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# CRANBOURNE WEST PSP REVIEW OF DESIGNATED LAND USE

FOR 690 WESTERN PORT HIGHWAY, 635 HALL ROAD AND PART OF  
620 WESTERN PORT HIGHWAY, CRANBOURNE WEST  
(AMENDMENT C219 CASEY PLANNING SCHEME)

*Traffic Engineering Assessment*

Prepared for

LEIGHTON PROPERTIES PTY LTD

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## *Traffic Engineering Assessment*

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# 1 INTRODUCTION

Traffix Group has been engaged by Leighton Properties to undertake a traffic engineering assessment and to prepare a report for proposed changes to the applied zone for properties 47 and 48 and part of property 46 within the Cranbourne West PSP area from Commercial 2 to the General Residential Zone. The location of the properties (“the subject site”) is shown on Figure 1 below.

This report provides a traffic engineering overview of the proposal, with particular attention to changed traffic generation impacts.

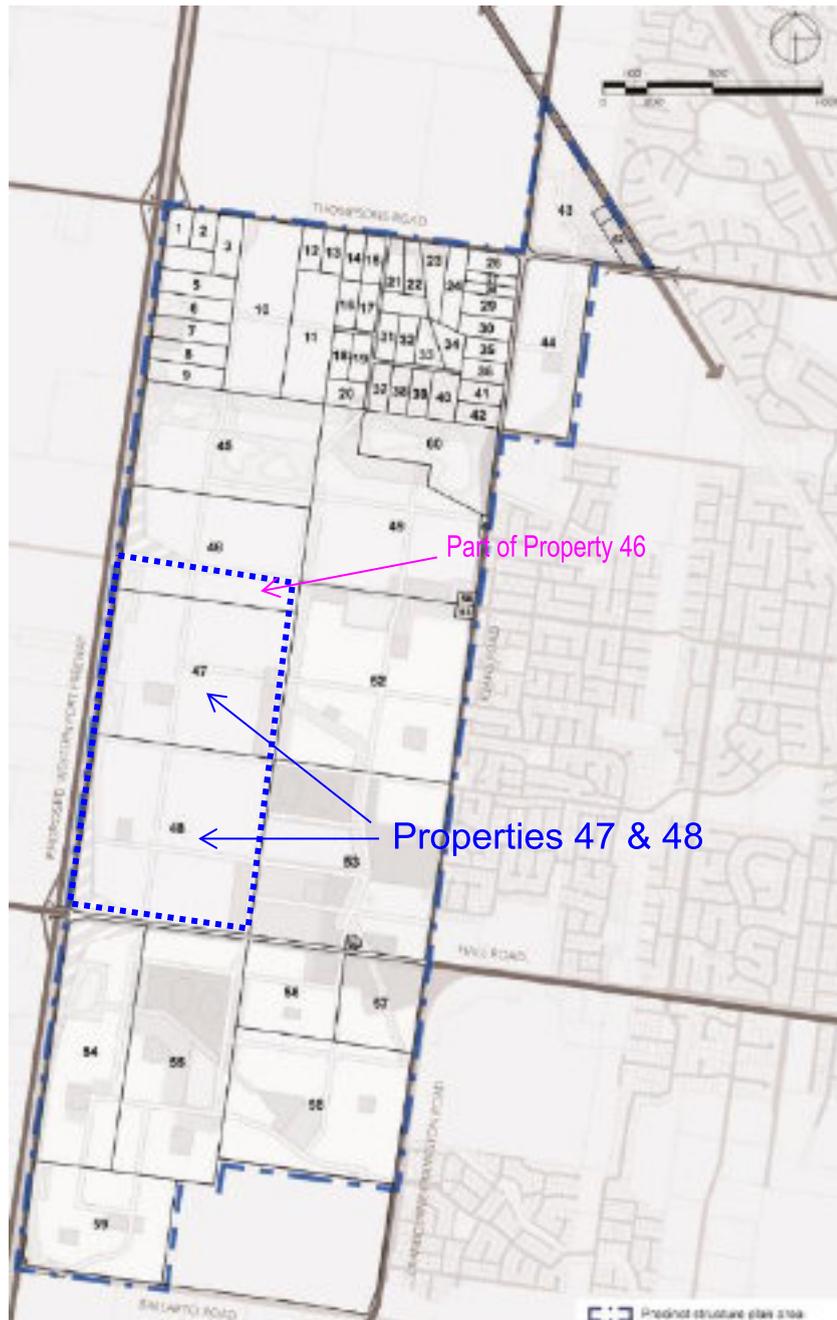


Figure 1: Subject Site

## 2 BACKGROUND

The subject site comprises properties known as 690 Western Port Highway, 635 Hall Road and part of property 620 Western Port Highway as shown in Figure 1 to this report. The subject site has a total area of approximately 134 hectares and is located on the east side of Western Port Highway north of Hall Road in Cranbourne West, within the Cranbourne West Precinct Structure Plan (CWSP) area.

The properties are currently rural land, zoned Urban Growth Zone – Schedule 1 (UGZ1).

The CWSP was originally approved by the Minister for Planning in February 2010, through Amendment C102 to the Casey Planning Scheme and has been to subsequent further minor amendments since its original approval.

The current CWSP sets out the 'future urban structure' for the subject site and surrounding land (shown on Figure 2 below), and earmarks the site for predominantly industrial use, with a small amount of 'employment interface' land.

There is also some encumbered open space (retarding basins and floodways) on Property 47.

The CWSP 'road network plan' identifies a number of industrial roads through the subject site, including a key north-south industrial road connecting between Hall Road and Thompsons Road (with signalised intersections at both ends and roundabouts at mid-block intersections) and a number of east-west industrial roads. Central Parkway (Wedge Road) is identified in the CWSP as a connector road and includes future city-oriented freeway ramps, and a second 'boulevard' north-south connector road is proposed along the site's eastern boundary. A future full diamond interchange is also proposed at Hall Road, with Western Port Highway ultimately proposed to be upgraded to a freeway.

Figure 2 shows the current CWPSP 'future urban structure' plan.

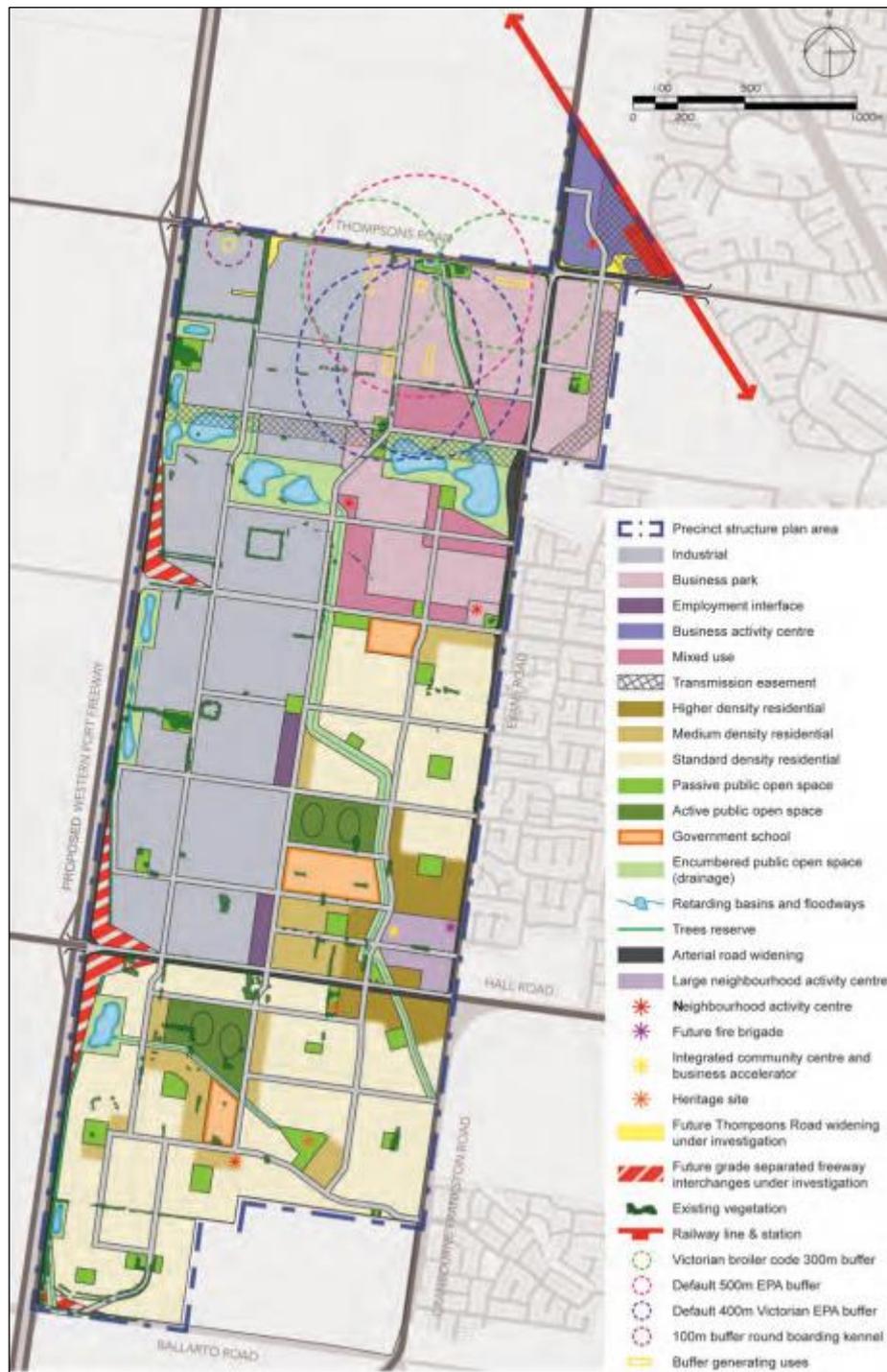


Figure 2: CWPSP - Urban Structure

### 3 PROPOSED ALTERNATIVE PSP

The proposal is to change the applied zone under the existing PSP from Commercial 2 to General Residential to facilitate residential rather than industrial development between Hall Road and Central Parkway, as proposed by the CWSP. The proposed alternative urban structure is shown in Figure 3 below.

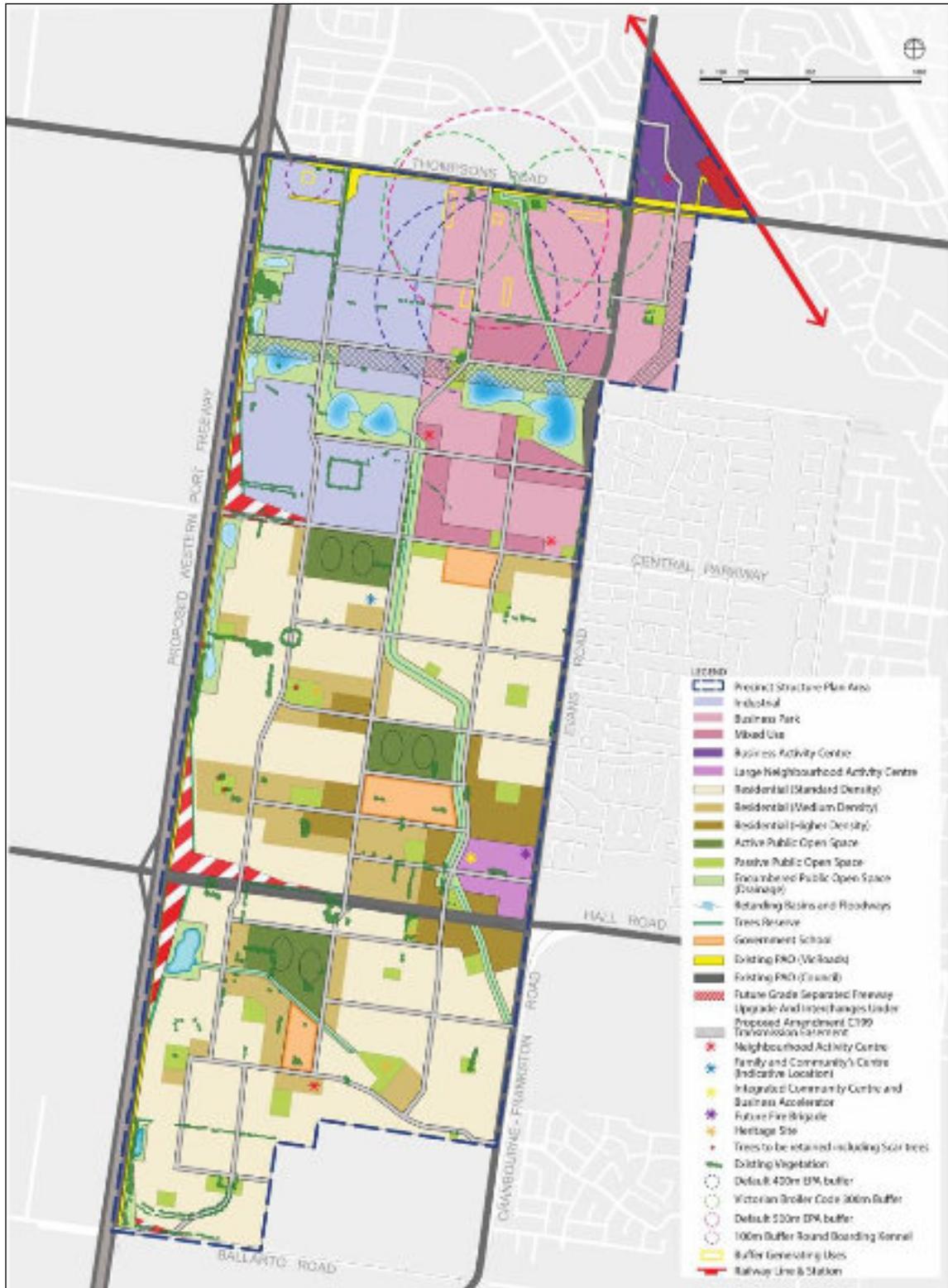


Figure 3: Proposed Concept Plan

## 4 TRAFFIC VOLUME CHANGES

### 4.1 Traffic Generation Assessments

In order to assess the potential traffic impacts of the proposed change to the PSP on the surrounding road network within the CWSPS area, we have undertaken a comparison assessment of industrial versus residential development of the site.

We note that detailed traffic modelling of the CWSPS area was undertaken by GTA Consultants in February 2009 on behalf of Casey Council, to inform the PSP and Development Contributions Plan (DCP). The GTA modelling utilised the Melbourne Integrated Transport Model (MITM) software.

The MITM model adopted the following traffic generation rates:

- *Industrial and Employment Interface: 4.7 trips per job per day*
- *Residential: 6.8 trips per dwelling per day*

As part of the CWSPS process, Traffix Group reviewed the GTA traffic assessments and modelling inputs on behalf of various landowners, and noted the following:

- The traffic generation rate modelled by the MITM model for industrial and employment interface uses was approximately 25% lower than the agreed 'first principles' rate. One key implication of this is that in our opinion the north-south industrial road needed to be constructed as a four-lane industrial road (two lanes each way), not a two-lane road, in particular noting the need to separate the industrial traffic away from the north-south boulevard 'interface' road.
- The traffic generation rate modelled by the MITM model for residential use is significantly lower than is currently used in planning for nearby areas, however school and shop trips have been separately counted in the MITM model, whereas the majority of demand for these uses is likely to come from internal residential areas within the PSP area. When adding the residential, retail and school trips together, they equate to an average of 9.1 vehicle trip-ends per household per day which is consistent with our experience.

For consistency, we have adopted the same traffic generation rates as used in the MITM model.

#### Industrial Use

The net developable area of the subject site (excluding open space) is 119.23 hectares.

The MITM model adopted a ratio of 33.9 jobs per net developable hectare for the industrial land, which corresponds to approximately 4,042 jobs which have been assumed to be provided on the subject site in the supporting analysis for the CWSPS.

At a rate of 4.7 trips per job, this equates to a total traffic generation for the subject site of 18,997 vehicles per day (vpd).

### Residential Use

Preliminary yield analysis for the development of the subject site for residential purposes indicates that the site may be able to accommodate in the order of 1,837 dwellings, with an average lot size of 393m<sup>2</sup>.

At the MITM model rate of 6.8 vehicle trip-ends per dwelling per day, this equates to a total traffic generation for the subject site of 12,492 vpd.

### Traffic Generation Summary

Based on the MITM model rates, by changing the subject site land use from industrial to residential, there is anticipated to be a reduction in the order of 6,505 vpd on the road network. This reduction in traffic generated by the site will have flow-on benefits, including reduced congestion on Western Port Highway (future freeway).

## 4.2 Traffic Distribution Assessments

### Industrial Use

Traffix Group previously undertook traffic distribution and impact assessments for industrial development of the subject site, and adopted the following traffic distribution assumptions:

- 13.8% of daily traffic in the AM peak hour and 15.8% of daily traffic in the PM peak hour, based on the distribution profile in Table 3.4 of the RTA Guide to Traffic Generating Developments (2002) (RTA Guide),
- 80% of traffic entering the site and 20% exiting the site during the AM peak hour, with the reverse distribution in the PM peak hour,
- 70% of traffic to/from the north and 30% of traffic to/from the south, and
- during the road network peak hour, 3% commercial vehicles (CV).

### Residential Use

For the purposes of estimating the traffic distribution for the proposed residential use, the following assumptions have been adopted:

- 10% of daily traffic occurring during the road network peak hours,
- 30% of traffic entering the site and 70% exiting the site during the AM peak hour,
- 60% of traffic entering the site and 40% exiting the site during the PM peak hour, and
- 70% of traffic to/from the north and 30% of traffic to/from the south.

### Traffic Distribution Summary

Table 1 below sets out a comparison between the industrial and residential traffic distribution for the subject site during the road network peak hours, based on the preceding assumptions.

Table 1: Traffic Distribution Comparison

Movement	AM Peak			PM Peak		
	Industrial	Residential	Difference	Industrial	Residential	Difference
Out to North	367 vph	612 vph	+ 245 vph	1,681 vph	350 vph	- 1,331 vph
In from North	1,468 vph	262 vph	- 1,206 vph	420 vph	525 vph	+ 105 vph
Out to South	157 vph	262 vph	+ 105 vph	720 vph	150 vph	- 570 vph
In from South	629 vph	112 vph	- 517 vph	180 vph	225 vph	+ 45 vph
<b>TOTAL</b>	<b>2,621 vph</b>	<b>1,248 vph</b>	<b>- 1,373 vph</b>	<b>3,001 vph</b>	<b>1,250 vph</b>	<b>- 1,751 vph</b>

### 4.3 Traffic Impacts

Table 1 indicates the following:

- significant reduction in traffic entering the site in the AM peak,
- minor increase in traffic exiting the site in the AM peak,
- minor increase in traffic entering the site in the PM peak,
- significant reduction in traffic exiting the site in the PM peak, and
- an overall net reduction of up to 1,373 vehicles on the surrounding road network during the AM peak hour and an overall net reduction of up to 1,751 vehicles on the surrounding road network during the PM peak hour for residential use compared with industrial use.

In addition, it is noted that the type of traffic generated by the site under the proposed residential is more compatible with the surrounding land, in particular the land to the immediate east of the site, being residential in nature. Conversely, under the current PSP land use for the site, there would be potential for a high volume of commercial vehicle traffic generated by the subject site to travel through the surrounding residential road network.

### 4.4 Internal Road Network

Figure 4 below shows the current CWPSM road network plan for the subject site and surrounding properties.

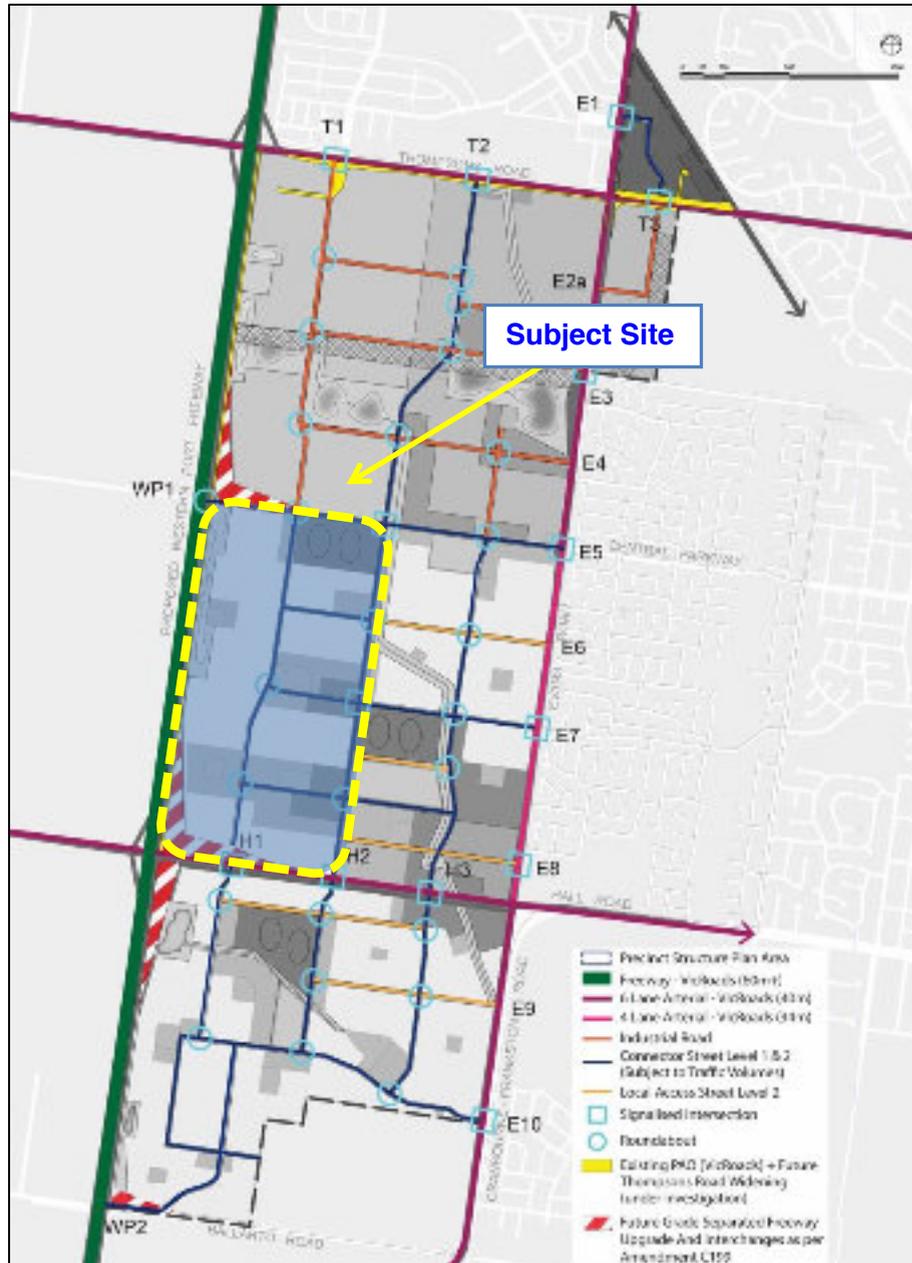


Figure 4: CWPSM Plan 13 – Road Network

We note that the road layout could be retained, exactly as shown in the PSP, with the ‘orange’ industrial roads within the subject site changed to local residential access streets.

The proposed MasterPlan concept at Figure 3 above effectively adopts the existing internal road network.

Key differences between the MasterPlan concept layout compared with the PSP road layout for the subject site are as follows:

- no need for the wide industrial north-south road through the centre of the subject site (we note that our previous assessments indicated that this needed

to be an industrial road with two lanes in each direction so as to accommodate the industrial development of the subject site without placing high levels of industrial traffic on the north-south boulevard connector road along the eastern boundary of the site, which shares residential frontage),

- an internal “mid-block” north-south connector standard road could satisfy traffic demands for the residential concept,
- the function of the currently planned north-south boulevard connector road located at the eastern boundary of the site would be simplified as it would no longer split industrial and residential land uses,
- the MasterPlan concept proposes no change to roads outside of the subject site.

The proposed change to the applied zoning under the PSP in relation to the subject site will substantially reduce the potential for conflict between industrial traffic and the Cranbourne West residential area. The proposed residential extension to the existing Cranbourne West neighbourhood will generate compatible residential traffic on the east-west roads within the subject site which connect directly (via cross-intersections) to the residential land to the east.

## 5 CURRENTLY ENVISAGED WORKS

### 5.1 Western Port Highway Upgrade

Details of the proposed Western Port Highway upgrade designs are available on VicRoads' web site. In particular, interchanges are proposed at Thompsons Road, Central Parkway (Wedge Road) and Hall Road in the vicinity of the site. The respective interchange layouts are presented in Figures 5, 6 & 7 below.



Figure 5: Thompsons Road Interchange

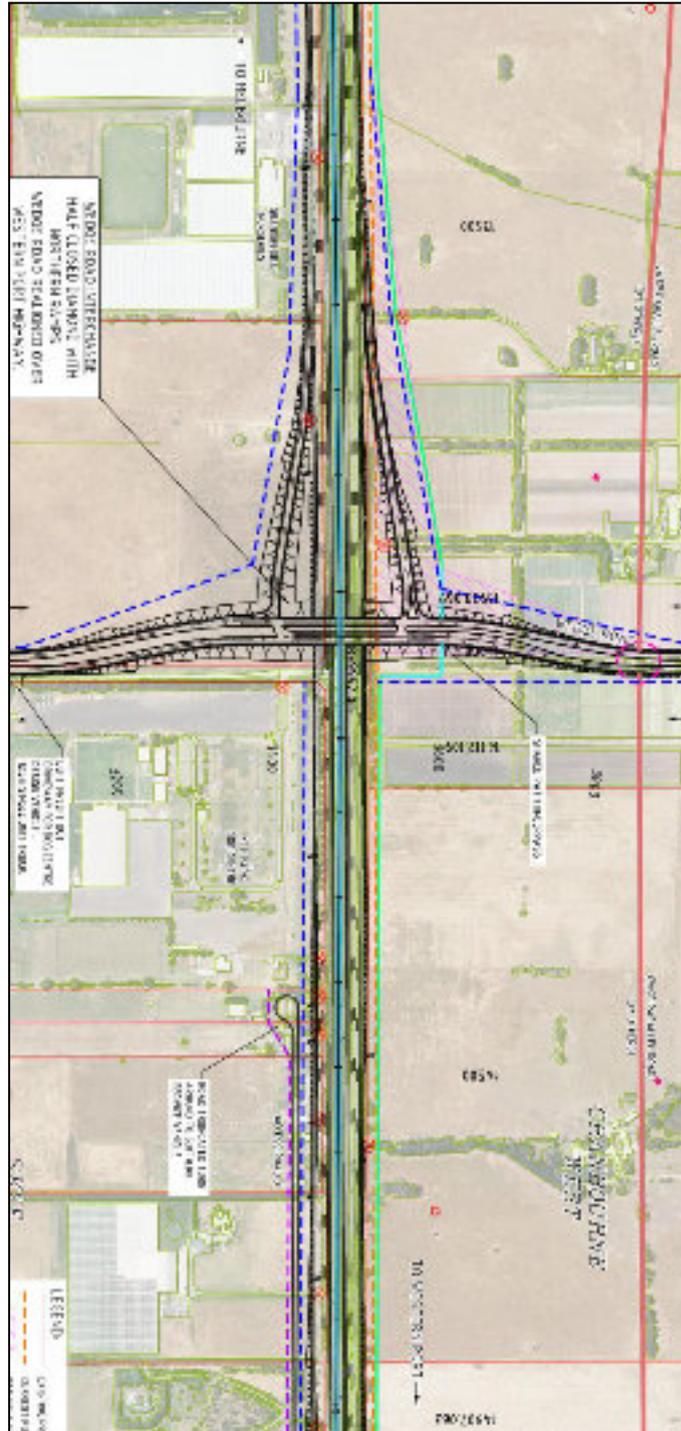


Figure 6: Central Parkway (Wedge Road) Interchange



## 5.2 DCP Impacts

The Development Contributions Plan (DCP) for the Cranbourne West PSP area requires that all internal roads and intersections are to be funded by the developer (or shared by adjacent developers where intersection treatments are on the boundary between two properties), and are not DCP items. Accordingly the proposed change to the internal road network and intersections within the site does not have any adverse cost implications for adjacent land.

The DCP includes a number of road and intersection infrastructure projects which the subject site and surrounding land are required to contribute towards.

The projects proximate to the site are detailed on Figure 8 below as follows:

- **RD01:** Signalised Intersection – intersection of Thompsons Road and Evans Road
- **RD02a:** Interim 2 lane roundabout intersection of Hall Road and Evans Road
- **RD02b:** Road connection/signalisation at Cranbourne-Frankston Road from interim 2 lane roundabout at intersection of Hall Road and Evans Road
- **RD03:** Pedestrian Operated Signals on Evans Road (near Montrose Way)
- **RD04:** Land for Evans Road widening
- **RD05:** Land for Hall Road widening
- **RD06:** Hall Road bridge and culvert
- **RD07:** Central Parkway Extension
- **RD08:** Urbanisation of Evans Road
- **RD09:** Urbanisation of Hall Road
- **RD10:** Volk Road extension
- **RD11:** North-south residential collector road extension
- **RD12:** Land for Missens Road widening
- **RD13:** Construction of Missens Road
- **RD14:** Construction of signalised intersection at Thompsons & Missens Roads

Legend

- Road Projects
- Community Facility Projects
- Open Space Projects
- Roads
- Growth Area



Figure 8: DCP Road Projects

## 6 IMPACT OF PROPOSED CHANGES

The DCP notes that ... *'the infrastructure included in it is directly required to service the wider development of the area. However infrastructure that relates specifically to the needs of an individual developer has not been included in the DCP'*. Items of this nature include local roads, collector roads and intersections with arterial roads.

A number of properties within the Cranbourne West PSP area have been or are currently in the process of being developed and accordingly some DCP funds have already been collected, and some of the DCP road projects have already been funded/delivered through the DCP process.

We note that if the subject site is developed for residential purposes, all of the road projects listed in the DCP are still required and thus the proposed change to the PSP would not impact upon the road related projects in the DCP.

Overall, the traffic generated by the proposed residential zoning of the land (and the impacts, including heavy vehicle impacts) will be less than was assumed for the purposes of preparing supporting documents for the DCP (which was based on the subject site being industrial development), and accordingly no additional road infrastructure items are required external to the site as a result of the proposed change to the PSP.

We note that the DCP does not allow for 'ultimate' construction of Hall Road, Evans Road and Thompsons Road intersections. The DCP provides 'interim' treatments as well as the land component for ultimate treatments, with the construction of ultimate treatments being the responsibility of the road authority, taking into account external through traffic demands not attributable to the Cranbourne West PSP area.

By changing the zoning of the subject site from industrial to residential, with corresponding reduced traffic volumes contributing to the surrounding arterial road network and intersections from the subject site (including substantially reduced truck traffic volumes), the ultimate arterial road duplication and intersection treatments may be able to be delayed for some years.

## 7 CONCLUSIONS

Having undertaken traffic engineering assessments of the proposed rezoning, we are of the opinion that: -

- (a) based on the traffic generation rates adopted in MITM model, residential development of the land would generate in the order of 6,505 fewer vehicle trip-ends per day on the surrounding road network, compared with industrial development of the land,
- (b) there will be an overall net reduction in the order of 1,373 and 1,751 vehicle trip-ends on the surrounding road network during the AM and PM peak hours respectively,
- (c) there will be substantially less heavy vehicle traffic generated by the site under the residential development scenario compared with industrial development of the land, with the type of traffic generated by the proposed residential development of the site being more compatible with the surrounding land uses, particularly the residential land to the immediate east of the site,
- (d) the reduced traffic generated by the site under the 'residential' scenario will have flow-on benefits, including reduced congestion on Western Port Highway (future freeway),
- (e) all of the road infrastructure projects included in the Cranbourne West DCP will be required regardless of whether the subject site is developed for industrial or residential purposes, and the proposed residential development of the subject site does not increase the scope or costs of any of the DCP road projects,
- (f) no additional road infrastructure items are required external to the site as a result of the proposed residential development,
- (g) as a result of changing the site from industrial to residential zoning, the ultimate arterial road duplication and intersection treatments may be able to be delayed for some years,
- (h) the proposed concept layout demonstrates that an efficient road network layout within the subject site can be achieved which also responds to the adjacent residential area.
- (i) There would no longer be a need for the wide industrial north-south road connecting from Hall Road up to Thompsons Road through the centre of the site, and
- (j) there are traffic engineering benefits if the subject site were to be residential rather than industrial development.

**Proposed Development Plans**

**APPENDIX A**

