Draft Pakenham East Precinct Structure Plan

Expert Witness Statement
(Planning Panel Reference - Amendment C234)

STATEMENT TO THE INDEPENDENT PLANNING PANEL

by Ali Abdou, Associate

25 May 2018

Project No. 170237

Instructions: Mr Barnaby McIlrath, Maddocks

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<td>Maddocks</td>
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<td>Client Contact</td>
<td>Barnaby McIlrath</td>
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ATTACHMENT A - REQUIREMENTS OF VCAT PRACTICE NOTE No. 2 – EXPERT EVIDENCE
1 QUALIFICATIONS

My name is Ali Abdou and I practice as an Associate with Trafficworks Pty Ltd at First Floor, 132 Upper Heidelberg Road, Ivanhoe 3079.

My educational qualifications and membership of professional associations are as follows:

- Bachelor of Engineering in Civil Engineering (Honours), Victoria University;
- Member, Institution of Engineers, Australia.

I have over 16 years of experience in traffic engineering, 3 years with Hume City Council, 3 years with VicRoads and 10 years in private practice with John Piper Traffic, CPG Australia (CPG) and Trafficworks. In April 2012 I joined Trafficworks Pty Ltd.

My areas of expertise include traffic and parking impact assessments for a variety of developments, road safety auditing and general traffic engineering and road safety.

A copy of the relevant information that is required to accord with Practice Note PNVCAT 2 – Expert Evidence is attached at Attachment A to this report.

My declaration in regard to this statement is provided in Section 6.
2 BACKGROUND

2.1 Introduction

The Pakenham East Precinct Structure Plan (PSP) was prepared and exhibited between 11 January and 23 February 2018.

A planning scheme amendment is proposed to rezone the majority of the land within the Pakenham East Precinct to Urban Growth Zone (UGZ5) and involves incorporating the Pakenham East PSP within the Cardinia Shire Council Planning Scheme.

In March 2018, Council resolved to endorse the submission to the amendment. However, Council’s position on traffic issues was subject to further review. This review was undertaken by Trafficworks in a report titled ‘Draft Pakenham East Precinct Structure Plan – Traffic Impact Assessment’, dated 18 May 2018.

I have been engaged to prepare an expert witness statement of evidence addressing:

• the transport implications of the Planning Scheme Amendment, in relation to the exhibited Draft Pakenham East Precinct Structure Plan
• transport issues raised in objectors’ submissions.

The planning scheme amendment panel hearing is set to commence on 30 May 2018.

2.2 Objectors’ Submissions to Panel

The VPA provided some initial preliminary responses to submissions (in May 2018), relating to a number of traffic related issues raised by submitters. The traffic related issues are generally:

• Assumptions used in the distribution of traffic, specially related to the proportion of traffic travelling towards Pakenham
• The introduction of traffic signals increasing travel times along Princes Highway
• Further impact on the existing congestion experienced to access the Princes Freeway via Racecourse Road
• Impact on the Nar Nar Goon road network and access to Princes Freeway
• Direct access to Princes Freeway from the PSP area
• No clarification within the PSP as to the upgrade of the existing narrow bridge along Ryan Road across Deep Creek
• Interface between the PSP area and the existing low density properties along Ryan Road, and operation of Ryan Road as a collector street and subsequently accommodating development traffic
• Estimated traffic volumes along Ryan Road by the objector (12,000 vpd)
• Road safety implications of increased traffic
• Dore Road transition between the PSP area and the existing road network
• Provision of public transport
• The CFA have indicated that all roads should have a trafficable width of at least 3.5m.
2.3 References

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

- Victoria Planning Authority (VPA), *Draft Pakenham East Precinct Structure Plan (PSP)*
- *RTA Guide to Traffic Generating Developments, Version 2.2, October 2002*
- *Victoria Planning Authority (VPA), formerly the Growth Areas Authority’s (GAA), Engineering Design and Construction Manual for Subdivision in Growth Areas, April 2011*
- *VicRoads Speed Zoning Guidelines (2017)*
- Victorian Department of Transport *Public Transport Guidelines for Land Use and Development (2008)*
- Cardinia Shire Council Planning Scheme
- *VicRoads Open Data* website for traffic volumes along Princes Highway and SCATS traffic volume data at a nearby signalised intersection

The assessment also considers the relevant issues raised in the objectors’ submissions to the panel, made available by the client.
3 EXISTING CONDITIONS

3.1 Subject Site

The Pakenham East Precinct is located in the Pakenham and Nar Nar Goon areas and is located approximately 55km south-east of Melbourne’s CBD. The precinct is generally bounded by the transmission easement to the north, the Princes Freeway to the south, Deep Creek and Ryan Road to the west and Mount Ararat Road to the east. Princes Highway traverses the centre of the precinct.

The site is located within a Farming Zone (FZ) and is surrounded by a Green Wedge Zone to the north, east and south of the site. To the west of the site, there is existing residential development within the suburb of Pakenham, with land located within General Residential Zone (GRZ1) and Low Density Residential Zone (LDRZ2).

The exhibited Draft PSP for the Pakenham East Precinct indicates there will be future residential, commercial, recreational and educational development within the site.

The location of the site and its surrounding environment is shown in Figure 1 and Figure 2.

Figure 1: Location Plan (reproduced with permission from Melways Publishing Pty Ltd)
3.2 Road Network

The roads surrounding the subject site are described in the subsequent sections of the report.

3.2.1 Princes Highway

Princes Highway (Route C 101) is a divided four-lane two-way arterial road aligned in an east-west direction in the vicinity of the subject site. It provides a connection between Nar Nar Goon and the Princes Freeway interchange to the east and Officer, Berwick and Melbourne CBD (as Alt Route 1) to the west.

A posted speed limit of 100 km/h currently applies to Princes Highway in the vicinity of the site, with the speed limit reducing to 80 km/h approximately 150 – 200 m east of the Ryan Road intersection and towards the Pakenham township.

Ultimately, the length of Princes Highway will be widened to become a divided six-lane two-way arterial road. Additional signalised intersections will be provided at the proposed Princes Highway intersections with Ryan Road, Connector A, Connector B and Connector C (as identified in the exhibited Draft PSP).
3.2.2 Ryan Road

Ryan Road is a two-lane two-way local road aligned in a north-south direction. It provides local connections to the low density residential and farming properties along its length and the Ryan Road Childcare Centre, located on the corner of Princes Highway.

Ryan Road has a sealed carriageway to the north of Pinehill Drive, becoming an unsealed gravel road to the south of Pinehill Drive.

There is an existing bridge along Ryan Road which crosses Deep Creek, directly north of Canty Lane. In the vicinity of the bridge, the carriageway width narrows without provision of kerb.

The posted speed limit of 60 km/h applies along the length of Ryan Road.¹

Ultimately, Ryan Road will be upgraded to form a two-lane two-way connector street north of Canty Lane (as per the exhibited Draft Pakenham East PSP).

3.2.3 Dore Road

Dore Road is a two-way unsealed (gravel) local road aligned in a north-south direction. It provides local connections between Princes Highway and the properties along its length. Dore Road is primarily occupied by farming properties, with dairy, cattle grazing and horticulture practices. The default rural speed limit of 100 km/h currently applies along the length of Dore Road.

Ultimately, Dore Road is proposed to be upgraded within the Pakenham East Precinct to form a two-lane two-way local access street (as per the exhibited Draft Pakenham East PSP).

3.2.4 Deep Creek Road

Deep Creek Road is a two-way unsealed (gravel) local road aligned in a north-south direction. It provides local connections between Princes Highway, the properties along its length and Army Settlement Road. Deep Creek Road also provides access to Deep Creek to accommodate Melbourne Water access for maintenance and management of the creek. Access to Deep Creek Road from Princes Highway is restricted to left-in / left-out movements only.

The default rural speed limit of 100 km/h currently applies along the length of Deep Creek Road.

Ultimately, Deep Creek Road is proposed to be closed to vehicular traffic within the Pakenham East Precinct and retained for pedestrian access and Melbourne Water maintenance and management activities. To the north of the precinct, Deep Creek Road will remain unchanged.

3.2.5 Mount Ararat Road (north and south)

Mount Ararat Road is a two-way unsealed (gravel) local road aligned in a north-south direction and located to both the north and south of Princes Highway. It provides local connections between Princes Highway and the farming properties along its length.

¹ It is acknowledged that the Draft Pakenham East Precinct Structure Plan – Traffic Impact Assessment prepared by Trafficworks indicated that the default urban speed limit of 50 km/h applies to Ryan Road.
The default rural speed limit of 100 km/h currently applies along the length of Mount Ararat Road (north and south).

The intersection of Mount Ararat Road and Princes Highway is currently configured with a wide median treatment, accommodating turning movements in all directions.

Ultimately, it is understood that Mount Ararat Road will be upgraded within the Pakenham East Precinct to form a two-lane two-way local access street (as per the exhibited Draft Pakenham East PSP).

Furthermore, the median along Princes Highway will be extended through the existing intersection, restricting access to Mount Ararat Road north and Mount Ararat Road south to left-in / left-out access only.

3.3 Traffic Volumes

The VicRoads Open Data portal provides an indication of the Annual Average Daily Traffic (AADT) along arterial roads in Victoria. Existing traffic volumes were obtained from the portal for Princes Highway. Review of the available data indicates daily traffic volumes (AADT), as follows.

- Princes Highway, between Dore Road and Princes Freeway
  - 5,300 vehicles per day (vpd), two-way
  - 2,800 vpd, eastbound
  - 2,500 vpd, westbound
  - 7% heavy vehicles

- Princes Highway, between Ryan Road and Dore Road
  - 5,000 vehicles per day (vpd), two-way
  - 2,800 vpd, eastbound
  - 2,200 vpd, westbound
  - 9% heavy vehicles

The peak hour traffic volumes along Princes Highway during the AM and PM periods are assumed to be 10% of the daily traffic volume.

Vehicle classification survey results have also been provided by Cardinia Shire Council along the southern section of Dore Road. This data indicates the following traffic volumes:

- May 2017
  - 450 vehicles per day (vpd), two-way
  - AM peak – 18 vph (northbound) and 24 vph (southbound)
  - PM peak – 34 vph (northbound) and 28 vph (southbound)
  - 8% heavy vehicles

- November 2009
  - 420 vehicles per day (vpd), two-way
  - AM peak – 15 vph (northbound) and 31 vph (southbound)
o PM peak – 25 vph (northbound) and 22 vph (southbound)
o 12.5% heavy vehicles

A comparison of the two surveys indicates that there has been less than 1% per annum growth in traffic volumes along Dore Road within the 7.5 year period between the surveys.
4 PROPOSED DEVELOPMENT

4.1 PSP Background

Since the initial planning stages of the PSP, it is understood that the VPA has increased the proportion of developable area designated to medium density lots. A high-level comparison between the initial PSP document (initially assessed by Cardinia Shire Council officers) and the Draft PSP (exhibited in January 2018) indicates that the increase in medium density development is likely to result in an additional 1,100 dwellings and will generate approximately an additional 6,000 vehicles per day (vpd).

The Draft PSP provides high-level intersection layouts for the ultimate configuration of the four signalised Princes Highway intersections, including ultimate widening of Princes Highway to provide three through traffic lanes in each direction. It is understood that intersection analysis was undertaken in the initial planning stages to inform these intersection layouts, prior to the increase in density.

4.2 Proposed Development Summary

The Pakenham East Precinct is proposed to comprise the following (as per the exhibited Draft PSP):

- residential lots of varying density, as follows:
  - standard density lots – 17 lots / hectare
  - medium density lots – 22 lots / hectare
  - interface area 1 (low density) – 14 lots / hectare
  - interface area 2 (low density) – 9.5 lots / hectare
  - interface area 3 (low density) – 2.95 lots / hectare
- commercial uses, including a town centre and a local convenience centre
- educational uses, including three primary schools and one secondary school
- public open space
- an internal trafficable road network comprising connector streets and local access roads
- signalised intersections along Princes Highway at Ryan Road, Connector A, Connector B and Connector C.

Vehicular access to the precinct is provided along Princes Highway, with access to the site proposed via four signalised intersections and one left-in / left-out access road.

High level estimates indicate that the Pakenham East Precinct is likely to be developed from west to east, rather than evenly spread throughout the site. Should this be the case, it is likely that the Ryan Road and / or Connector A signalised intersection with Princes Highway will be implemented first and provide interim access to the site, rather than all four intersections being implemented with an interim layout.

The Draft Pakenham East Precinct Structure Plan is shown in Figure 3.
Figure 3: VPA’s Draft Pakenham East Precinct Structure Plan (PSP) – Proposed Urban Structure
5 ASSESSMENT

The following sections provide a summary of the assessment undertaken in the ‘Draft Pakenham East Precinct Structure Plan - Traffic Impact Assessment’ prepared by Trafficworks (dated 18 May 2018).

5.1 Lot Yield

Based on the lot yield assessment, considering the type residential of development and the applicable densities, the Pakenham East Precinct is likely to yield 7,163 residential lots.

There is a vacant parcel of land located to the north of Princes Highway, directly west of the PSP area. This parcel of land could potentially yield up to 460 dwellings.

Hence, an additional lot yield of 460 conventional lots along Ryan Road to the north of Princes Highway, and 110 existing low density lots along Ryan Road to the south of Princes Highway have also been included in the overall assessment.

The overall lot yield in the wider precinct is anticipated to be 7,733 dwellings.

5.2 Traffic Generation

It is understood that the following traffic generation rates have previously been agreed upon by council and VicRoads for use within the Pakenham East Precinct. These rates have also been applied to lots within the adjacent development for this analysis.

- 0.9 trips / hour and 9 trips / day for standard, interface 1 and interface 2 lots
- 1.0 trips / hour and 10 trips / day for interface 3 lots
- 0.5 trips / hour and 5 trips / day for medium density lots.

Applying these rates, the proposed Pakenham East Precinct is estimated to result in a total traffic generation of 55,948 vehicles per day (vpd) to and from the development, with morning and afternoon peaks of 5,598 vehicles per hour (vph).

The existing lots and development adjacent to the Pakenham East Precinct is estimated to result in a total traffic generation of 5,130 vpd, with morning and afternoon peaks of 513 vph.

In addition, existing traffic volumes along Dore Road were applied in the assessment, to include daily two-way traffic volumes of 600 vpd, with two-way peak hour traffic volumes of up to 83 vph. These volumes have been projected from 2017 to 2046 (design year) by applying a 1% compounded growth rate per annum.

Overall, the wider precinct is anticipated to generate 61,678 vpd and 6,194 vph at full development of the Pakenham East PSP area (assumed to be 2046).
5.3 Traffic Distribution

Access to the Pakenham East Precinct is proposed to be provided from the Princes Highway at four signalised intersections and at one left-in / left-out intersection (at Mount Ararat Road).

It is assumed that all traffic generated will be to and from the proposed development with no allowance for the low level of internal trips that may occur. It is acknowledged that there will be some internal trips between residential, commercial and educational uses within the precinct, however, during peak hours it is anticipated that trips to / from commercial and educational uses will be made as a stop on the way to / from a residential lot and will not reduce the number of external trips.


The estimated traffic distribution during the AM and PM peak hours at full development of the Pakenham East Precinct (at 2046) is shown in Figure 4.
Figure 4: Estimated peak hour traffic distribution at full development of the Pakenham East Precinct (2046)
5.4 Intersection Analysis

Intersection analysis was undertaken for the four proposed signalised intersections with the Princes Highway, providing access to the Pakenham East Precinct. Analysis was undertaken assuming full development in 2046 (design year), applying a 1% compounded annual growth rate to the existing Princes Highway traffic volumes.

The Draft PSP provides high level intersection layouts for each of the four signalised intersections. SIDRA analysis was undertaken applying each of these layouts and revealed that each of the four intersections will operate above practical capacity during peak hours (DOS of 0.9 for signalised intersections) at full development.

Cardinia Shire Council commissioned SMEC to prepare functional intersection design plans. SIDRA analysis was undertaken applying each of the SMEC functional intersection layouts and revealed that each of the four intersection layouts will also operate above practical capacity during peak hours at full development.

Additional intersection analysis was therefore undertaken to ensure that each intersection will be able to operate satisfactorily below practical capacity at full development.

Figures 10 – 13 within the ‘Draft Pakenham East Precinct Structure Plan - Traffic Impact Assessment’ prepared by Trafficworks (dated 18 May 2018) indicate the modified layouts identified by the SIDRA analysis. These are replicated in Figures 5 – 8 in this report.

![Figure 5: Modified Ryan Road / Princes Highway intersection layout](image-url)
Figure 6: Modified Connector A / Princes Highway intersection layout

Figure 7: Modified Connector B / Princes Highway intersection layout
5.5 Mid-block Capacity

Section 4.6 of the ‘Draft Pakenham East Precinct Structure Plan - Traffic Impact Assessment’ prepared by Trafficworks (dated 18 May 2018) provides the anticipated two-way daily traffic volumes along Connector A, Connector B, Connector C and Ryan Road (based on the estimated peak hour volumes being 10% of the daily traffic volume).

As per Table 4 – Road Elements of the Engineering Design Construction Manual for Subdivision in Growth Areas:

- A connector street cross section is intended to carry between 3,000 – 7,000 vpd.
- A boulevard connector street cross section is intended to carry between 7,000 – 12,000 vpd.
- A local access street level 2 cross section is intended to carry between 2,000 – 3,000 vpd.

Table 1 shows the estimated traffic volumes and cross sections proposed in the PSP.
Table 1: Mid-block traffic volumes and cross sections

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<th>North of Princes Highway</th>
<th>South of Princes Highway</th>
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<tr>
<td></td>
<td>Volume (vpd)</td>
<td>PSP Cross Section</td>
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<tr>
<td>Ryan Road</td>
<td>3,860</td>
<td>Connector Street</td>
</tr>
<tr>
<td>Connector A</td>
<td>8,700</td>
<td>Connector Street</td>
</tr>
<tr>
<td>Connector B</td>
<td>5,500</td>
<td>Local Access Street Level 2</td>
</tr>
<tr>
<td>Connector C</td>
<td>5,600</td>
<td>Connector Street</td>
</tr>
</tbody>
</table>

It is recommended that the proposed Connector A and Connector B cross sections be modified so that the intended traffic volume of type of cross section (in Table 4 - Road Elements of the Engineering Design Construction Manual for Subdivision in Growth Areas) reflects the estimated volume along the road.

5.6 Road Hierarchy

Section 4.7 of the ‘Draft Pakenham East Precinct Structure Plan - Traffic Impact Assessment’ prepared by Trafficworks (dated 18 May 2018) provides a comparison between the VPA and council preferred road hierarchy.

It is recommended that the Dore Road cross section be modified to a connector street to better facilitate heavy vehicle access to the existing farming sites north of the PSP area.

5.7 Proposed Cross Sections

Section 4.8 of the ‘Draft Pakenham East Precinct Structure Plan - Traffic Impact Assessment’ prepared by Trafficworks (dated 18 May 2018) provides discussions in relation to road cross sections within the PSP area.

It is recommended that:

- the 24.0 m wide road reserve along Ryan Road be retained south of Canty Lane, and an additional Ryan Road specific interface cross section be created to improve the interface between the PSP area and the existing low density residential lots, by increasing verge widths and green space. This would also provide additional space to accommodate a connector street cross section along the entire length, should it be required in future (i.e. if a train station is introduced).
- the road reserve along Dore Road be widened to 25.0 m to accommodate the standard connector street cross section
• the road reserve along Connector B (north of Princes Highway) be widened to 25.0 m to accommodate the standard connector street cross section
• the road reserve along Connector B (south of Princes Highway) be widened to 28.0 m – 31.0 m to be in line with the standard boulevard connector street cross section
• 3.5 m wide traffic lanes are provided on connector roads to accommodate bus services in accordance with the Public Transport Guidelines for Land Use and Development
• a trafficable width of at least 3.5 m is provided on all roads to accommodate CFA vehicles.

5.8 Public Transport, Pedestrian and Cycling Facilities

Section 4.9 of the ‘Draft Pakenham East Precinct Structure Plan - Traffic Impact Assessment’ prepared by Trafficworks (dated 18 May 2018) provides discussions in relation to public transport, pedestrian and cycling facilities within the PSP area.

Public Transport

The Public Transport Guidelines for Land Use and Development indicate that 95% of residential land uses should be designed to allow access to public transport services within 400 - 500 metres safe walking distance. It also states that as a guideline, bus stops should be located every 300 m along a bus route.

The exhibited Draft PSP indicates that bus routes are proposed to be provided along each of the connector streets within the precinct.

The lots located at the northern end of Connector A and Dore Road and the southern end of Ryan Road are likely to be located more than 1.0 km walking distance from the nearest bus route.

Bicycle and Pedestrian Facilities

Review of the proposed path network indicates the following gaps in connectivity:

• The connectivity of the proposed shared path generally located along the Princes Freeway alignment is broken to the south of the proposed secondary school (approx. 250 m length). It is recommended that this path be extended to provide a continuous facility without requiring cyclists to travel on-road.
• The shared path along Ryan Road does not provide a connection south of Canty Lane, resulting in a convoluted and indirect path link to the proposed shared path link to Pakenham Railway Station. It is recommended that a shared path be provided along the entire length of Ryan Road to provide more direct bicycle connections.
• Shared paths are proposed along both sides of Hancock Gully in the southern portion of the precinct. As there is no bridge connection across the creek, the route for cyclists travelling east – west across Hancock Gully is indirect and does not follow desire lines as it requires cyclists to travel to Connector C to cross the gully.

5.9 Intersection Design and Traffic Calming (within the PSP area)

Section 4.10 of the ‘Draft Pakenham East Precinct Structure Plan - Traffic Impact Assessment’ prepared by Trafficworks (dated 18 May 2018) provides discussions in relation to intersection design and traffic calming within the PSP area.
Cross intersections have an increased potential for conflict to occur between motorists, due to multiple conflict points. To enhance safety at intersections, all cross intersections need to be controlled by either traffic signals or a roundabout.

The provision of roundabouts is generally preferred to traffic signals to control intersections between local roads (i.e. connector streets and local access streets), unless high pedestrian volumes are anticipated at the intersection.

It is also desirable that Connector Street / Connector Street intersections are controlled with roundabouts or traffic signals to accommodate increased intersection capacity and clearly define priority.

The design of local roads should ensure that straight lengths of road are generally kept between 200 - 250 m in length, to avoid the need to provide traffic calming devices to manage vehicle speeds. In addition to controlling the priority at intersections, roundabouts also act as traffic calming devices and can be used to manage vehicle speeds.

Traffic calming devices include:

- roundabouts (at cross intersections or T-intersections)
- raised intersections (at T-intersections)
- road humps or slow points (in mid-block locations).

5.10 Speed Zones


It is recommended that:

- the existing speed limit along Princes Highway be reduced to 80 km/h along the subject site frontage
- a 50 km/h default speed limit generally be applied to local roads within the PSP area
- the speed limit along connector streets within the precinct be reviewed in line with the VicRoads Speed Zoning Guidelines (2017)
- school speed zones should be applied at primary and secondary schools on roads that have boundary gates used for student access
- Reduced speed zones of 40 km/h may also be applied within pedestrian activity precincts, such as activity centres and shopping strips. This 40 km/h reduced speed limit could apply within the local town centre.
6 OBJECTORS’ SUBMISSIONS TO PANEL

There are a number of traffic related issues raised in objectors’ submissions to the panel as part of the exhibited PSP and Planning Scheme Amendment. These issues are summarised in Table 3 below.

Table 3: Summary of traffic related issues raised in submissions to the panel

<table>
<thead>
<tr>
<th>Objection</th>
<th>Response / Comment</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Assumptions used in the distribution of traffic, specially related to the proportion of traffic travelling towards Pakenham. It is understood that this comment is in relation to previous traffic analysis completed by others. Traffic distribution within the Trafficworks ‘Draft Pakenham East Precinct Structure Plan - Traffic Impact Assessment’ is based on an overall 40% split towards Nar Nar Goon, 5% north south movement (internal) and 55% split towards Pakenham. This is based on existing directional splits along Princess Highway at Windermere Boulevard, and consideration of travel times to access Princes Freeway during peak periods (obtained from Google maps). This indicates that traveling west via Pakenham results in inconsistent and overall greater travel time due to congestion experienced along Racecourse Road and McGregor Road.</td>
</tr>
<tr>
<td>2</td>
<td>Traffic signals increasing travel times along Princes Highway. Introducing traffic signals will increase travel times between Nar Nar Goon and Pakenham. This impact could be reduced by linking the signalised intersections along Princes Highway. Signalised intersections are required to provide safe and efficient access to the PSP area.</td>
</tr>
<tr>
<td>3</td>
<td>Further impact on the existing congestion experienced to access the Princes Freeway via Racecourse Road. This is beyond the scope of works of the Trafficworks ‘Draft Pakenham East Precinct Structure Plan - Traffic Impact Assessment’. The responsible road authorities should consider the impact of additional traffic on existing roads and intersections.</td>
</tr>
<tr>
<td>4</td>
<td>Impact on the Nar Nar Goon road network and access to Princes Freeway. This is beyond the scope of works of the Trafficworks ‘Draft Pakenham East Precinct Structure Plan - Traffic Impact Assessment’. The responsible road authorities should consider the impact of additional traffic on existing roads and intersections.</td>
</tr>
<tr>
<td>5</td>
<td>Direct access to Princes Freeway from the PSP area. The proposed road hierarchy and signalised intersections onto Princes Highway have been assessed to ensure they will be able to accommodate the traffic generated by the PSP at full development (2046). However, the impact of additional traffic on existing roads within the wider network is beyond the scope of works of the Trafficworks ‘Draft Pakenham East Precinct Structure Plan - Traffic Impact Assessment’. The responsible road authorities should consider this impact.</td>
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<tr>
<td>Objection</td>
<td>Response / Comment</td>
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<td>Interface between the PSP area and the existing low density properties along Ryan Road and operation of Ryan Road as a collector street and subsequently accommodating development traffic</td>
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<td>8</td>
<td>Traffic volumes along Ryan Road (12,000 vpd)</td>
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<td>9</td>
<td>Road safety implications of increased traffic</td>
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<td>Objection</td>
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| Transition between Dore Road within the PSP area and the existing Dore Road | Further consideration needs to be given to the transition between the Dore Road connector street cross section within the PSP area and the existing Dore Road cross section. This should manage the change in speed limit and the transition from a sealed carriageway to a narrow gravel road.  
A portion of the rural road could be sealed as part of the transition to an unsealed rural road. A threshold treatment could be implemented to provide visual and / or tactile clues to alert drivers they are entering a driving environment that is different from the one they have just left. |
| Provision of public transport                                             | The Public Transport Guidelines for Land Use and Development indicate that 95% of residential land uses should be designed to allow access to public transport services within 400 - 500 metres safe walking distance.  
The exhibited Draft PSP indicates that bus routes are proposed to be provided along each of the connector streets within the precinct.  
The lots located at the northern end of Connector A and Dore Road and the southern end of Ryan Road are likely to be located more than 1.0 km walking distance from the nearest bus route.  
A consideration of another train station is beyond the scope of works of the Trafficworks ‘Draft Pakenham East Precinct Structure Plan - Traffic Impact Assessment’. However, it is understood that a viability assessment for a future train station was undertaken (by others) and it was deemed that a high frequency bus service would be provided instead. |
| The CFA have indicated that all roads should have a trafficable width of at least 3.5m | CFA require a 3.5 m wide trafficable width to be provided along all roads. Therefore, the Town Centre Main Street cross section should be modified to provide 3.5 m traffic lanes either side of the median. |
7 CONCLUSION

I have been engaged by Maddocks on behalf of Cardinia Shire Council to prepare an Expert Witness Statement addressing the transport implications of the Planning Scheme Amendment, in relation to the exhibited Draft Pakenham East Precinct Structure Plan.

I have arrived at the conclusions outlined in the ‘Draft Pakenham East Precinct Structure Plan - Traffic Impact Assessment’ and as detailed in this expert witness statement.

It is concluded that:

- the overall lot yield in the wider precinct is anticipated to be 7,733 dwellings, and is anticipated to generate 61,678 vpd and 6,194 vph at full development (2046)
- SIDRA analysis undertaken for the high level intersection layouts within the Draft PSP revealed that each of the four intersections will operate above practical capacity during peak hours at full development
- SIDRA analysis undertaken for the functional intersection design plans prepared by SMEC for Cardinia Shire Council revealed that each of the four intersections will also operate above practical capacity during peak hours at full development.

It is recommended that:

- the modified layouts for each of the proposed signalised intersections be adopted, as per the SIDRA analysis undertaken by Trafficworks, to ensure each intersection will operate below practical capacity at full development (2046)
- the proposed Connector A and Connector B cross sections be modified so that the intended traffic volume of type of cross section (in Table 4 - Road Elements of the Engineering Design Construction Manual for Subdivision in Growth Areas) reflects the estimated volume along the road
- the Dore Road cross section be modified to a connector street to better facilitate heavy vehicle access to the existing farming sites north of the PSP area
- the 24.0 m wide road reserve along Ryan Road be retained south of Canty Lane, and an additional Ryan Road specific interface cross section be created
- the road reserve along Dore Road be widened to 25.0 m to accommodate the standard connector street cross section
- the road reserve along Connector B (north of Princes Highway) be widened to 25.0 m to accommodate the standard connector street cross section
- the road reserve along Connector B (south of Princes Highway) be widened to 28.0 m – 31.0 m to be in line with the standard boulevard connector street cross section
- 3.5 m wide traffic lanes are provided on connector roads to accommodate bus services in accordance with the Public Transport Guidelines for Land Use and Development
- a trafficable width of at least 3.5 m is provided on all roads to accommodate CFA vehicles
- the shared path generally located along the Princes Freeway alignment be extended to provide a continuous facility without requiring cyclists to travel on-road
- a shared path be provided along the entire length of Ryan Road to provide more direct bicycle connections
- all cross intersections are controlled by either traffic signals or a roundabout
• Connector Street / Connector Street intersections are controlled with roundabouts or traffic signals to accommodate increased intersection capacity and clearly define priority

• the design of local roads be kept between 200 – 250 m in length to avoid the need to provide traffic calming devices to manage vehicle speeds.

• the existing speed limit along Princes Highway be reduced to 80 km/h along the subject site frontage

• the speed limits within the precinct be reviewed in line with the VicRoads Speed Zoning Guidelines (2017).

In summary, it is my opinion that the Pakenham East Precinct Structure Plan should be modified to address each of the issues and recommendations identified, prior to its inclusion in the Cardinia Shire Council Planning Scheme as per the proposed Amendment.

I have made all the inquiries that I believe are desirable and appropriate and to the best of my knowledge, there are no relevant traffic-related matters of significance that have been withheld from the panel.

Ali Abdou
BEng (Civil)(Hons)
ATTACHMENT A - REQUIREMENTS OF VCAT PRACTICE
NOTE No. 2 – EXPERT EVIDENCE
Name
Ali Abdou – Associate

Address
Trafficworks Pty Ltd
First Floor, 132 Upper Heidelberg Road, Ivanhoe, 3079

Qualifications
• Bachelor of Engineering in Civil Engineering (Honours), Victoria University;
• Member, Institution of Engineers, Australia.

Experience
I have over 16 years of experience in traffic engineering, 3 years with Hume City Council, 3 years with VicRoads and 10 years in private practice.

Areas of Expertise
Areas of expertise include, traffic and parking impact assessments for a variety of developments, road safety auditing and general traffic engineering and road safety.

Expertise to Prepare this Assessment
My experience gathered over 16 years practice as a traffic engineer includes traffic impact assessments for major residential and industrial subdivisions, schools, community facilities, emergency stations and mixed use developments (retail, office and residential), as well as road safety auditing and general traffic engineering and road safety projects.

I am therefore qualified to provide an expert assessment in relation to the proposed development.

Business Relationships and Instructions
I have been engaged by Maddocks on behalf of Cardinia Shire Council to prepare an Expert Witness Statement addressing the transport implications of the Planning Scheme Amendment, in relation to the exhibited Draft Pakenham East Precinct Structure Plan, and present the statement to panel.

Assistance Received in Preparing this Statement
In preparing this Expert Witness Statement, I have had assistance from fellow employees at Trafficworks, including the provision of editorial and peer reviews.

However, I am the principal author of this Expert Witness Statement and all the conclusions and recommendations are mine.

Documents Taken into Account
The primary references used in the preparation of this report are as follows:
• Victoria Planning Authority (VPA), Draft Pakenham East Precinct Structure Plan (PSP)
• RTA Guide to Traffic Generating Developments, Version 2.2, October 2002
• Victoria Planning Authority (VPA), formerly the Growth Areas Authority’s (GAA), Engineering Design and Construction Manual for Subdivision in Growth Areas, April 2011
• VicRoads Speed Zoning Guidelines (2017)
- Cardinia Shire Council Planning Scheme
- VicRoads Open Data website for traffic volumes along Princes Highway and SCATS traffic volume data at a nearby signalised intersection

The assessment also considers the relevant issues raised in the objectors’ submissions to the panel, made available by the client.