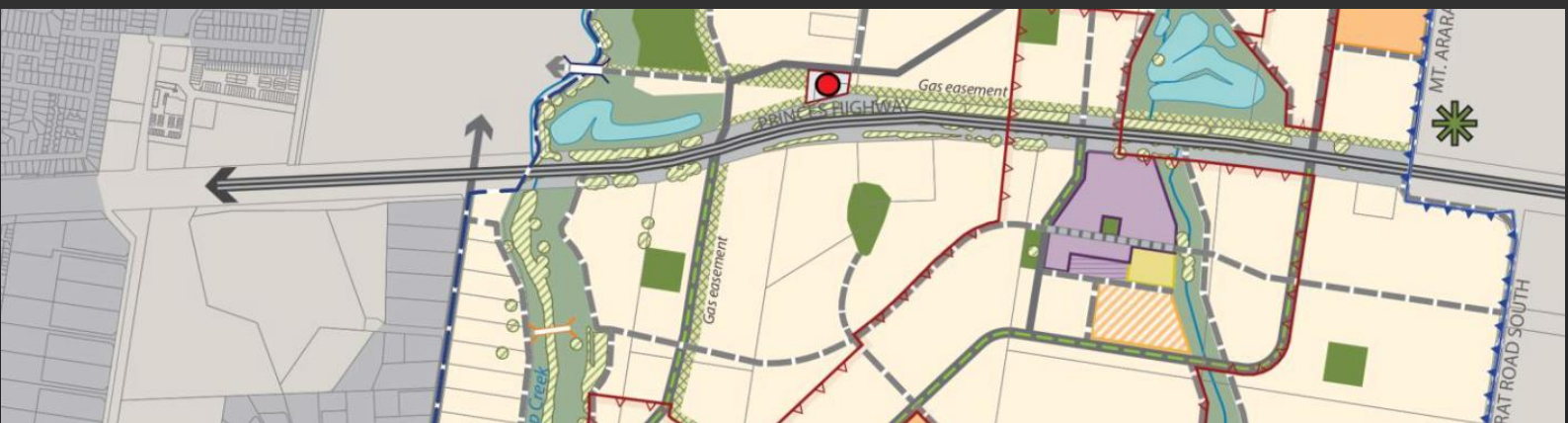


Amendment C234 – Cardinia Planning Scheme

Expert Evidence Statement – Traffic & Transport

Abrehart Road, Pakenham



180320REP001C.docx

28 May 2018

onemilegrid

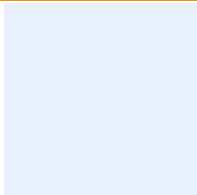
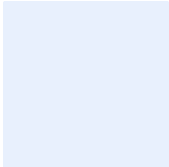
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Prepared by	Valentine Gnanakone	Reviewed by	James Dear
Signature		Signature	

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1 QUALIFICATIONS AND EXPERTISE

Amendment Number	C234 – Cardinia Planning Scheme
Date of this Report	28 May 2018
Address of Property	Abrehart Road, Pakenham
Date(s) of any inspection	none
The party for whom the report has been prepared	This report has been prepared at the request of Ferati Holdings Pty Ltd
The person from whom the expert received instructions	Ms. Maggie Cusdin of Plans in Motion

In accordance with Planning Panels Victoria, Guide to Expert Evidence, my qualifications, experience and expertise to provide my opinions on this matter are summarised below:

Name:	Valentine Premkumar Gnanakone
Address:	1/59 Keele Street Collingwood Victoria 3066
Professional Qualifications:	Bachelor of Engineering (Civil), RMIT University 2003 Master of Business Administration (MBA), Deakin University 2013
Professional Registration:	Board of Professional Engineers of Queensland – Registered Professional Engineer of Queensland (RPEQ) Accredited Road Safety Auditor
Professional Experience:	Director, onemilegrid , 2014 – present Associate, Cardno, 2011 – 2014 Senior Traffic Engineer, Cardno, 2007 – 2011 Engineer, Grogan Richards, 2004 – 2007
Professional Memberships:	Victorian Planning and Environmental Law Association (VPELA) Australian Institute of Traffic Planning and Management (AITPM)
Areas of Expertise:	Car parking and traffic engineering design and compliance. Traffic advice and assessment of land use and development proposals to local and state planning authorities, government agencies, corporations and developers for a variety of projects including low, medium & high density residential, commercial, retail, industrial, institutional, service orientated and mixed-use projects. Preparation and presentation of expert evidence before VCAT and Planning Panels.

Expertise to Prepare this Report:	My professional qualifications, training and experience over a number of years on all forms of development qualifies me to comment on the traffic engineering implications of the proposed amendment.
Relationship to the Applicant:	I do not have any private or business relationship with the applicant.
Instructions:	I have been requested by Plans in Motion, representing Ferati Holdings Pty Ltd, to provide my expert opinions in relation to the traffic engineering matters relevant to the Planning Scheme Amendment C234 for Cardinia Shire Council.
Facts, Matters, and Assumptions Relied Upon:	<p>Cardinia Planning Scheme</p> <p>Relevant Exhibition Documentation for Amendment C234</p> <p>Pakenham East – Precinct Structure Plan</p> <p>Plans in Motion Submission to the VPA dated 23 February 2018</p> <p>Traffic Analysis Report prepared by TFV / VicRoads dated 21 August 2017</p> <p>Traffic Report prepared by Traffix Group dated May 2007</p> <p>Traffic Report prepared by O'Brien Traffic dated August 2014 for Development Plan</p> <p>Draft Pakenham East PSP Traffic Impact Assessment prepared by Trafficworks dated 18 May 2018</p> <p>Plans in Motion Draft Schematic Plan – Lot Yield Calculation</p>
Identity of Persons Undertaking the Work:	Valentine Gnanakone, Director onemilegrid (BE Civil, MBA)

I have made all the inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the Panel.



Valentine Gnanakone
Director – Senior Traffic Engineer
onemilegrid

2 INTRODUCTION

My name is Valentine Gnanakone and I am Director at **onemilegrid** where I practise as a traffic engineer.

I have been requested by Plans in Motion on behalf of Ferati Holdings Pty Ltd to undertake an assessment of the traffic engineering matters relevant to the intersection of Ryan Road and Princes Highway in Pakenham as a result of the Planning Scheme Amendment C234.

Specifically, I have been requested to provide my opinions in relation to: -

- The ICP arrangement for IN-01; the intersection of Ryan Road and Princes Highway.

In the course of preparing this report on the proposal, I have reviewed development plans and background information and assessed the traffic implications of the amendment.

3 AMENDMENT C234 CARDINIA PLANNING SCHEME

The Pakenham East Precinct Structure Plan (PSP) has been prepared by the Victorian Planning Authority (VPA) in consultation with the Shire of Cardinia and other authorities, to guide the development of the land within the amendment area known as the Pakenham East PSP.

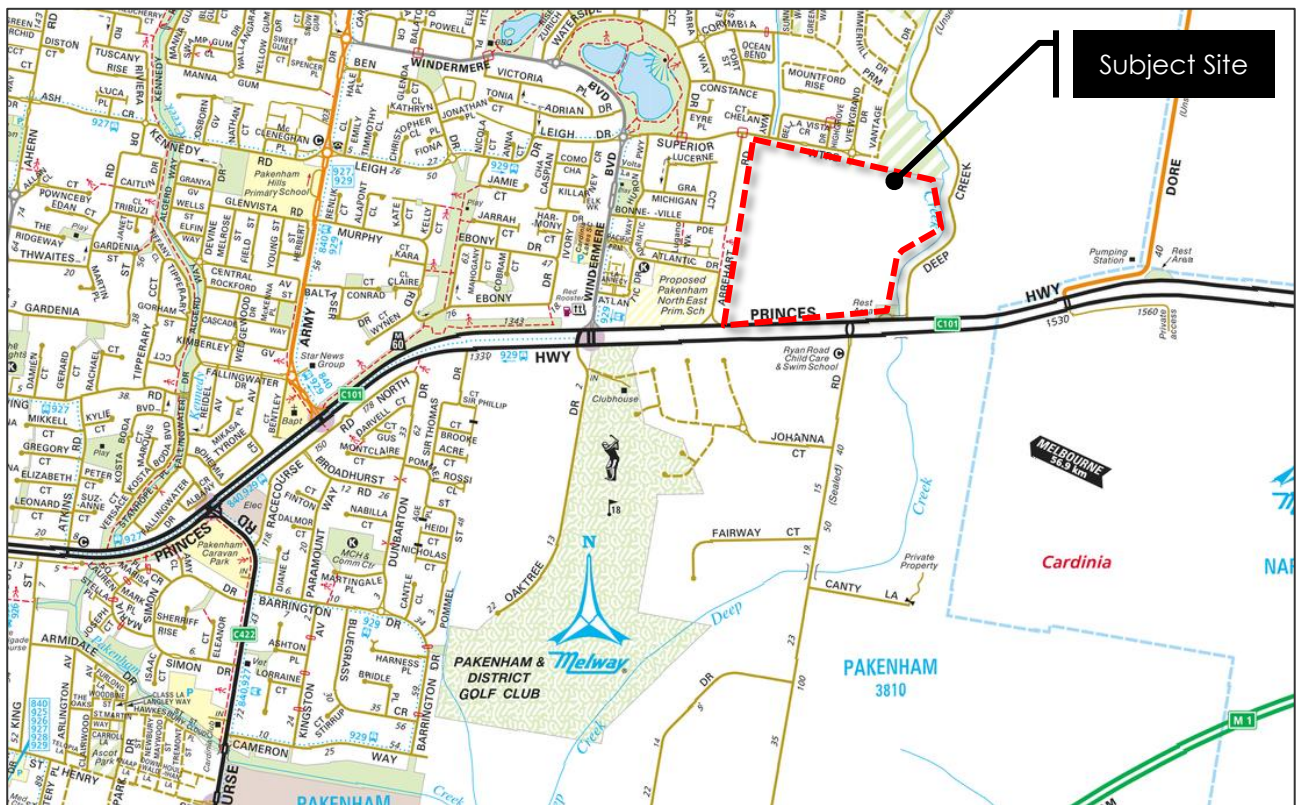
The PSP has been prepared to identify amongst other things the future transport network including roads, public transport, and active transport with due consideration of broader planning outcomes. In addition, the PSP has been prepared in parallel with the Pakenham East Infrastructure Contributions Plan (ICP).

4 EXISTING CONDITIONS

4.1 Site Location

The subject site is located on the north side of Princes Highway in Pakenham. This site is rectangular in shape and is bound by a local road to the north, Deep Creek to the east, Princes Highway to the south and Abrehart Road to the west. The location of the site is generally shown in Figure 1 below.

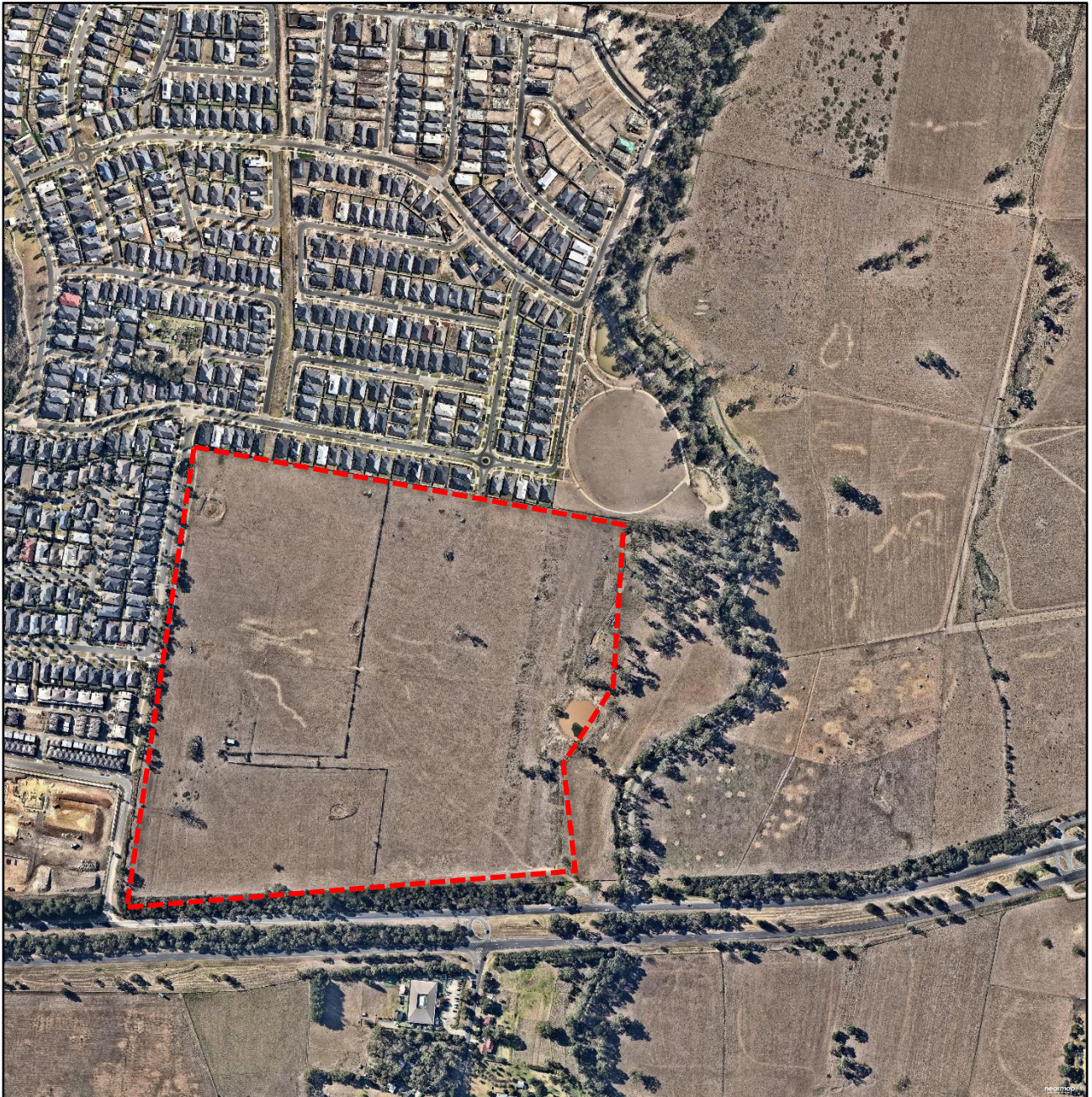
Figure 1 Site Location



Copyright Melway Publishing

An aerial photograph of the site is provided Figure 2.

Figure 2 Aerial Photograph



Copyright Nearmap

4.2 Existing Road Network

4.2.1 Princes Highway

Princes Highway is a VicRoads controlled arterial extending south-east from Melbourne's suburbs, linking with the Princes Freeway approximately 5 kilometres to the east of the site.

In the vicinity of the site it accommodates two traffic lanes in each direction, separated by a treed central median.

The cross-section of Princes Highway at the frontage of the site is shown in Figure 5.

Figure 3 Princes Highway, looking east (left) and west (right)



An 80km/h speed limit applies to Princes Highway in the vicinity of the site.

4.2.2 Ryan Road

Ryan Road is a local access road aligned generally north-south between the Princes Freeway (to which no access is provided) and the Princes Highway.

The road cross-section accommodates two-way traffic within a pavement width of approximately 8 metres, with unrestricted kerbside parking provided on both sides.

The intersection of Ryan Road with Princes Highway is Give-Way sign-controlled, with priority provided to Princes Highway and fully-directional movements permitted.

The cross-section of Ryan Road at the frontage of the site is shown in Figure 4.

Figure 4 Ryan Road, looking south (left) and north (right)



A 60km/h speed limit applies to Ryan Road in the vicinity of the site.

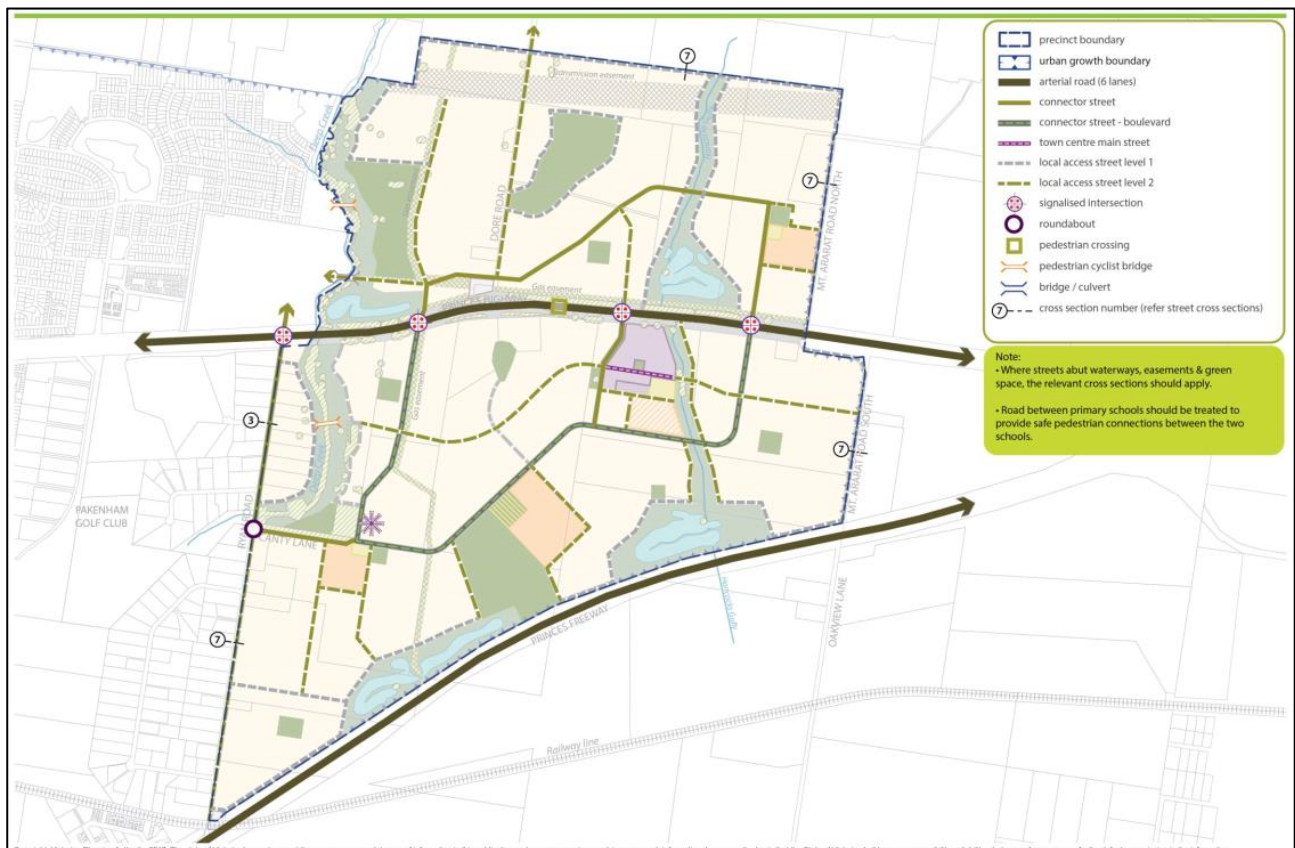
5 PAKENHAM EAST PRECINCT STRUCTURE PLAN

5.1 Overview

The PSP area is located to the east of the subject site, and is bounded by Princes Freeway to the south, Mt Ararat Road to the east, the power line reservation to the north, and Deep Creek and Ryan Road to the west.

A view of the PSP area and future road network is provided in Figure 5 below.

Figure 5 Pakenham East PSP Road Network Plan



Of relevance to the subject site, the PSP contemplates upgrade of Ryan Road to a Connector Street cross-section, and the Ryan Road / Princes Highway intersection upgraded to a signalised intersection.

5.2 Road Network

As part of the PSP, existing roads in the vicinity of the subject site will be upgraded and a new road network developed to provide for access through and around the precinct.

An extract of the proposed road layout for the PSP is illustrated in Figure 6.

Figure 6 Pakenham East PSP Road Network



Of particular relevance to the subject site, the PSP road network proposes signals at the existing intersection of Ryan Road and Princes Highway with a proposed connector street connection into the subject site. In addition, a local access street connection across the creek is also proposed with a bridge proposed to facilitate the crossing.

A detailed view of the road network in the context of the subject site is provided in Figure 7.

Figure 7 Pakenham East PSP Road Network – Subject Site



5.3 Precinct Infrastructure Plan (PIP) & Infrastructure Contributions Plan (ICP)

The PSP includes guidance on the delivery of infrastructure within the precinct as part of the Precinct Infrastructure Plan (PIP) facilitated by the Infrastructure Contributions Plan (ICP). Within the PIP, various projects are proposed which include:

- road projects;
- intersection projects;
- bridge and culvert projects;
- Pedestrian crossing projects;
- Community facility projects;
- Education projects;
- Open space and local park projects; and
- Conservation projects.

The PSP under Table 8 – Precinct Infrastructure lists each of the projects, and the component of which is included in the ICP, such as land and cost.

A view of the Precinct Infrastructure Plan (Plan 11) from the PSP with particular focus on areas surrounding the subject site is provided in Figure 8.

Figure 8 Precinct Infrastructure Plan



As shown in Figure 8, two PIP projects interact with the subject site being IN-01 and BR-02, which are described below (extracted from the PSP).

Figure 9 PIP Projects at Subject Site (Extracted from PSP - Table 8)

PROJECT CATEGORY	ICP PROJECT NUMBER	TITLE	PROJECT DESCRIPTION	LEAD AGENCY	COMPONENT INCLUDED IN ICP			TIMING
					Ultimate land	Interim construction	Ultimate construction	
Intersection Projects								
Intersection	IN-01 (ICP)	Intersection - Princes Highway / Ryan Road connector road	Purchase of land (ultimate treatment) and construction of primary arterial to connector road 4-way signalised intersection (interim treatment)	VicRoads	Yes (50%)	Yes (50%)	No	M-L
Bridge	BR-02 (ICP)	Connector road bridge across Deep Creek	Purchase of land and construction of road bridge across Deep Creek	Cardinia Shire Council	Yes	No	Yes	L

My understanding from the review of Table 8 and associated plans within the PSP is as follows: -

IN-01

Construction of a 4-way signalised intersection treatment at Princes Highway / Ryan Road / New Collector Road.

The project will be led by VicRoads with land to facilitate the intersection split between the northern and southern sides of Princes Highway. The ICP will fund 50% of the intersection cost with the remainder appearing to come from land holders on the north side of the intersection, Cardinia Shire Council or VicRoads.

BR-02

Construction of a vehicular bridge across Deep Creek between the PSP area and the Ferati land holding. The land and ultimate construction is to be funded by the ICP. I understand that the bridge will cater for an Access Street Level 2.

6 DEVELOPMENT PLAN

A Development Plan relating to the subject land (and land to the north) was approved and endorsed on 19 November 2014. The approved Development Plan was accompanied by a traffic report prepared by O'Brien Traffic.

I have been advised that the endorsed plan allows for in the order of 294 lots across the subject site (albeit lots were not shown on the endorsed plans). The potential lot yield is shown on the Plans in Motion Lot Yield Calculation Plan.

I understand that the Development Plan contemplated traffic signals at the intersection with Princes Highway / Ryan Road.

7 TRAFFIC ENGINEERING REVIEW

7.1 Traffic Volumes

Transport for Victoria (TFV) and VicRoads were requested by the VPA to undertake a traffic analysis (and subsequently prepare a report) using the ultimate traffic volumes (2046) for Princes Highway to assess the operation of future intersections. These intersections include, Ryan Road and Connector A, B and C. The intersection locations are shown in Figure 10.

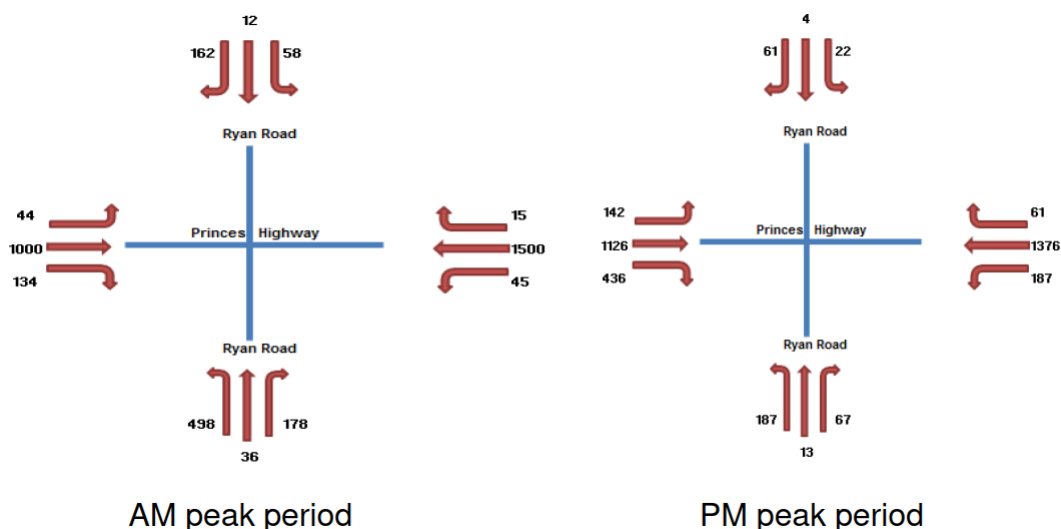
Figure 10 Intersection Locations



The report by TfV and VicRoads (dated 21 August 2017) subsequently illustrated traffic volumes at each intersection based on the traffic model. I have reviewed the report and am generally comfortable with the assumptions adopted to determine ultimate traffic volumes. These include the development densities, traffic generation rate per lot and the adoption of the 2046 ultimate volumes for Princes Highway.

An extract of the intersection traffic volumes for the Ryan road intersection is provided in Figure 11.

Figure 11 Ryan Road Intersection Traffic Volumes



7.2 Traffic Distribution

Based on the traffic volumes it can be determined that 75% of traffic generated to the intersection is from the south via the new PSP area and existing properties whilst 25% of volumes are generated to the north of the intersection.

A summary of the counts is provided below.

Figure 12 Ryan Road Intersection Traffic Volumes - AM

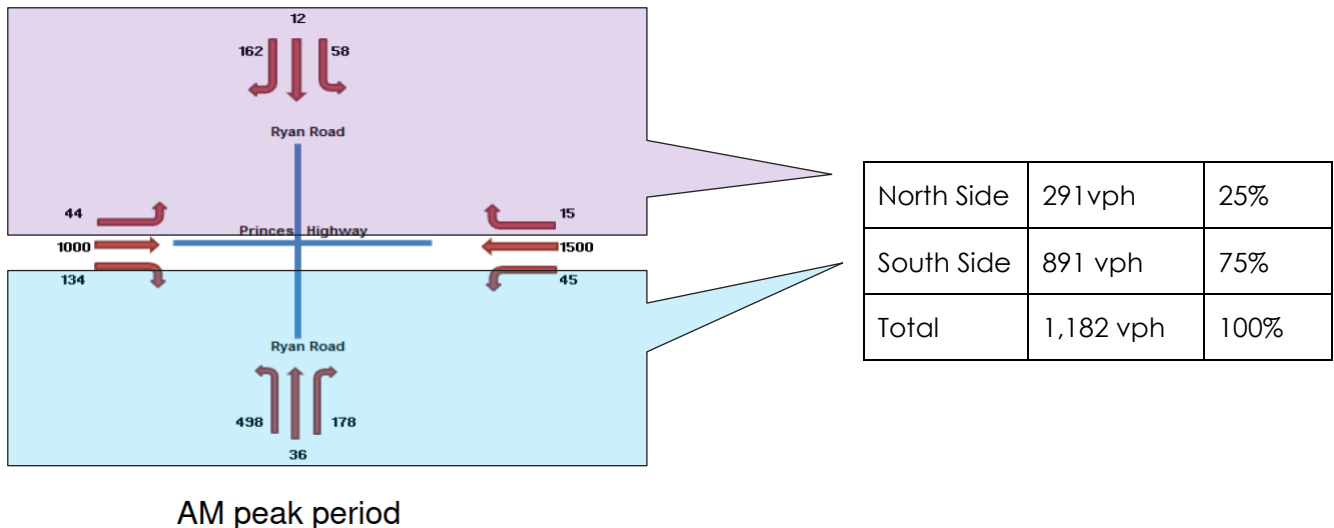
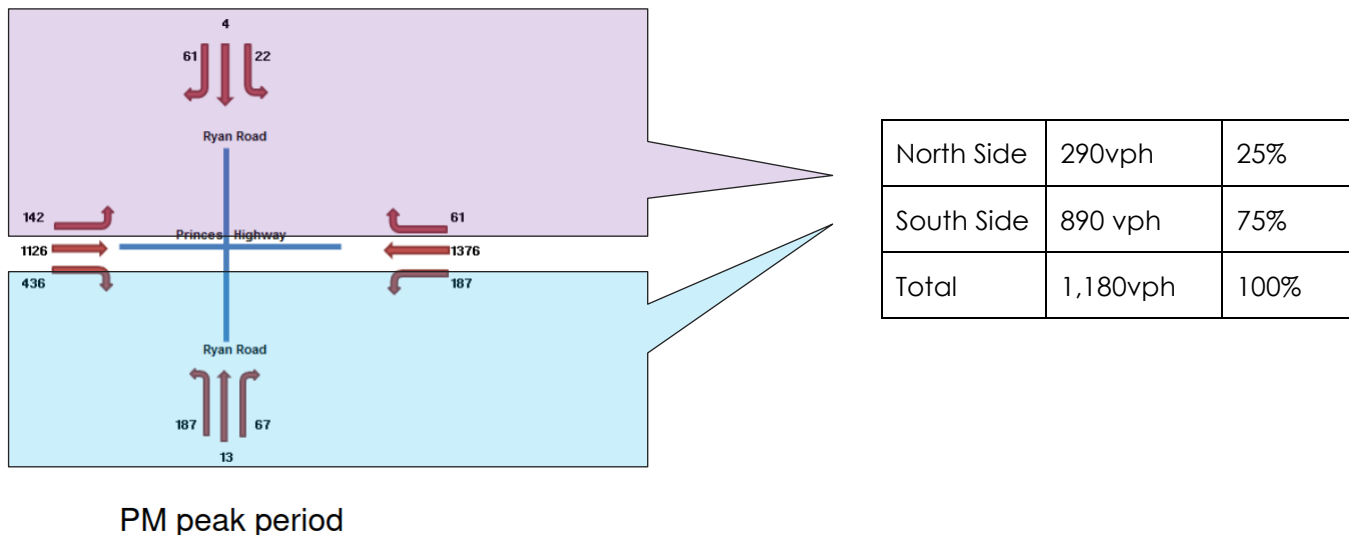


Figure 13 Ryan Road Intersection Traffic Volumes - PM



7.3 Council Traffic Impact Assessment

Trafficworks on behalf of Council prepared a Traffic Impact Assessment dated 18 May 2018 to assess the Draft PSP. I have reviewed this report and note that in the Lot Yield assessment (Section 4.1 page 10), contemplated an indicative yield of 460 lots. I have been advised that a yield closer to 294 lots is more likely (refer to Plans in Motion Lot Yield Calculation Plan). This would therefore result in an over estimation of traffic being generated to the north of the Ryan Road intersection within the Trafficworks report.

Of note, overall Trafficworks estimate 35% of traffic would be generated to / from the north side of Princes Highway. After accounting for the above difference between lots (-166), it is reasonable to estimate that 25% of traffic would be generated to / from the north as per the estimates from the TfV and VicRoads assessment.

7.4 Adequacy of Intersection Treatment

Having had an opportunity to review the traffic volumes and associated analysis I am comfortable that traffic signals are the appropriate treatment for the intersection.

7.5 Intersection Apportionment

As shown in the above traffic distribution, the majority of traffic is originating from the south within the Pakenham East PSP area. In view of this, it is my view that the PSP area should fund a greater portion of the signalised intersection.

I am of the view that the apportionment of costs should be reflective of the level of traffic generated by each side. As shown above, only 25% of traffic generated to the intersection originates from the north and as such this should be the maximum required contribution from land to the north, Cardinia Shire Council and / or VicRoads.

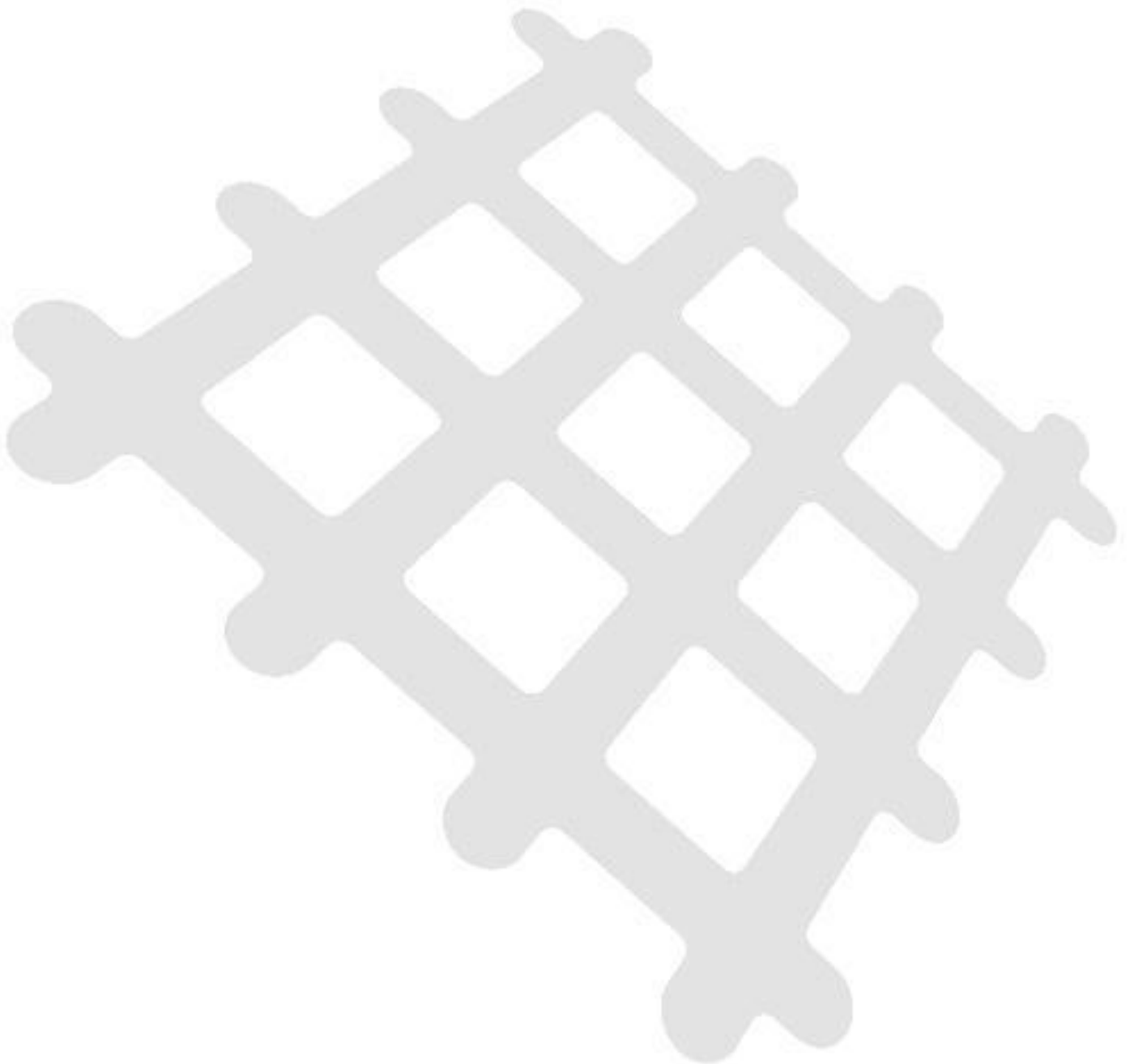
8 CONCLUSIONS

I have been requested to provide my expert opinions in relation to the traffic engineering matters relevant to the Ferati land holding on the north side of Princes Highway to the west of the Pakenham East PSP.

A summary of my opinions follows:

- The PSP includes 2 x infrastructure projects which have an interface to the subject site, IT-01 and BR-02;
- It is my view that signals at intersection IT-01 is the appropriate treatment for the intersection;
- It is my view that any contribution from land to the north, Cardinia Shire Council or VicRoads should not exceed 25% of the cost.

Appendix A Plans in Motion Lot Yield Calculation



**APPROVED AMENDED DEVELOPMENT
PLAN
PLANNING AND ENVIRONMENT ACT 1987
CARDINIA PLANNING SCHEME**

Sheet: 1 of 7
Approved by: Lisa Hall
CARDINIA SHIRE COUNCIL
Date: Wednesday, 19 November 2014

**DRAFT
SCHEMATIC**



Southern Lot Yield: 294 lots
Southern Lot Area: 30.87ha
(Lot Yield Calculations of Southern Portion by
Plans in Motion Pty Ltd.)

South East Water



DEVELOPMENT PLAN

CARDINIA VIEWS, PAKENHAM

Total Site Area: 27.94ha

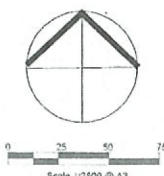
Allotments Total: 16.73ha
Internal Road Network: 6.44ha
NE Reserve: 1.01ha
District Reserve: 3.76ha
Lot Yield: 319
Average Lot Size: 524m²
Minimum Lot Area: 398m²
Maximum Lot Area: 1184m²

Roads

Major Roads
Collector Streets
Shared Cycle/Ped Paths

Native Trees

Trees to be retained
Trees to be removed



VILLA WORLD



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Drawing Ref: UD_DP01_V2



