the subject site and travel to/from Maroondah Highway via Johnston Street and Taylor Street.

Figure 5 shows the anticipated peak hour traffic volumes at the proposed development access.

Figure 5: Anticipated post-development traffic volumes

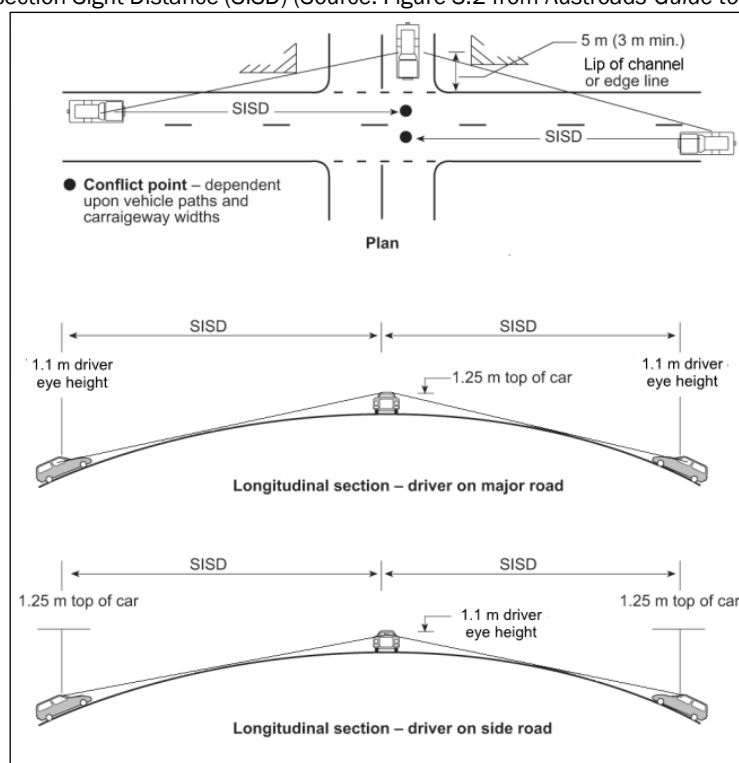


4 ASSESSMENT

4.1 Sight distance

The visibility criterion typically applied to intersections is Safe Intersection Sight Distance (SISD). This is nominated in the Austroads Guide to Road Design, Part 4A (AGRD4) as the minimum distance which should be provided on the major road at any intersection (refer to Section 3.2.2 in AGRD4A) and provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle from the minor access approach moving into a collision situation (e.g. in the worst case, stalling across the traffic lanes) and to decelerate to a stop before reaching the collision point (refer Figure 6).

Figure 6: Safe Intersection Sight Distance (SISD) (Source: Figure 3.2 from Austroads *Guide to Road Design Part 4A*)



The minimum SISD criterion specified in Table 3.2 of the Austroads Guide requires clear visibility relating to the general reaction time R_T of 2 seconds for a desirable minimum distance of:

- 97 m, for a design speed of 50 km/h applicable to Peterkin Street along the subject site frontage
- 123 m, for a design speed of 60 km/h applicable to Taylor Street at the intersection with Maroondah Highway.

Noting Peterkin Street's straight and flat alignment, the sight distance requirements are satisfied at the internal development road intersection with Peterkin Street.

Conclusion 5: the sight distance requirements are satisfied at the internal development road intersection with Peterkin Street.

4.2 Impact on the Arterial road network

The proposal will generate an additional 210 vpd and 18 vph at full development. This level of traffic is low and will represent an increase in less than 10% of existing traffic volumes at the arterial road intersections in the vicinity of the subject site. Therefore, it is anticipated that the subject site will have a negligible impact on the safety or operation of the surrounding arterial road network.

Conclusion 6: the traffic generated by the subject site is low and will have a negligible impact on the safety or operation of Peterkin Street or the surrounding road network.

4.3 Development of internal road layout

The proposed internal road network and access points onto the abutting road network (shown in Attachment A) generally meet sound urban design principles. They offer a high level of road amenity, connectivity and permeability. The proposed internal network should meet the IDM's rural road characteristics and requirements.

4.4 Speed zoning and traffic calming

The proposed development is expected to operate under the default urban 50 km/h speed limit. The Austroads Guide to Traffic Management Part 8 (AGTM8) indicates that straight section road lengths (i.e. between slow or near-stop conditions) should be kept below 200 m – 250 m for target speeds of around 50 km/h.

The proposed internal road is less than 250 m in length.

Conclusion 7: the subdivision design satisfies the Austroads Guide, with straight road lengths less than 250 m.

4.5 Internal development roads

Councils have developed the IDM in regional Victoria to ensure consistent requirements and standards for the design and development of infrastructure. The IDM documents the design criteria for roads within subdivisions, which can be used as a guide for the detailed design of the internal road network within the subdivision.

The proposed internal development road within the proposed subdivision has an 18.0 m road reserve width. This provides more than the minimum 16.0 m road reserve required under the IDM for an Access Street.

The proposed internal court bowl has a 30.0 m road reserve width. This provides more than the minimum 28.0 m road reserve under the IDM for a Residential Court Bowl. The IDM specified a minimum 10.0 m radius for the court bowl.

Conclusion 8: The road reserve widths of the internal road network are per the IDM.

Recommendation 1: a minimum radius of 10.0 m be provided for the court bowl per the IDM.

4.6 Emergency and service vehicle access

All roads within the development need to provide sufficient space so that emergency vehicles, waste collection vehicles and street-cleaning vehicles can conduct their functions while travelling in a forward direction throughout the development.

The cul-de-sac within the development should be designed to ensure emergency vehicles and waste collection vehicles can turn around and exit the subject site in a forward direction. A minimum turning circle radius of 8.0 m is required for CFA access which will be satisfied by the 10.0 m radius provided as part of the IDM cross section for a residential court bowl.

4.7 Peterkin Street frontage

As discussed in Section 2.3, the subject site frontage to Peterkin Street is configured as a rural style road with open swale drains and transitions to an urban road with kerb and channel adjacent to new subdivisions. It is recommended that the Peterkin Street carriageway be upgraded along the subject site frontage to Council's satisfaction as part of the development.

Recommendation 2: the Peterkin Street carriageway is upgraded along the subject site frontage to Council's satisfaction.

4.8 Peterkin Street / Johnston Street intersection

It is unclear who has priority at the intersection of Peterkin Street and Johnston Street near the subject site (as shown in Photo 3)

In consultation with Council, it is recommended that the appropriate stop/give way sign control is installed at the intersection to ensure approaching drivers know who has the right of way.

Recommendation 3: implement appropriate sign control in consultation with the Council at the Peterkin Street intersection with Johnston Street.

4.9 Maroondah Highway

As discussed in Section 3.1, lots 3 and 4 will not directly access the Maroondah Highway and connect through the local road network via Johnston Street and Taylor Street.

It is noted that the existing property on the southwest corner of Peterkin Street and the bus depot on the southeast corner of Peterkin Street also access the Maroondah Highway via the local road network (i.e. no direct access to the arterial road).

Conclusion 9: lots 2 and 4 will not have direct access to the Maroondah Highway.

5 CONCLUSIONS

The following conclusions are drawn from assessing traffic impacts resulting from the proposed residential development at 1 Peterkin Street in Alexandra.

- the estimated traffic volumes in the vicinity of the subject site are:
 - 127 vehicles per day (vpd) and 20 vehicles per hour (vph) along Peterkin Street
 - 382 vehicles per day (vpd) and 55 vehicles per hour (vph) along Johnston Street
 - 452 vehicles per day (vpd) and 62 vehicles per hour (vph) along Taylor Street.
- the Maroondah Highway carries two-way traffic volumes of 4,300 vpd and 430 vph (215 vph in each direction)
- no crash trend is indicated near the subject site
- the proposal is anticipated to generate 210 vehicles per day (vpd) and 18 vehicles per hour (vph) at full development
- the sight distance requirements are satisfied at the internal development road intersection with Peterkin Street
- the traffic generated by the subject site is low and will have a negligible impact on the safety or operation of Peterkin Street or the surrounding road network
- the subdivision design satisfies the Austroads Guide, with straight road lengths less than 250 m
- the road reserve widths of the internal road network are per the IDM
- lots 2 and 4 will not have direct access to the Maroondah Highway.

It is recommended that:

- **Recommendation 1:** a minimum radius of 10.0 m be provided for the court bowl by the IDM
- **Recommendation 2:** the Peterkin Street carriageway is upgraded along the subject site frontage to Council's satisfaction
- **Recommendation 3:** implement appropriate sign control in consultation with the Council at the Peterkin Street intersection with Johnston Street.

Provided the recommendations outlined in this report are implemented, no traffic-related reasons would prevent this development from occurring.

ATTACHMENT A – DEVELOPMENT PLAN

PLAN OF PROPOSED SUBDIVISION
 I PETERKIN STREET
 ALEXANDRA



PEYTON WAITE

CONSULTING LAND SURVEYORS & TOWN PLANNERS
 LEVEL 1 240 LOWER HEIDELBERG ROAD EAST IVANHOE 3078
 PHONE 94784933 A.C.N. 004 963 884

SCALE
 1:1000
 10 0 10 20 30 40
 LENGTHS ARE IN METRES

DIMENSIONS SUBJECT TO SURVEY
 EASEMENTS WHERE NECESSARY

ORIGINAL SHEET
 SIZE: A3

SHEET 1 of 1

SURVEYORS FILE REF: 11688/01

Version No: 3

168801.lcd



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