Prepared for
Victorian Planning Authority
ABN: 58 651 383 439

DRAFT

Melton East PSP

Strategic Transport Modelling

17-Jan-2025

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Client: Victorian Planning Authority

ABN: 58 651 383 439

Prepared by

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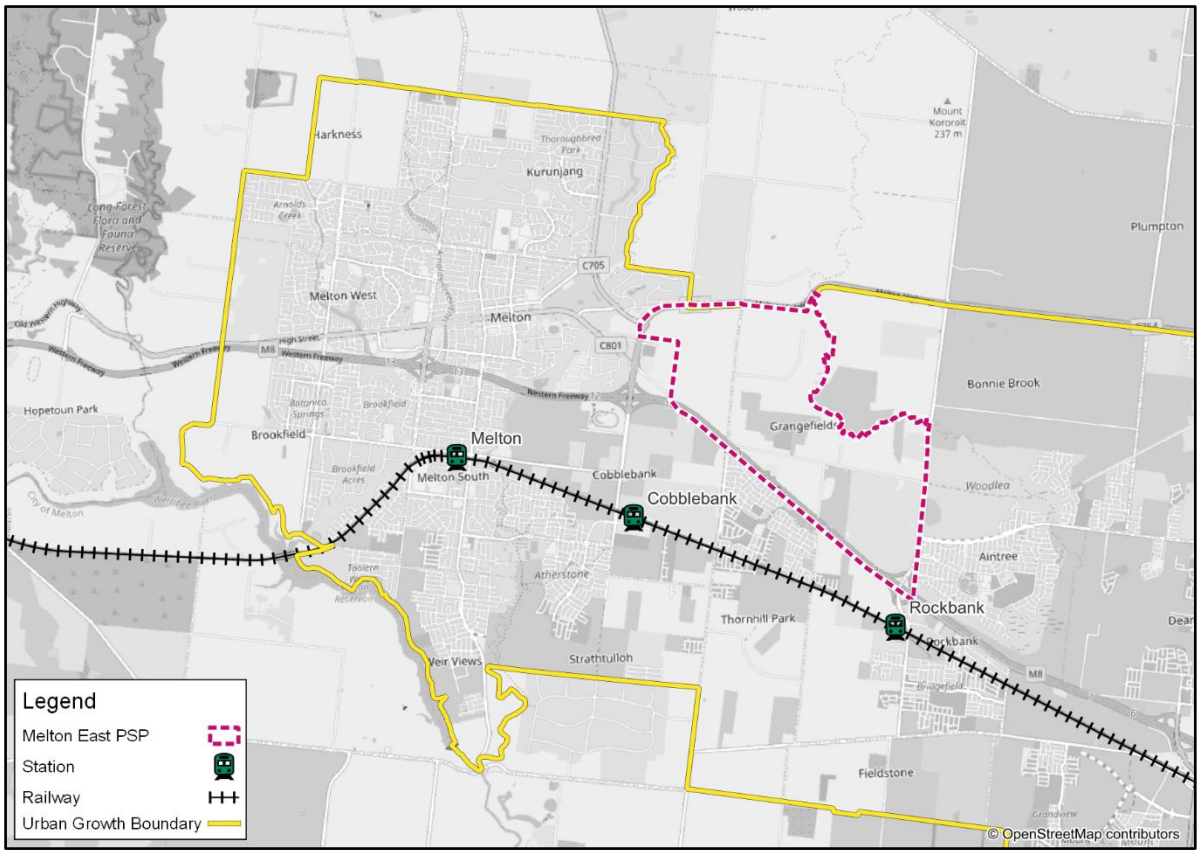
1.0 Introduction

1.1 Background

In May 2023 AECOM was engaged by the Victorian Planning Authority (VPA) to support the development of an integrated transport assessment as part of the broader precinct structure plan (PSP) panel process. The Melton East PSP is located to the west of the urban growth boundary, sandwiched between Leakes Rd, Melton Highway and the Western Freeway. Figure 1 details the location of the Melton East PSP and surrounding context.

Figure 1 Melton East PSP Context



Melton has been identified as an area of fast existing and projected population growth. For example, Table 1 details projected population and household counts for the Melton East as per Victoria in Future (VIF). Annual population growth between 2021 and 2036 is forecast to be approximately 4.5%, in contrast to 1.7% for Victoria as a whole.

Table 1 Melton LGA population and household projections[1]

Metric	2021	2026	2031	2036	2021-36 CAGR[2]
Population	181,346	242,875	295,815	349,385	4.5%
Households	58,734	79,673	97,616	116,405	4.7%

In order to support this population growth, appropriate top-level land use and infrastructure planning is required to encourage sustainable travel patterns and asset utilisation. This report details the strategic

[1] Victoria in Future (Planning Victoria, 2023)
[2] Compound annual growth rate

modelling undertaken to support this goal. Separate reporting has been produced as part of the broader integrated transport assessment by AECOM.

1.2 Purpose of this report

This report presents the results of strategic modelling undertaken to support the preparation of the Melton East PSP. The outputs of the strategic modelling will be used to inform the integrated transport assessment, in addition to supporting the understanding of the alignment and structure of the future road network in the ultimate scenario year of 2051, such as the number of lanes and road reserve required.

The report is structured as follows:

- Elaboration of the PSP area and surrounding context.
- Review of transport modelling inputs and assumptions.
- Discussion of modelling results, with analysis of vehicle volumes, mode share and network performance.
- Concluding thoughts and recommendations.

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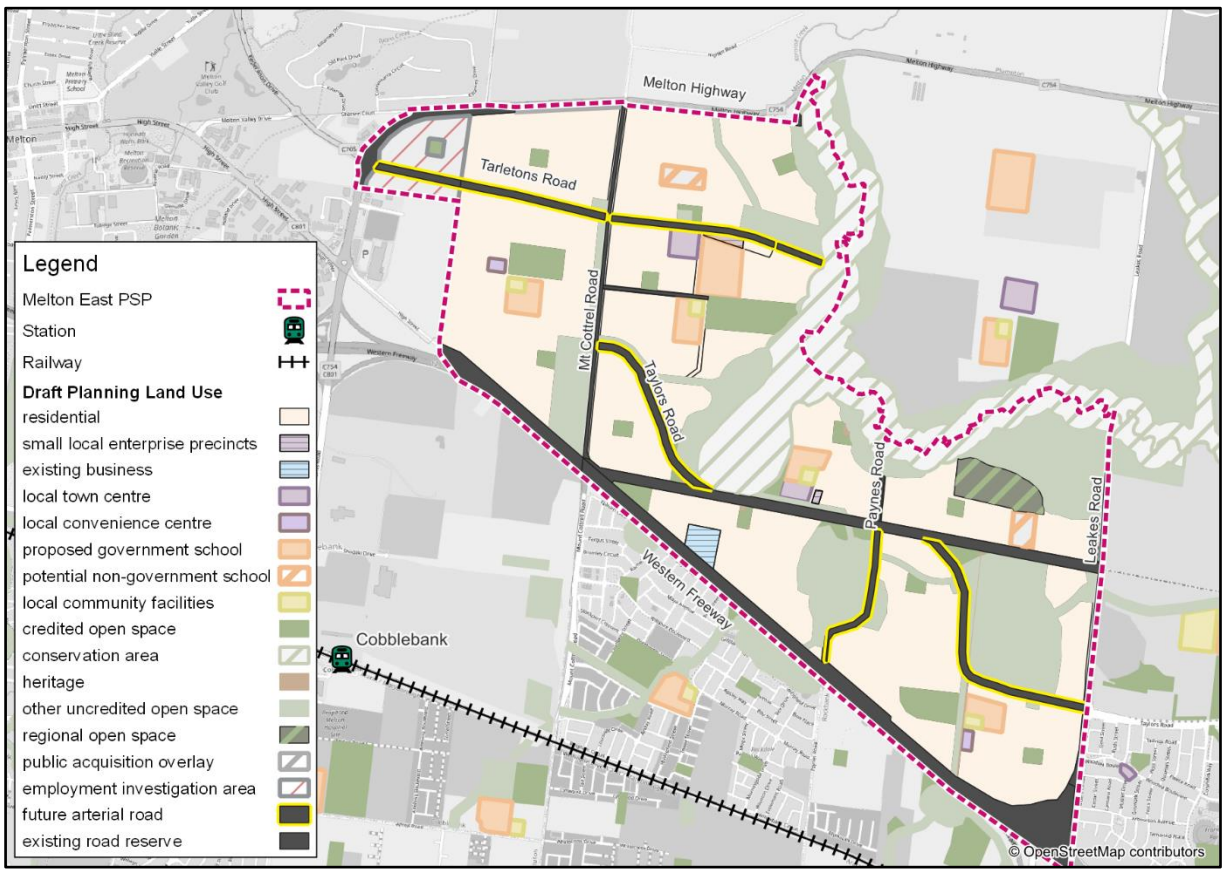
2.0 Regional context

2.1 Melton East PSP

Figure 2 provides a detailed view of Melton East PSP with draft planning land use provided by VPA in mid-2023. There are a few key challenges facing the area from a transport perspective:

- Currently only two arterials exist to carry north/south traffic between the Melton Highway and the Western Freeway or Rockbank. Key to this discussion is whether Paynes Road should be extended to meet a future Tarletons Road.
- For east/west traffic, a key arterial will be Taylors Road. While the precise alignment of Taylors Road cannot be guaranteed through strategic modelling, the VITM modelling can help understand the expected load on Taylors Road, and whether Beattys Road's alignment can or should be adjusted. Similarly, the connection between the PSP and High Street in Melton proper requires investigation.
- In order to appropriately capture sufficient road reserve, it is important to understand the ultimate utilisation and required lanes for each arterial.
- Lastly, it is important to understand whether key activity centres lead to traffic saturating connector streets, and that access from residential blocks to arterials do not run into choke-points.

Figure 2 Melton East PSP



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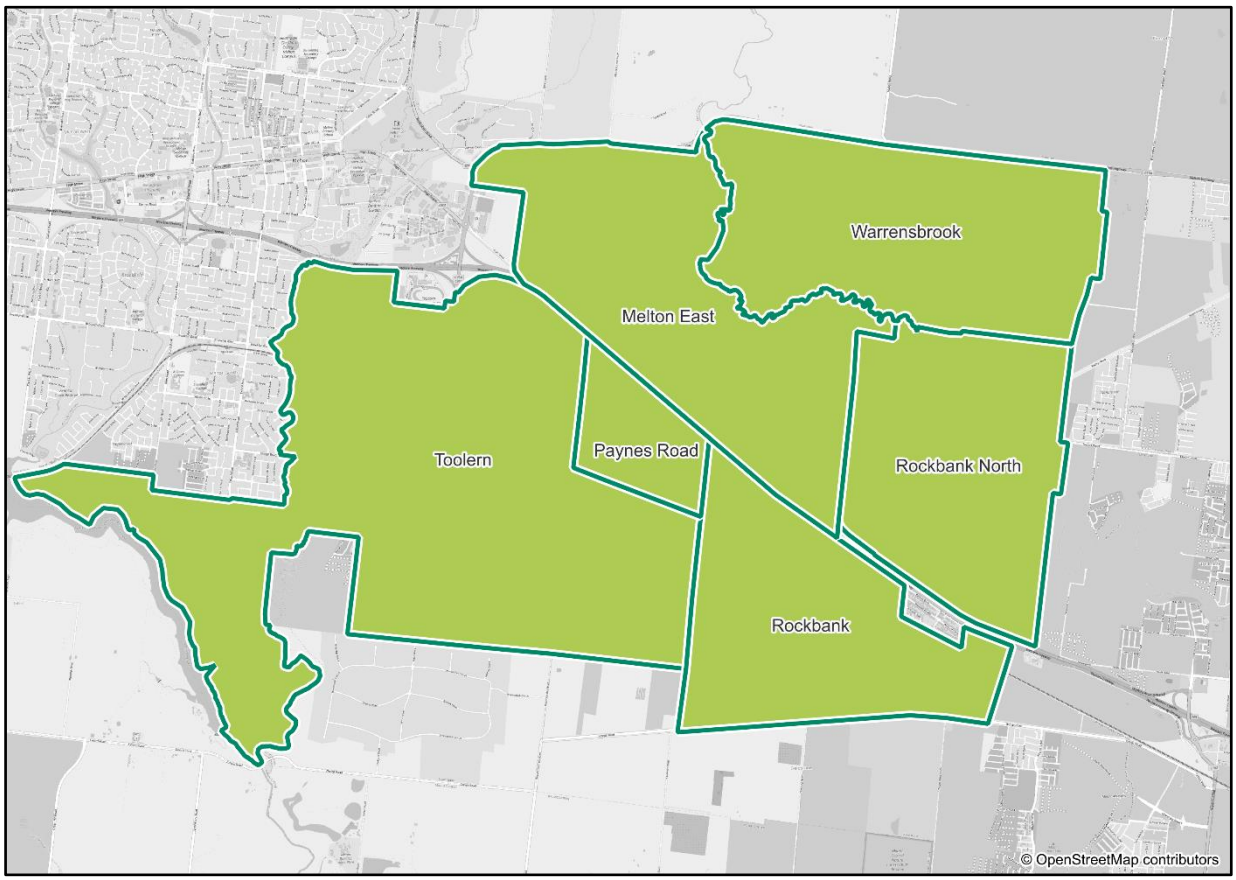
2.2 Adjacent PSPs

There are five main PSPs buttressing Melton East:

- Toolern (approved in 2010).
- Paynes Road (approved in 2016).
- Rockbank (approved in 2016).
- Rockbank North (approved in 2012); and
- Warrensbrook (proposed).

Figure 3 shows the location and boundaries of these PSPs.

Figure 3 PSPs surrounding Melton East



2.3 Western Growth Corridor

In 2012 VPA released Growth Corridor Plans[3] to provide strategic guidance for the development of Melbourne's growth areas. These growth corridor plans served multiple purposes, key to the transport context are:

- Provide an overarching framework to support strategic planning for growth in each corridor.
- Specify approximate locations of residential districts, employment areas, industrial and open areas.
- Identify potential locations for future Major Town Centres and Principal Town Centres.
- Specify the likely alignment of transport infrastructure to support urban growth.
- Support the precinct structure planning process.

Melton East sits within the Western Growth Corridor, which covers an area ranging between Footscray, Broadmeadows, Melton and Werribee. Figure 4 on the following page shows the Western Growth Corridor plan with the Melton East PSP boundaries superimposed. Importantly, Melton East also lies within a large contiguous area of greenfield growth, situated amongst a cluster of Major and Principal Town Centres. It also contains a Biodiversity Conservation Strategy conservation area[4] in Kororoit Creek, in addition to areas subject to 1 in 100 year flooding.

The Western Growth Corridor plan identifies alignment for key transport infrastructure, such as railway, arterial corridors and the Principal Public Transport Network (PPTN). The PPTN is a statutory planning framework set up to provide greater certainty to planners as to which areas will be serviced by frequent high-quality public transport. In Melton East, the PPTN is slated to cover Tarletons Road for east/west transit, and Leakes Road in the north/south direction.

2.4 Existing and Proposed Arterial Roads

The Melton East PSP is bounded by existing arterial roads including Melton Highway to the north and the Western Freeway to the south. Leakes Road and Mt Cottrel Road to the east and to the west of the PSP are both currently operating as local roads, with planned upgrades to arterial classification in the future.

Proposed future arterial roads within the PSP include the extension of Taylors Road to the west to connect with Mt Cottrel Road, and the new Tarletons Road connection between Melton Highway and Leakes Road in the north. Together these new roads will provide key connections for east-west traffic movements within the PSP.

Paynes Road is another proposed arterial within the PSP which would introduce an additional north-south connection between Melton Highway and the Western Freeway, approximately midway between the existing Leakes Road and Mt Cottrel Road connections. The planned Tarletons Road and Paynes Road connections would require the construction of a bridge crossing over Kororoit Creek, while the existing bridge infrastructure on Leakes Road would require an upgrade.

Each of the three north-south arterials are planned to interface with the Western Freeway on the southern border of the precinct, in addition to the existing interchange where Melton Highway meets the Western Freeway. Figure 5 on page 7 details the proposed alignment of the arterial roads, using the final model assumptions in the Victorian Integrated Transport Model (VITM), as outlined in later sections.

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[3] https://vpa.vic.gov.au/metropolitan/growth-corridor-plans/
[4] Biodiversity Conservation Strategy for Melbourne's Growth Corridors (Victorian Department of Environment and Primary Industries, 2013) pp 77

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Figure 4 Western Growth Corridor with Melton East PSP boundary

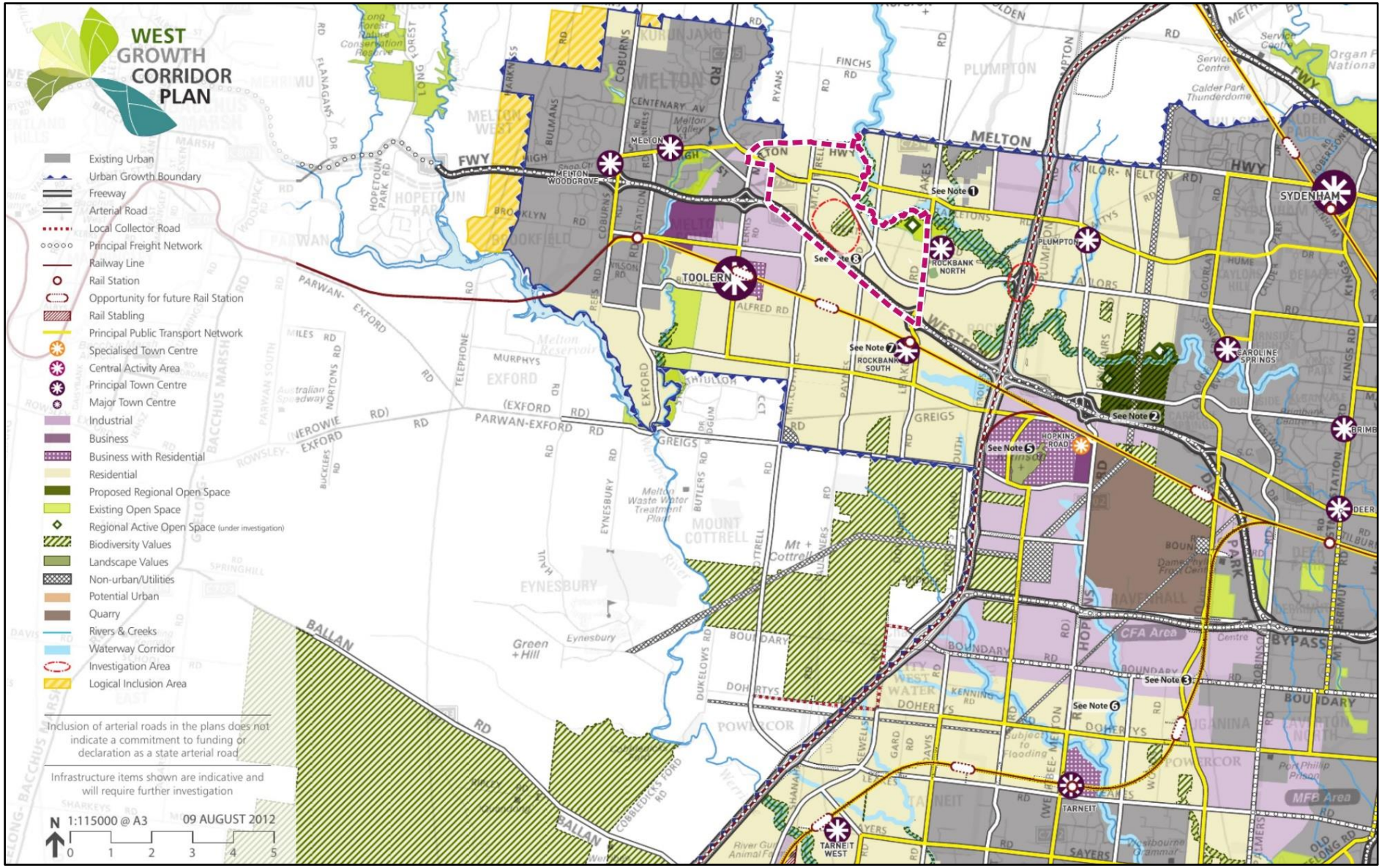

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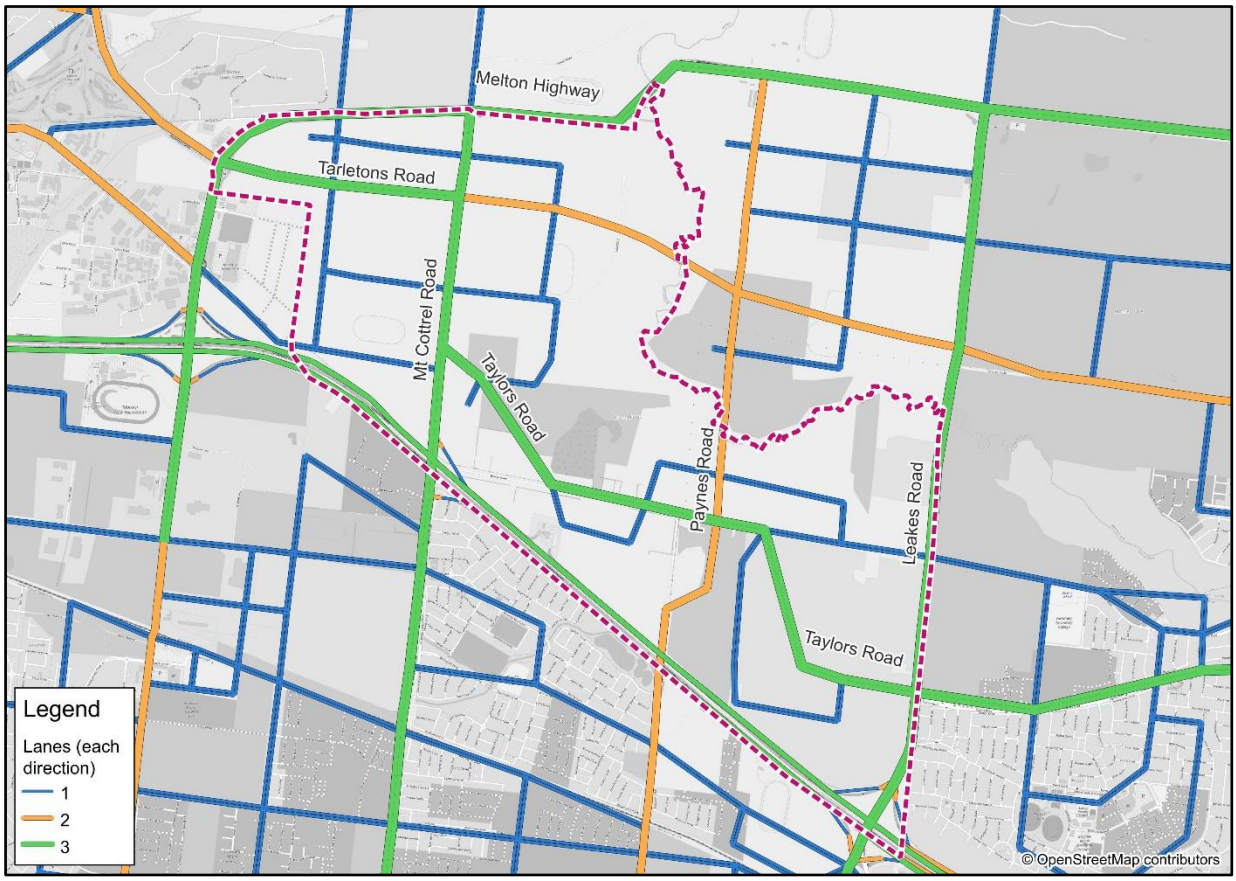
Figure 5 Arterial roads within PSP



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3.0 Strategic modelling

3.1 Background

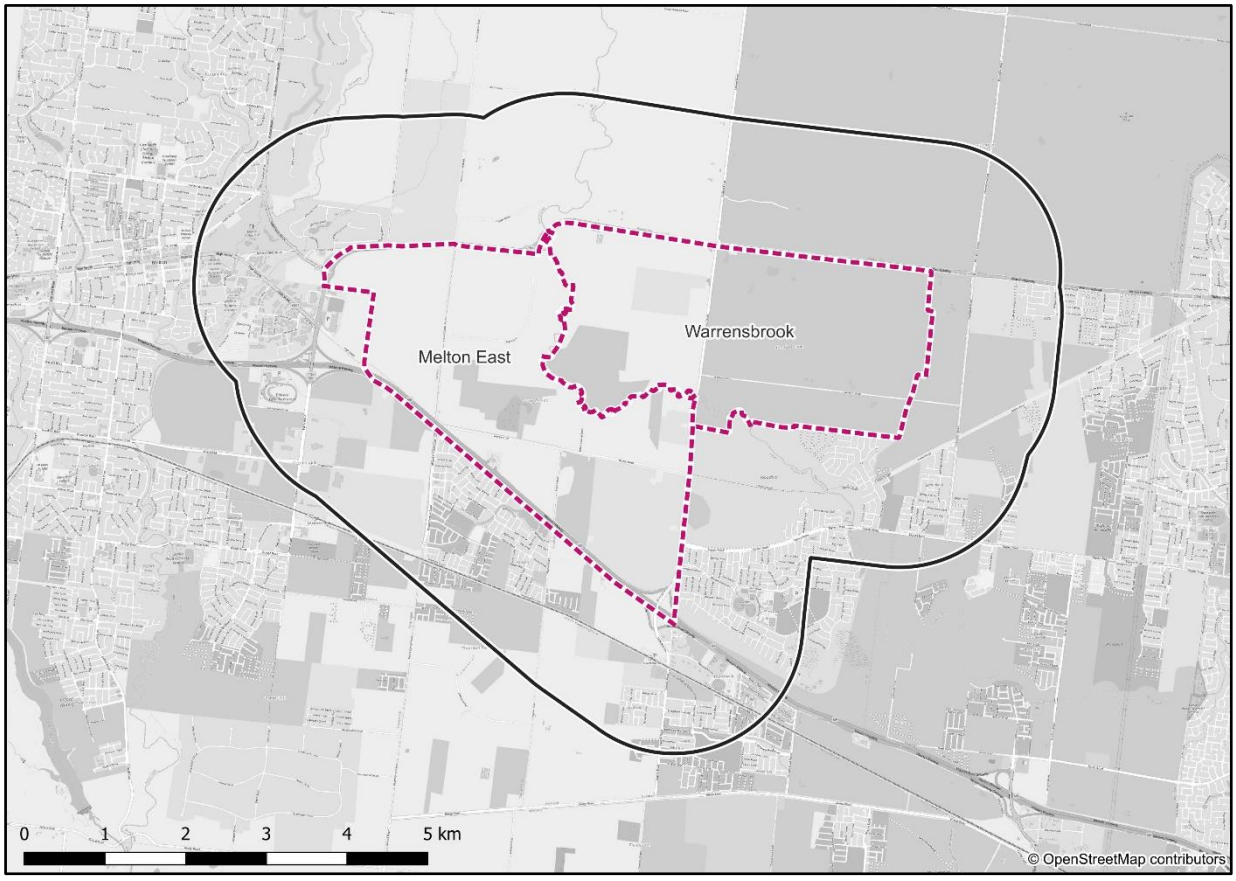
The strategic transport modelling utilises the Victorian Integrated Transport Model (VITM), developed and maintained by the Department of Transport and Planning (DTP). VITM is a strategic multi-modal model used to estimate levels of transport demand for future transport corridors, or for major transport infrastructure projects. The model estimates the demand response to changes in land use and in the transport supply. In doing so, the model uses mathematical equations and assumptions which are in part determined by the availability of data and computing constraints. To achieve a practical and workable model, the model simplifies a number of real-life behaviours.

The strategic modelling in this project has focused on an ultimate year of 2051.

3.1.1 Study area

For the strategic modelling task the core area of interest is the area enclosed by the Melton East and Warrensbrook PSP boundaries. However, to facilitate a more dynamic model representation, the full study area considered for the updating of the road network, land use and other inputs was expanded to include a buffer of 1.6 kilometres surrounding the PSPs. Figure 6 below details this study area.

Figure 6 Study area



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3.2 Base Case model assumptions and inputs

This section describes the changes made to the VITM model received to arrive at a base scenario from which other scenarios were based on.

3.2.1 VITM version

The version of VITM used for the strategic modelling is VITM22_v2_04, received from the Department of Transport and Planning in May 2023.

3.2.2 Reference Case

VITM modelling requires a suite of inputs that document assumptions and views to a variety of conditions in Victoria's transport network. To maintain consistency between modelling projects the Department of Transport and Planning bundle together with VITM a predefined set of model inputs that specify a 'Reference Case' road network and other assumptions. These assumptions are meant to serve the purposes of strategic modelling and do not represent or imply a commitment from the Department or Government to fund or complete implicated projects. Most modelling projects will refer to the Reference Case inputs in an unchanged or slightly modified form. In the case of the Melton East project modelling, the 2051 Reference Case was used as a basis for VITM modelling[5].

3.2.3 Work from home

The COVID-19 pandemic accelerated changes in travel patterns, particularly around the nature of the daily commute. Initially included as a sensitivity, VITM has since been updated to include a core work from home (WFH) component, through which home-based work trip demand is reduced in proportion to the level of work from home**.**

3.2.4 Zone system

In the standard Reference Case model, the resolution of transport zones in growth areas is typically low, due to a variety of factors, such as a lack of certainty around demography and land use, and the fact that most transport studies are likely to focus on Metropolitan Melbourne. For example, in the typical 'aggregated' VITM zone system, the Melton East Precinct contains four zones. As a result, it was necessary to disaggregate the zone system in the study area to appropriately capture the distinct land use of various activity centres, commercial and residential zones. The initial Reference Case and final zone system are shown in Figure 7 and Figure 8 on the following page.

[5] Since the modelling for this PSP has been undertaken, DTP have updated the VITM Reference Case process to consist of two separate future year network scenarios: a 'Central Case' which is similar in scope to the Reference Case, and a 'Committed and Funded' network, which takes a more strict view of likely infrastructure and network developments.

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Figure 7 Base zone system

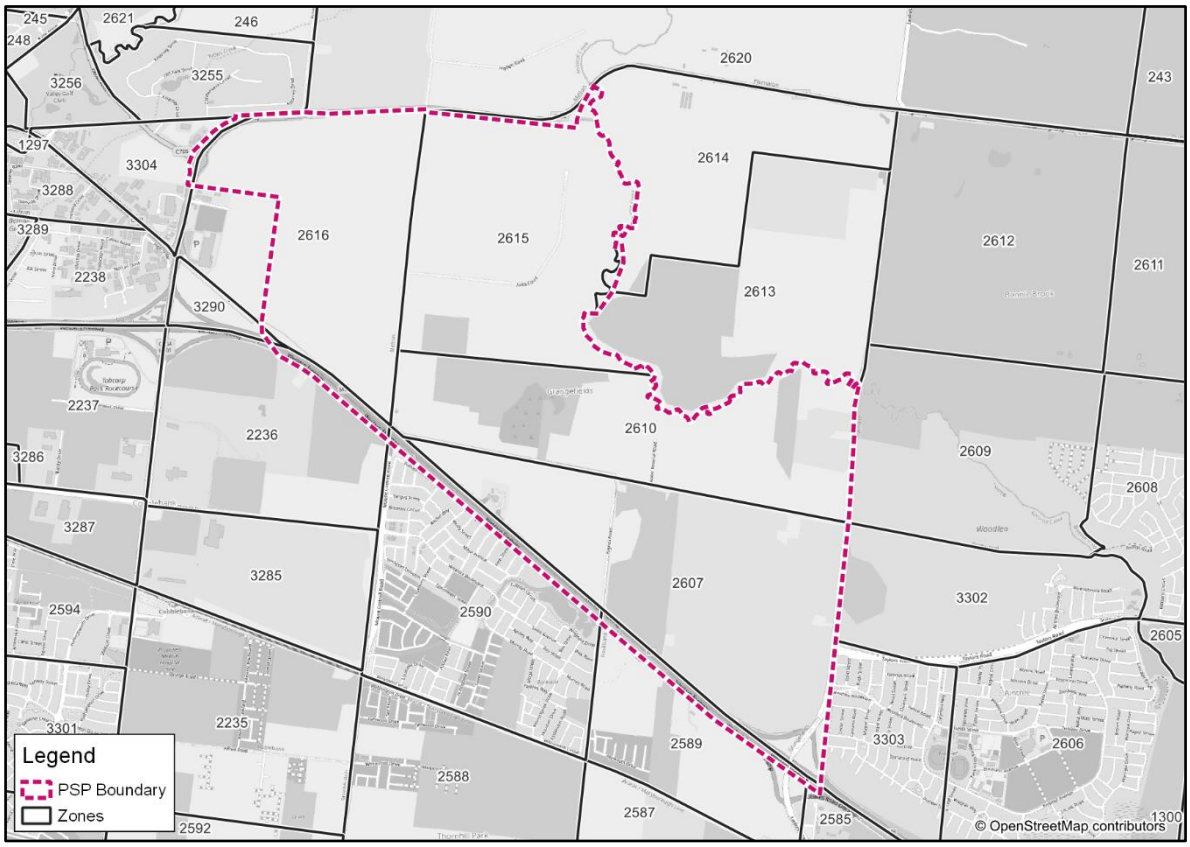
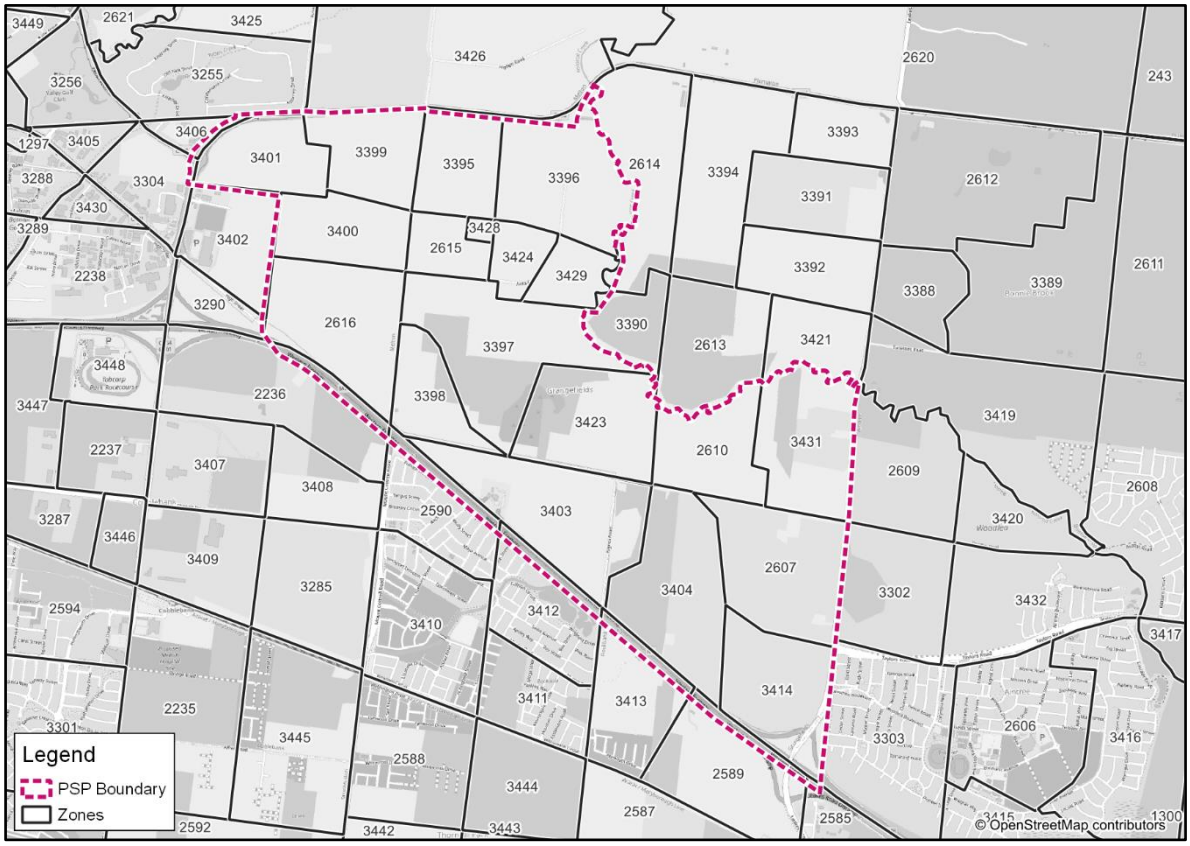


Figure 8 Final zone system



3.2.5 Network review[6]

The Reference Case network assumptions do not contain a detailed proposed transport network in Melton East in the future. Significant changes were required to arrive at a network that aligned with the draft place-based planning envisioned by VPA, largely through the addition of various connector roads.

Figure 9 to Figure 14 on the following pages detail the Reference Case and updated Base case assumptions for the number of lanes, road classification and posted speed per direction. A significant number of changes have been made to the network, including:

- Tarletons Road has been realigned and now feeds directly into Federation Drive.
- Taylors Road now has a tighter alignment, and ends at Mt Cottrel Road.
- Leakes Road south of the Western Freeway has been truncated, and the northern portion of Leakes Road now connects to Rockbank Road (see Rockbank Development Contributions Plan[7]).
- A connector street has been added between High Street in Melton and Mt Cottrel Road.
- Mt Cottrel Road, Leakes Road, and Taylors Road have had their lanes increased to three in each direction. Similarly, the number of lanes on Paynes and Tarletons Road has increased to two per direction, rising to three lanes west of Mt Cottrel Road.

  The western component of Melton Highway has also had the number of lanes increased to three each way, down through Ferris Road up until Abey Road.
- There are significant changes to posted speed, Leakes Road has decreased from a combination of 70, 80 and 100km/h down to 60km/h.
- Similarly, Mt Cottrel Road and Beattys Road have decreased from 100km/h to 80km/h and 40km/h respectively. Conversely, the speed limit on Taylors Road has increased from 60km/h to 80km/h.

Aside from the above, the density of the network has increased due to a large number of connector streets added, to provide connections to the refined zone system and key activity centres.

[6] In the late stages of the project, an error was identified in the base network specification, in which the Beattys Road alignment differed to the place-based plan. In effect, Beattys Road intersected Taylors Road, instead of crossing it, allowing vehicles to access Taylors Road west of Paynes Road via Beattys Road, instead of the Taylors/Leakes Road intersection.
In order to understand potential impacts of this, AECOM conducted a test using a corrected network specification. We found that the impact of the change is relatively isolated. As would be expected, removing connection between Beattys and Taylors Road connection reduced volumes on Beattys Road, with much of the difference shifting to Taylors Road. For example, immediately west of Leakes Road, two-way daily volumes on Beattys Road fall by 4,000 to 5,400, while on Taylors Road daily volumes increase by 2,900. The net effect is a daily reduction of approximately 1,000 vehicles using the corridor, which instead travel via Tarletons or the Western Freeway.
Network performance improves significantly on Beattys Road, while reducing slightly on Taylors Road. For example, in the AM peak direction, the volume to capacity ratio on Beattys Road drops from 0.65 to 0.33, while on Taylors Road it increases from 0.4 to 0.46. Changes of a similar scale are found in the PM peak. Changes to network performance on Tarletons and the Western Freeway are negligible. AECOM's view is that in light of this coding issue, there is still sufficient capacity on Taylors Road in each modelled scenario.

[7] Rockbank Development Contributions Plan - August 2016 (Amended December 2023)

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Figure 9 Reference Case lane assumptions (2051)

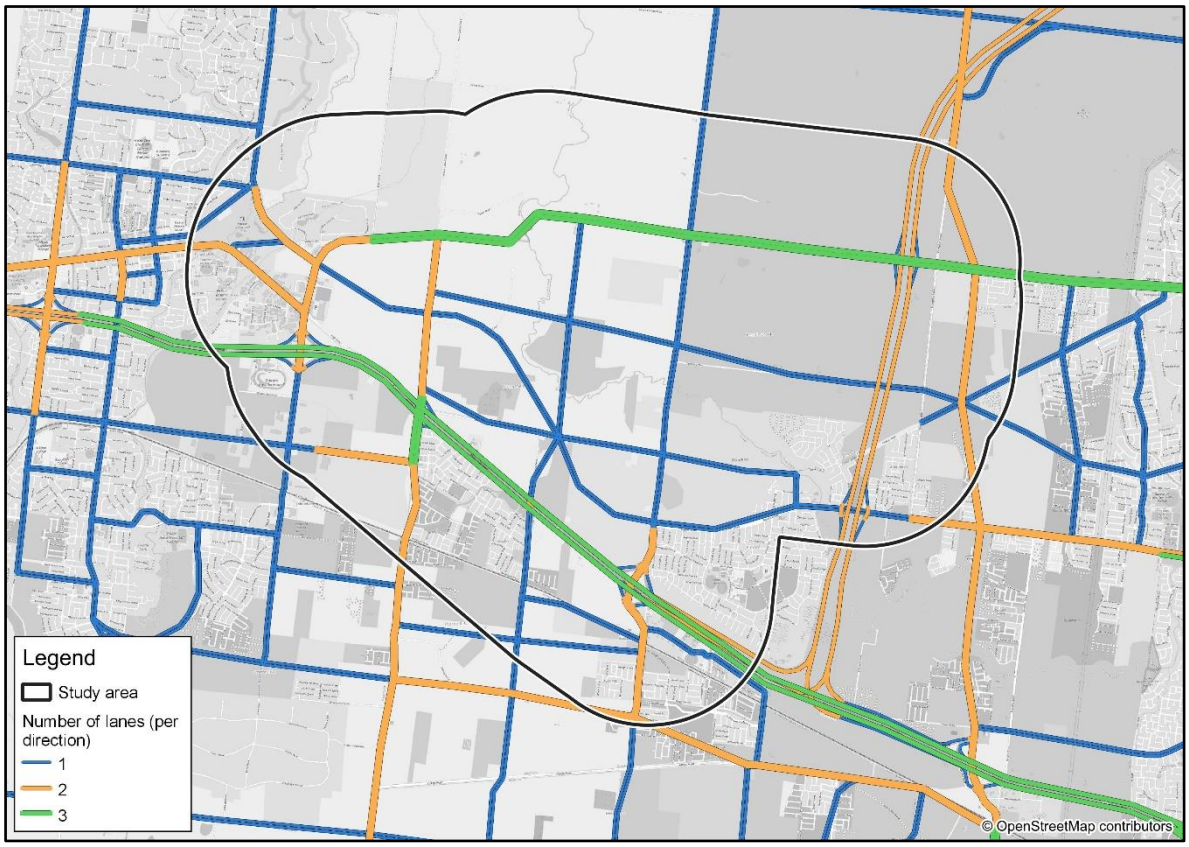

Figure 10 Updated Base case lane assumptions (2051)

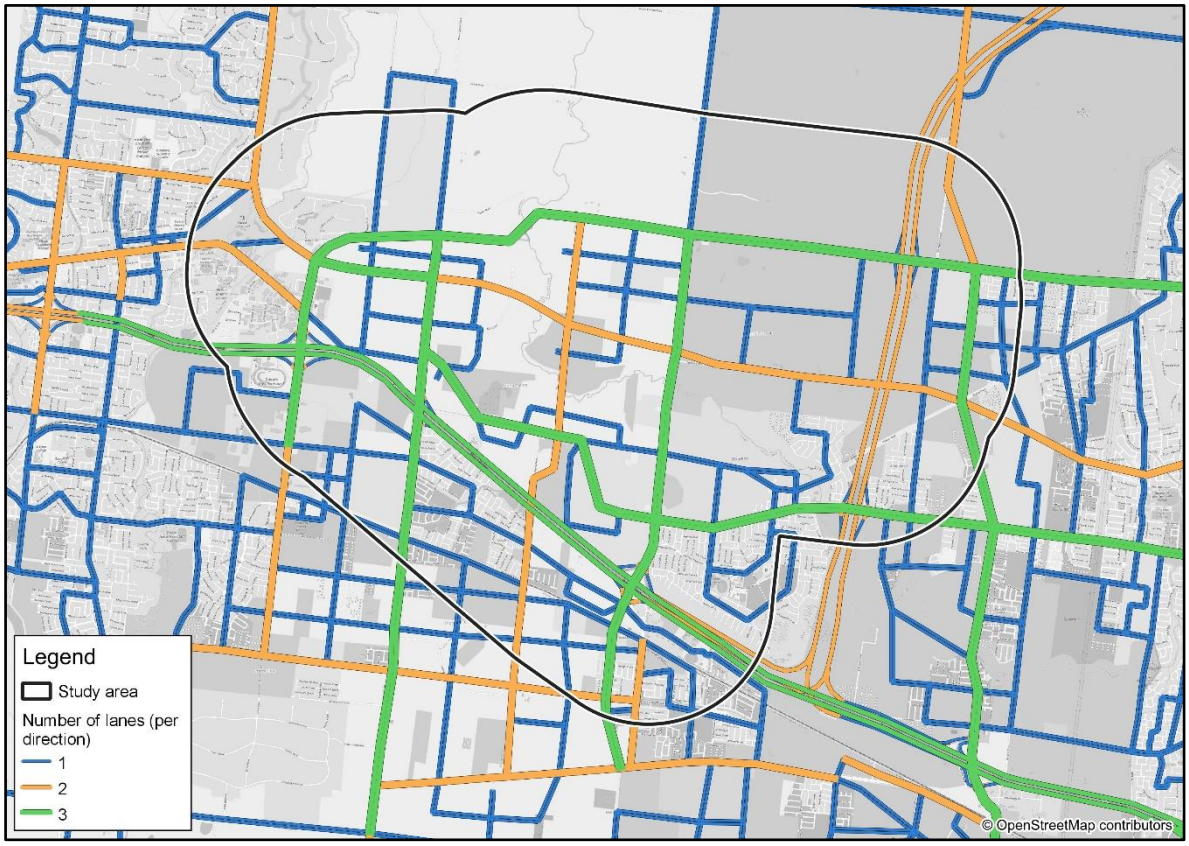

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Figure 11 Reference Case road classification assumptions (2051)

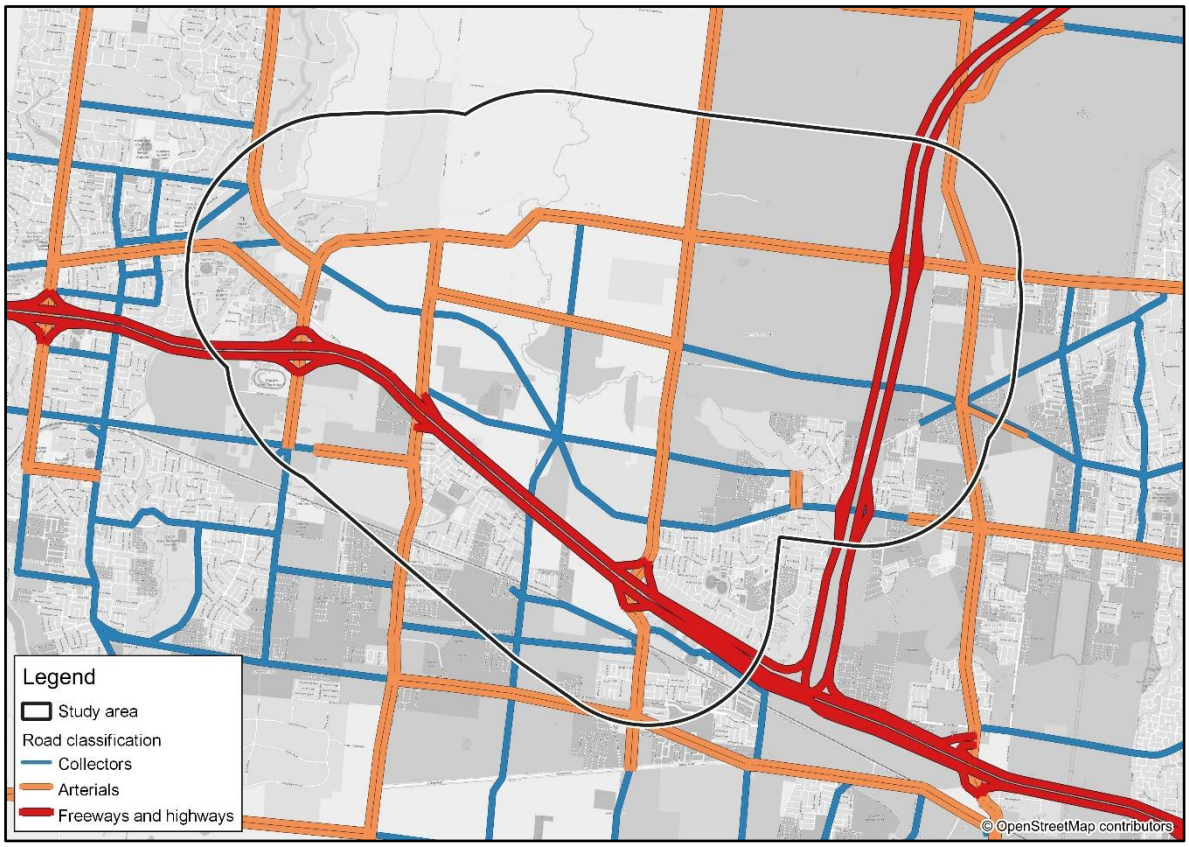

Figure 12 Updated base road classification assumptions (2051)

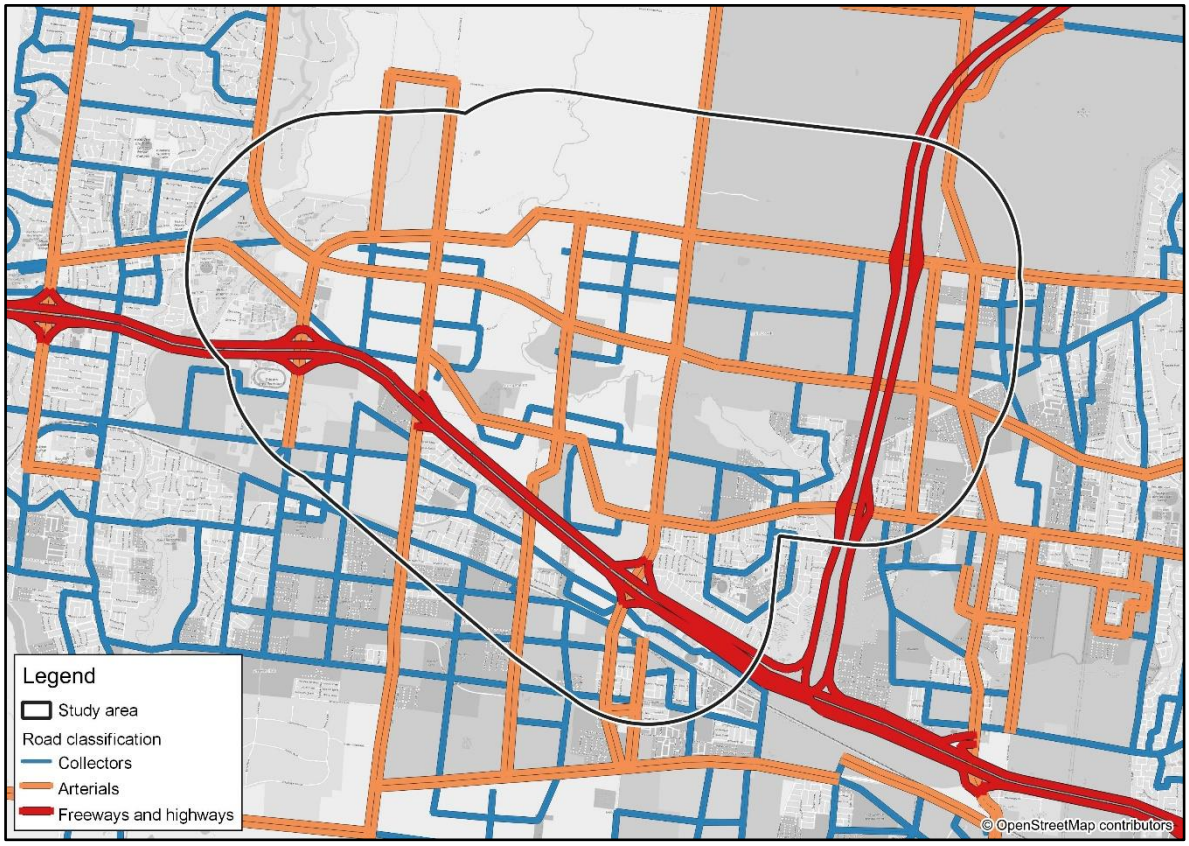

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Figure 13 Reference Case posted speed assumptions (2051)

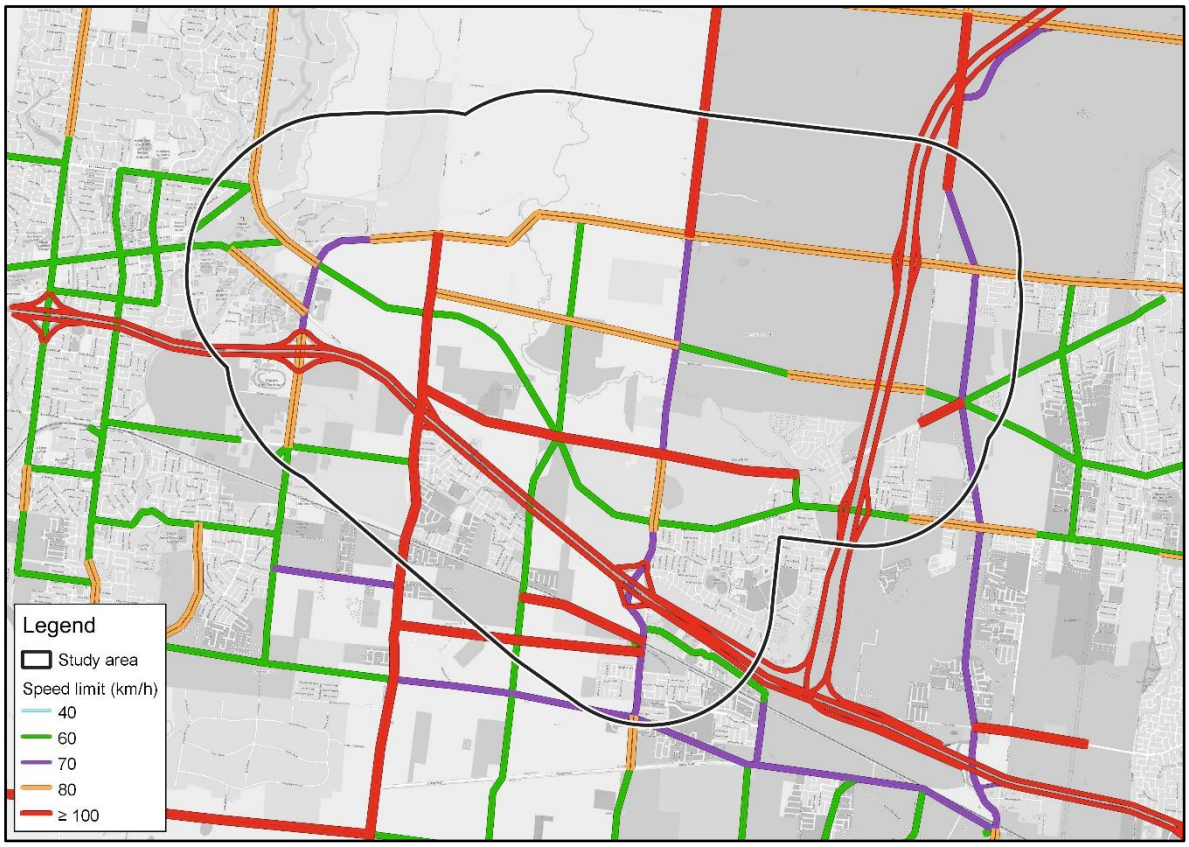
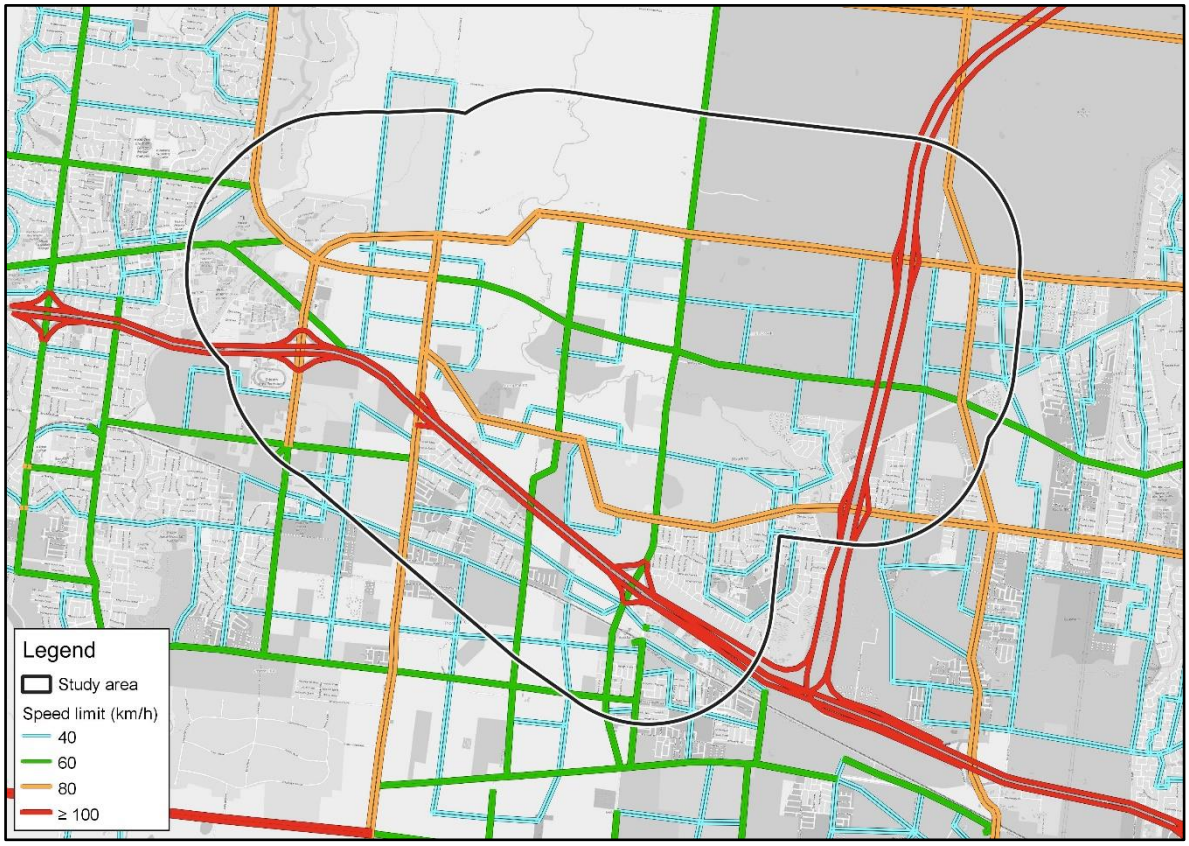


Figure 14 Updated base posted speed assumptions (2051)



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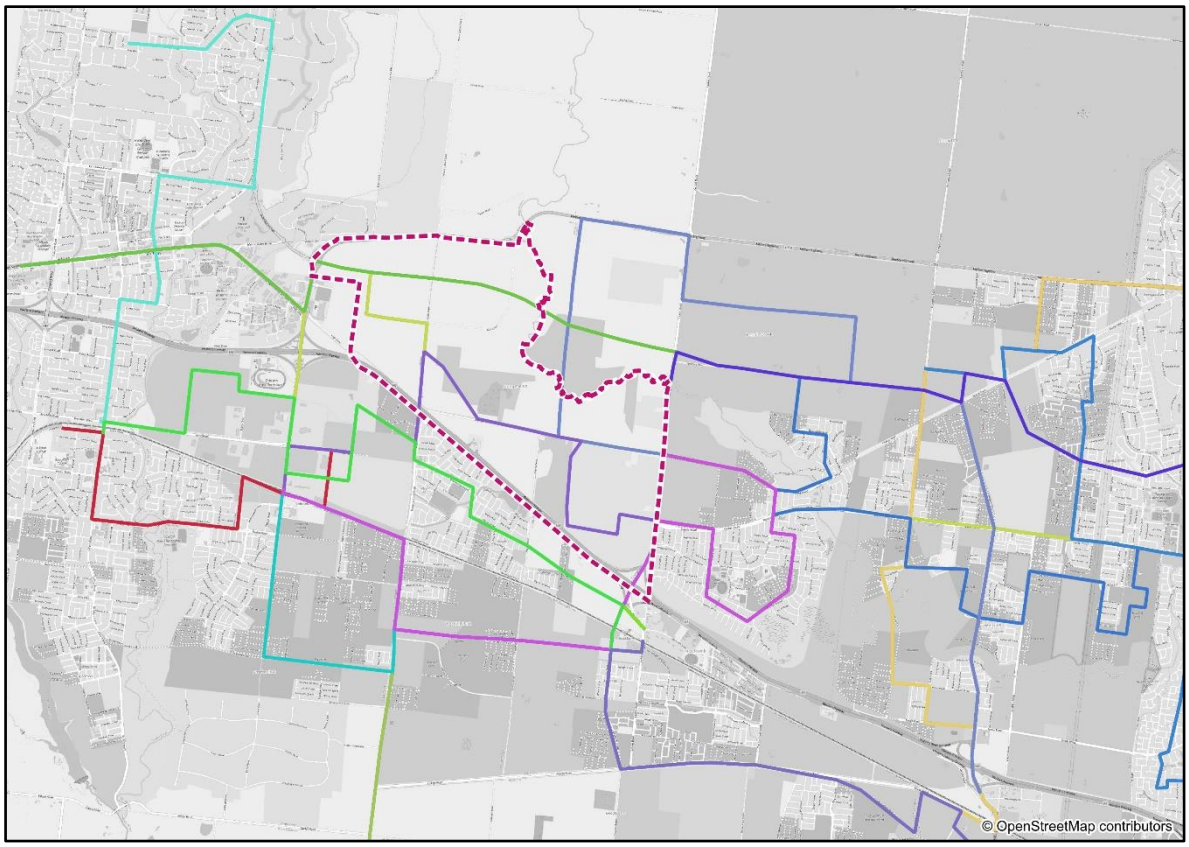
3.2.6 Public transport

In general, public transport inputs have remained similar to the Reference Case assumptions provided by DTP. Some bus service routes were adjusted in order to align with the updated network assumptions, as is the case with the truncation of southern Leakes Road. Additionally, a bus service was realigned to ensure coverage on Tarletons Road in-line with the PPTN assumptions as discussed in section 2.3. Figure 15 details the coverage of public transport routes in the study area, with the PSP boundary highlighted. Figure 16 on the following page details the AM bus frequencies for the base scenario. Throughout the modelling, no changes were made to bus service frequency other than as a consequence of service realignment due to road truncation.

Figure 15 Public transport routes in study area



3.2.7 Demographics[8]

Demographics are key inputs to VITM, as they drive the core trip production, attraction and distribution sub models of the four-step process. As part of this study, VPA has provided updated demographic assumptions that have been reviewed by key stakeholders including Melton City Council. Zones that do not have demographic data provided by VPA have had their core small area land use projection (SALUP) assumptions retained.

[8] Since the modelling for this report has been undertaken, the VPA have updated their demographic estimate methodology, which includes an increase in assumed densities for precincts. This would increase the traffic generation for the transport zones updated as shown in Appendix A. AECOM still consider the modelling undertaken fit for the purposes of understanding strategic transport demand within the context of the Melton East PSP.
As an example, consider the following back-of-the-envelope calculation: using select-link data, we can estimate that, of vehicles travelling on Taylors Road just east of Paynes Road, approximately 62% of vehicles travelling in the AM peak direction originate within the Melton East PSP. The volume to capacity ratio at this link is 0.36 in the AM peak direction. If we assumed the land use inputs and trips within the PSP were **doubled** this rough estimate of V/C would remain below 0.6. Even using reduced capacity assumptions of scenario two, a doubling of assumed population would not push this number above 0.85. These calculations are only estimates, and do not take into account likely changes to distribution. Regardless, any future modelling that uses updated land use assumptions would add value to the analysis conducted in this report..

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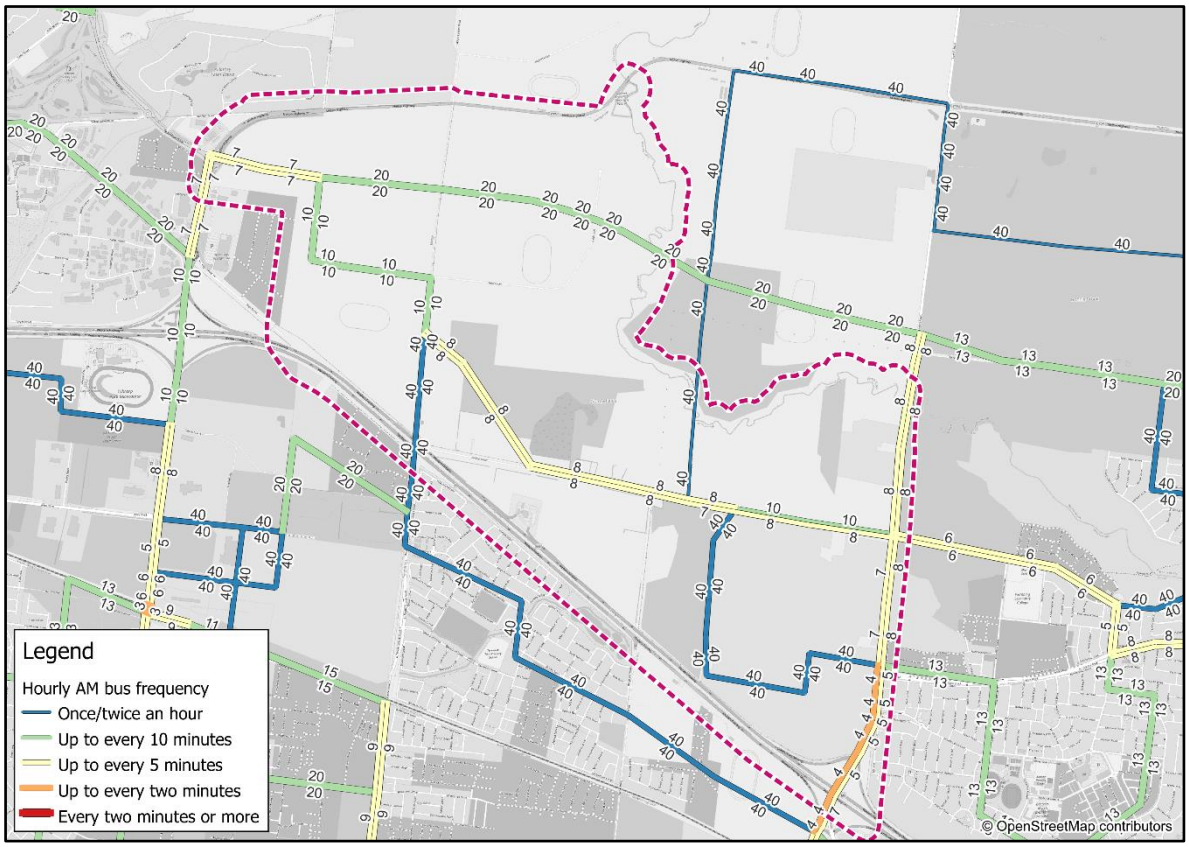
Figure 16 AM hourly public transport frequency



The land use provided by VPA has been developed using a replicable modelling methodology designed to proportionally allocate estimated overall yield data (encompassing dwellings, population, and jobs) from the whole of precinct level down to smaller geographic regions to facilitate further technical modelling and analysis work by others. The VPA does not guarantee that the results are free of errors, nor does it assure that the information supplied is fit for any particular purpose.

Table 2 below details the land use assumptions for the Melton East Precinct in 2016 and 2051[9].

Table 2 Demographic assumptions for Melton East (2051)

Year	Population	Households	Employment	Enrolments
2016	30	12	19	0
2051	30,500	10,800	2,200	4,400

Land use assumptions are provided in detail within Appendix A, including a zone map for reference.

[9] Note: 2016 data is based on the reference case zone system, so is not an exact 1-to-1 comparison

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4.0 Scenarios

In order to provide a fuller picture of the constraints facing the study area, VPA has specified three alternative transport infrastructure scenarios after discussion with key stakeholders. This section provides a brief summary of the changes each scenario represents.

4.1 Scenario 1 – Truncation of Paynes Road

The first scenario specified as part of the PSP scenario modelling is that of a truncation of Paynes Road (i.e. removal of Paynes Road bridge across Kororoit Creek), in addition to a realignment of the connector street joining Taylor's Road to High St. The main purpose of this scenario was to ascertain the ability of Leakes Road and Mt Cottrel Road to carry traffic that would have used the more central Paynes Road (via a bridge over Kororoit Creek). Figure 17 and Figure 18 display the lane and posted speed assumptions of the first scenario. All other assumptions match the Base case described in section 3.2.

Figure 17 Lane assumptions for Scenario 1

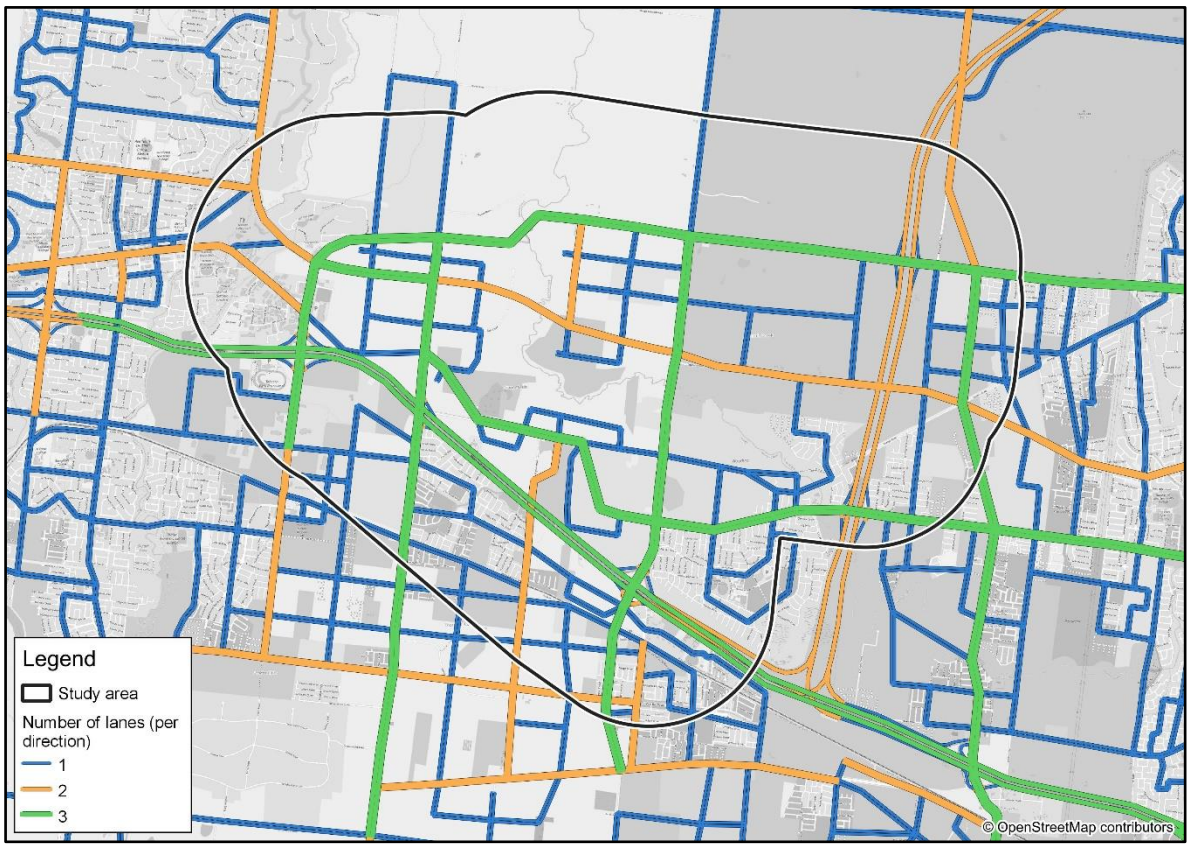

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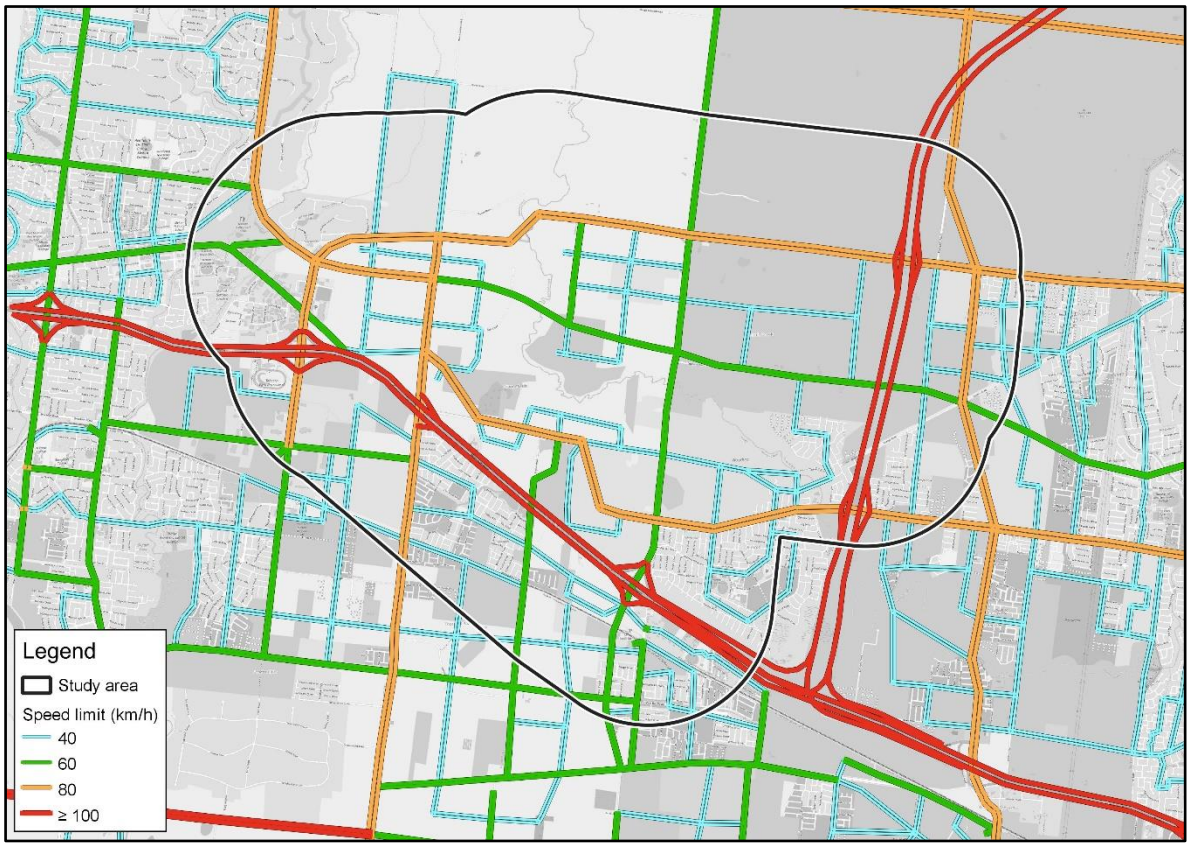
Figure 18 Posted speed assumptions for Scenario 1



4.2 Scenario 2 – Lane reduction

The second scenario tested as part of the strategic modelling was a reduction of lanes in various sections of the study area, in particular, components of Leakes, Taylors and the northern section of Mt Cottrel Road. Figure 19 provides an overview of the lane assumptions for the study area in this scenario. All other assumptions match the Base case described in section 3.2.

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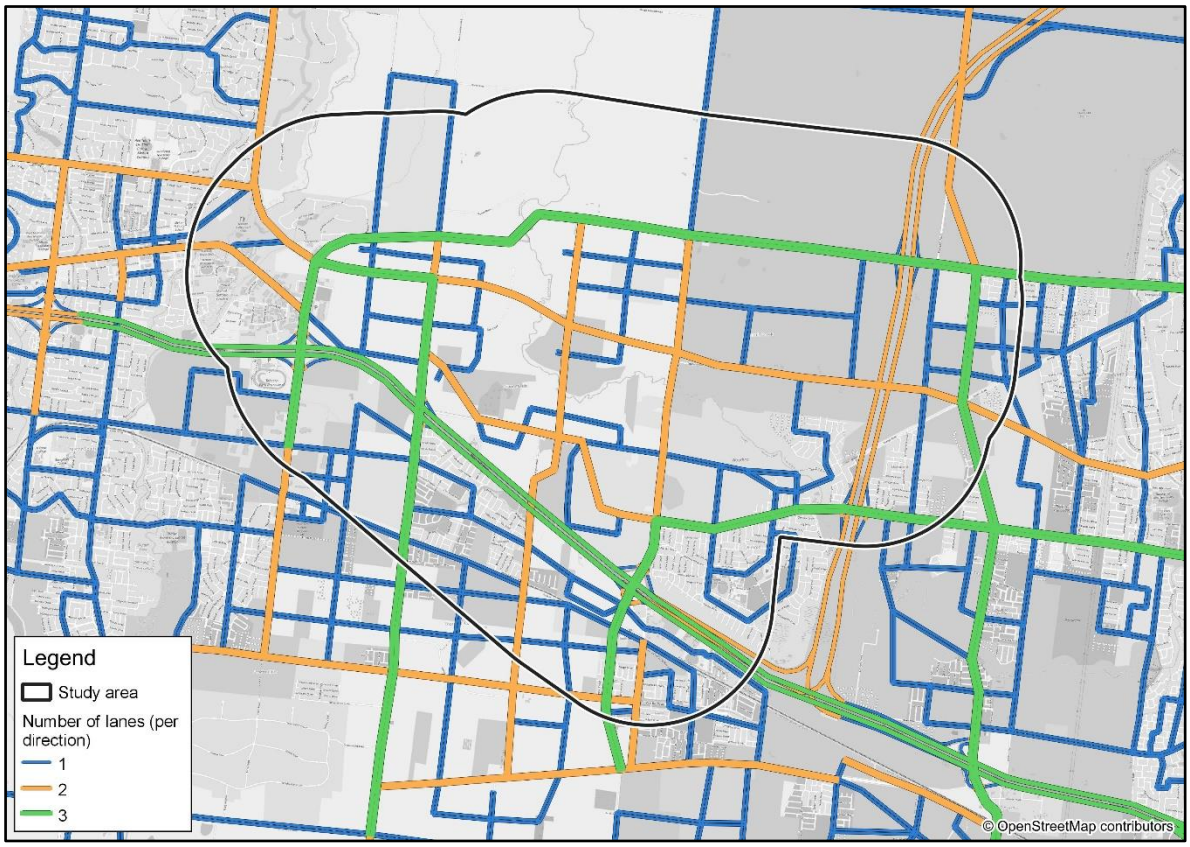
Figure 19 Lane assumptions for Scenario 2



4.3 Scenario 3 – Realignment of Taylors Road

Lastly, the third scenario tested a truncation and realignment of Taylors Road adjacent to Leakes Road. As part of this, Taylors Road is realigned to follow the existing alignment of Beattys Road up until Leakes Road. In addition, the connector streets south of Taylors between Paynes and Leakes Road were realigned, and Leakes Road north of Beattys Road has been reduced to two lanes per direction. Figure 20 and Figure 21 below detail the lane and posted speed assumptions for this scenario. All other assumptions match the Base case described in section 3.2.

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Figure 20 Lane assumptions for Scenario 3

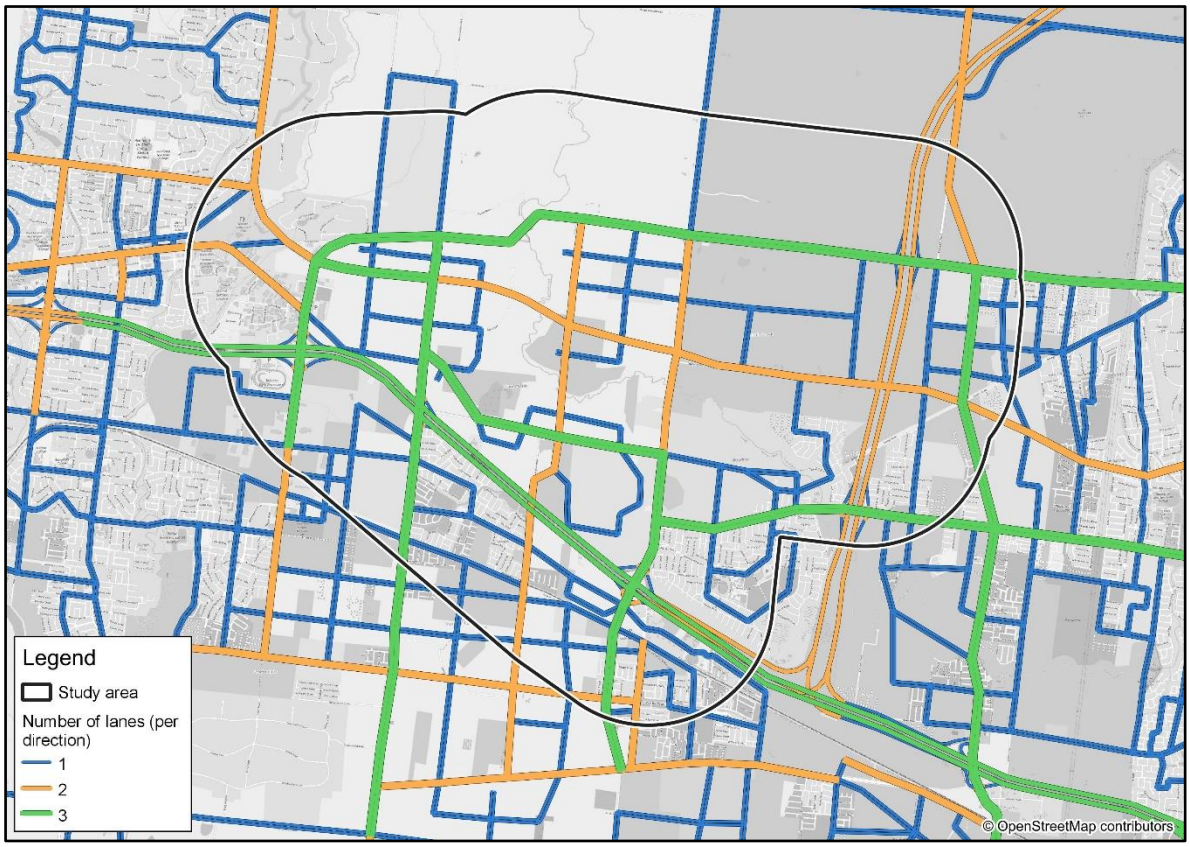
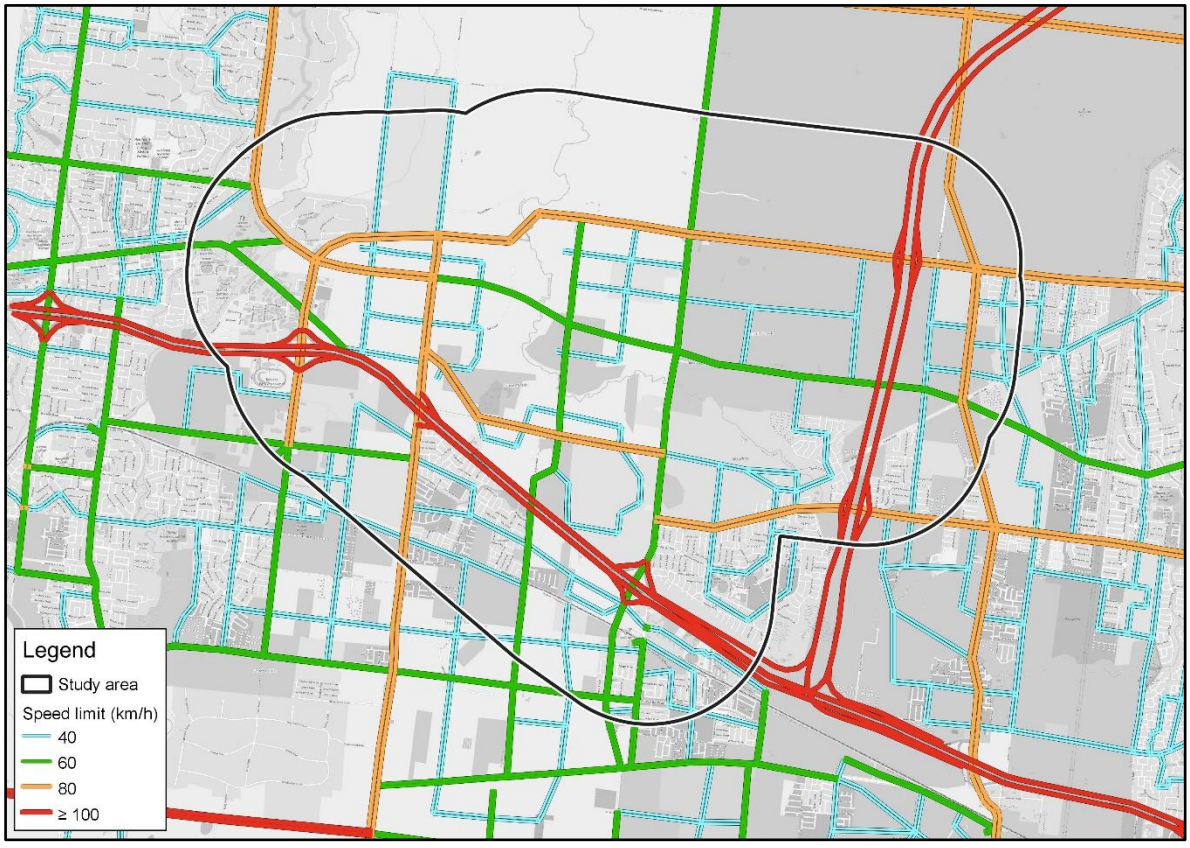


Figure 21 Posted speed assumptions for Scenario 3



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5.0 Results

This section provides an overview of the modelling results, broken down by modelling scenario. Key results are presented and discussed in this section, with additional labelled volume plots available in Appendix B.

5.1 Volumes

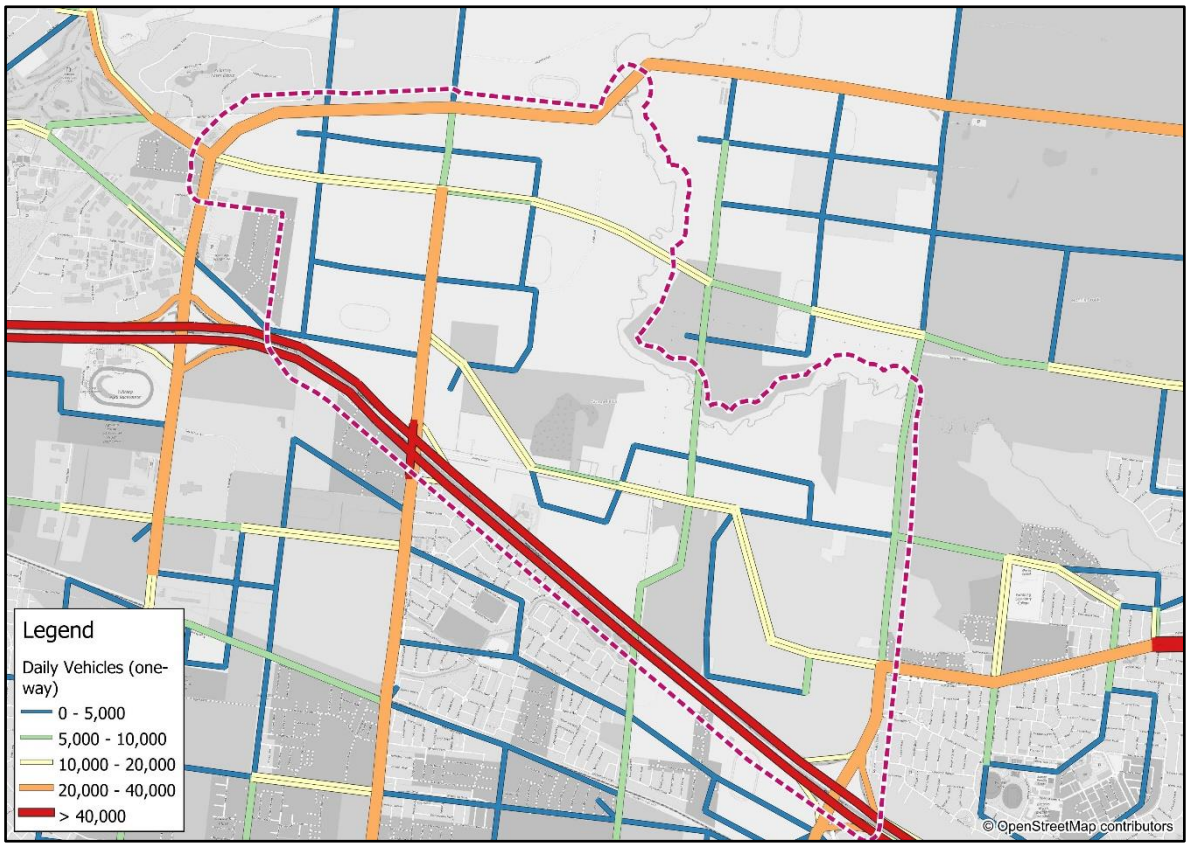
This section provides a view of the daily network utilisation by vehicles, in addition to the daily level of public transport patronage on the bus network.

5.1.1 Vehicle volumes

Base case

Figure 22 details the daily volumes across the precinct in the Base case. Aside from the Western Freeway and Melton Highway, utilisation of the network is concentrated along arterials, with connector roads servicing a lower level of volumes. Mt Cottrel Road experiences a significant volumes, likely due to its role facilitating travel between Melton East, Tarneit and Manor Lakes. This is expected given the its role in facilitating travel to key locations such as proposed schooling and retail locations in the north-west section of the PSP. Leakes and Paynes Road service a lower level of volumes, though Leakes Road does take on volumes from the existing alignment of Taylors Road, partly as a route to the OMR but also due to its connection to suburbs further east such as Caroline Springs and Taylors Hill.

Figure 22 Daily vehicle movements | Base Case

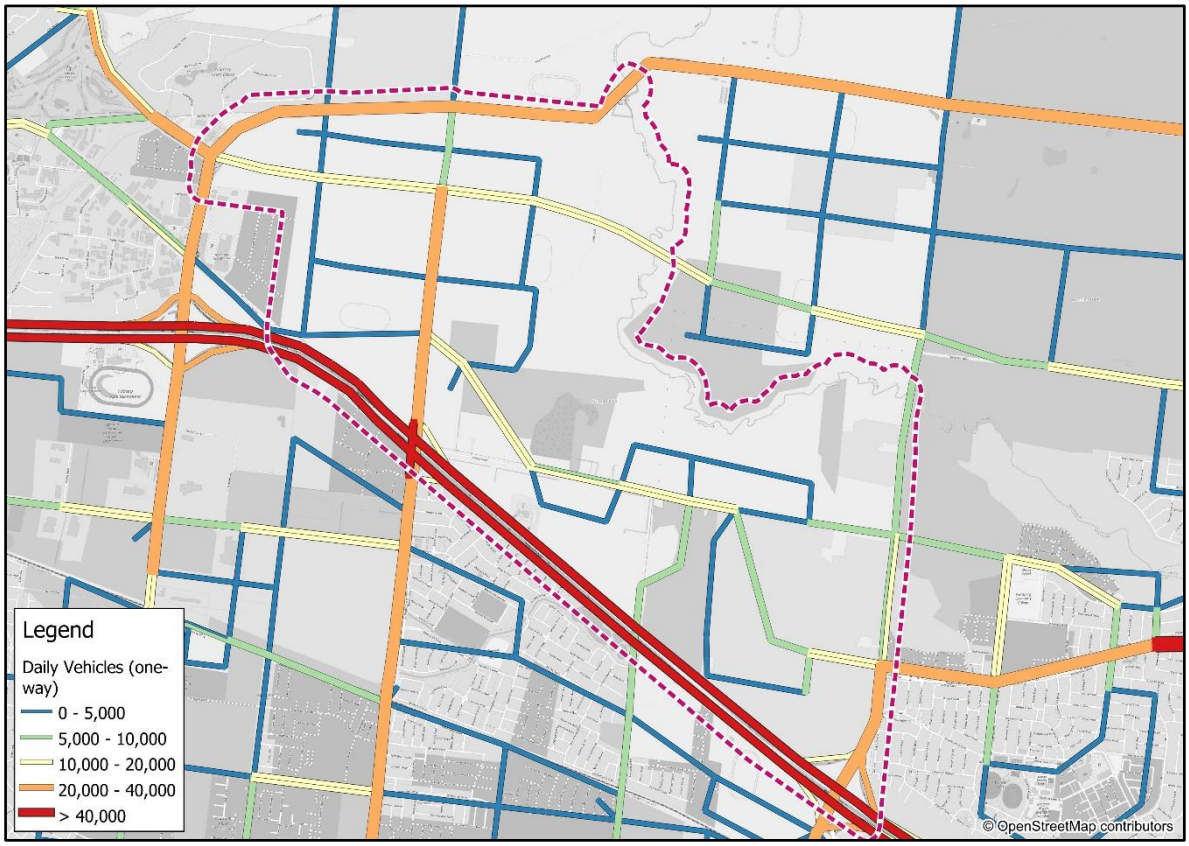


Scenario 1

The truncation of Paynes Road in scenario 1 causes a redistribution of traffic, in particular for north-south corridors. Figure 23 details the daily volumes in the precinct for Scenario 1. Traffic along all sections of Paynes Road decrease in proportion to the proximity to the truncated section of road. As an example, volumes just south of the bridge drop by almost 100%, while just south of the Western Freeway daily volumes fall by approximately 14%. These volumes are redistributed first to Leakes Road

and then Mt Cottrel Road. Volumes on Leakes Road increase by approximately 2,700-3,000 vehicles a day, representing a 44% increase, while volumes on Mt Cottrel Road increase in the order of 1,000 vehicles a day, a smaller proportional change of 5%, due to Mt Cottrel Road's high existing volumes. This has flow-on effects for Taylors Road, with increases to the west of Paynes Road and decreases to the east.

Figure 23 Daily vehicle movements | Scenario 1

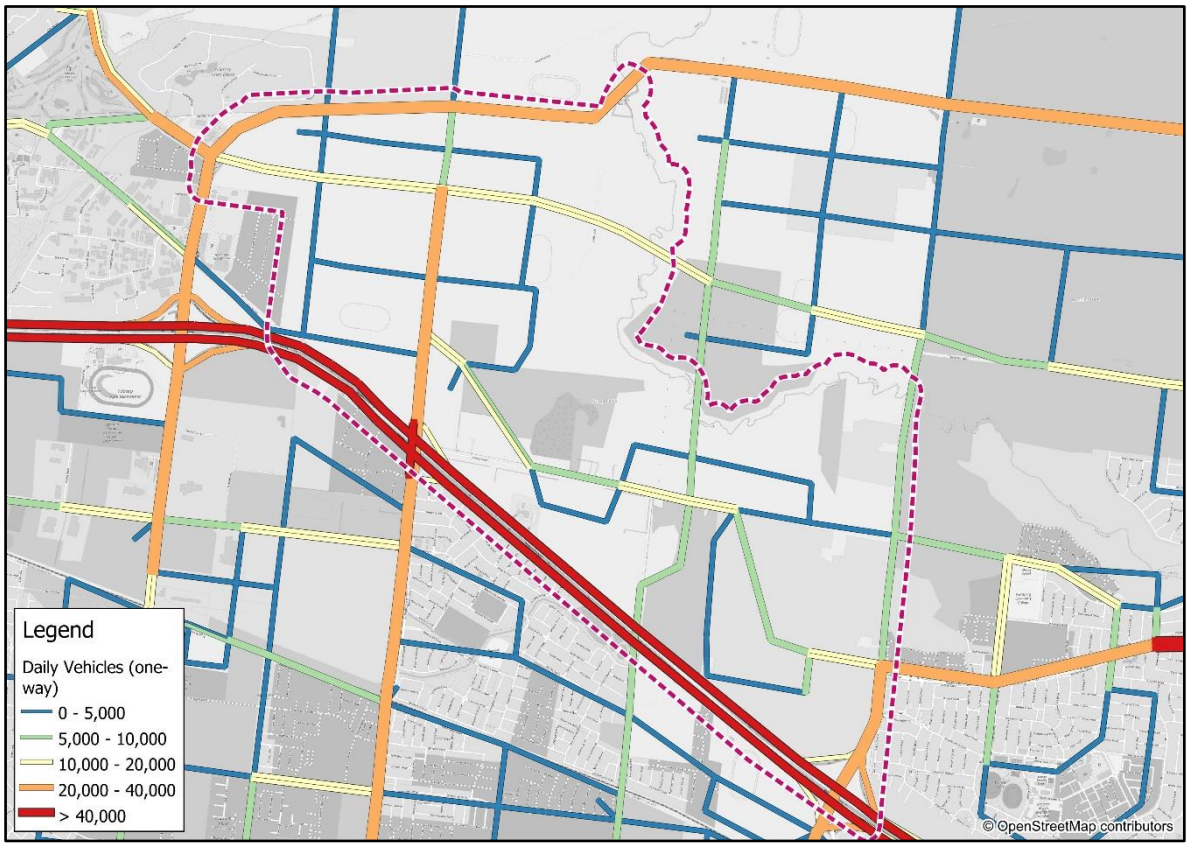


Scenario 2

In comparison to Scenario 1, the intervention modelled in Scenario 2 is relatively modest. As such, the impact on traffic volumes is quite small. Figure 24 shows daily traffic volumes across the study area for Scenario 2. The main impact of the lane reductions is seen on Taylors Road, with a decrease in daily volume of approximately 300 vehicles by direction in most sections of the corridor. This represents approximately a 3% reduction in daily volumes along that section.

Beyond Taylors Road, the other arterials see a very minimal impact due to the scenario. For example, Leakes Road between Taylors Road and Tarletons Road experiences a decrease in two-way daily volumes of approximately 70 vehicles when compared to the base case (a decrease of 0.5%). The scope of changes to traffic demand on Paynes Road is similarly small, with two-way daily volumes decreasing by around 20 vehicles (a fall of 0.2%). Traffic demand for the section of Mt Cottrel Road north of Tarletons Road does not appear to be impacted by the Scenario 2 intervention, with two-way vehicle volumes in this section increasing by less than 10 vehicles per day (or a increase of 0.05%) compared to the base case. The results suggest that these corridors were not operating near capacity in the base case, which is corroborated later in section 5.5.

Figure 24 Daily vehicle movements | Scenario 2



Scenario 3

Lastly, the truncation of Taylors Road causes a realignment of traffic demand in the area of intervention, shifting volumes between the two alignments of Taylors Road. Figure 25 details the daily vehicle volumes for this scenario, with a significant portion of traffic demand for the truncated section of Taylors Road redirected via the old Beattys Road alignment. Table 3 summarises the impact of this realignment between the Base scenario and Scenario 3:

Table 3 Impact on Taylors and Beattys Road: two-way daily volumes

Alignment	Base	Scenario 3	+ / -
Beattys Road Immediately West of Leakes Road	9,400	37,250	27,850
Taylors Road Immediately West of Leakes Road	27,900	0	-27,900
Total	**37,300**	**37,250**	**-50**

In addition, due to Taylors Road intersecting with Leakes Road further north, the section of Leakes Road between Beattys Road and the original Taylors Road intersection sees an increase in vehicles – approximately 5,900 extra vehicles, representing a 63% increase. There is also a slight rerouting of vehicles away from the existing Taylors Road east of Leakes, instead travelling north up Leakes and east across Tarletons Road. Paynes Road south of Taylors Road also sees an increase in volumes, which partially flows into the realigned connector streets.

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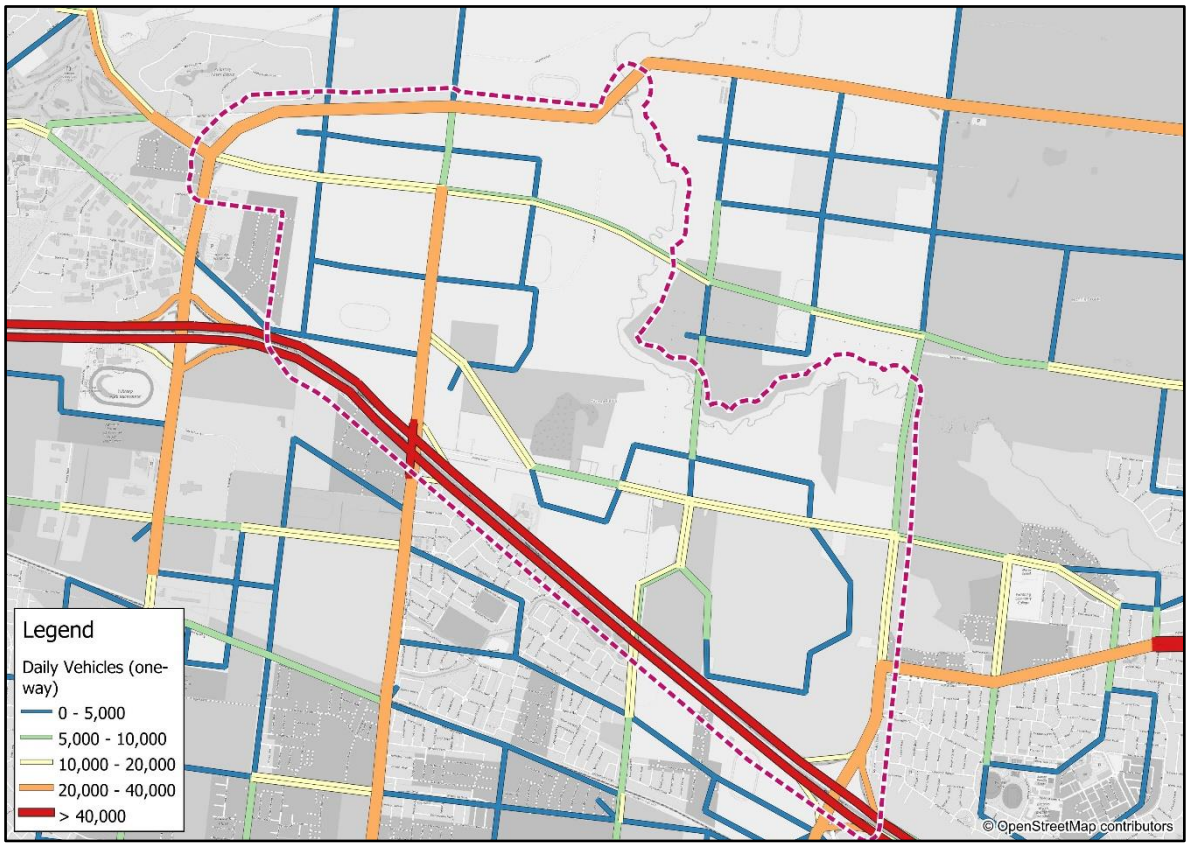
Figure 25 Daily vehicle movements | Scenario 3



5.1.2 Public transport

Base case

Figure 26 shows the public transport patronage for bus services in the Base case. Grey coloured links represent parts of the VITM network with no bus services or patronage. It appears that the most popular routes are feeding travel towards Rockbank Station. Aside from this, patronage is largest along Taylors Road, Leakes Road and Tarletons Road.

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Figure 26 Daily public transport patronage | Base case

Scenario 1

The truncation of Paynes Road meant rerouting bus services travelling across Paynes Road to Leakes Road. This has the relative effect of increasing patronage along Leakes Road. This is visible in Figure 27, along with a reduction in patronage on Taylors Road between Leakes Road and Paynes Road.

Scenario 2

The reduction in lanes for Scenario 2 has a less noticeable impact on patronage when compared to the base scenario. Figure 28 shows the patronage for Scenario 2, which largely resembles the Base Scenario with some minor shifts along sections of Taylors Road.

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Figure 27 Daily public transport patronage | Scenario 1

Figure 28 Daily public transport patronage | Scenario 2

Scenario 3

Even though the intervention modelled by Scenario 3 is significant, the change in patronage is not too far from the Base Scenario. The most noticeable change is the increase in patronage on Leakes Road between Beattys Road and the old Taylors Road alignment, due to Taylors Road now feeding onto Leakes further north. The maximum patronage in the connector streets south of Taylors Road is also slightly lower.

Figure 29 Daily public transport patronage | Scenario 3

5.2 Mode share

Public transport

As might be inferred from the previous section, mode share is not strongly impacted by the changes in scenario specifications. Table 4 details the mode share for trips originating in the Melton East precinct for each scenario. These results make sense, as each scenario does not dramatically change the cost or access to public transport in the precinct.

Table 4 Mode share of person trips originating in Melton East (Daily)

Scenario	Private Vehicles	Public Transport
Base	92.44%	7.56%
Scenario 1	92.49%	7.51%
Scenario 2	92.45%	7.55%
Scenario 3	92.33%	7.67%

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Heavy vehicles

In order to understand heavy vehicle mode share through the precinct, two screenlines have been taken for east/west and north/south travel, as shown in Figure 30 below. Melton Highway has been included to add context to the results.

Figure 30 Screenlines

Table 5 details the results of this screenline, with total vehicles and the percent of heavy vehicles at each arterial across both screenlines. Results are very similar across many scenarios, key differences include a decrease in the share of heavy vehicles on Leakes Road, largely due to a rerouting of primarily private vehicles from Paynes Road. Most other scenarios retain a largely comparable share of heavy vehicles across screenlines.

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Table 5 East/West screenline results

Road	Direction	Base		Scenario 1		Scenario 2		Scenario 3	
		Total	#HV (%)	Total	#HV (%)	Total	#HV (%)	Total	#HV (%)
Melton Hwy	East	33,390	2,300 (6.9%)	33,850	2,340 (6.9%)	33,360	2,340 (7.0%)	33,260	2,330 (7.0%)
	West	32,760	2,750 (8.4%)	33,220	2,760 (8.3%)	32,830	2,760 (8.4%)	32,800	2,760 (8.4%)
Tarletons	East	10,180	240 (2.4%)	10,400	240 (2.3%)	10,290	250 (2.4%)	9,850	240 (2.4%)
	West	10,060	180 (1.8%)	10,220	180 (1.8%)	10,150	190 (1.9%)	10,080	170 (1.7%)
Taylors	East	11,710	110 (0.9%)	12,480	100 (0.8%)	11,400	100 (0.9%)	11,870	210 (1.8%)
	West	12,840	50 (0.4%)	13,570	50 (0.4%)	12,480	50 (0.4%)	12,270	60 (0.5%)
Total	**East**	**55,280**	**2,650 (4.8%)**	**56,730**	**2,440 (4.3%)**	**55,050**	**2,700 (4.9%)**	**54,980**	**2,800 (5.1%)**
	West	**55,660**	**3,010 (5.4%)**	**57,010**	**2,790 (4.9%)**	**55,460**	**2,990 (5.4%)**	**55,150**	**2,980 (5.4%)**

Table 6 North/South screenline results

Road	Direction	Base		Scenario 1		Scenario 2		Scenario 3	
		Total	#HV (%)	Total	#HV (%)	Total	#HV (%)	Total	#HV (%)
Mt Cottrel	North	27,040	780 (2.9%)	28,450	830 (2.9%)	27,020	780 (2.9%)	26,490	770 (2.9%)
	South	24,030	480 (2.0%)	25,380	480 (1.9%)	23,950	480 (2.0%)	23,930	500 (2.1%)
Paynes	North	6,190	10 (0.2%)	N/A	N/A	6,150	10 (0.2%)	5,110	10 (0.1%)
	South	6,170	10 (0.1%)	N/A	N/A	6,180	10 (0.1%)	5,060	0 (0.0%)
Leakes	North	5,970	130 (2.2%)	8,750	140 (1.6%)	5,950	120 (2.1%)	8,380	160 (1.9%)
	South	6,820	200 (2.9%)	9,790	200 (2.0%)	6,760	200 (2.9%)	8,730	210 (2.4%)
Total	**North**	**39,190**	**940 (2.4%)**	**37,200**	**970 (2.6%)**	**39,120**	**940 (2.4%)**	**39,970**	**920 (2.3%)**
	South	**37,010**	**670 (1.8%)**	**35,170**	**670 (1.9%)**	**36,890**	**660 (1.8%)**	**37,720**	**720 (1.9%)**

5.3 Accessibility

It is useful to understand whether the network assumptions in each scenario impacts accessibility to key activity centres and other land use such as employment or education. To investigate this, Figures 31 to 38 show isochrones which classify each network link by the amount of time it takes to travel to the activity centre at the intersection of Mt Cottrel and Tarletons Road in the AM peak by driving and public transport. In the public transport isochrones, links not covered by a bus service assume an average walk time of 5km/h.

In general, accessibility in each scenario is largely comparable. Changes in network alignment do cause some changes in travel time, particular for public transport as seen in in the intersection of Paynes and Taylors Road in Scenario 1. As would be expected, the traversable area by public transport is lower than by driving.

Figure 31 AM peak isochrone from activity centre | Base case

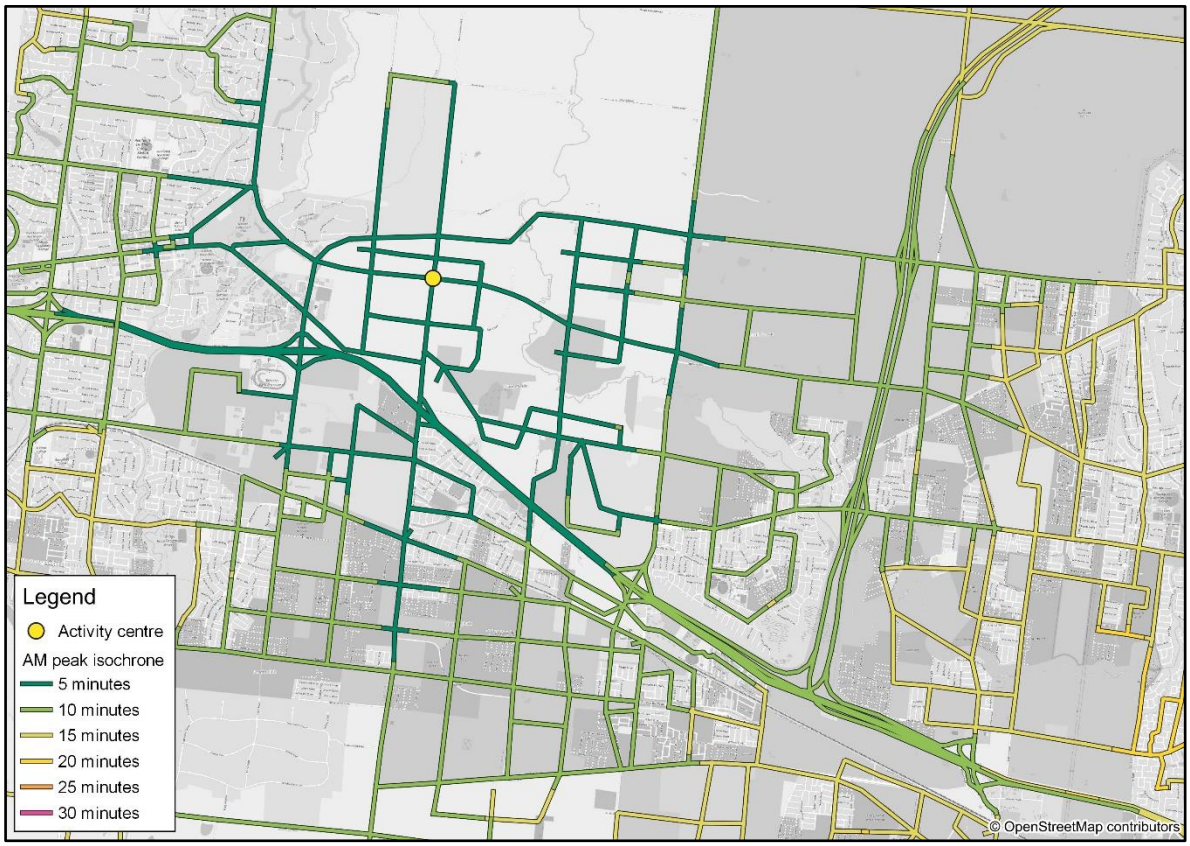

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Figure 32 AM peak public transport isochrone from activity centre | Base case

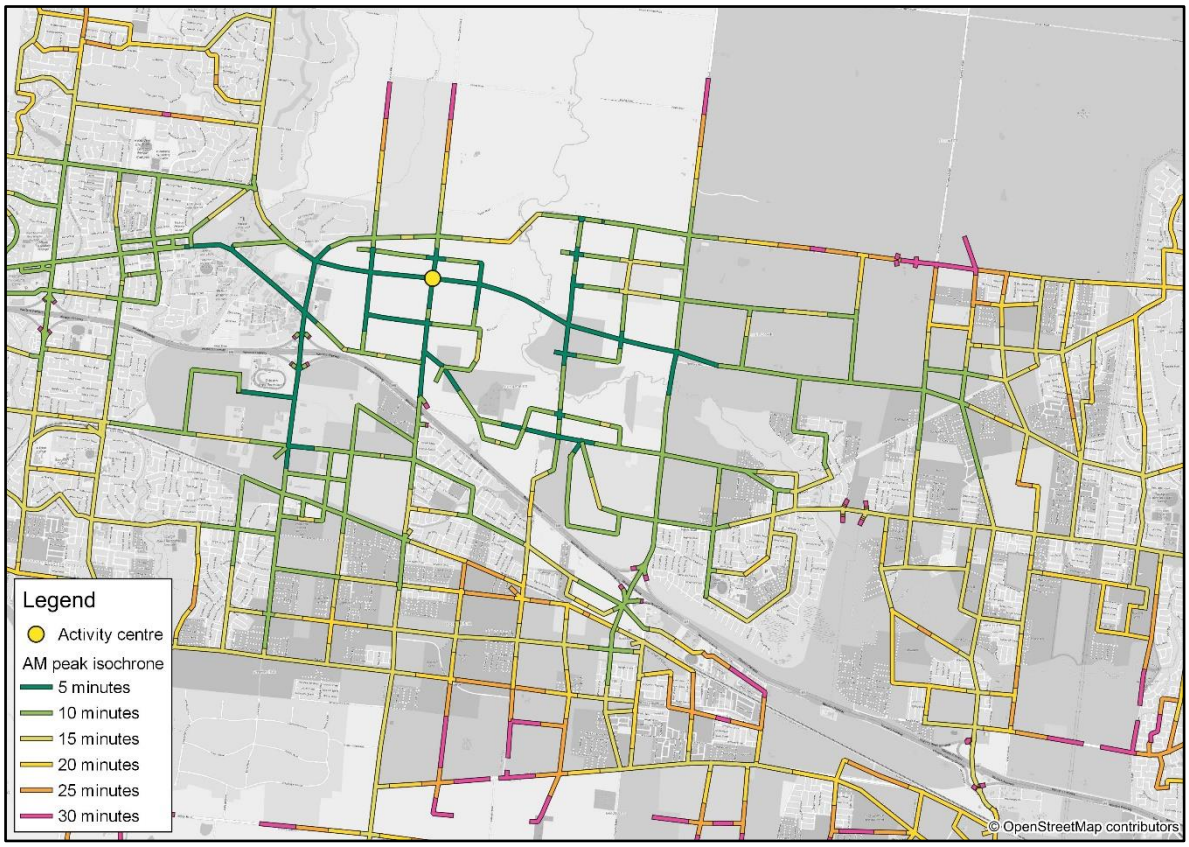

Figure 33 AM peak isochrone from activity centre | Scenario 1

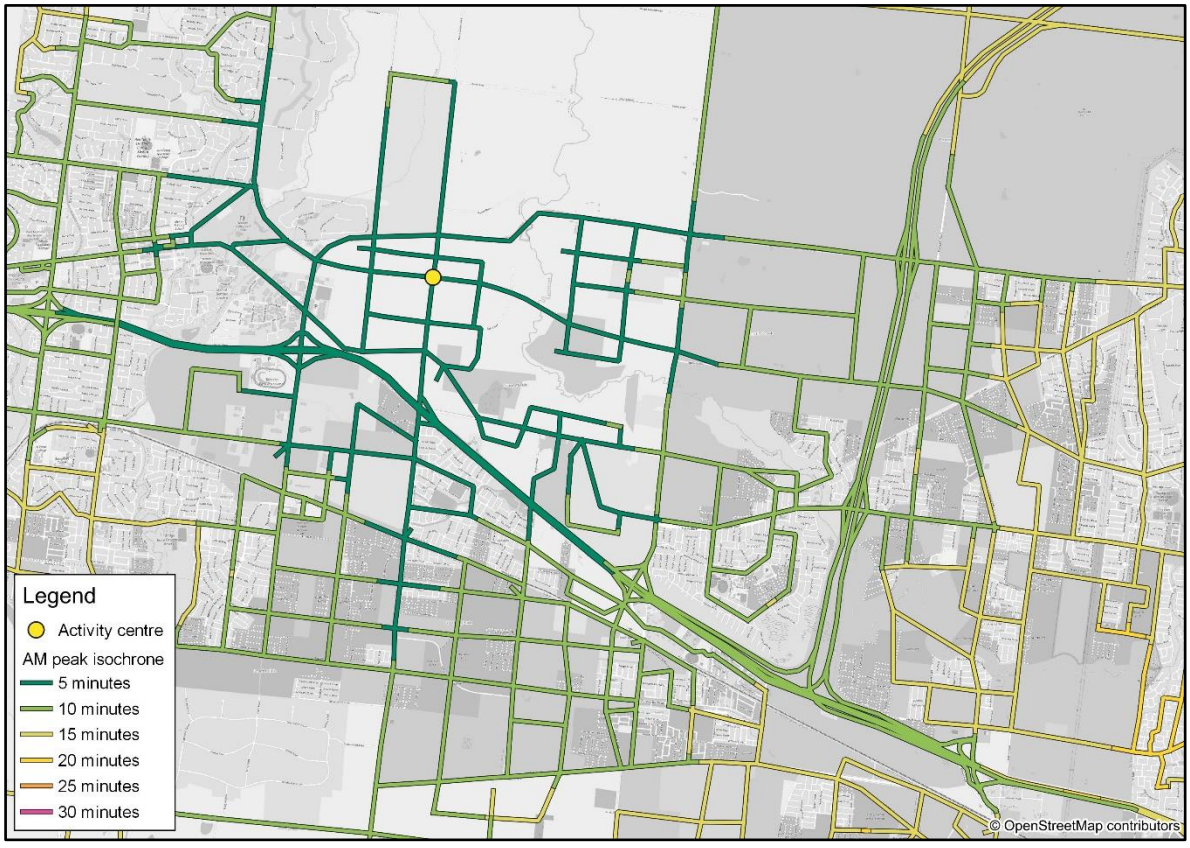

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Figure 34 AM peak public transport isochrone from activity centre | Scenario 1

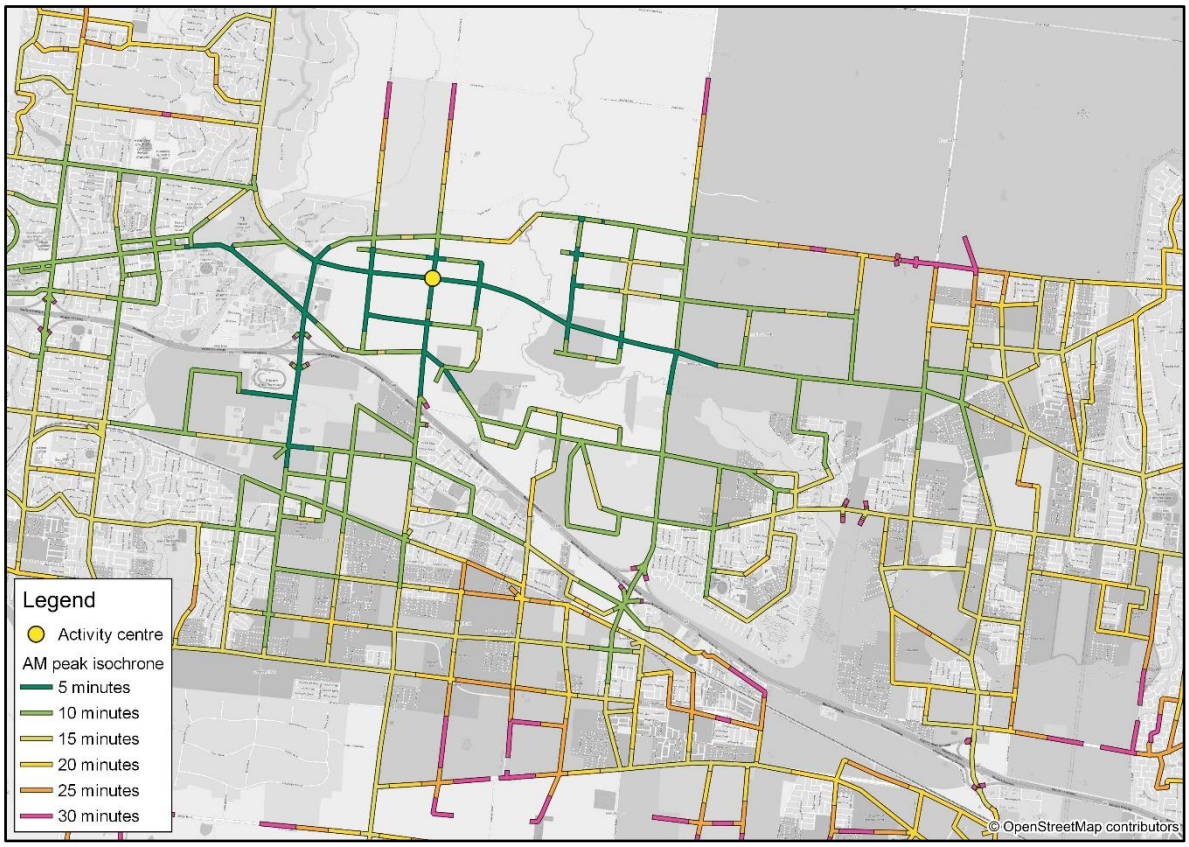

Figure 35 AM peak isochrone from activity centre | Scenario 2

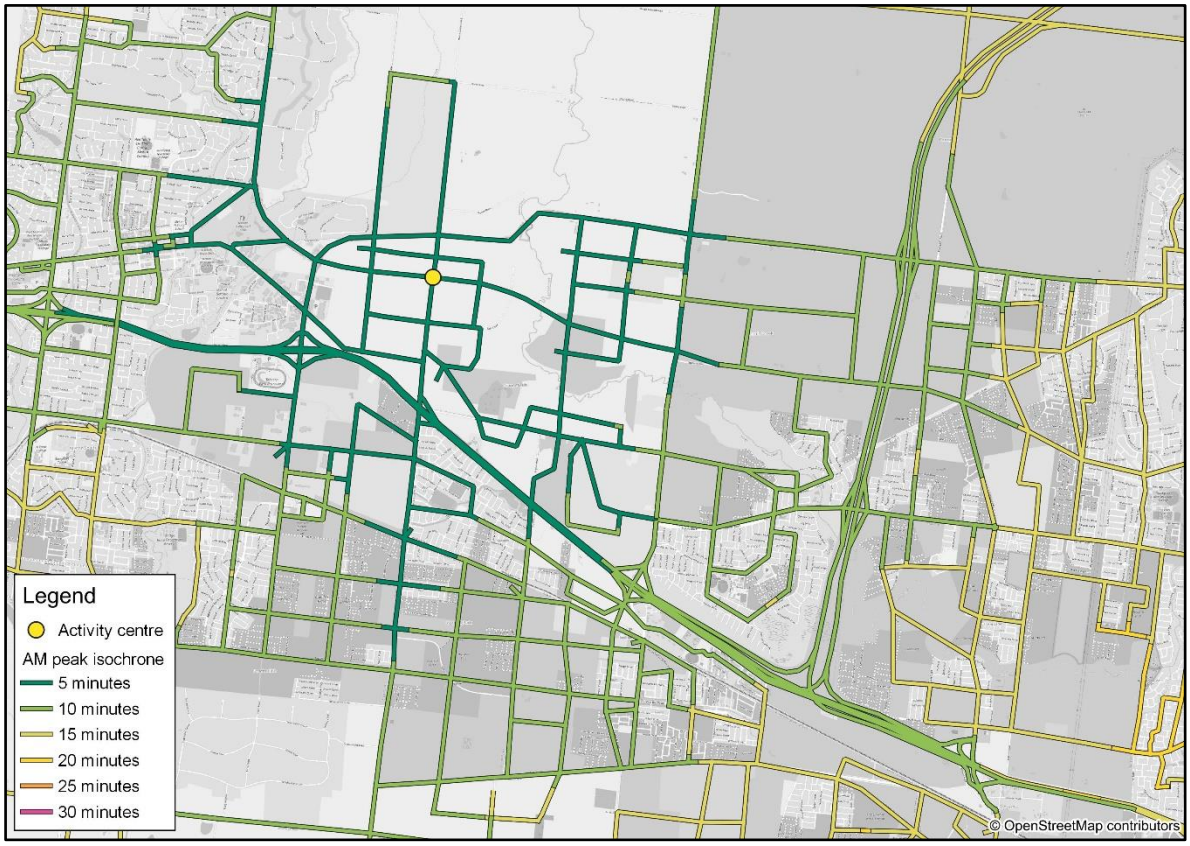

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Figure 36 AM peak public transport isochrone from activity centre | Scenario 2

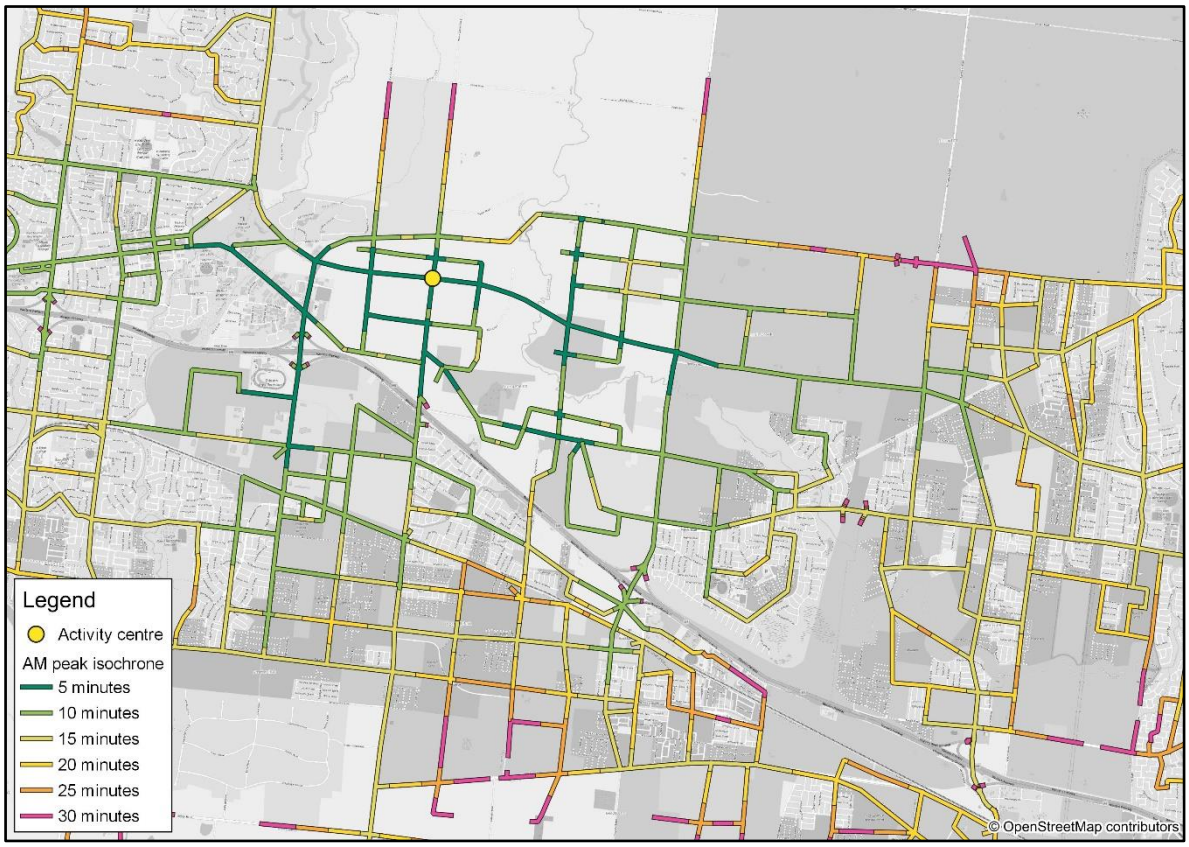

Figure 37 AM peak isochrone from activity centre | Scenario 3

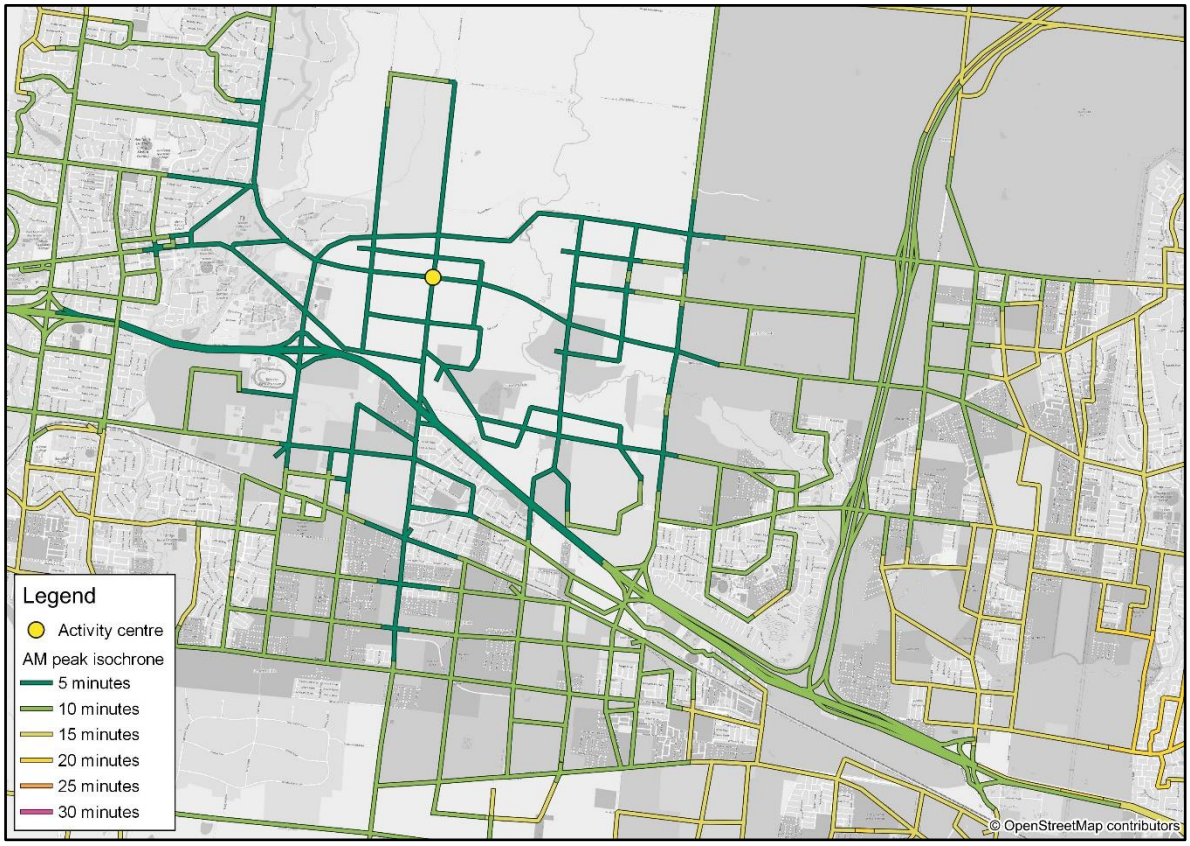

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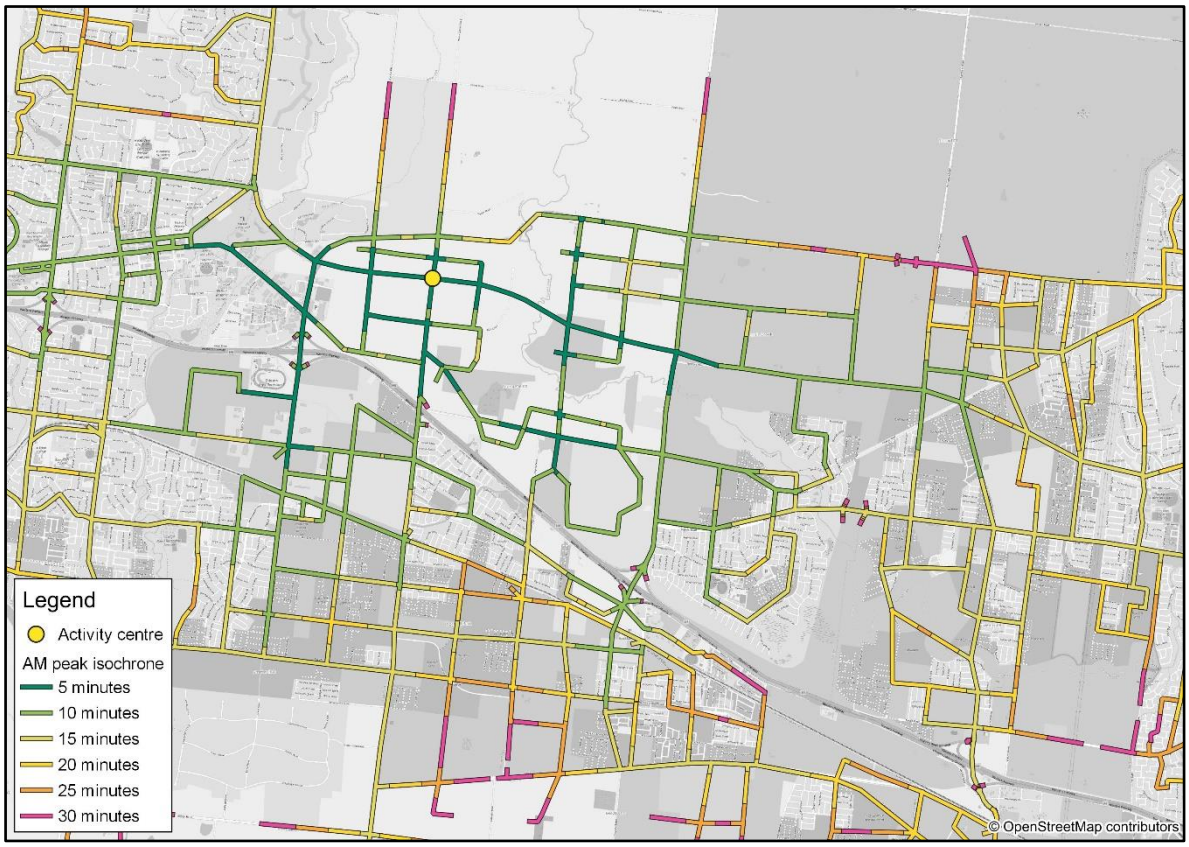
Figure 38 AM peak public transport isochrone from activity centre | Scenario 3



5.4 Select link analysis

5.4.1 Context

To better understand the model forecasts in the study area, a 'select link' analysis was carried out for several key locations across the PSP.

What *is* a select link?

A 'select link' analysis is a method of analysing traffic movements by identifying the origin, destination and path of every trip that passes through a nominated section or sections of road.

The results of a select link can be plotted to give an indication of the importance of a road link to the road network and the spatial distribution of the vehicles that use it. This information can provide valuable insights to transport planning and operational modelling.

Table 7 lists the five select link locations taken as part of this exercise. Labelled plots of each select link can be found in Appendix C.

Table 7 Select link locations

Location	Time period	Scenario
Taylors Road west of Paynes Road	AM	Base
	PM	Base
	AM	Scenario 3
	PM	Scenario 3
Taylors Road east of Leakes Road	AM	Base
	PM	Base
	AM	Scenario 3
	PM	Scenario 3
Tarletons Road Bridge	PM	Base
Paynes Road over Western Freeway	PM	Base
Leakes Road between Taylors and Beattys Road	PM	Base
	PM	Scenario 3

The select links provide us with useful information on the patterns of transport within and into the precinct. The **Taylors Road west of Paynes Road** select link indicates a strong east/west connection between Federation Drive and part of Tarletons Road through to Taylors Road past Leakes Road. Comparisons between the Base Scenario and Scenario 3 show that the changing alignment mostly affects traffic to the east of the link, with an aggregation of movements onto Taylors Road (west of Leakes Road) in Scenario 3.

Further east, the select link at **Taylors Road east of Leakes Road** provides a view of the distribution of vehicles entering the precinct via Taylors Road. Many vehicles head immediately south, to access the Western Freeway or access precincts to the south. The changed alignment in Scenario 3 leads to a lower proportion of vehicles continuing through the western section of Taylors Road, strengthening the primary south-to-east (or east-to-south) connection.

The **Tarletons Road Bridge** select link indicates a significant east-west component of vehicle movements, with traffic branching at key north/south arterials or local connector streets providing access to residential or other key land uses.

The **Paynes Road Overpass** select link over the Western Freeway shows a radial pattern of vehicle movements in the precinct, with an roughly even usage of Taylors Road's east/west directions and the northern component of Paynes Road. Further south, key components of the select link's volumes derive from the Toolern PSP, with a lower proportion due to the Rockbank and Rockbank South PSPs.

Finally, the select link on **Leakes Road** between Taylors and Beattys Road indicates the effect of realigning Taylors Road. The both scenarios see similar proportional utilisation of the Western Freeway, while patterns otherwise differ significantly. Realigning Taylors Road to the existing Beattys Road alignment causes a higher share of northbound traffic to head west on Taylors/Beattys than in the Base Case. Further, in the Base case, a much higher share of the select link's traffic interacts with the activity centre just north-east of the link, in addition to a higher share of vehicles travelling to/from the Rockbank PSP.

5.4.2 Taylors Road west of Paynes Road

One of the first select links taken was at Taylors Road, just west of Paynes Road as shown in Figure 39 below. This was conducted in the Base Case and Scenario 3 to understand the effects of the alternative alignment of Taylors Road, in conjunction with a second series of select links east of Leakes Road (see section 5.4.3 in the following pages).

Figure 39 Taylors Road west of Paynes Road select link

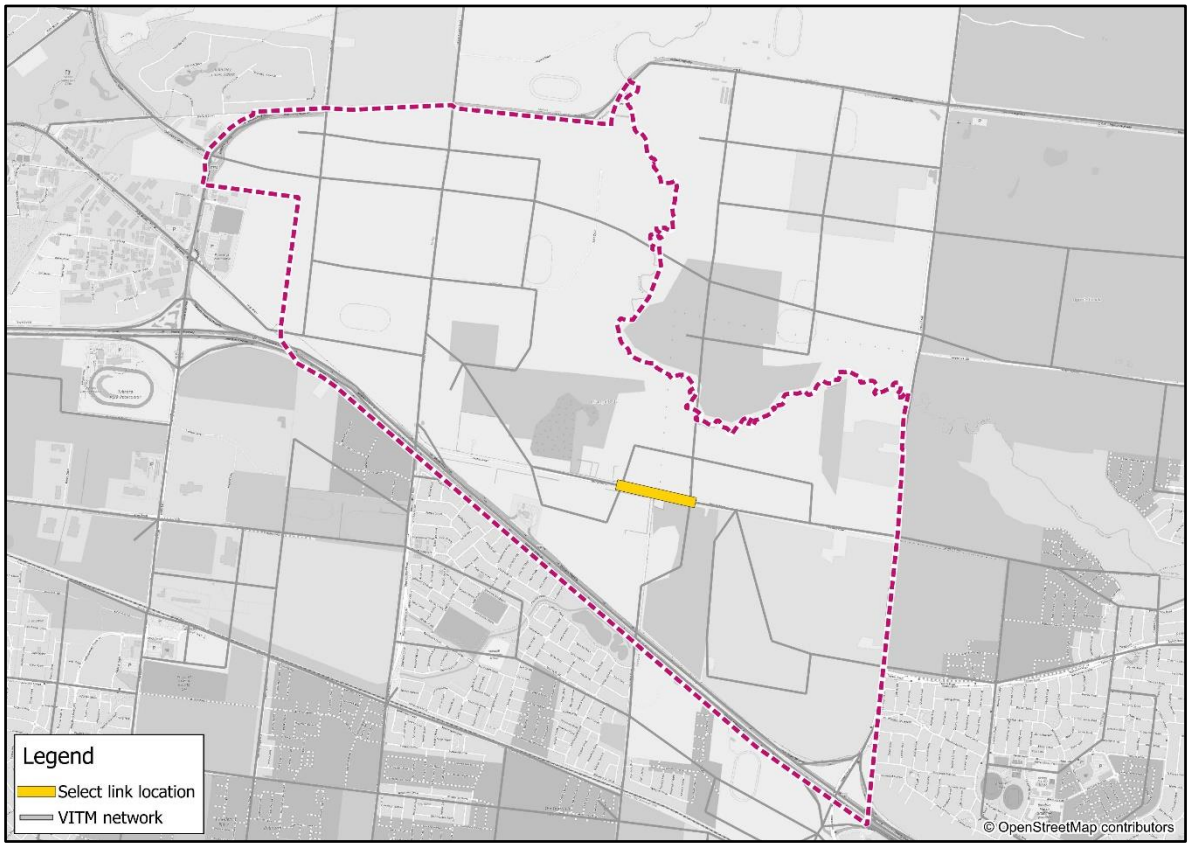


Figure 40 and Figure 41 detail the select link results for the **Base Case** AM and PM peaks respectively. The plots show that this segment of Taylors Road is serving a significant amount of traffic local to the PSP. It also appears to serve as a connection between Melton and eastern PSPs that straddle or are bisected by Taylors Road, such as Rockbank North, Plumpton, Kororoit and Taylors Hill West.

In the AM peak, approximately 40 percent of westbound traffic that passes the select link enters the PSP via Taylors Road, with almost 30 percent exiting at Federation Drive, and almost 25 percent exiting south on Mt Cottrel Road. Paynes Road is the second largest source of westbound vehicles, with approximately 20 percent entering the PSP via Paynes.

Eastbound traffic in the AM is more evenly split between continuing on Taylors Road and taking Beattys Road to the Rockbank North town centre. A larger amount of eastbound traffic appears to be locally generated.

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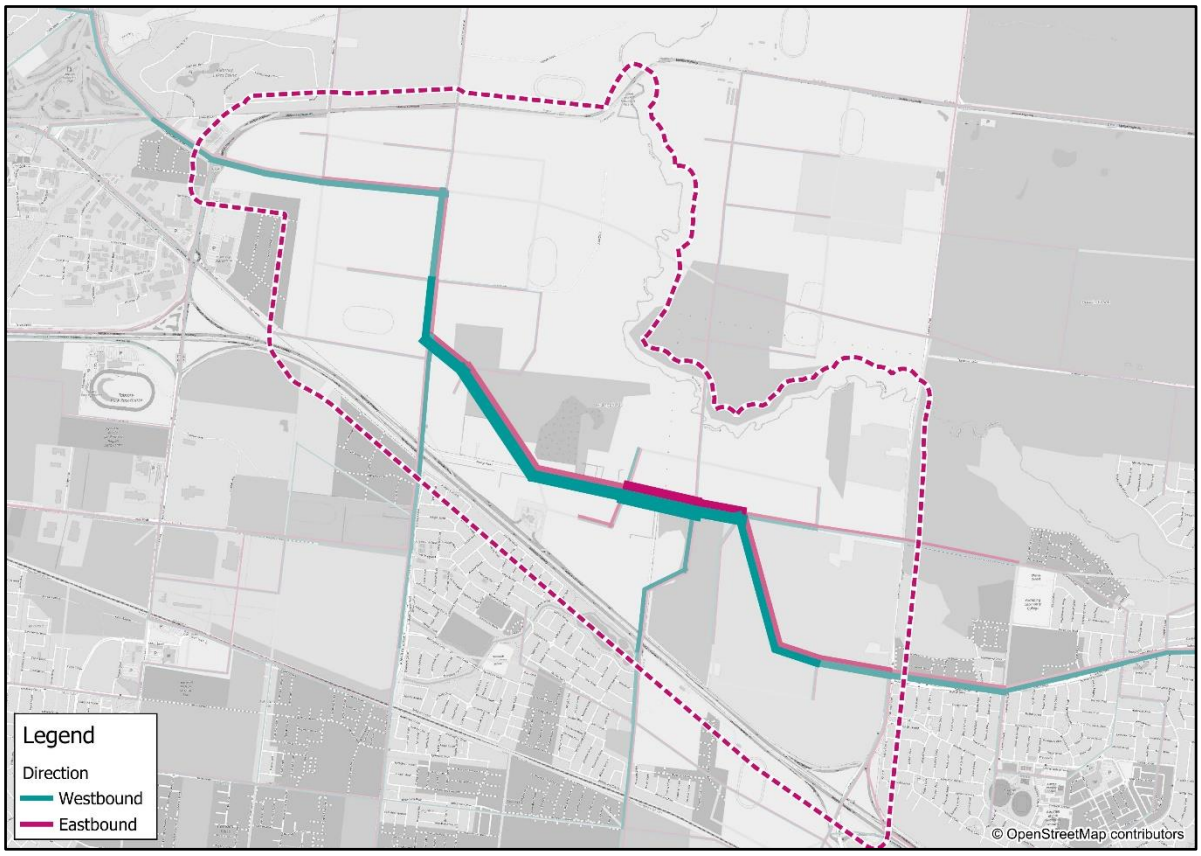
Figure 40 Taylors Road west of Paynes Road select link (AM peak) | Base Case



In the PM peak, similar patterns are observed, with some tidal changes. Approximately 30 percent of east/west traffic passing through the select link exits/enters the PSP area via Taylors Road, while approximately 20 percent is due to Federation Drive in the north-west.

A higher proportion of eastbound travel comes from northbound traffic on Mt Cottrel Road, while a lower number of westbound vehicles travel south on Mt Cottrel Road. Approximately 10 percent of westbound vehicles originate via the Western Freeway via Leakes Road, and a slightly lower proportion of eastbound vehicles entering the Western Freeway using the same interchange.

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Figure 41 Taylors Road west of Paynes Road select link (PM peak) | Base Case

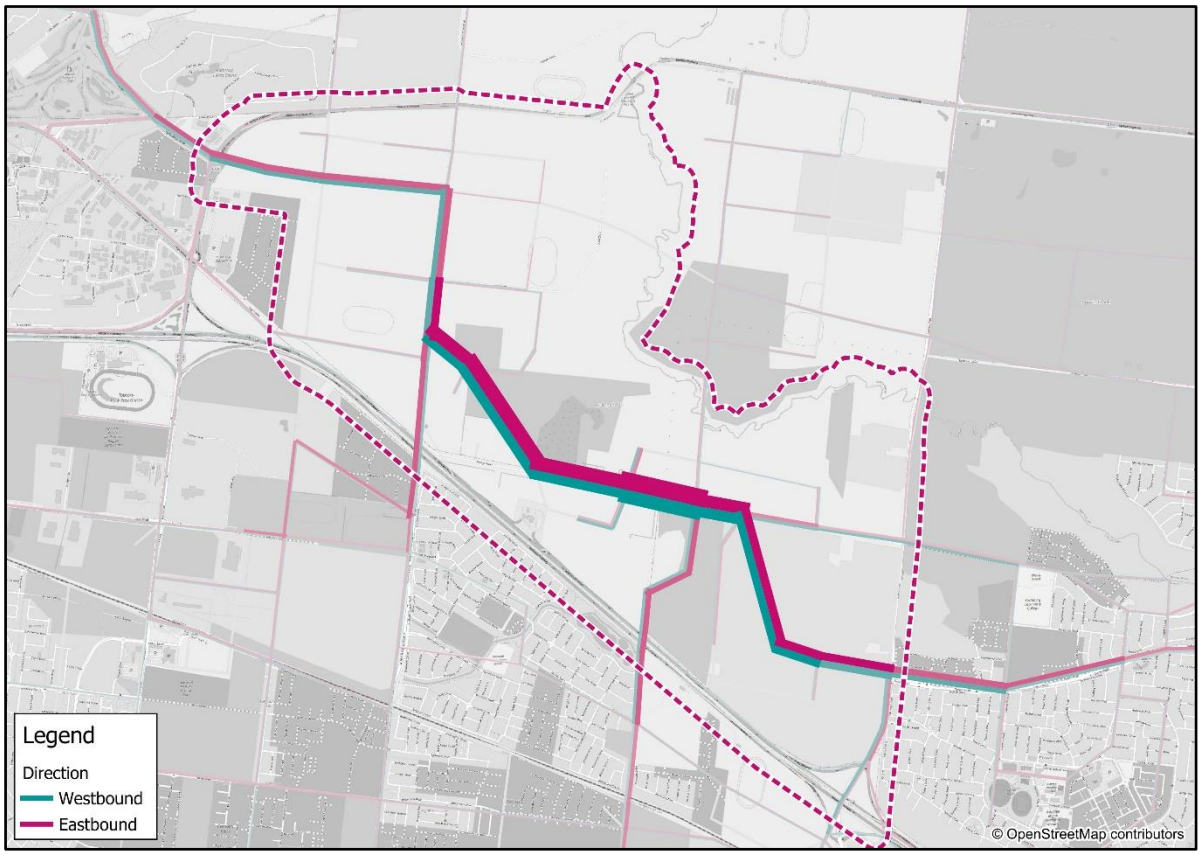

Figure 42 and Figure 43 show the select results for the same location, but this time for the **Scenario 3** model.

To the west of the select link, the results are similar to the Base scenario. The biggest change between the two scenarios is the patterns of traffic to the east. The key factor here is the realignment of Taylors Road to assume the same alignment as Beattys Road. As a result, 70 percent of AM eastbound traffic at the select link continues along the new alignment to Leakes Road, a similar proportion to the combined eastbound traffic on Taylors Road and Beattys Road in the Base scenario.

The proportion of traffic crossing the select link using Paynes Road has increased when compared to the results of the Base scenario. In the AM peak, traffic heading north along Paynes Road and then west on Taylors Road increases from 23% to 42%. Similarly, the eastbound traffic heading south on Paynes Road to cross the Western Freeway increases from 12% to 21%. This increase is likely due to less-direct access to the Leakes Road crossing, particularly from the west/north-west.

Around 30 percent of eastbound AM traffic passing through the select link continues across Leakes Road onto Beattys Road, largely to access the Rockbank North town centre.

The proportion of traffic crossing this select link and exiting/entering the PSP via Taylors Road in the east has dropped by approximately half due to the shifted alignment.

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Figure 42 Taylors Road west of Paynes Road select link (AM peak) | Scenario 3

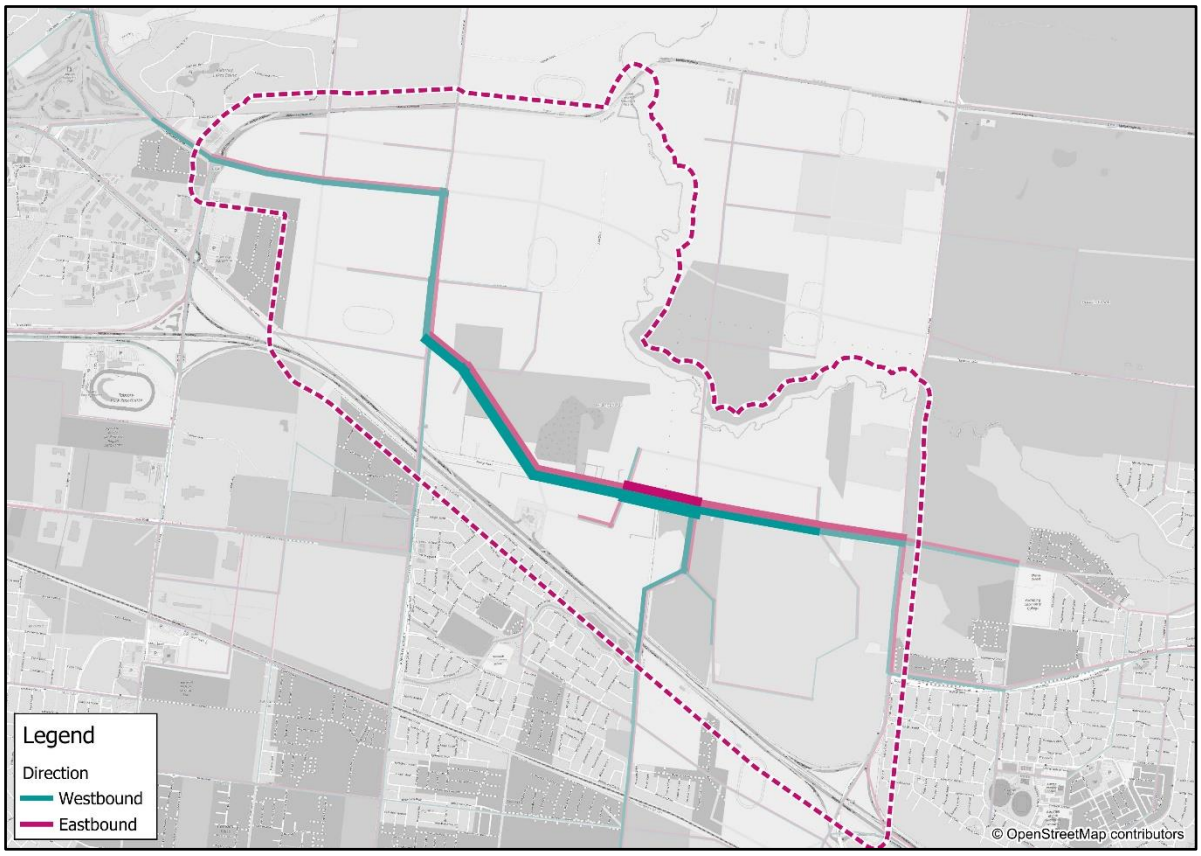

Figure 43 Taylors Road west of Paynes Road select link (PM peak) | Scenario 3

5.4.3 Taylors Road east of Leakes Road

Another select link was taken on Taylors Road, this time to the east next to Leakes Road, as shown in Figure 44 below. Figure 45 and Figure 46 detail the select link results for the **Base Case** AM and PM peak respectively.

It is clear that the primary use of this section of Taylors Road is to provide access to southbound travel along Leakes Road. Approximately two thirds of vehicles passing through this link utilise the southern section of Leakes Road. Much of this is for access to the Western Freeway; in the AM peak approximately 35 percent of westbound traffic travelling via the select link is bound for the Western Freeway of which 15 percent of continues east, while approximately 20 percent heads west.

Aside from accessing the Freeway, a further 30 percent continues south on Leakes/Rockbank Road to access the Rockbank major town centre or to travel further on Toolern Road (as defined in the Rockbank PSP).

The remaining third of traffic continues along Taylors Road to the west into the PSP. In the AM peak, a larger amount of eastbound traffic is accessing Taylors Road via Paynes Road, while westbound traffic largely continues to Mt Cottrel Road and splits north and south.

Similar patterns are observed in the PM peak, though the proportion of traffic on Paynes Road and the western portions of Taylors Road are more balanced by direction.

Figure 44 Taylors Road east of Leakes Road select link

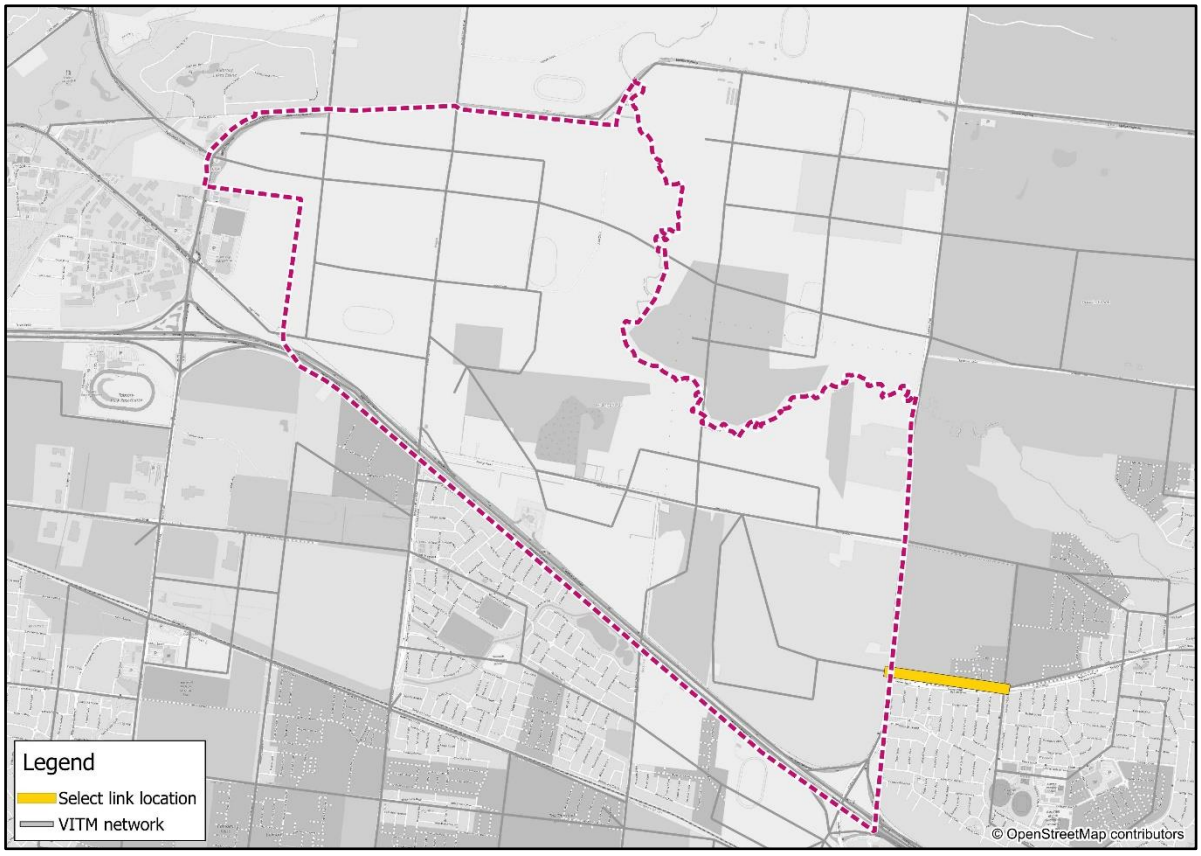

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Figure 45 Taylors Road east of Leakes Road select link (AM peak) | Base Case

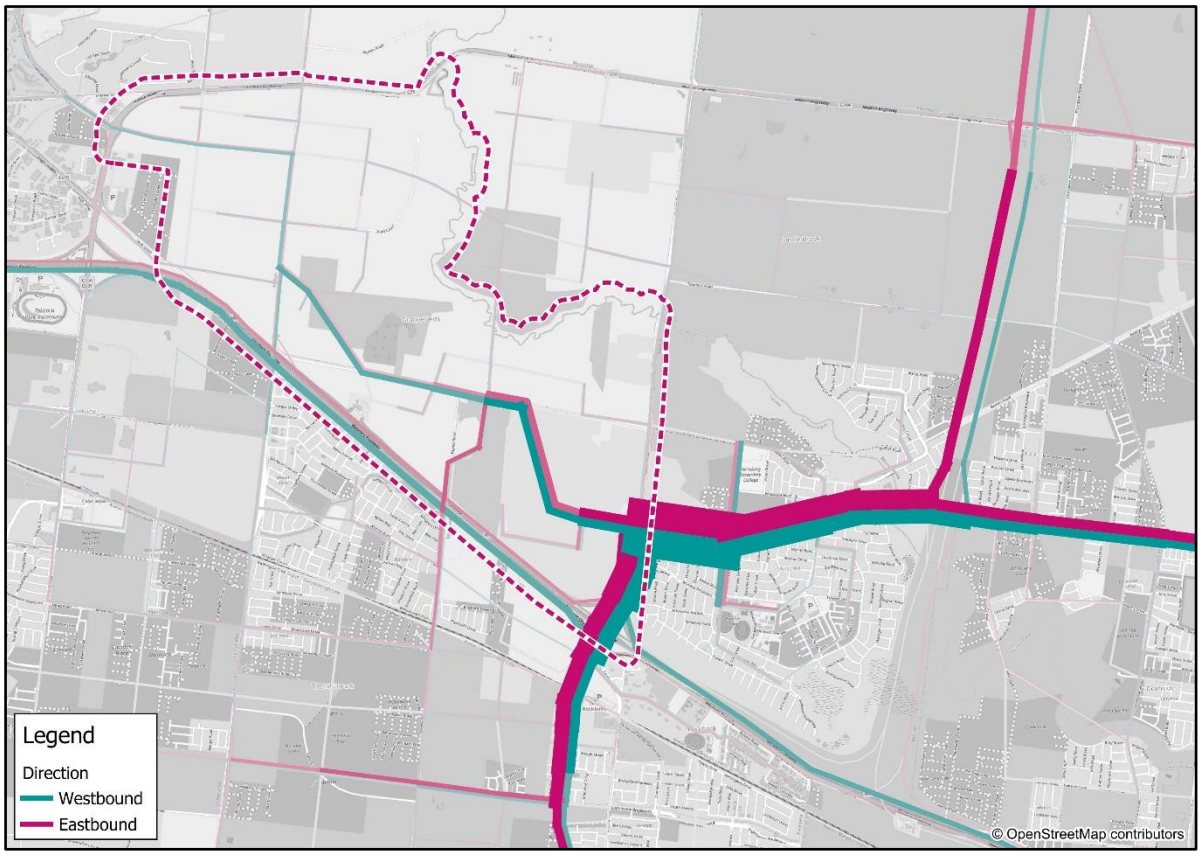

Figure 46 Taylors Road east of Leakes Road select link (PM peak) | Base Case

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In **Scenario 3**, the realignment of Taylors Road leads to a reduction in the proportion of vehicles continuing along the western portion of Taylors Road. To be clear, in absolute terms, the change in total volumes along Taylors Road in Scenario 3 beyond the altered alignment is relatively minor. Just east of Paynes Road, the updated alignment amounts to a two-way increase of approximately 750 vehicles, a 2.4% increase over base volumes. However, it is apparent that less of these volumes are derived from the eastern component of Taylors Road.

In the AM peak, of the vehicles passing through the select link, the amount continuing through Taylors Road decreases from approximately a third of vehicles down to around 15 percent. Much of this demand appears to have been redirected to the Western Freeway, where westbound traffic increases from approximately 20 percent to 30 percent. To this extent, it appears the updated alignment of Taylors Road shifts its role from an east/west connection to a key linkage to the Western Freeway for OMR and traffic derived from Taylors Road further east.

For vehicles that continue to use the western section of Taylors Road, approximately one third of westbound vehicles continue through to Federation Drive via Mount Cottrel Road in the AM peak. For eastbound vehicles, about a third of vehicles are derived from Paynes Road to the south. The remaining vehicles largely accumulate from zones adjacent to or nearby Taylors Road.

Similar effects can be seen in the PM peak, though the proportion of vehicles continuing on the western portion of Taylors Road is slightly higher.

Figure 47 Taylors Road east of Leakes Road select link (AM peak) | Scenario 3

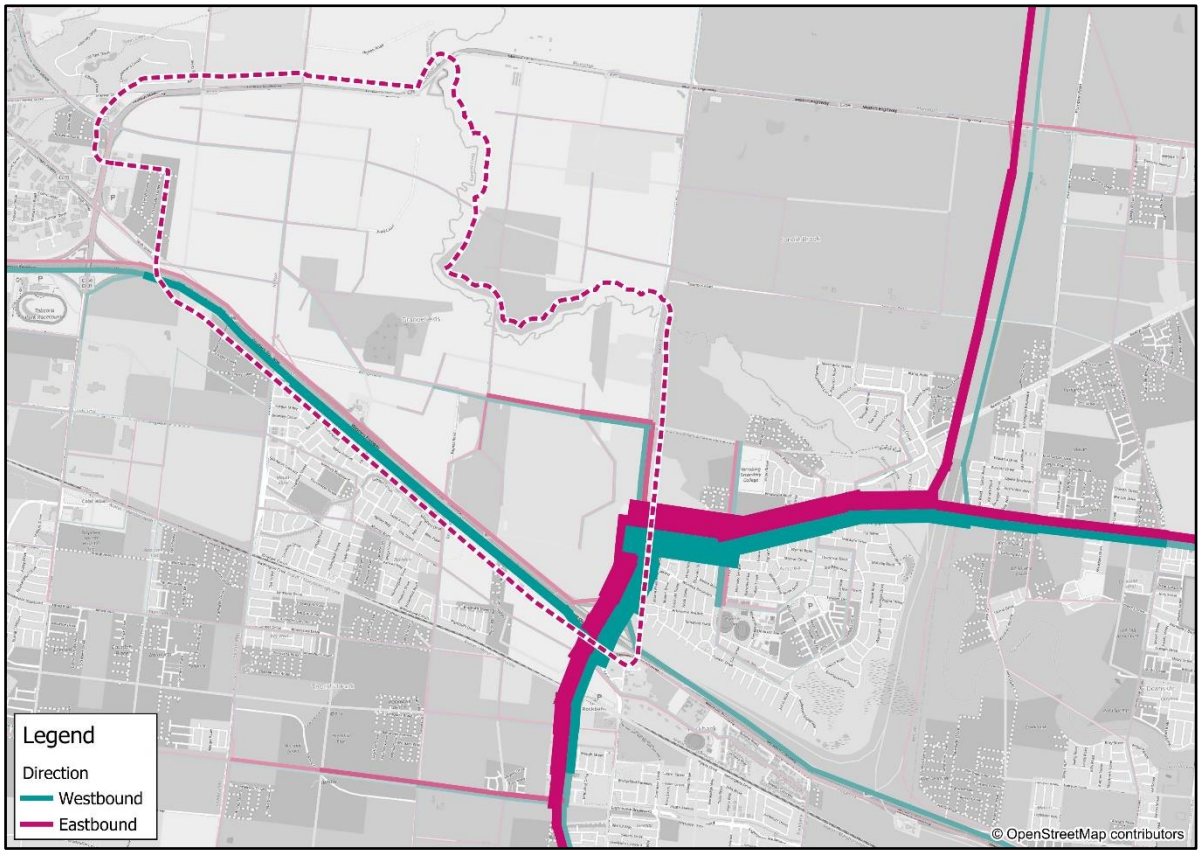

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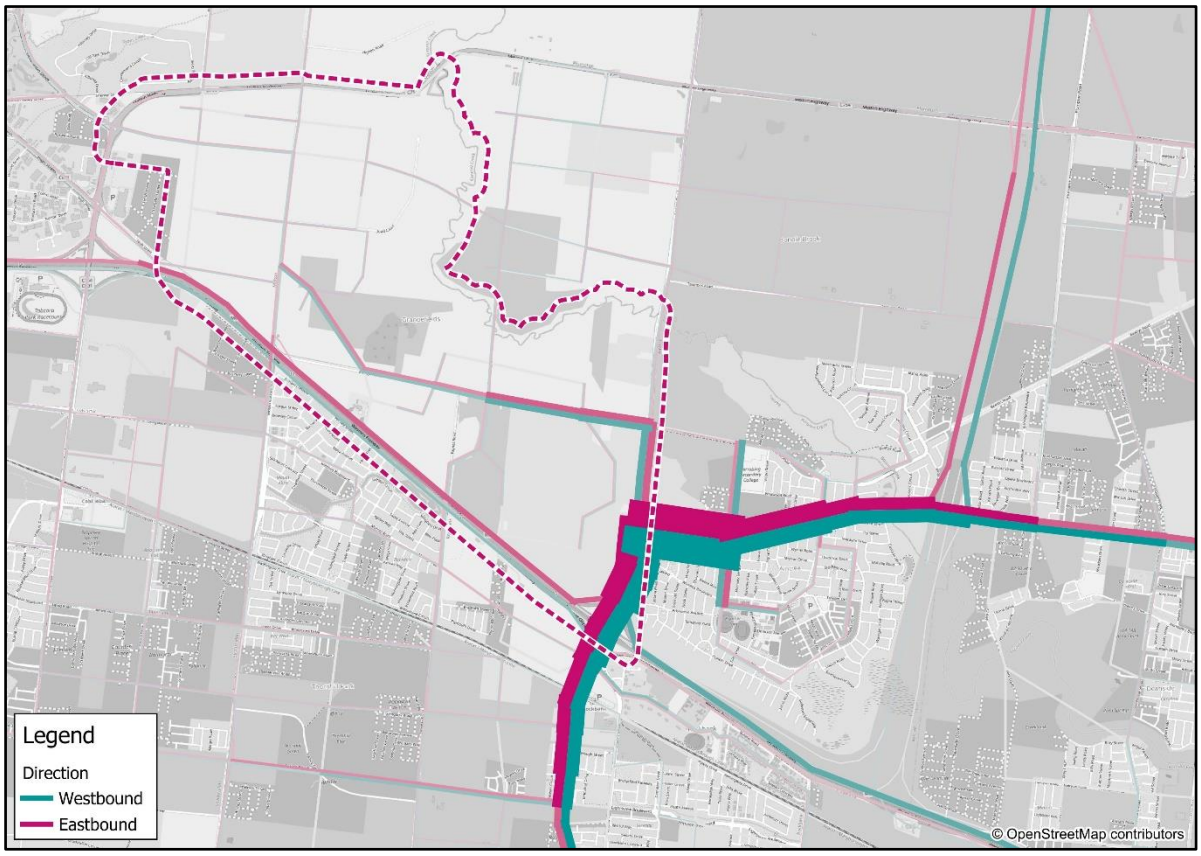
Figure 48 Taylors Road east of Leakes Road select link (PM peak) | Scenario 3



5.4.4 Tarletons Road Bridge Crossing

The second-last location chosen for a select link analysis is the Tarletons Road bridge crossing over Kororoit Creek, shown in Figure 49.

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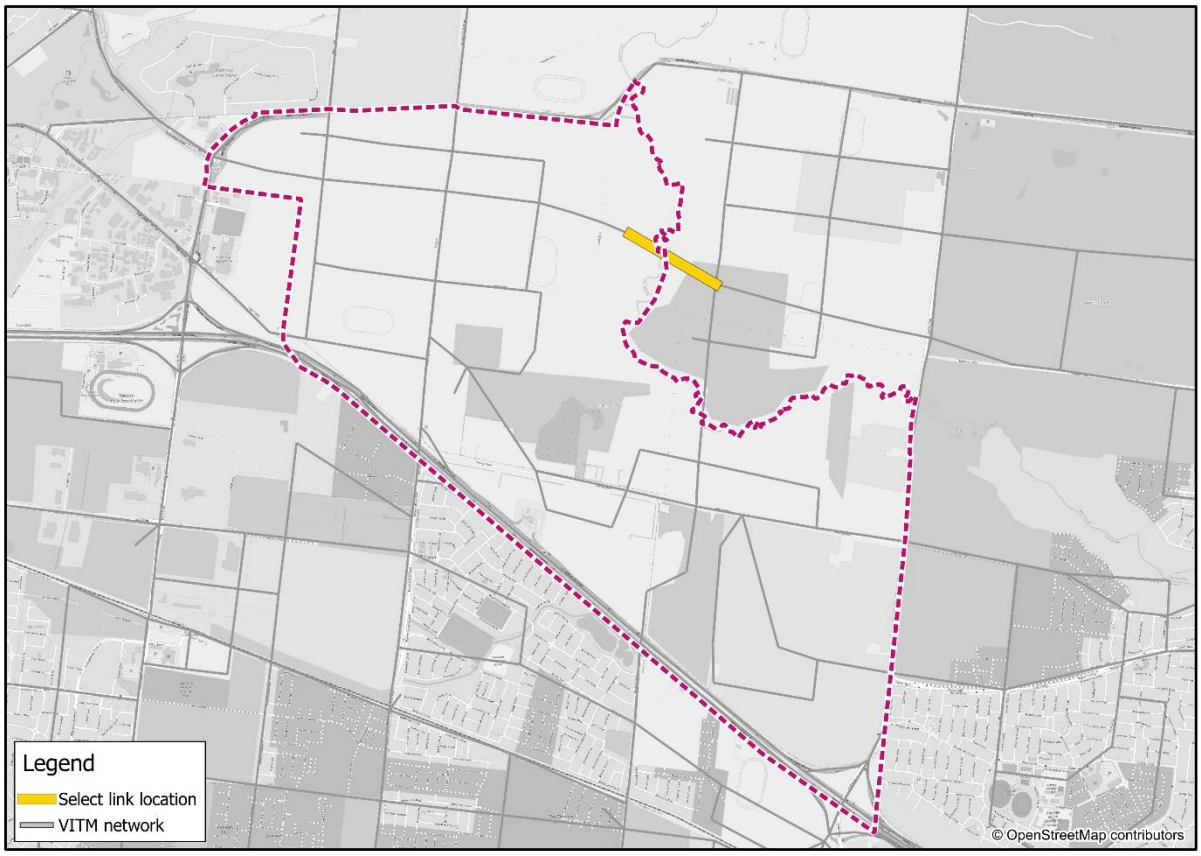
Figure 49 Tarletons Road bridge crossing select link



Results from the Tarletons Road select link shown in Figure 50 suggest that it primarily serves the movement of east/west traffic, particularly to the east.

Approximately a quarter of traffic along this link enter the PSP via Federation Drive, while a significant portion of vehicles utilise Tarletons Road travelling through to Warrensbrook, Plumpton and Taylors Hill West. Even beyond, approximately 15 percent of eastbound traffic at this link travels through to Gourlay Road (via the continuation of Tarletons Road as Hume Drive). An even higher 25 percent of westbound traffic originates from the same extent. It is clear that for those who use it, Tarletons Road largely serves as a broader strategic east/west connector

Within Melton East, there are a few key north/south trunks of traffic. Significant amounts of east and westbound traffic crossing the bridge originate/are bound to the southern component of Melton Highway. Half of this appears to be due to the Western Freeway, while the remaining proportion of vehicles originate further south via Ferris Road. Almost 20 percent of east/west traffic also splits south down Mt Cottrel Road, while a similar amount comes from the northern section of Leakes Road. The schooling/activity centre to the south-west of the bridge draws approximately 15 percent of traffic, with a lower proportion due to the residential zone located to the north of the activity centre.

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Figure 50 Tarletons Road bridge crossing select link (PM peak) | Base Case

5.4.5 Paynes Road over Western Freeway

The second-last select link location chosen is located at the Paynes Road Western Freeway overpass, indicated in Figure 51 below.

The patterns of this select link are more radial than the clear east/west pattern of the Tarletons Road Bridge link. A significant amount of northbound traffic across this link – over 30 percent – originates from the Toolern PSP, likely due to the educational and activity centres located in the precinct. Southbound traffic appears to be more evenly divided between heading into the Toolern, Rockbank, and Rockbank South PSPs.

On the northern side of the Western Freeway, traffic appears to split between continuing on Paynes Road and heading east/west on Taylors Road in similar proportions. There is a key tendency for traffic, particularly northbound traffic to use the eastern portion of Taylors Road. Some of this is destined for Beattys Road to access the Rockbank North activity centre, while a majority continues on Taylors Road through Rockbank North, Plumpton/Kororoit and Taylors Hill West. Traffic along the western section of Taylors Road primarily use it to access Melton via Tarletons Road and Federation Drive. The remaining traffic uses the northern section of Paynes Road, largely to either access Melton Highway, access residential areas within Warrensbrook, or to travel east along Tarletons Road.

D R A F T

Figure 51 Paynes Road over Western Freeway select link

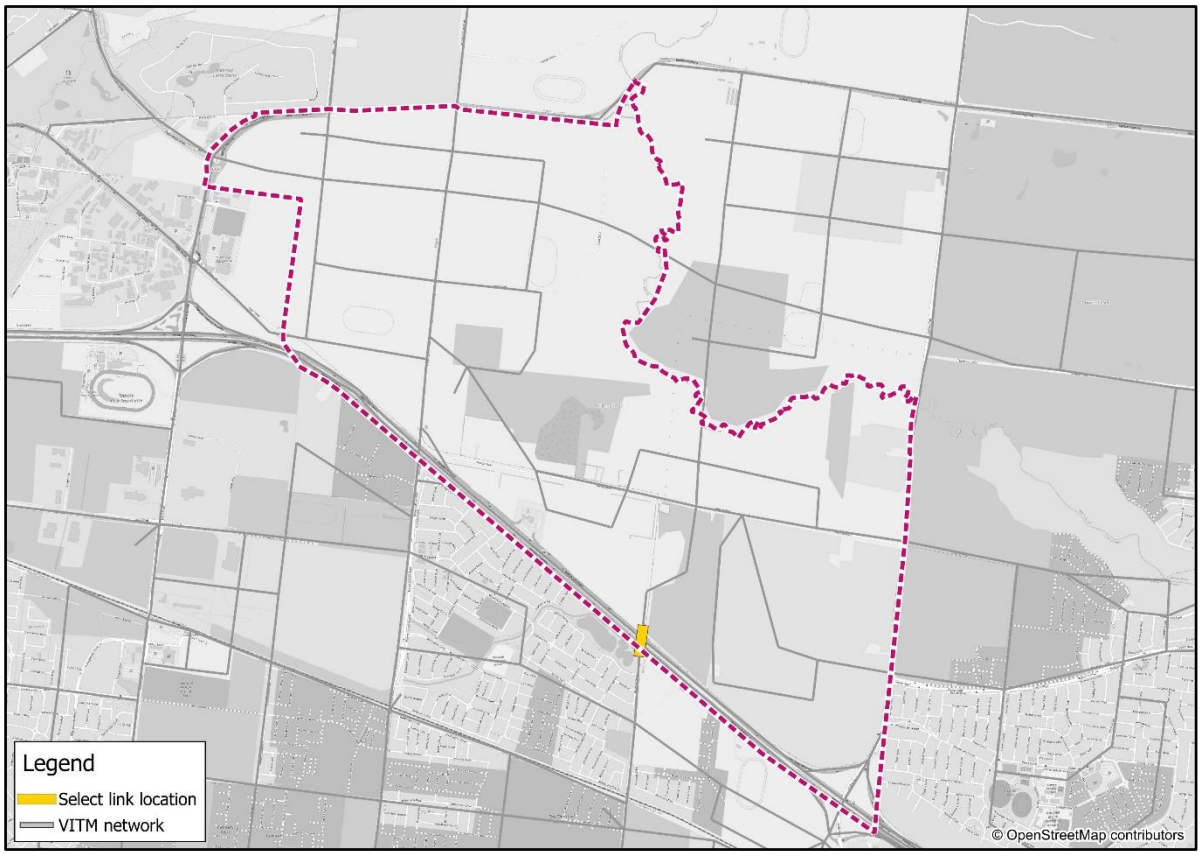

Figure 52 Paynes Road over Western Freeway select link (PM peak) | Base Case

5.4.6 Leakes Road between Taylors and Beattys Road

Lastly, the final select link location chosen was located on Leakes Road between Taylors Road and Beattys Road. Figure 53 details the location of the select link. This select link was conducted for both the Base Case and Scenario 3.

Figure 54 details the results in the **Base Case**. There is a strong north-south pattern for this link, which makes sense given Leakes' role as an arterial. Approximately a third of northbound travel originates east on the Western Freeway, with around another third originating via the Rockbank PSP. The next-largest source of northbound traffic is via the eastern section of Taylors Road, at around 15% of the northbound traffic.

Over 50% of northbound traffic leads to Tarletons Road, subsequently splitting north, east and west. 25% of the remaining traffic travels east on Beattys Rd to connect to the activity centre nearby, while another 20% heads west on Beattys Road.

Changing directions, a bit over 50% of southbound traffic originates from the activity centre via the eastern component of Beattys Road. A further 40% is fed from Tarletons Road and the northern section of Leakes. Approximately 37% of southbound traffic enters the Western Freeway heading East, while a third continues south into the Rockbank PSP. A further 9% of southbound traffic turns eastbound on Taylors Road, largely to access Aintree.

Figure 53 Leakes Road select link

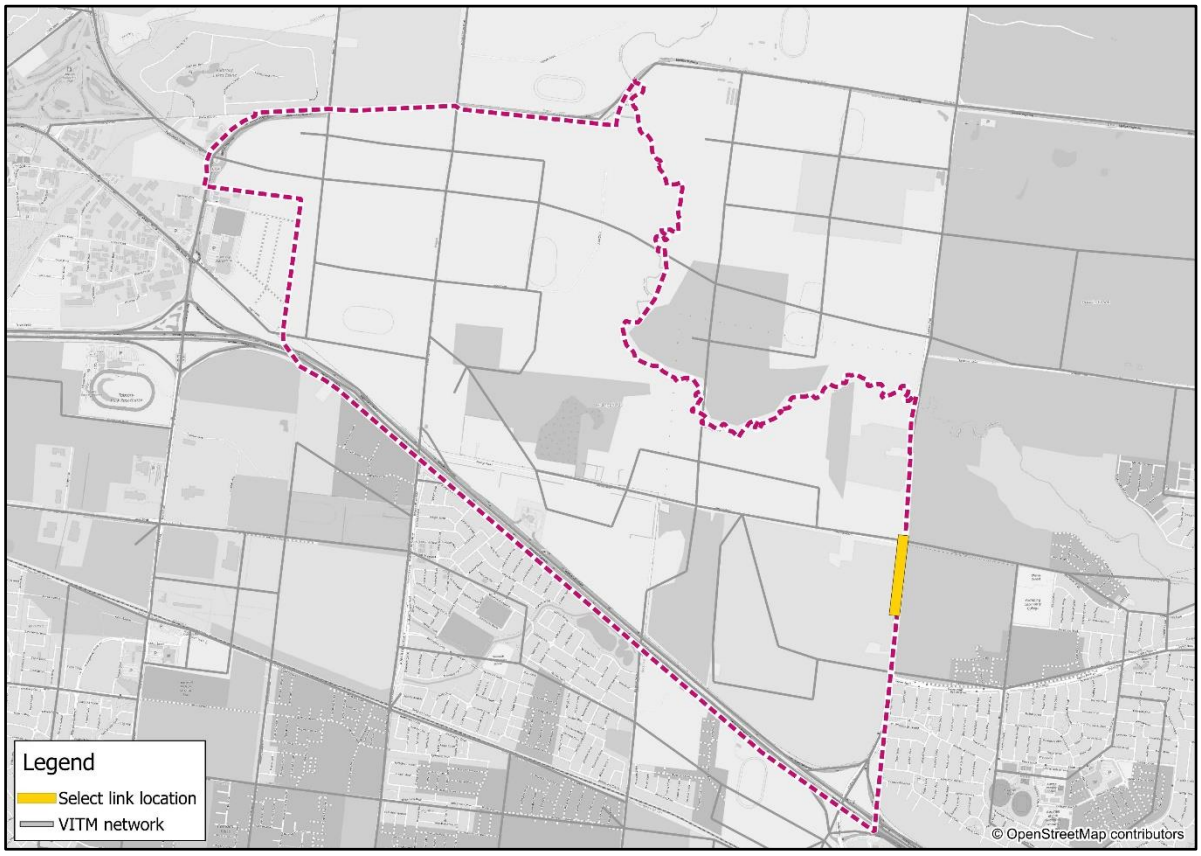

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Figure 54 Leakes Road select link (PM peak) | Base case

The results for **Scenario 3** are shown in Figure 55. The composition of this select link is significantly different to the Base case, due to the realignment of Taylors Road. Instead of largely continuing north on Leakes, a large contingent – just over 70% – of northbound traffic heads westbound on the realigned Taylors/Beattys Road, while approximately 24% of the select link's northbound traffic continues north to Tarletons Road. Only 15% of northbound traffic originates via the Rockbank PSP, with approximately 44% instead arriving via the eastern section of Taylors Road. A similar proportion of vehicles arrive from and are destined to the Western Freeway as in the Base Case.

Southbound traffic is similarly different in Scenario 3. Just over 52% of the select link volumes originate via the western section of Taylors/Beattys Road, with Tarletons and the eastern part of Beattys accounting for approximately a quarter each. Approximately 40% of southbound traffic heads east on Taylors road, while around 60% continues south. About one-third of southbound traffic heads east on the Western Freeway with around 20% of traffic continuing south into Rockbank PSP.

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Figure 55 Leakes Road select link (PM peak) | Scenario 3

5.5 Network performance

This section provides an overview of the network performance of the PSP area for each scenario. First, the patterns of volume over capacity (V/C) are investigated, with areas of high V/C and changes between scenarios explored. Lastly, the level of service for the main arterials are assessed using an approach outlined by Austroads.

5.5.1 Volume / Capacity (V/C)

Volume/capacity ratios provide a view as to the level of congestion expected at various points in the network. VITM calculates V/C during the highway assignment process, based on the theoretical capacity of each link across a given time period. Figure 56 and Figure 57 detail the AM and PM peak V/C ratios respectively for the base model as described in section 3.2.

Base case

Generally, the interior within Melton East experiences little-to-no areas of oversaturation. Most connector roads have very low levels of V/C, and arterials indicate stable levels of flow. Areas of note are roads connecting into the precinct. For example, Federation Drive in the north-west of the precinct is over capacity in the AM peak direction, and in both directions in PM peak. Additionally, the Leakes Road south-east bound on-ramp for the Western Highway experiences high levels of V/C, while the same is true for the PM peak on Mt Cottrel Road crossing the Western Freeway into Melton East. A similar dynamic exists for westbound traffic on Beattys Road in the PM peak.

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Figure 56 AM peak V/C ratio | Base case

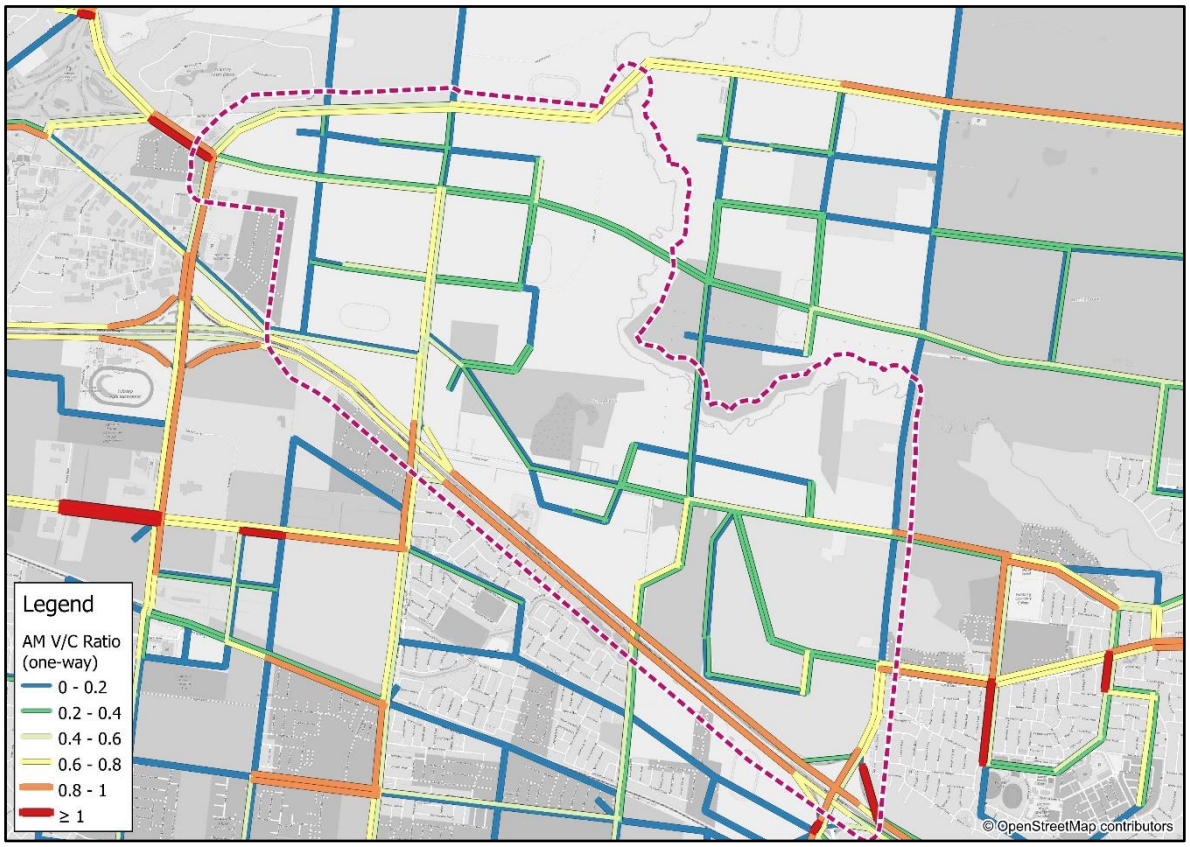

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Figure 57 PM peak V/C ratio | Base Case

Scenario 1

The truncation of Paynes Road in Scenario 1 does not dramatically impact conditions on the network. V/C ratios increase slightly on both Mt Cottrel Road (by approximately 0.03-0.05) and Leakes Road (by approximately 0.04-0.07), though it is only visible on the latter in Figure 58 and Figure 59 below. These increases largely do not feed through to the Western Freeway interchanges for both arterials, with AM peak direction V/C increasing by 0.02 and 0.01 for the Mt Cottrel and Leakes Road overpasses respectively, and 0.01 for both in the PM peak. Impacts on the Melton Highway are similarly minimal, ranging from increases of 0.01-0.02 in most sections, if any change.

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Figure 58 AM peak V/C ratio | Scenario 1

Figure 59 PM peak V/C ratio | Scenario 1

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Scenario 2

The lane reduction in scenario two by definition decreases the carrying capacity of the roads involved, and as such will increase V/C ratios without a corresponding redistribution of vehicles. Figure 60 and 61 below show the V/C ratios for the AM and PM peaks respectively. In the AM peak, almost all sections of Taylors Road between Mt Cottrel and Leakes Road see a moderate increase in V/C, with slight increases in the southern portion of Leakes Road and north of Mt Cottrel Road themselves.

Figure 60 AM peak V/C ratio | Scenario 2

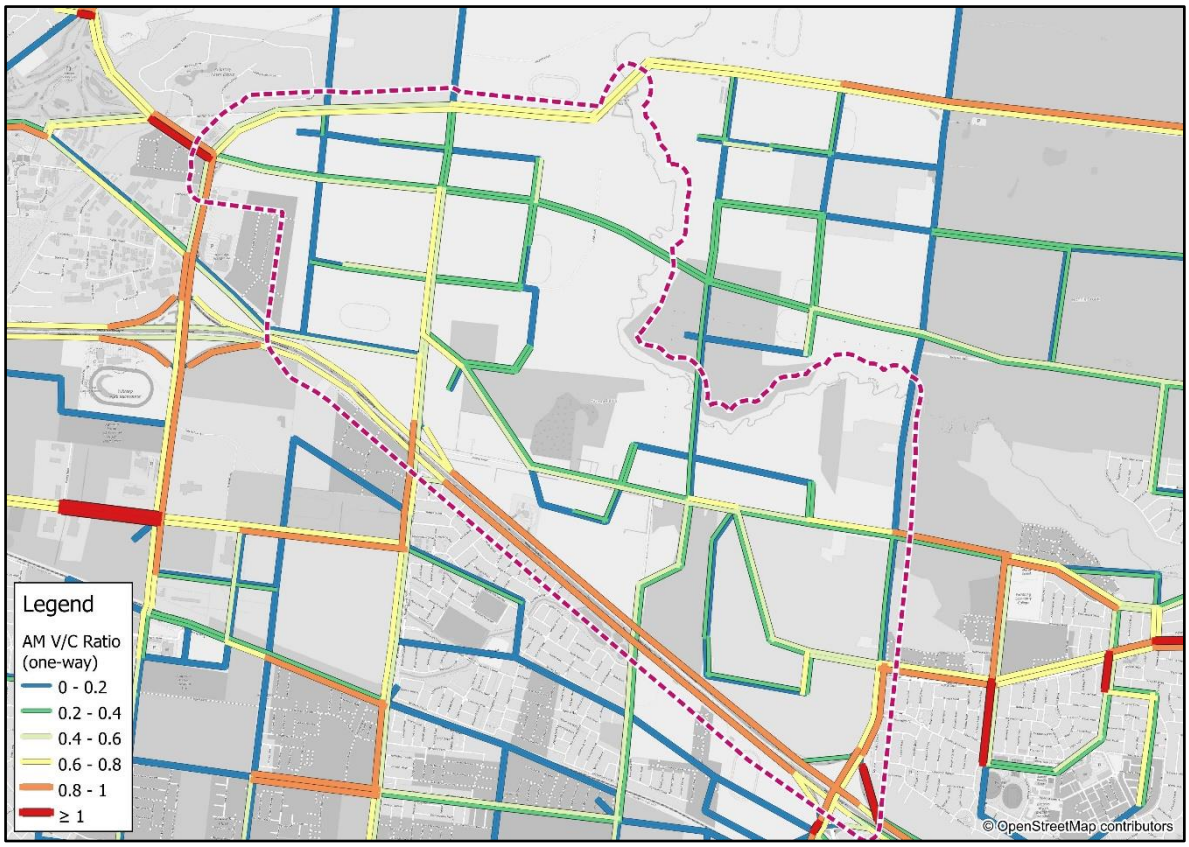

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Figure 61 PM peak V/C ratio | Scenario 2

Scenario 3

The network performance in scenario 3 largely aligns with the Base case. Conditions in the realigned segment of Taylors Road are largely similar, with portions of the connector roads of Taylors Road seeing a slight increase in V/C.

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Figure 62 AM peak V/C ratio | Scenario 3

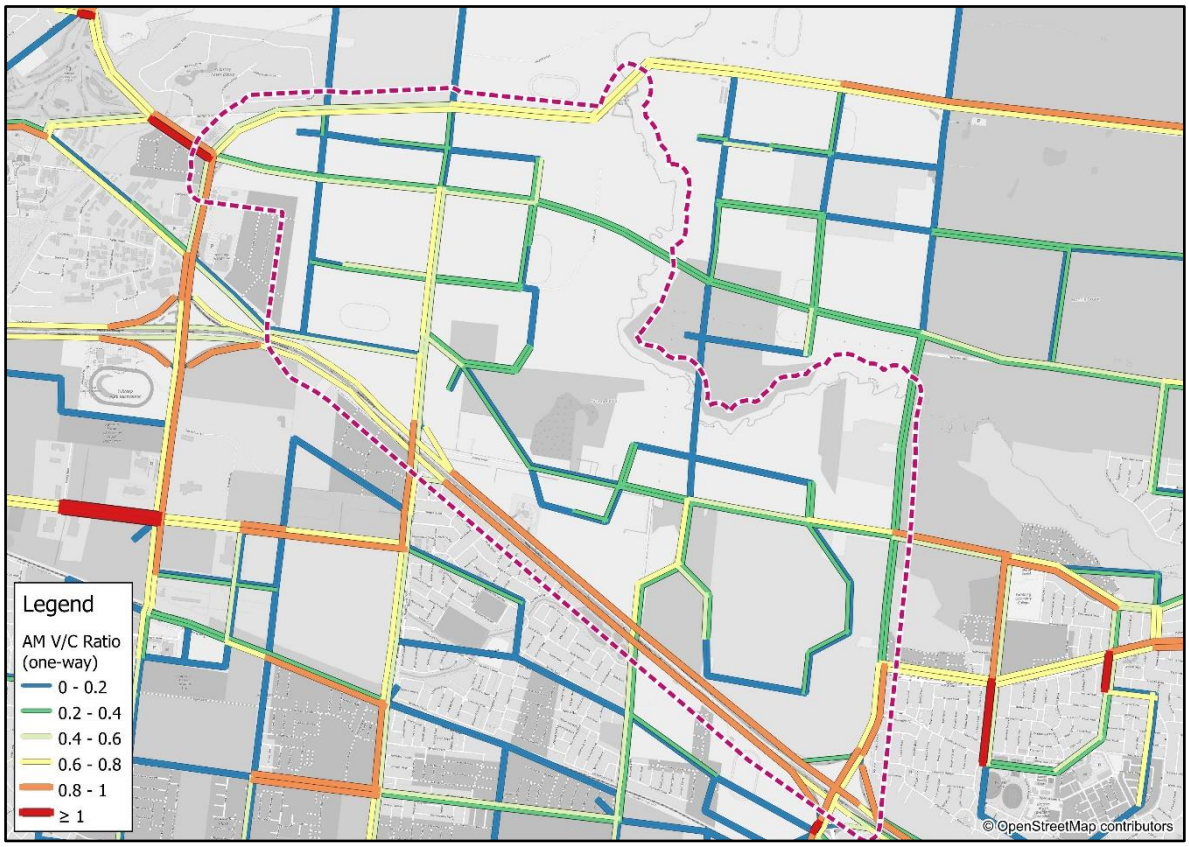
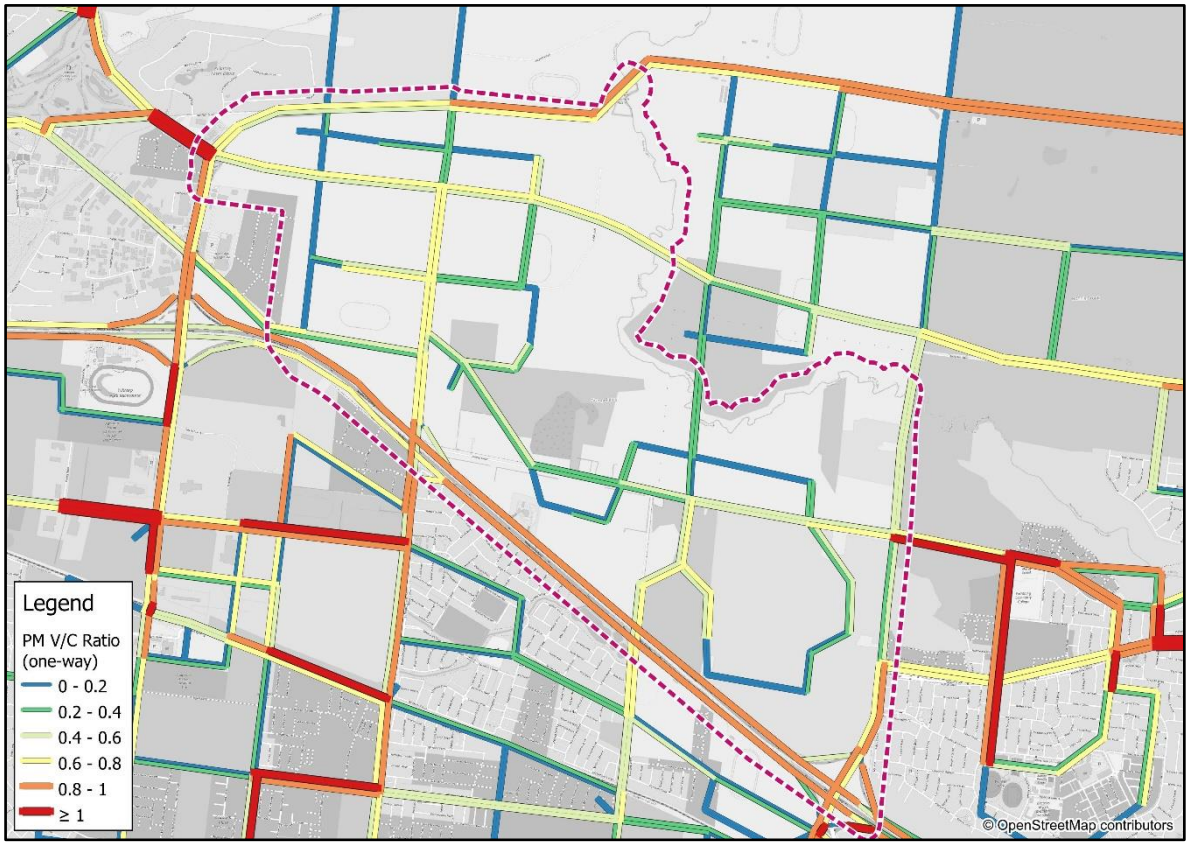


Figure 63 PM peak V/C ratio | Scenario 3



5.5.2 Level of Service

Following the analysis in the previous section, it can be useful to provide some classification of the main arterial roads in the study area. Using values outlined Austroads' Guide to Traffic Management[10] for urban arterials with interrupted flow, we can classify sections of road based on the travel speed calculated by VITM as a percentage of the free flow speed. Table 8 details the criteria for classifying LOS by this approach.

Table 8 Level of Service Classifications

LOS	Description	Travel speed as a % of free flow speed
A	Free flow operating speeds, manoeuvring is unimpeded.	80%-100%
B	Manoeuvring is slightly impeded, delay at intersections is insignificant.	67%-80%
C	Stable operation, longer queues at intersections may limit travel speeds.	50%-67%
D	Less stable operation, increases in flow can lead to large delays/	40%-50%
E	Unstable operation and significant delay.	30%-40%
F	Volume exceeds road capacity	0%-30%, or V/C ≥1.0

Table 9 details the LOS classification of each arterial – in addition to Melton Hwy for context – based on the above approach, along with the percentage free-flow speed at each section. All arterials in the corridor show no sign of poor LOS, regardless of scenario. The only arterial other than Melton Highway that comes close to being classified as 'B' is Mt Cottrel Road, which has travel speed at just over 81% of free flow speed in scenario 1.

Table 9 LOS classification of study area arterials

Road	Direction	Base		Scenario 1		Scenario 2		Scenario 3	
		AM	PM	AM	PM	AM	PM	AM	PM
Melton Hwy	East	A (84%)	B (73%)	A (83%)	B (71%)	A (84%)	B (73%)	A (84%)	B (73%)
	West	A (81%)	A (81%)	A (80%)	B (79%)	A (81%)	A (81%)	A (80%)	A (81%)
Tarletons	East	A (97%)	A (92%)	A (97%)	A (90%)	A (97%)	A (91%)	A (98%)	A (93%)
	West	A (97%)	A (95%)	A (97%)	A (94%)	A (97%)	A (95%)	A (97%)	A (96%)
Taylors	East	A (98%)	A (95%)	A (98%)	A (94%)	A (96%)	A (90%)	A (98%)	A (95%)
	West	A (96%)	A (96%)	A (96%)	A (96%)	A (93%)	A (94%)	A (97%)	A (96%)
Mt Cottrel	North	A (85%)	A (86%)	A (81%)	A (81%)	A (86%)	A (85%)	A (87%)	A (86%)
	South	A (94%)	A (86%)	A (93%)	A (81%)	A (94%)	A (86%)	A (94%)	A (86%)
Paynes	North	A (98%)	A (97%)	N/A	N/A	A (98%)	A (97%)	A (99%)	A (98%)
	South	A (99%)	A (97%)	N/A	N/A	A (99%)	A (97%)	A (99%)	A (99%)
Leakes	North	A (99%)	A (99%)	A (99%)	A (98%)	A (99%)	A (98%)	A (97%)	A (96%)
	South	A (99%)	A (98%)	A (99%)	A (97%)	A (99%)	A (97%)	A (98%)	A (94%)

[10] Guide to Traffic Management Part III (Austroads, 2020)

6.0 Conclusion

This report has provided an overview of the strategic modelling undertaken to support the integrated transport assessment and broader precinct structure planning process for VPA. The transport modelling in this report has been undertaken using the VITM, which relies on a range of Reference Case assumptions for the future network, public transport and land use. Using draft place-based planning and land use assumptions provided by VPA, the modelling study area was refined to more closely align with expected conditions in the future. Regardless, future events are uncertain, and any modelling or projection exercises are reliant on the assumptions that underpin them.

Multiple scenarios have been tested to understand the underlying nature of future demand in the precinct, including the resolve of key planned arterial corridors in the face of future traffic. From the modelling results and select link exercise some conclusions can be drawn:

First, the nature of traffic on Taylors Road appears more locally-driven and less strategic than Tarletons Road. This is not to mean that Tarletons Road carries more traffic, but rather a comment on the type of function it appears to serve. This can be seen from the distribution of traffic in select links for each corridor. It is likely that Taylors Road's proximity to the Western Freeway plays a part in this dynamic: traffic heading west on Taylors Road can travel a short distance south on Leakes Road and take advantage of a higher prevailing speed and more direct access to Melton Proper. Meanwhile, heading north to Melton Highway from Tarletons Road to travel west leads to the same access point of Federation Drive.

Second, there does not appear to be strong notable challenges regarding public transport accessibility, at least as regards travel time, as indicated in section 5.3. The success of the precinct's public transport network will likely rest on service frequency.

Lastly, in all scenarios tested, the precinct did not face issues relating to oversaturation. For example, section 5.5.2 shows that key arterials in the precinct show little signs of poor level of service in the future, with little variance between scenarios. Similarly, plots of volume/capacity indicate that – other than the Western Freeway and Melton Highway – the transport network in each scenario does not face issues of high congestion, with essentially no elements of the precinct's network exceeding V/C values of 0.8.

Instead, key pinch points identified are roads leading into the Melton East: Beattys Road, Federation Drive and Mt Cottrel Road all saw high volume/capacity ratios leading into the precinct in most scenarios. A low level of congestion across the precinct in each modelled scenario suggests that the ultimate network configuration is less constrained by fundamental network capacity and may be driven more by other considerations such as cost, amenity, or design considerations.

Appendix A

Land use assumptions

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Appendix A Land use assumptions

This appendix provides the demographic land use assumptions used for this study. A zone number reference map has been provided for convenience.

Figure 64 Zone reference

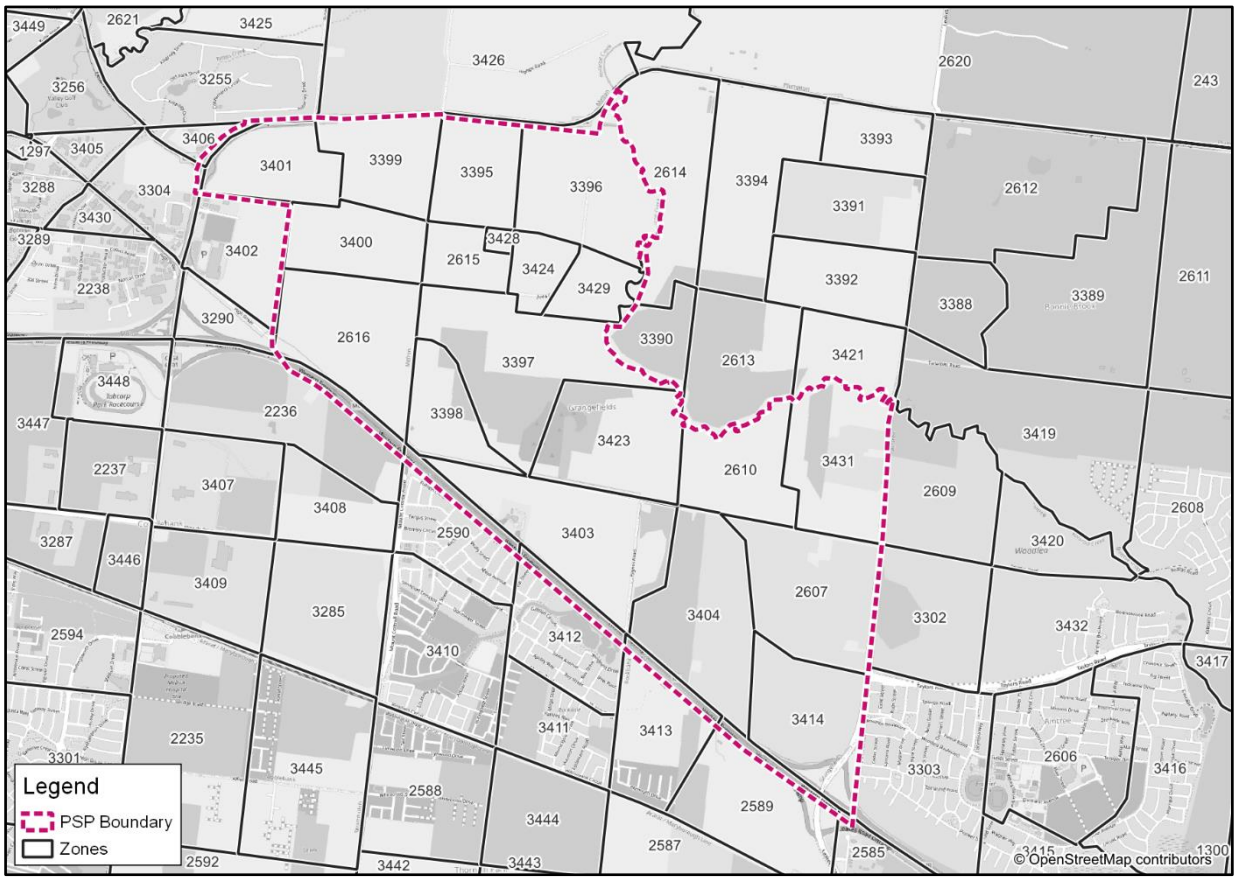

Table 10 PSP Land use assumptions (2051)

Zone	Population	Total Employment	Retail Employment	Primary Enrolments	Secondary Enrolments	Tertiary Enrolments
2607	938	0	0	0	0	0
2610	1,379	0	0	0	0	0
2615	1,138	126	101	0	0	0
2616	2,859	48	0	525	0	0
3395	1,918	30	0	525	0	0
3396	1,948	0	0	0	0	0
3397	2,283	48	0	525	0	0
3398	1,565	0	0	0	0	0
3399	2,168	0	0	0	0	0
3400	1,956	134	134	0	0	0
3401	731	577	0	0	0	0
3403	2,640	109	0	0	0	0

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Zone	Population	Total Employment	Retail Employment	Primary Enrolments	Secondary Enrolments	Tertiary Enrolments
3404	3,619	0	0	0	0	0
3414	2,317	182	134	525	0	0
3422	0	0	0	0	0	0
3423	1,384	421	290	525	0	0
3424	294	37	0	0	1,200	0
3428	158	417	334	0	0	0
3429	581	0	0	0	0	0
3431	613	30	0	525	0	0

Appendix B

Labelled volume plots

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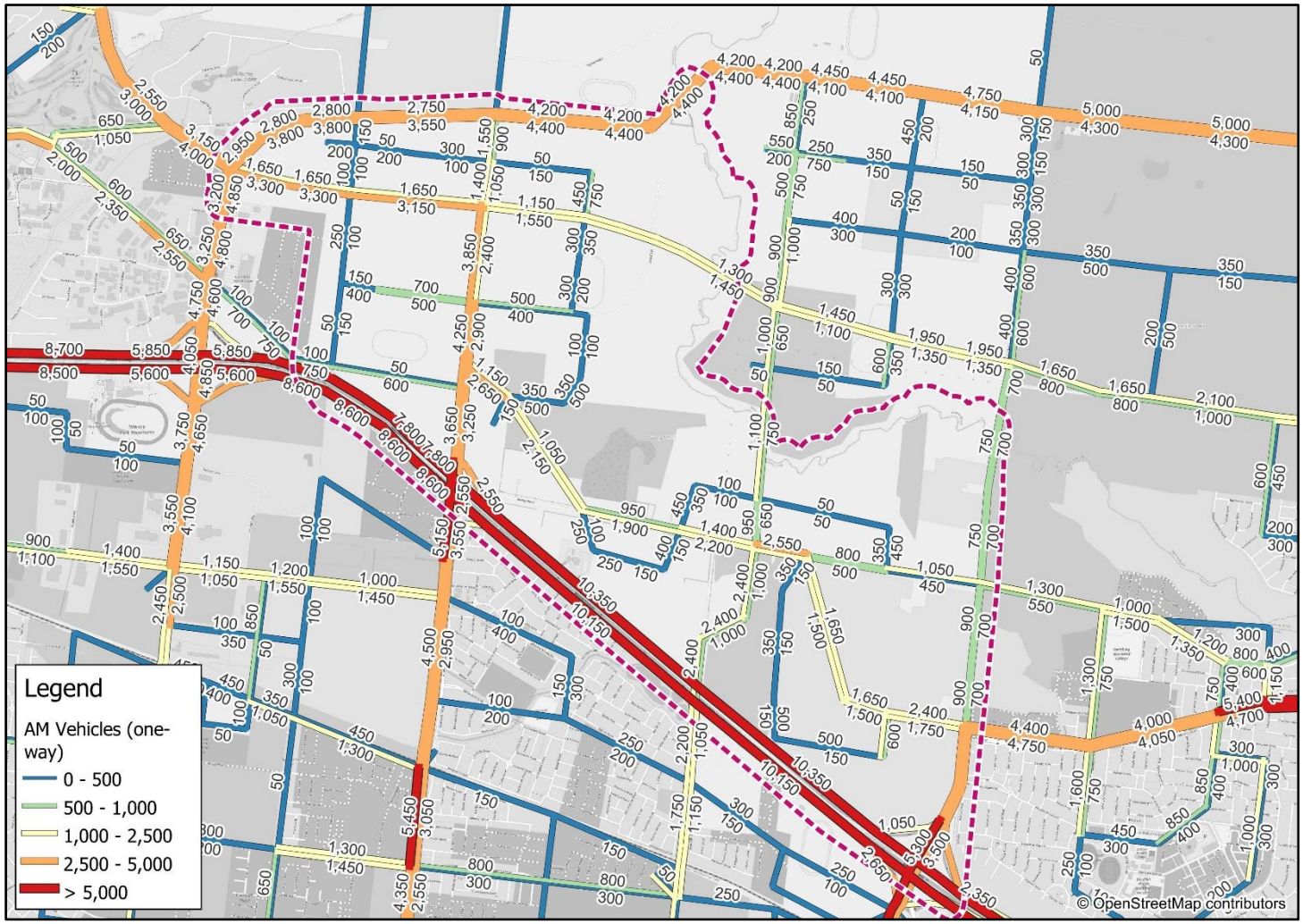
Appendix B Labelled volume plots

This appendix provides additional volume plots with rounded labels for additional detail. Plots are provided for the AM and PM peaks, in addition to daily volumes. Please note that peak period volumes are provided in ‘full time period’ values – that being 7-9am for the AM peak (2 hours) and 4-7pm for the PM peak (3 hours).

D R A F T

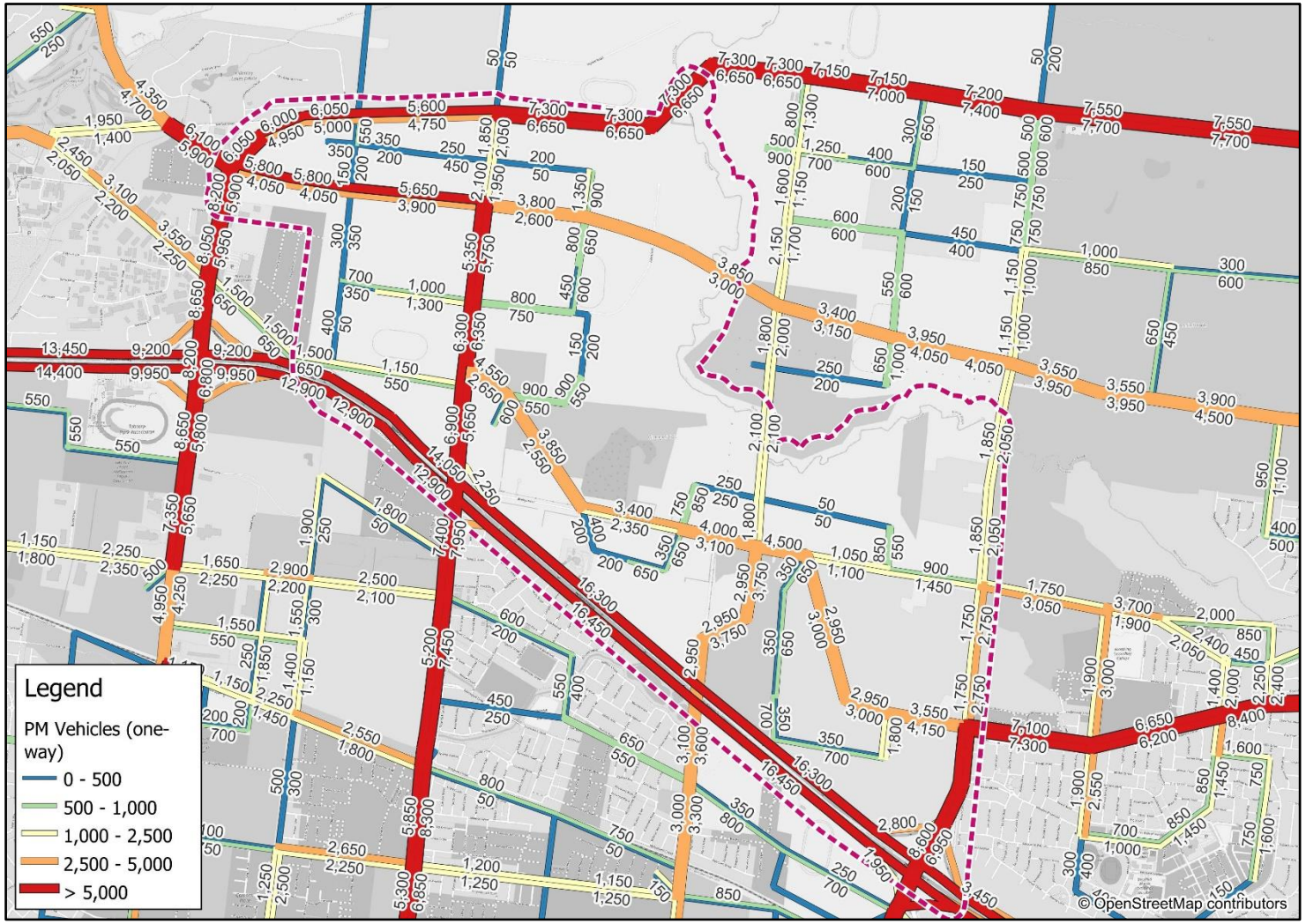
Base case

Figure 65 Labelled AM vehicle volumes | Base case



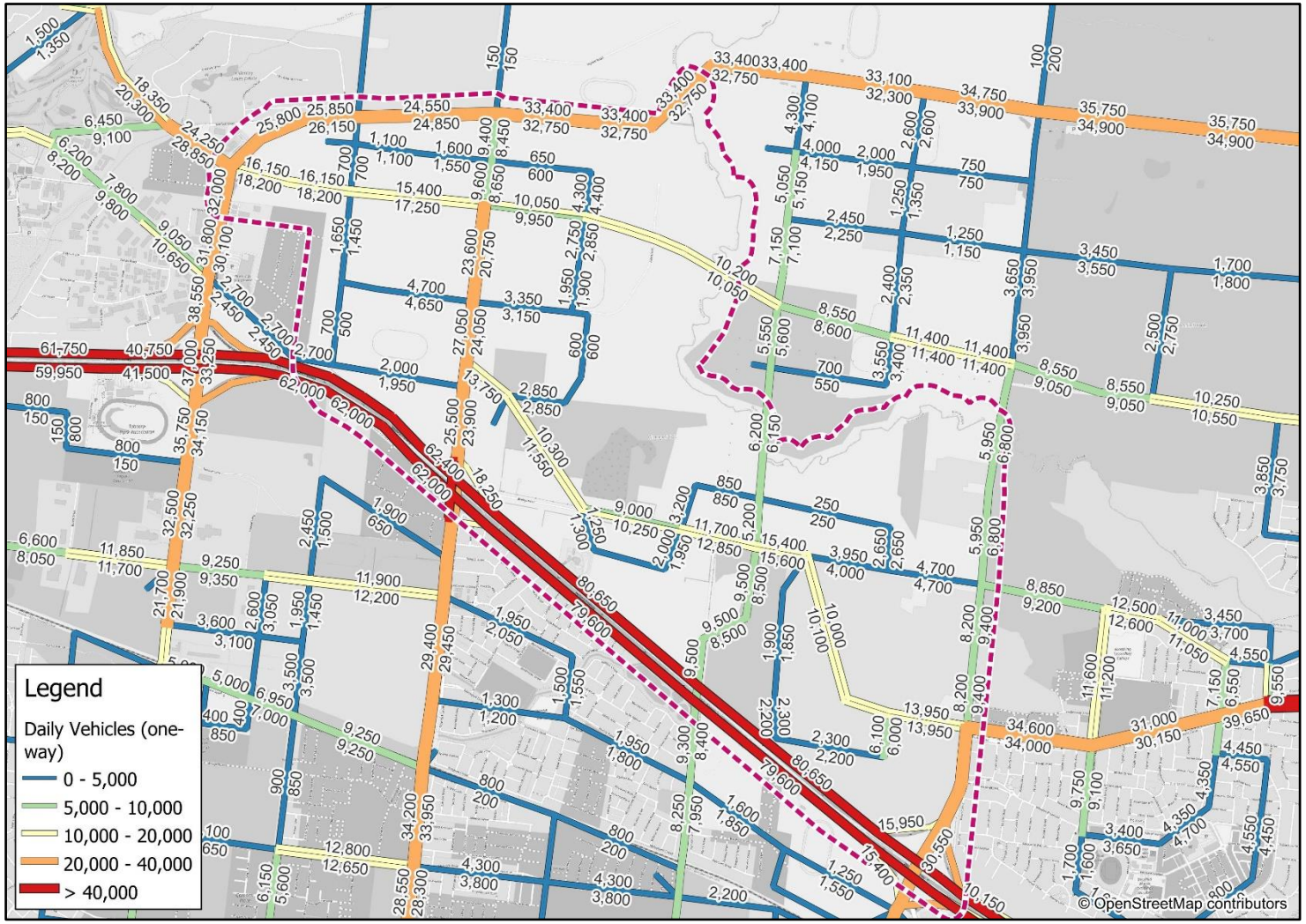
D R A F T

Figure 66 Labelled PM vehicle volumes | Base case



D R A F T

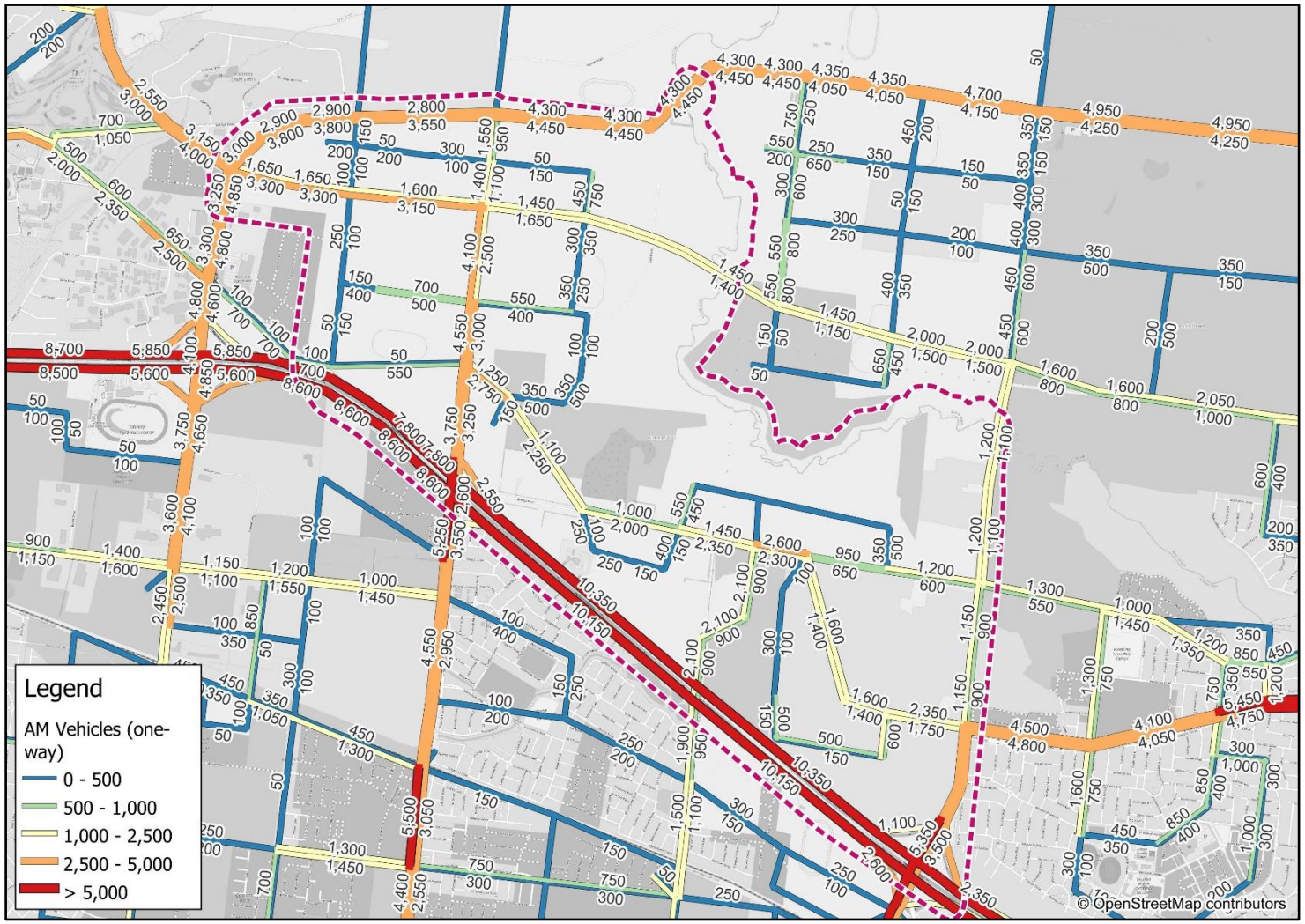
Figure 67 Labelled daily vehicle volumes | Base case



D R A F T

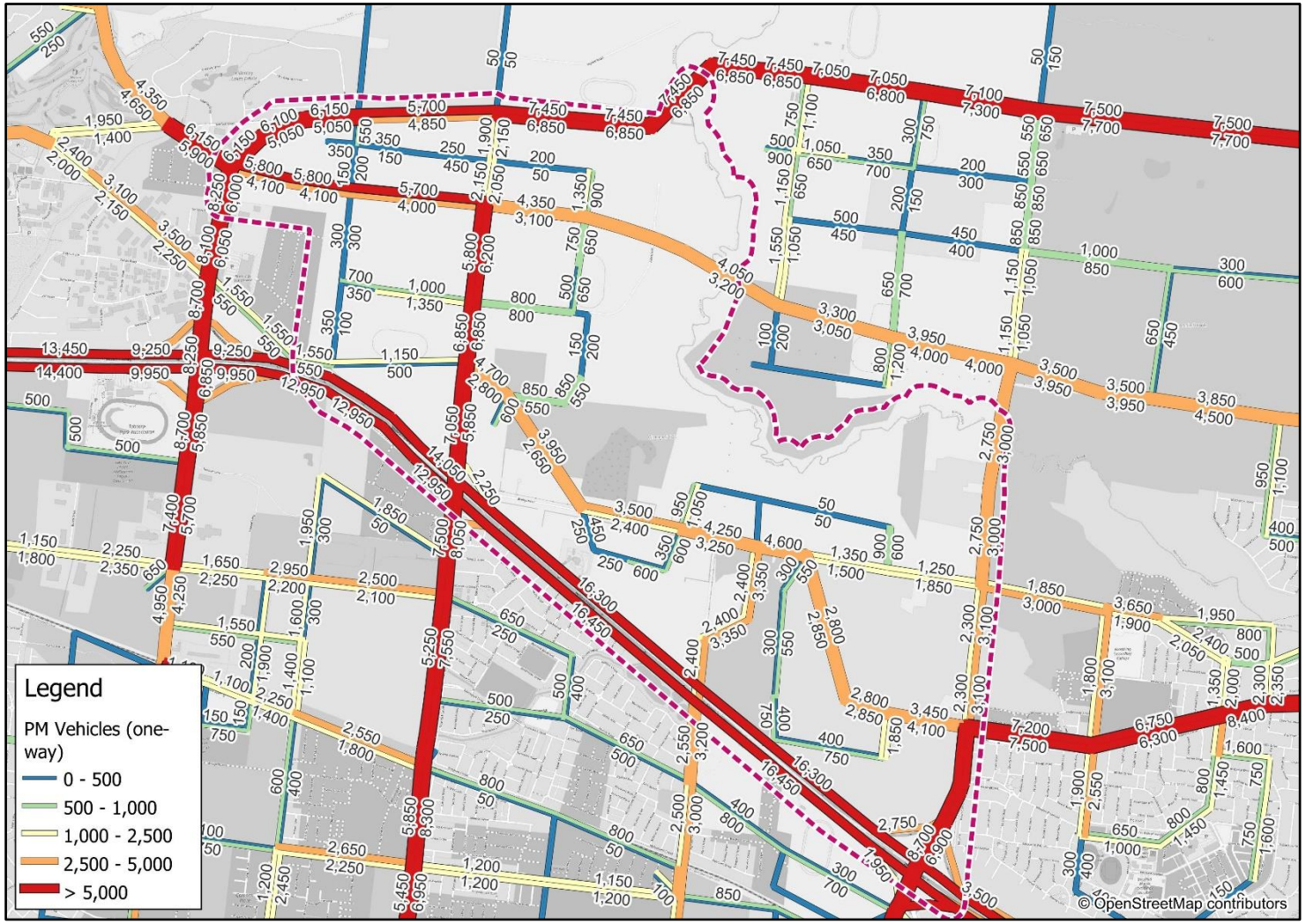
Scenario 1

Figure 68 Labelled AM vehicle volumes | Scenario 1



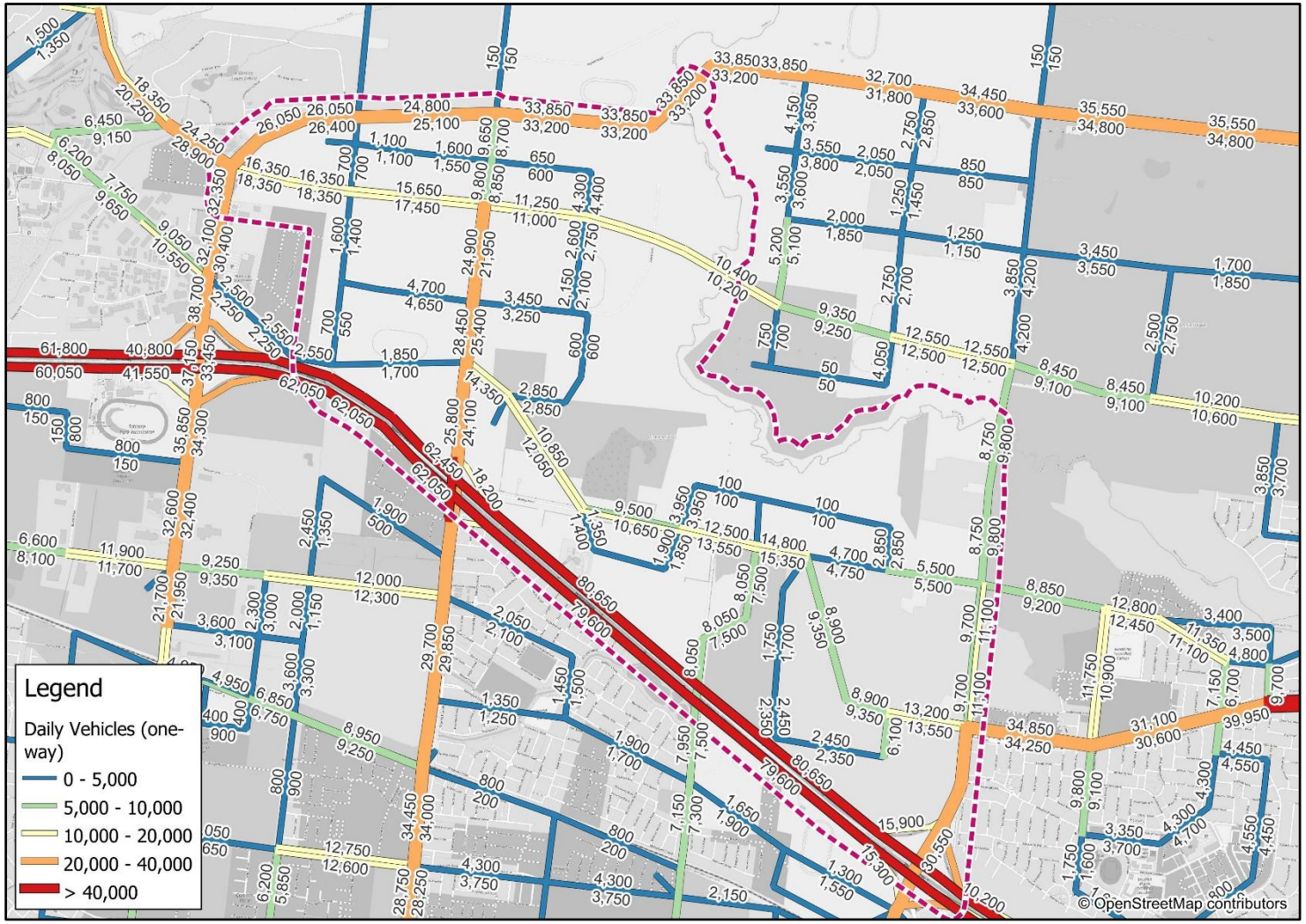
D R A F T

Figure 69 Labelled PM vehicle volumes | Scenario 1



D R A F T

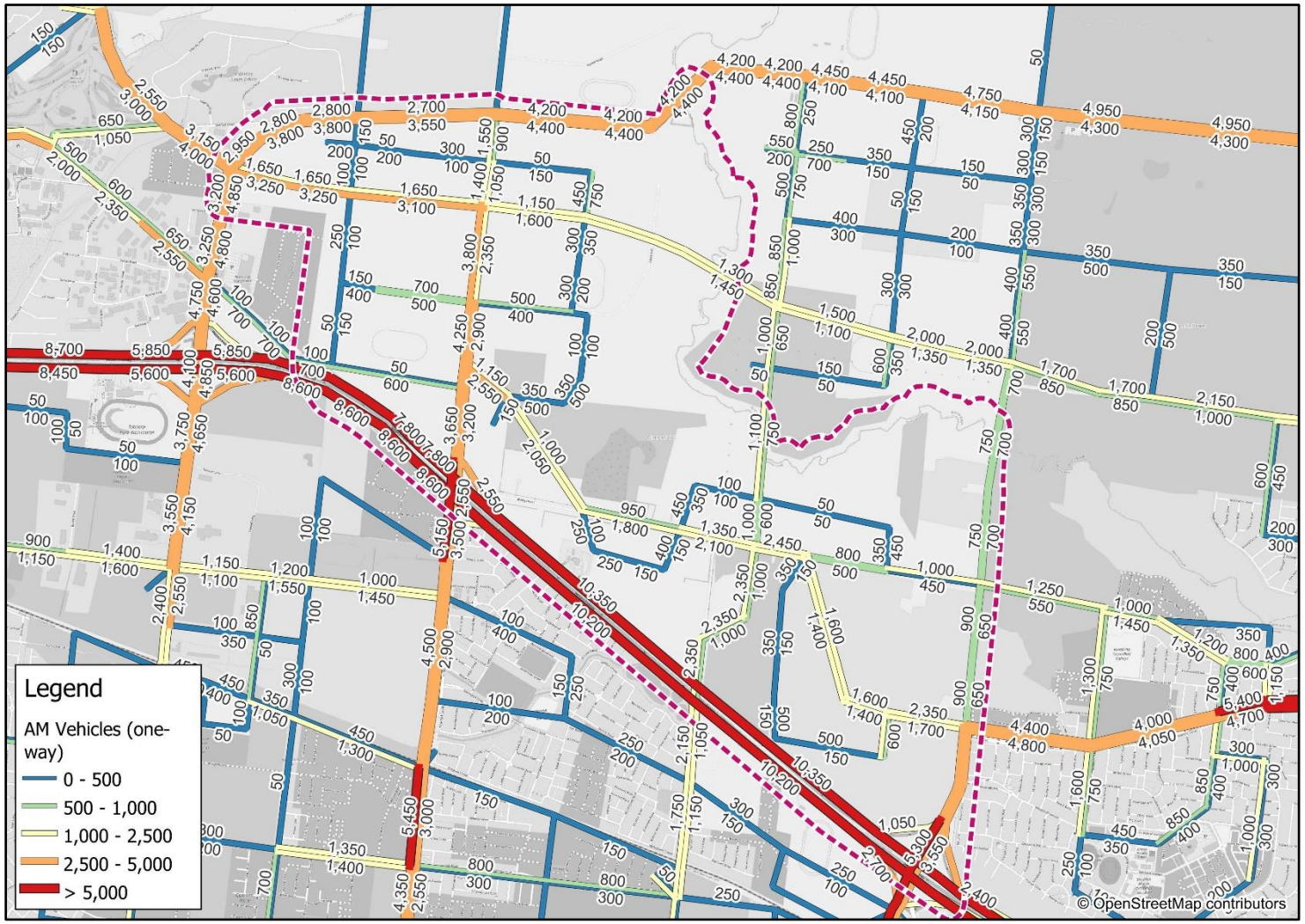
Figure 70 Labelled daily vehicle volumes | Scenario 1



D R A F T

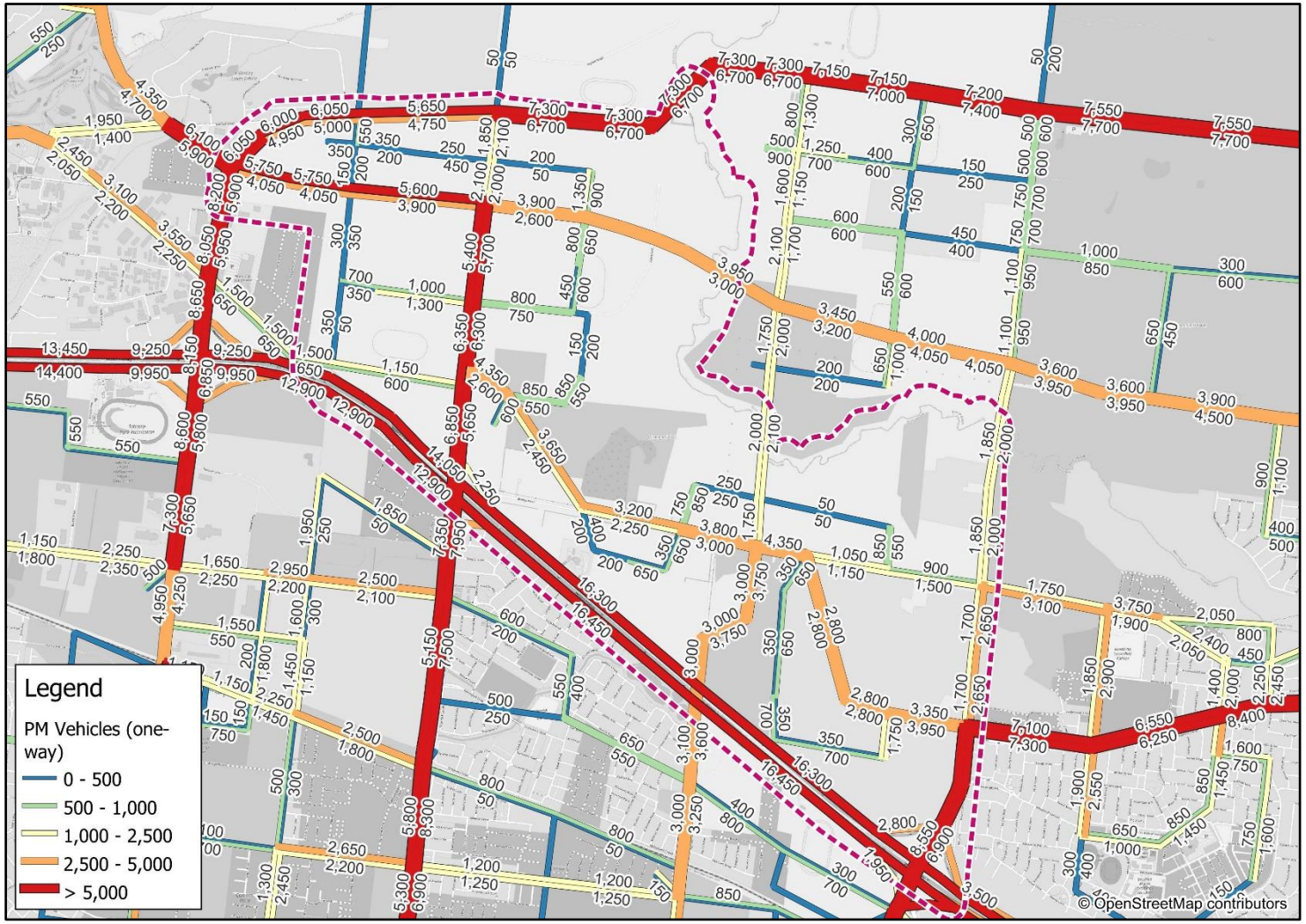
Scenario 2

Figure 71 Labelled AM vehicle volumes | Scenario 2



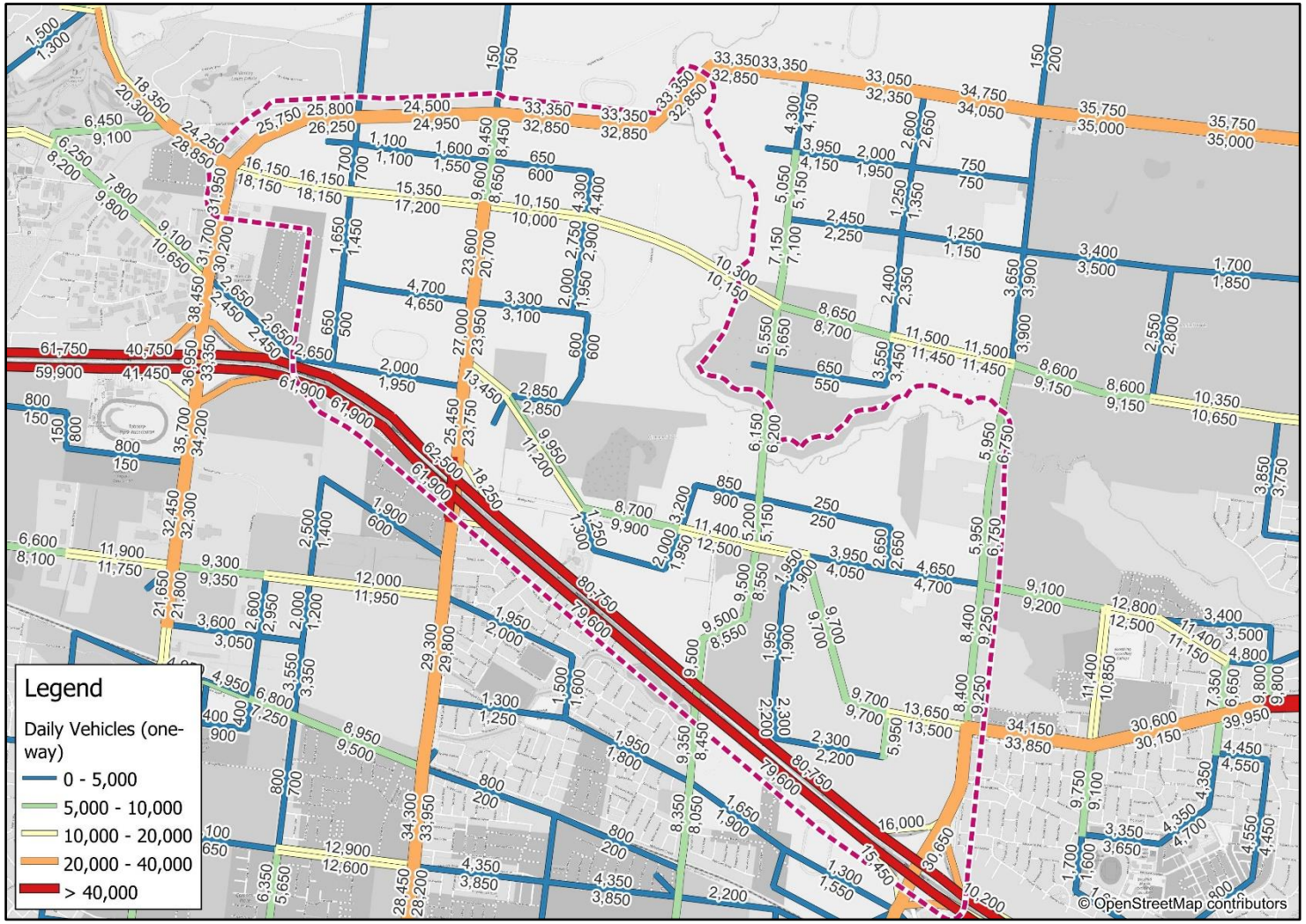
D R A F T

Figure 72 Labelled PM vehicle volumes | Scenario 2



D R A F T

Figure 73 Labelled daily vehicle volumes | Scenario 2



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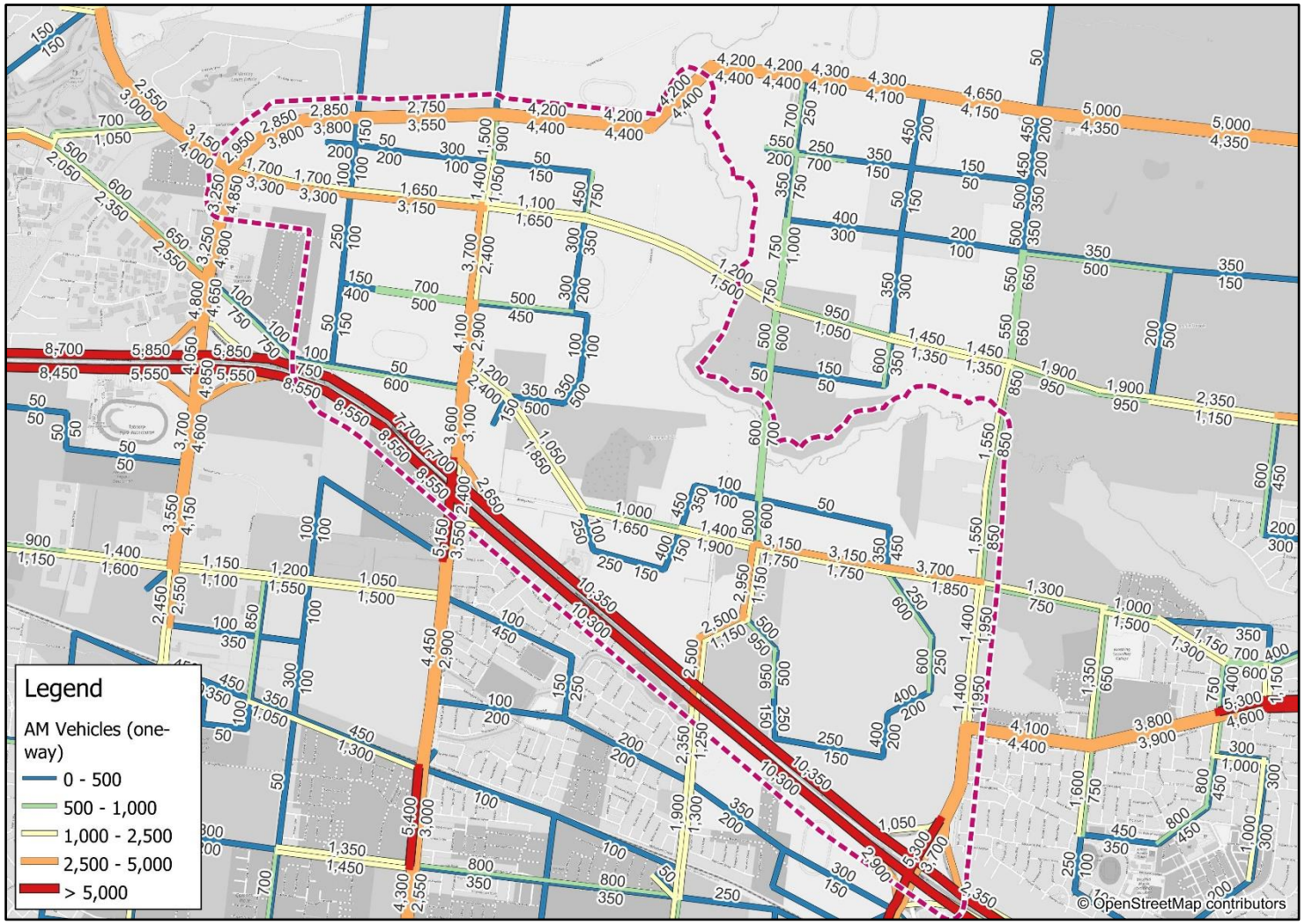
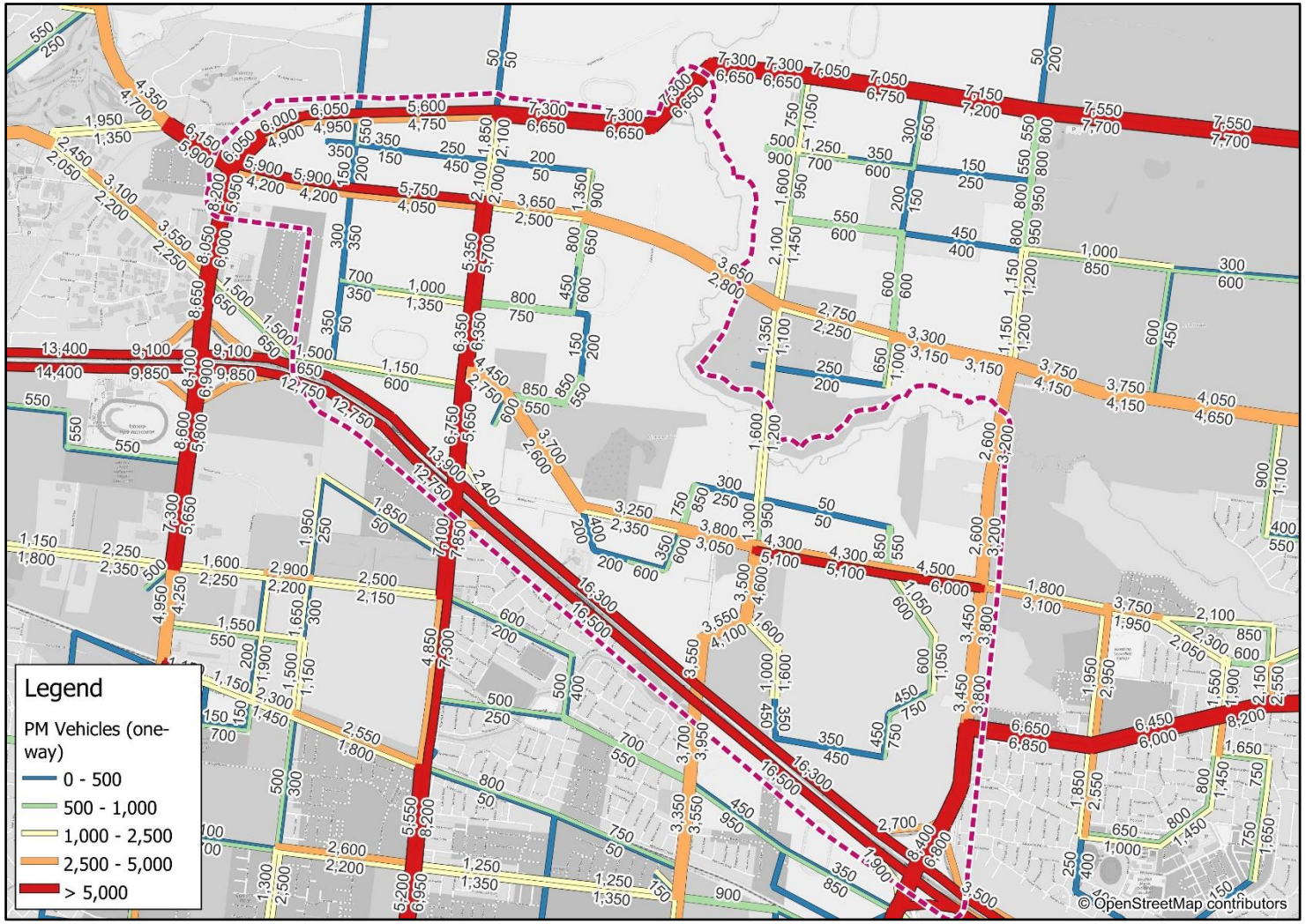
Scenario 3

Figure 74 Labelled AM vehicle volumes | Scenario 3



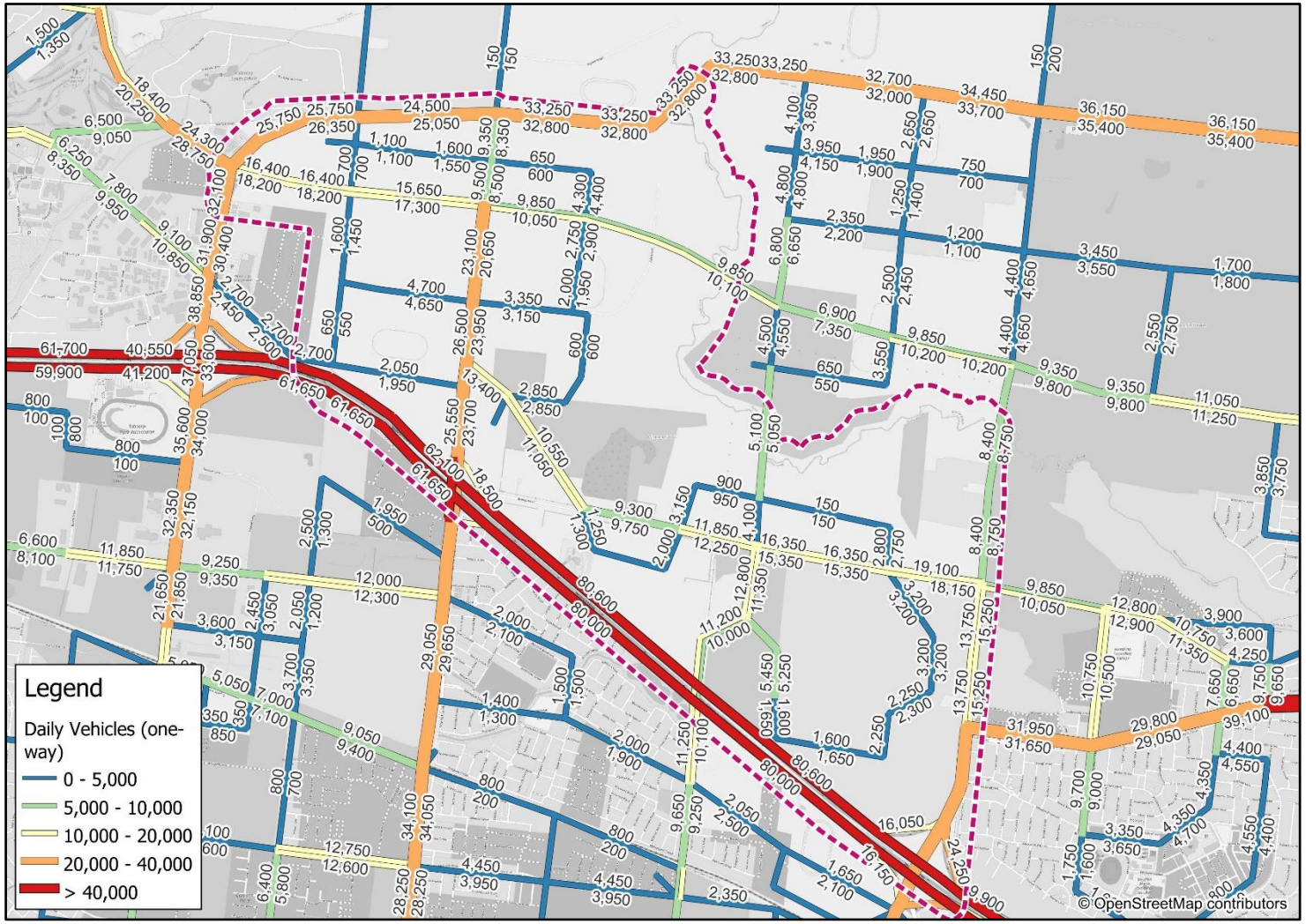
D R A F T

Figure 75 Labelled PM vehicle volumes | Scenario 3



D R A F T

Figure 76 Labelled daily vehicle volumes | Scenario 3



Appendix C

Select link plots

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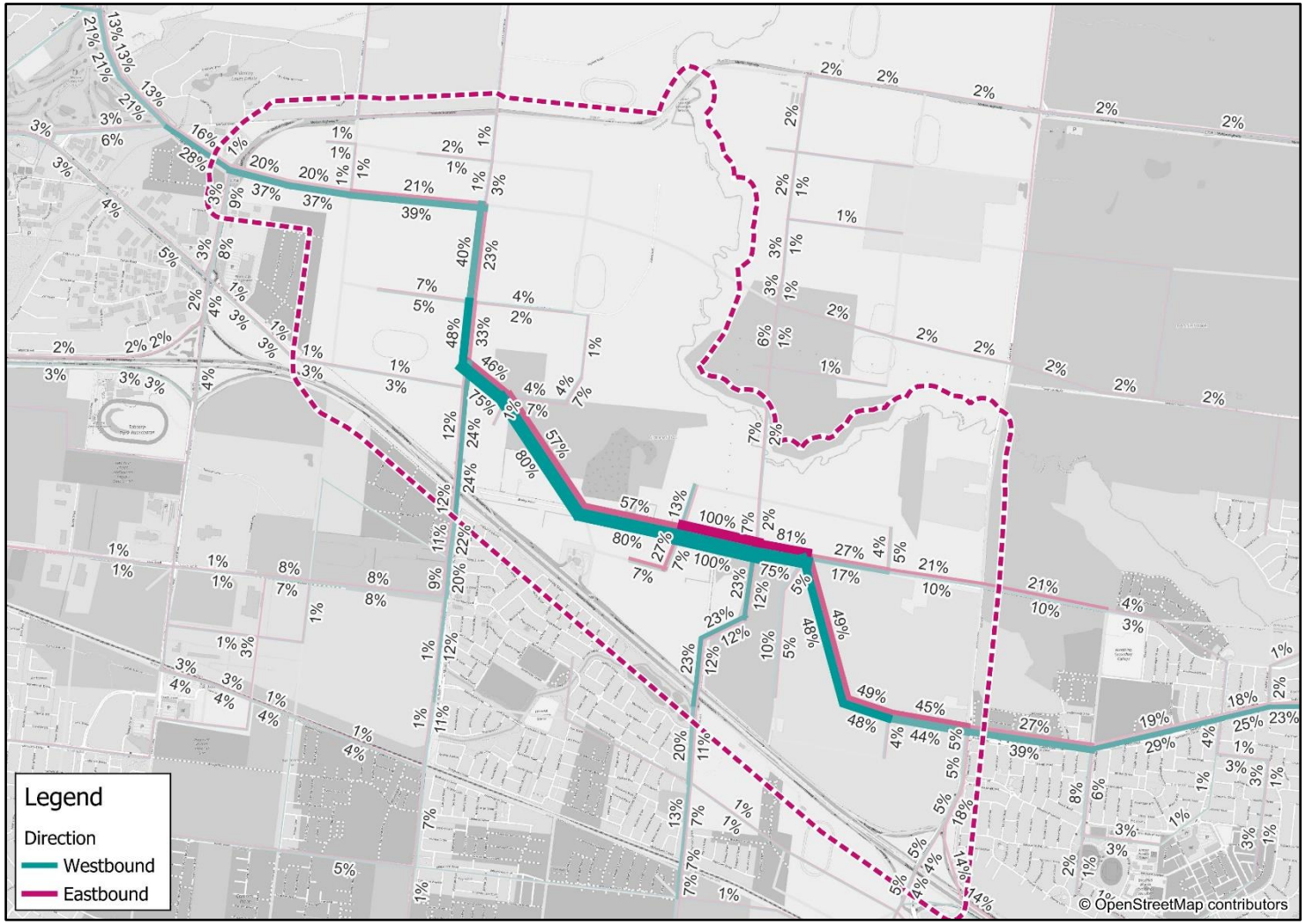
Appendix C Select link plots

This appendix contains labelled versions of select link plots displayed in section 5.4. The labels provided are in percentages, whereby the number at a given link represents the proportion of traffic at that link as a percentage of the traffic that passed through the select link in the same direction.

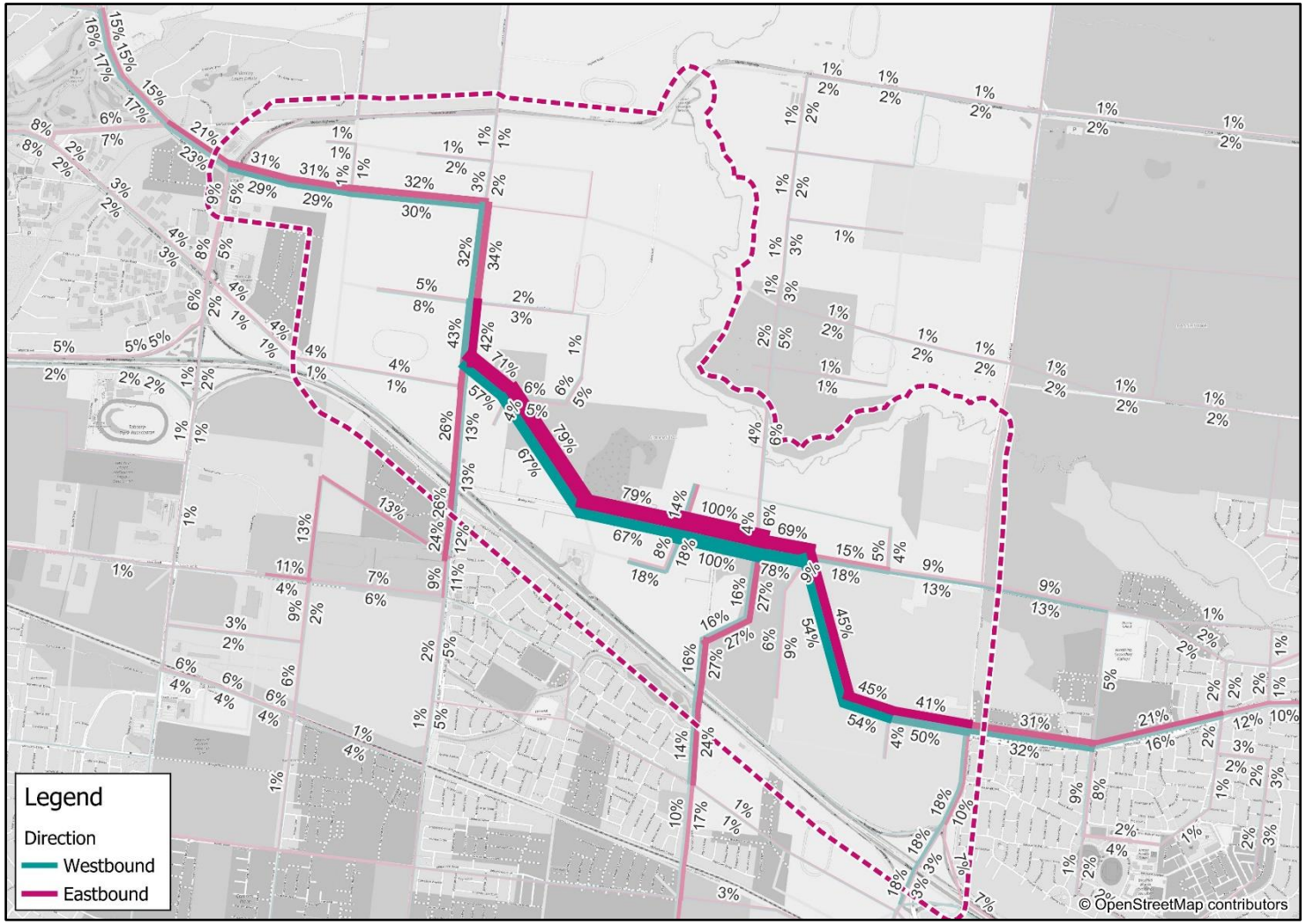
D R A F T

Figure 77 Taylors Road west of Paynes Road select link (AM peak) | Base Case



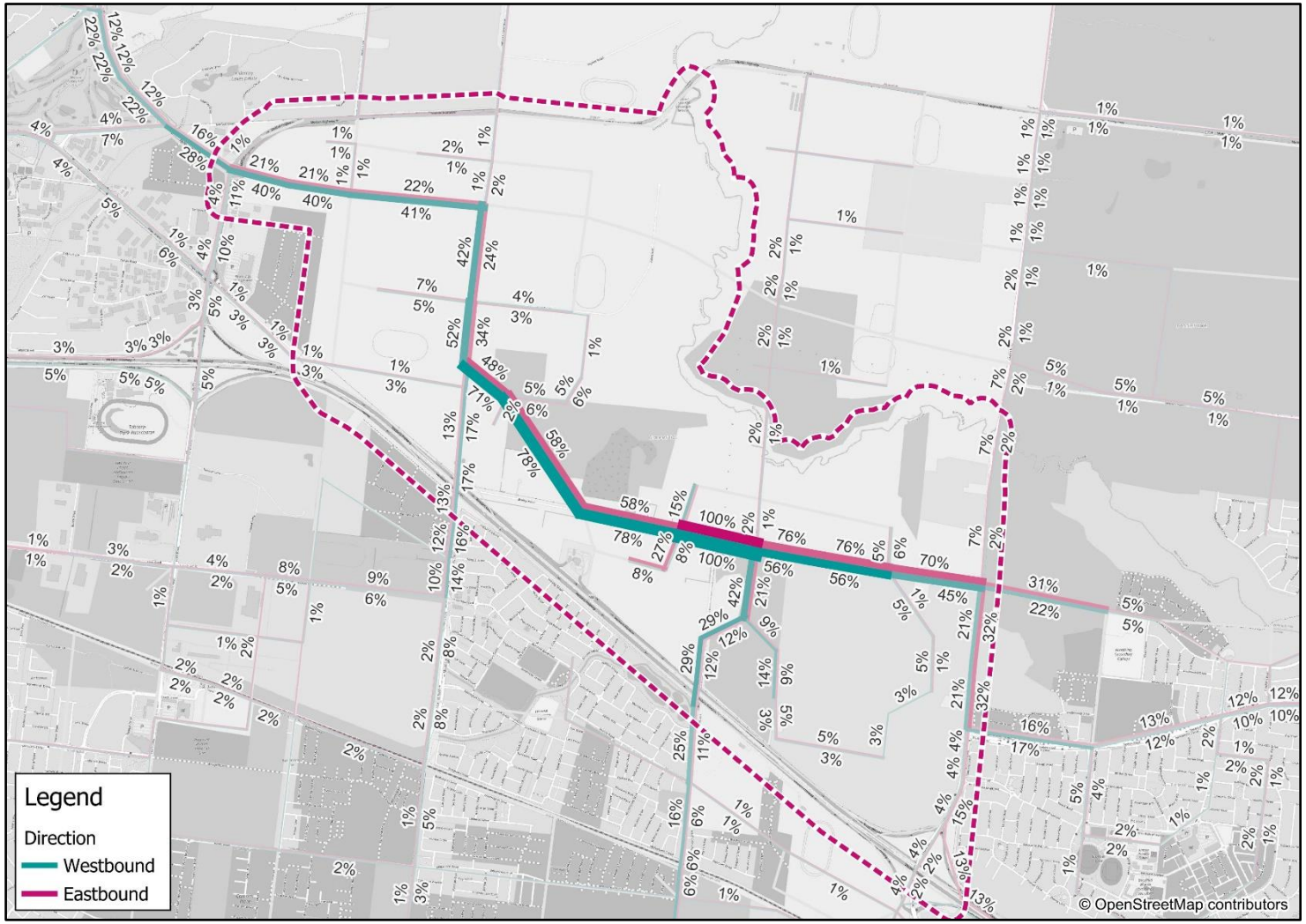
D R A F T

Figure 78 Taylors Road west of Paynes Road select link (PM peak) | Base Case



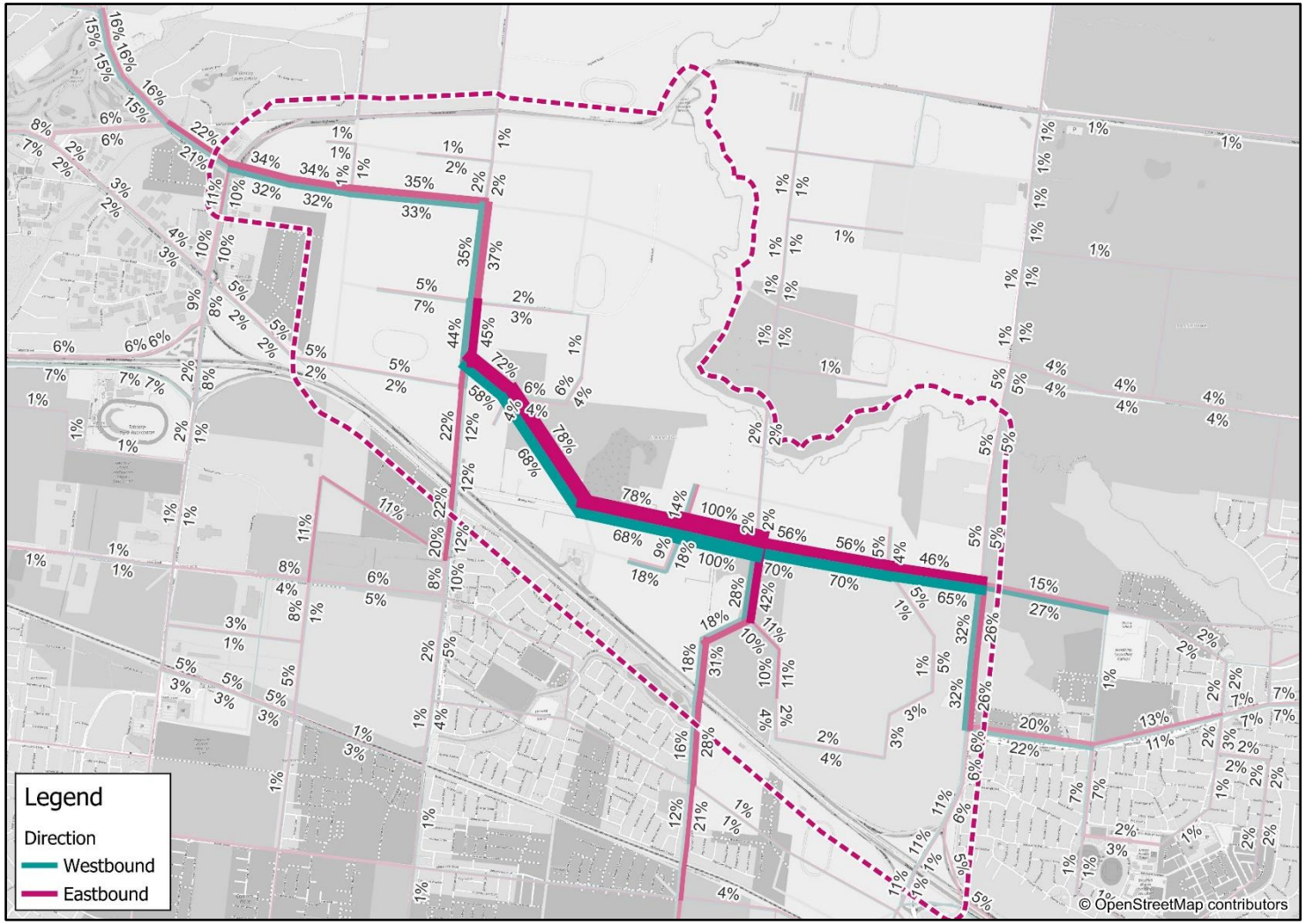
D R A F T

Figure 79 Taylors Road west of Paynes Road select link (AM peak) | Scenario 3



D R A F T

Figure 80 Taylors Road west of Paynes Road select link (PM peak) | Scenario 3



D R A F T

Figure 81 Taylors Road east of Leakes Road select link (AM peak) | Base Case

D R A F T

Figure 82 Taylors Road east of Leakes Road select link (PM peak) | Base Case

D R A F T

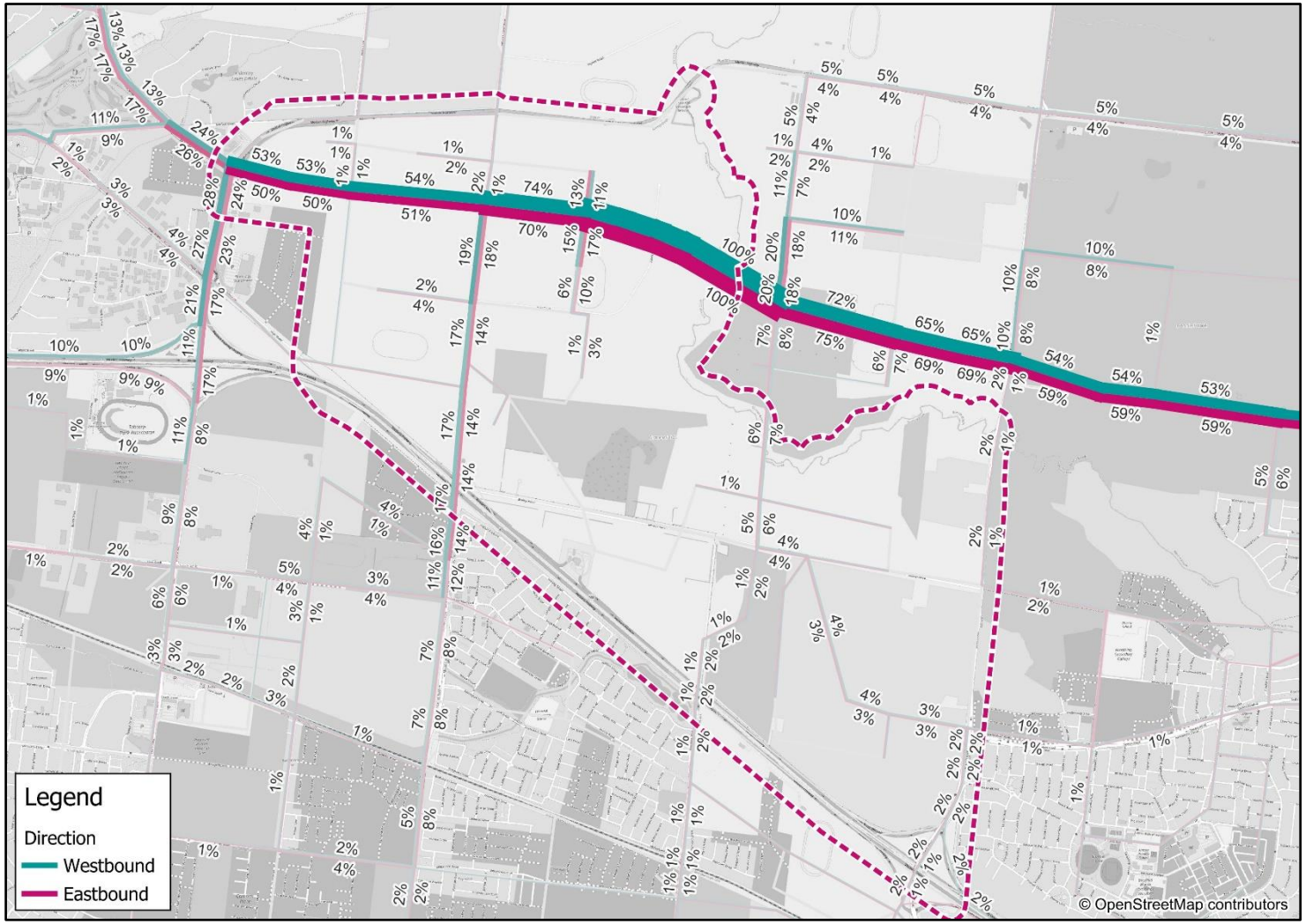
Figure 83 Taylors Road east of Leakes Road select link (AM peak) | Scenario 3

D R A F T

Figure 84 Taylors Road east of Leakes Road select link (PM peak) | Scenario 3

D R A F T

Figure 85 Tarletons Road Bridge crossing select link (PM peak) | Base Case



D R A F T

Figure 86 Paynes Road over Western Freeway select link (PM peak) | Base Case

D R A F T

Figure 87 Leakes Road select link (PM peak) | Base case

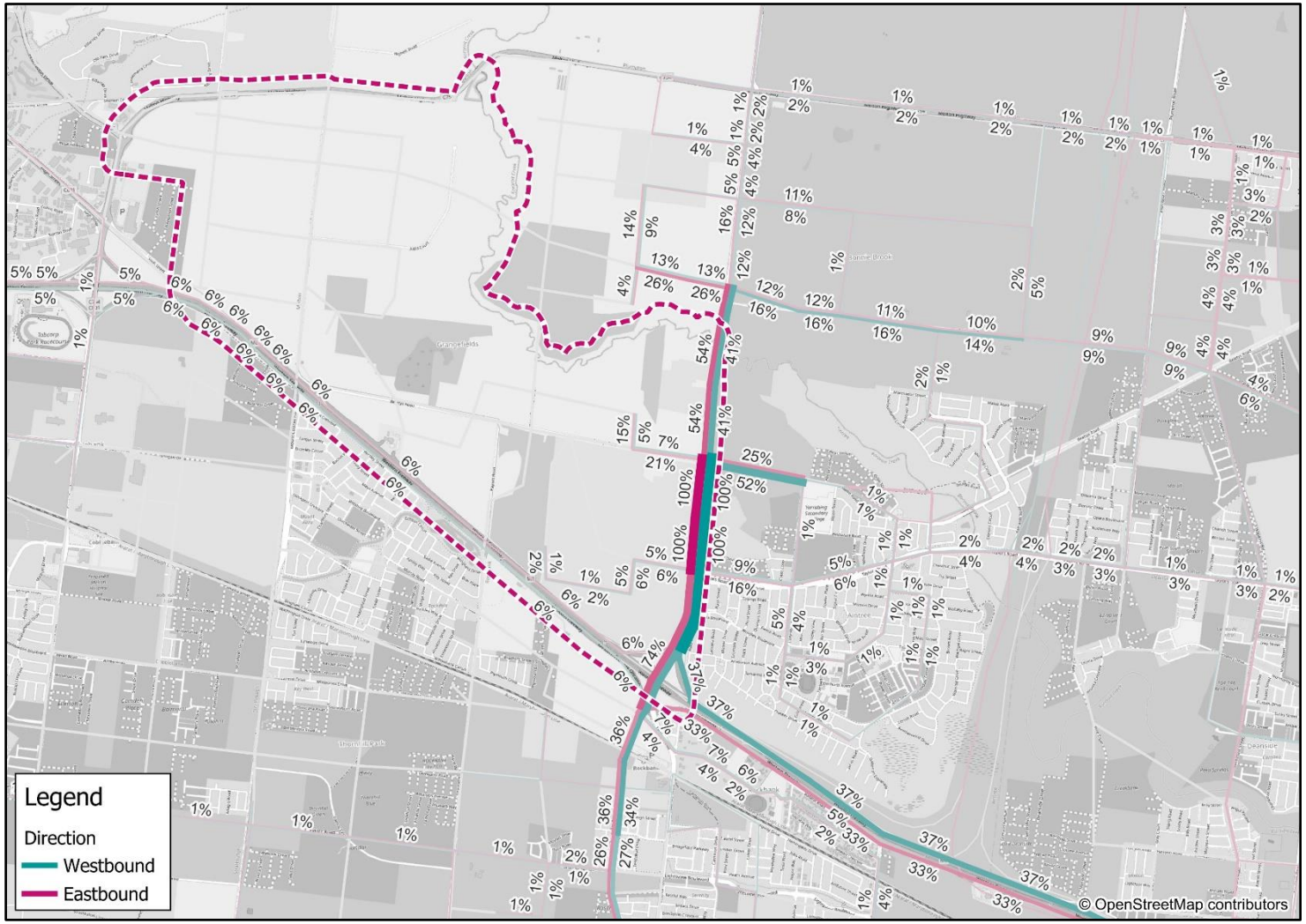


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Figure 88 Leakes Road select link (PM peak) | Scenario 3