

Toolern Employment and Mixed Use UDF and Revision of the Toolern Town Centre UDF

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Urban Design Framework

Technical Report - Transport


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Executive Summary

There is a significant amount of background material relating to the planning of the West Growth Corridor, Toolern PSP, Toolern Town Centre, and Toolern Employment and Mixed-Use Land. This has been set out through the technical report, to include all relevant matters needing to be considered as part of the development of the Urban Design Frameworks for the Toolern Town Centre, and the Toolern Employment and Mixed-Use Land. With consideration of these various and relevant matters, the recommended guiding approaches, and identified issues and opportunities, are summarised as follows:

- Toolern represents one of the key PSPs in the West Growth Corridor, as it is proposed to accommodate the highest order Town Centre (and a future metropolitan activity centre based on Plan Melbourne) and a major employment precinct.
- State Government has announced their commitment to a new train station in Toolern. The proposed train station will result in a significant increase in accessibility of the area by public transport, and help unlock its proposed development. Also, given its implementation at the start of Toolern's development, it provides an opportunity to help develop more sustainable travel behaviours from the outset and not over provide road infrastructure.
- The planning of the revised Toolern PSP will provide sufficient road capacity, but in areas of high population and employment densities, such as the Toolern Town Centre, and Toolern Employment and Mixed-Use Land, more space efficient modes (walking, cycling and public transport) must be prioritised.
- Beyond achieving an orderly road network structure to support access to the Toolern Town Centre, a key road within it will be Main Road, which currently extends between Ferris Road and East Road, and could potentially be an acceptable through route. To avoid its use as a through route, the following design measures are recommended:
 - Increase the traffic signal time to pedestrian crossing movements than the typical minimums and have shorter signal cycle times so pedestrian crossing opportunities occur more often
 - Limit property and car park access from Main Road (more from the surrounding arterial and connector roads) - promote access from rear laneways. Main Road should have pedestrian, bicycle and/or public transport priority as part of VicRoads SmartRoads Policy for road network management.
 - Provide a low speed environment (30km/h or less) through suitable surfacing and traffic calming measures to make Main Street a place for people to spend time.
- The Toolern Employment and Mixed-Use Land will accommodate a range of commercial land use types, both in terms of activities and size. As such, a supporting road network that helps activate small sites, provides good access to arterial roads for larger sites, and minimises conflict between car park access and frontages of site is required.
- When the Toolern Railway Station is delivered, part of its success will be based on the integration with bus services, via a well located transport hub, which should be located as close as possible to the station, prioritised over and separated from any commuter car parking and be connected via high-quality pedestrian network for the stations catchment..

- The bus network should provide a high level of coverage throughout the Toolern PSP, i.e. 95% of residents and jobs within 400m of a bus route.
- Within the Toolern Town Centre, the road environment and pedestrian crossing arrangements are expected to prioritise pedestrian movements. This is expected to be delivered through the following design elements:
 - Provide a low speed environment (30km/h or less) through suitable surfacing and traffic calming measures, and/or being shared spaces.
 - Crossing facilities on each intersecting road that prioritise pedestrians, such as zebra crossings and/or wombat crossings.
 - Traffic signals that prioritise pedestrian crossing movements by increasing the signal time allocated to pedestrian movements above the typical minimum and have shorter cycle times so pedestrian crossing opportunities occur more often.
- Within the Toolern Employment and Mixed-Use land, it is expected that pedestrian paths will be provided along the majority of road ways and pedestrian crossing facilities provided on all intersecting roads that contain footpaths.
- Within the town centre, the road environment is expected to be a low speed environment of less than 30km per hour, which enables cyclists to mix with traffic. However, majority of cyclists are expected to access the Town Centre via separated bicycle facilities, with priority crossing facilities on lower order roads.
- It is expected that broadly the following bicycle facilities will be provided within and connecting the Toolern Town Centre and Toolern Employment and Mixed-Use Land, as follows, which is based on the VicRoads Guidance for planning Road Networks in Growth Areas:
 - Separated bicycle facilities along all arterial roads
 - On-road bicycle lanes on 60km/h or lower sign posted connector level roads (separated facilities on higher speed roads)
 - Mixed traffic conditions on low speed local roads (i.e. 30km/h or less)
 - Prioritised crossings when linking to the path network, key destinations and public transport facilities.
- End-of-trip facilities will be also required at key gateway and destination places. These are recommended to be provided as public facilities and not solely relied on to be provided as part of private development.
- Integrate behaviour change initiatives with infrastructure projects to achieve an increased shift away from private car use
- Start adopting and planning for the upcoming technology disruptions to transport use, such as better, connected and real time data, as well as electric and autonomous public and private vehicles.

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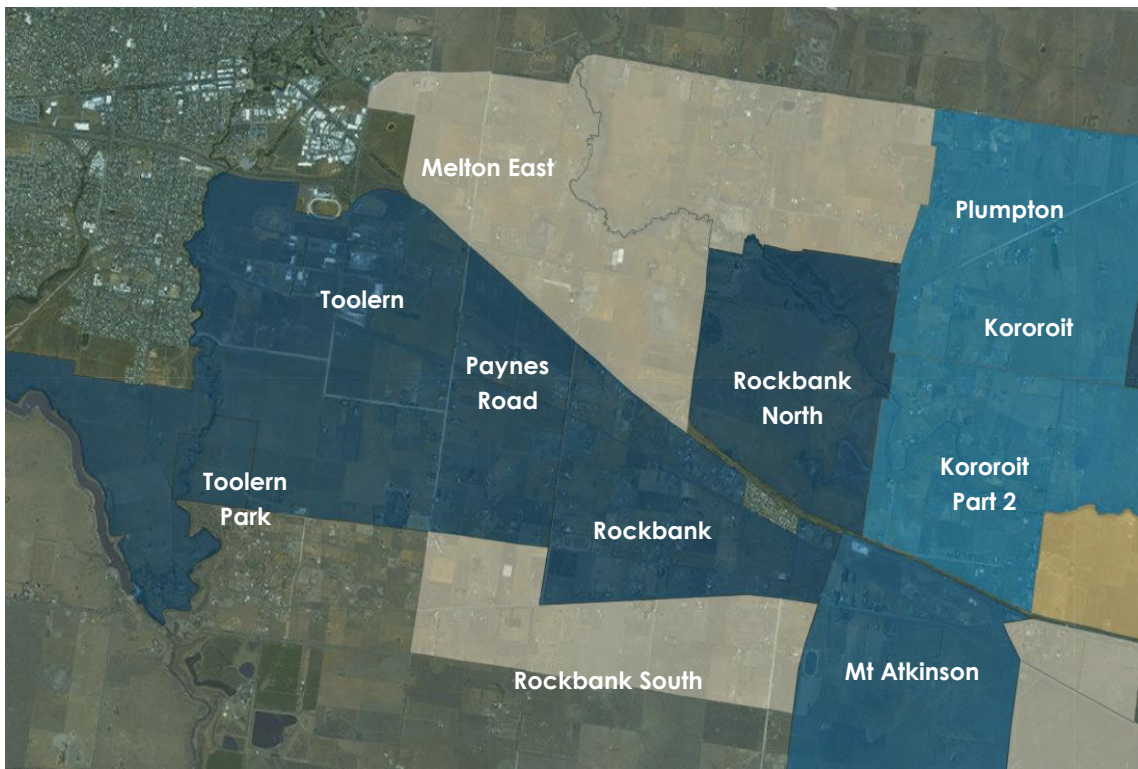
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1. Introduction

1.1 Background

Toolern is located 36km northwest of Melbourne's CBD, on the urban fringe of metropolitan Melbourne. Toolern has been identified by State Government as a suitable area for new urban development, along with a number of other greenfield precincts, as shown in Figure 1.1. The Toolern precinct comprises some 2,200 hectares directly east of Melton South and with the Melbourne - Ballarat Rail Line bisecting it. The Western Freeway extends along the northeast frontage of the precinct.

Figure 1.1: Toolern Precinct and adjacent Western Growth Area Greenfield PSP's



Source: <https://vpa.vic.gov.au/greenfield/interactive-status-map/>

The Toolern Precinct Structure Plan (PSP) and Development Contributions Plan (DCP) was developed by the Victorian Planning Authority (VPA) and Melton City Council (MCC), and subsequently approved by the Minister for Planning under Amendment C084 (Part 1) in October 2010 and Amendment C084 (Part 2) in November 2011 to the Melton Planning Scheme. The Toolern PSP guides what development mix and densities will be accommodated throughout the precinct, and the DCP identifies, costs and sets out the funding arrangements, for the key infrastructure that will support the precincts proposed urban structure.

The Toolern Town Centre is at the core of the Toolern PSP, and is proposed to be a Metropolitan Activity Centre, within the West Growth Corridor. As illustrated in Figure 1.2, there is also the Toolern Employment and Mixed-Use Land, which will be a significant place of employment for those living in and proximate to the West Growth Corridor.

1.3 Purpose of the UDFs

The following objectives for the Toolern Town Centre UDF and Toolern Employment and Mixed-Use Land UDF have been taken from the Project Specifications document put out by MCC for this project:

- *Establish a clear and integrated vision for the Employment and Mixed-Use Land*
- *Guide the use and development of the area through objectives and planning and design requirements and guidelines*
- *Establish an implementation program of statutory and strategic initiatives*
- *Include internal and external consultation with landowners, occupiers (businesses) relevant stakeholders, Council staff, Councillors and the wider community*
- *Establish a process for monitoring and review*

Based on the above, the Toolern Town Centre and Toolern Employment Land UDFs requires a holistic and integrated framework that not only sets out the future blue-print to work towards, but consideration and guidance on how to achieve this vision.

1.4 Purpose of this Report

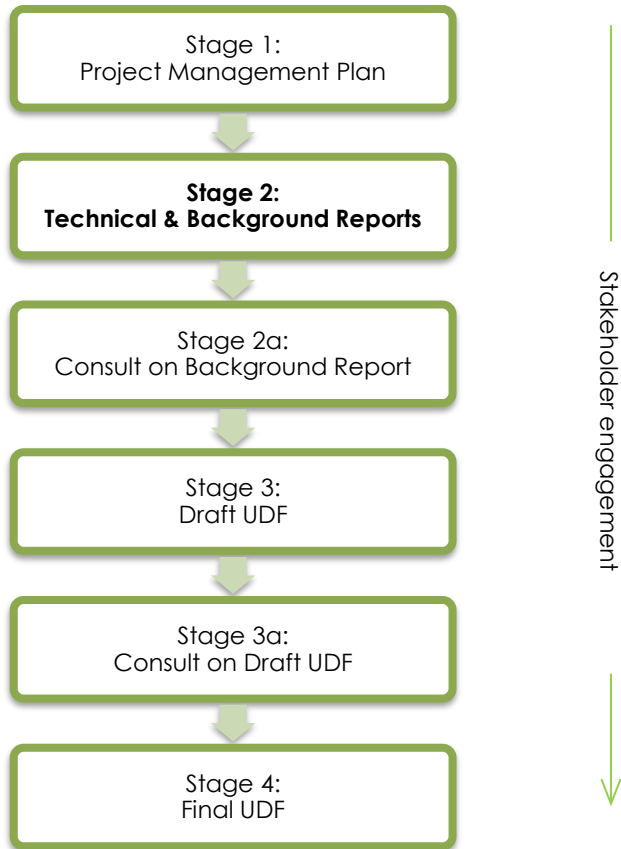
This technical report sets out a summary of the available transport data and traffic analysis completed to date, as well as any key transport issues and opportunities that have been identified. This report will inform the overall project Background Report, which will in turn facilitate the revision of the Toolern Town Centre UDF and drafting of the Employment and Mixed-Use Land UDF. More specifically, this report includes the following:

- Key transport policies influencing the project and land use in the study area
- Existing and future known demographics and land uses for the study area
- Existing and future known transport conditions for the study area
- Broad design considerations and implications
- Issues and opportunities associated with the development of the town centre, and employment and mixed-use land.

1.1 Project Overview

The key stages scope and methodology for the overall project is shown graphically in Figure 1.3, with the technical report stage shown in **bold**.

Figure 1.3: Project Methodology



2. Strategic Planning Context

2.1 State Government

2.1.1 Transport Integration Act

The Transport Integration Act is the primary transport statute for Victoria, and has caused significant change to the way in which transport and land use authorities make decisions and work together. The Act enshrines a triple bottom line approach to decision making about transport and land use matters.

The Act requires that all transport agencies work together to achieve an integrated and sustainable transport system, and that land use agencies such as the DEDJTR take account of transport issues in land use decisions. The Act has been effective to date in changing the focus of organisations that traditionally only considered a single transport mode.

The Act:

- *Unifies all elements of the transport portfolio to ensure that transport agencies work together towards the common goal of an integrated transport system*
- *Provides a framework for integrated and sustainable transport policy and operations*
- *Recognises that the transport system should be conceived and planned as a single system performing multiple tasks rather than separate transport modes*
- *Integrates land use and transport planning and decision-making by extending the framework to land use agencies whose decisions can significantly impact on transport ("interface bodies")*
- *Re-constitutes transport agencies and aligns their charters to make them consistent with the framework.*

The Act forms an overarching legislative framework for transport related state planning policy decisions and has been integrated within the Victorian Planning Provisions (VPP).

2.1.2 Plan Melbourne

The Victorian Government released the Metropolitan Planning Strategy, Plan Melbourne in 2016 (update of the previous plan released in 2014). The Plan looks to build on Melbourne's reputation as a global city of opportunity and choice, as it caters for an almost doubling of the population over the next 35 years (i.e. out to 2051).

The Plan provides guidance on the way housing, commercial and industrial development will be provided, based off the following key seven outcomes, and are supported by a range of actions:

- *Being a productive city that attracts investment, supports innovation and creates jobs*
- *Provide housing choice in locations close to jobs and services*
- *Have an integrated transport system that connects people to jobs and services and good to market*
- *Be a distinctive and liveable city with quality design and amenity*
- *City of inclusive, vibrant and healthy neighbourhoods*
- *A sustainable and resilient city*
- *Regional Victoria is productive, sustainable and supports jobs and economic growth*

The Plan discusses the importance of locating medium and high-density development near jobs, services and public transport to improve housing and transit choices, as well as achieve 20 minute neighbourhoods - places where people have access to local shops, schools, parks, jobs and a range of community services within 20 minutes of their home.

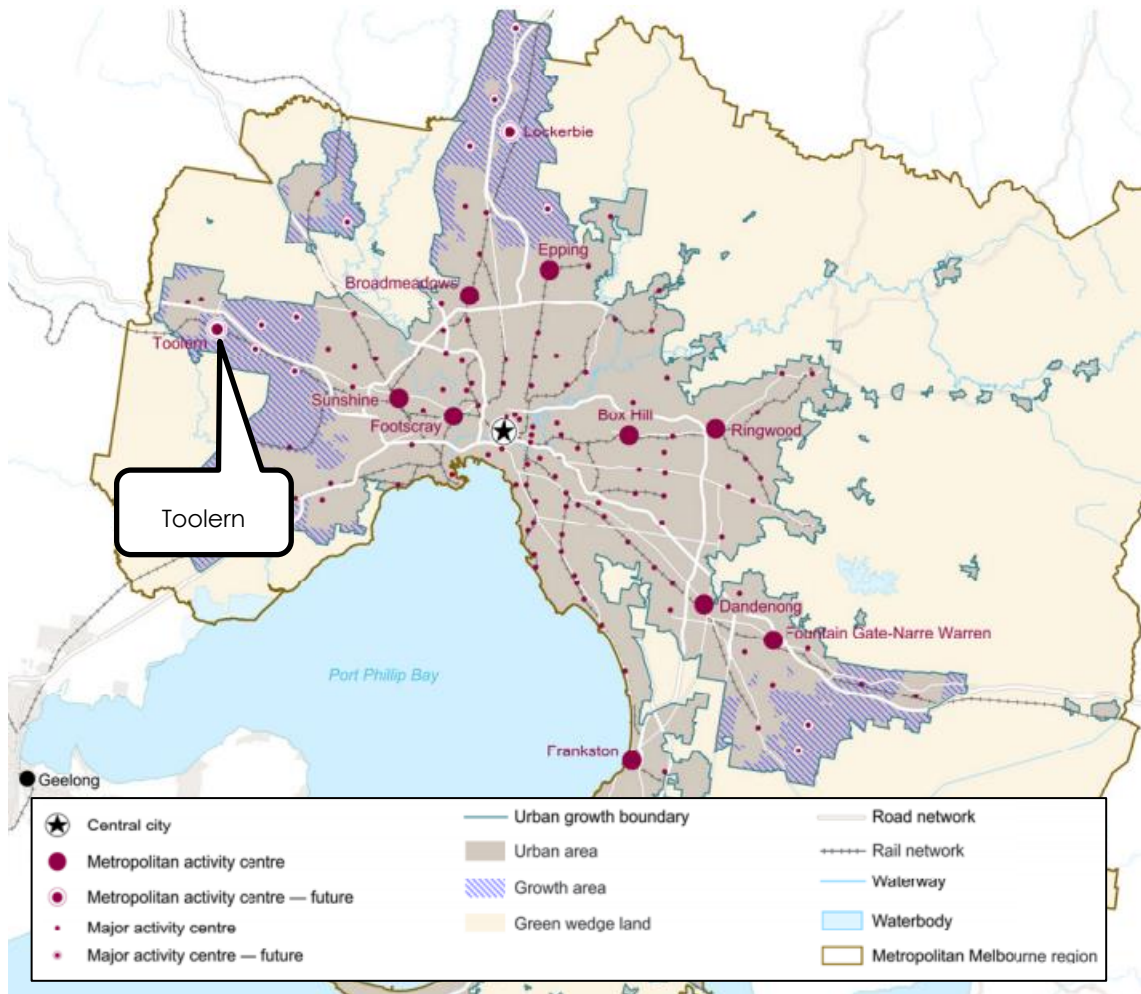
In outer suburban areas, this can be achieved through the development of major activity centres and employment precincts, preferably clustered around existing or proposed railway stations, such as in Toolern.

An excerpt from The Plan is shown in Figure 2.1, and identifies Toolern as one of two future and nine existing Metropolitan Activity Centres, which have the following purpose as stated in Plan Melbourne:

"To provide a diverse range of jobs, activities and housing for regional catchments that are well served by public transport.

These centres will play a major service delivery role, including government, health, justice and education services, as well as retail and commercial opportunities."

Figure 2.1: Plan Melbourne – Metropolitan and major activity centres



Source: Map 14, Plan Melbourne

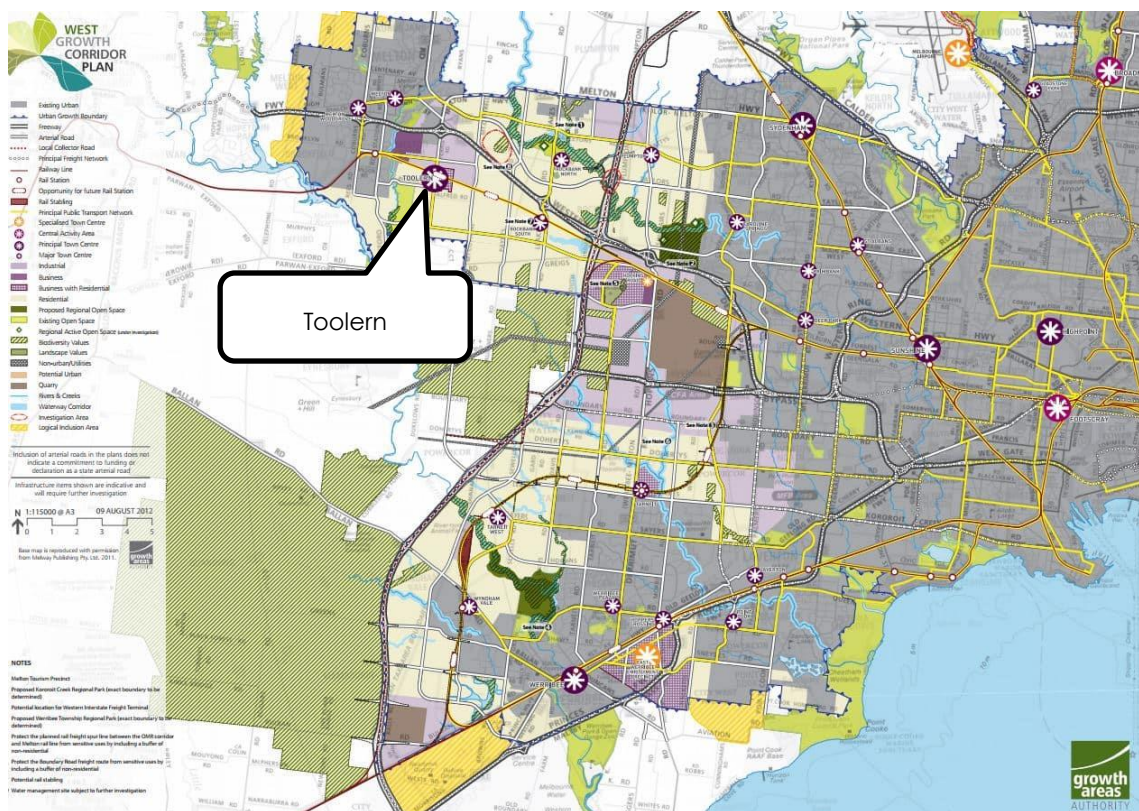
2.1.3 West Growth Corridor Plan

The Toolern PSP is located in Melbourne's West Growth Corridor (i.e. northwest fringe of metropolitan Melbourne, between Melton and Sunshine). The West Growth Corridor Plan is a high-level guide for the delivery of housing, employment, services and transport infrastructure for the next 30-40 years in Melbourne's outer western growth areas. The Corridor will eventually accommodate a population of at least 377,000 and 164,000 jobs.

The Plan identifies in Section 4.5.1 that the proposed Toolern Town Centre will be a Principle Town Centre and be the primary centre for employment in the north-western portion of the West Growth Corridor. Section 4.5.2 discusses how the Toolern Employment Precinct will likely support 470 hectares of industrial land and 120 hectares of mixed use employment activities.

The success of the town centre and employment precinct are indicated to be based on there being high levels of accessibility via the proposed train station in the town centre, north-south public transport routes, as well as high capacity traffic and freight access with the Western Freeway interchange to Ferris Road.

Figure 2.2: West Growth Corridor Plan Extent



Source: <https://vpa.vic.gov.au/greenfield/growth-corridor-plans/>

2.1.4 SmartRoads

SmartRoads is a VicRoads policy which sets strategic 'modal' priorities on the road network at different times of the day and underpins many of the strategies significant to the operational directions that support broader strategies around land use and transport.

"There is no single solution to managing congestion on our roads. Sustainable management of congestion will require an integrated approach involving better management of the existing network, building new infrastructure, visionary land use planning, encouraging sustainable transport modes, and changes in behaviour by individuals, businesses and a level of government."

All road users will continue to have access to all roads. However, certain routes will be managed to work better for cars while others for freight, public transport, cyclists and pedestrians during the various peak and off-peak periods. In this regard, the following is noted by VicRoads for the various modes assigned to arterial roads across the network that form part of the Network Operating Plans:

- *Facilitate good pedestrian access into and within activity centres in periods of high demand*
- *Prioritise trams and buses on key public transport routes that link activity centres during morning and afternoon peak periods*
- *Encourage cars to use alternative routes around activity centres to reduce the level of 'through' traffic*
- *Encourage bicycles through further developing the bicycle network*
- *Prioritise trucks on important transport routes that link freight hubs and at times that reduce conflict with other transport modes*

The above modal aspirations are targeted towards achieving a more efficient transport network. Consideration of this and what the priorities will ultimately be for the arterial road network within and connecting the Toolern Town Centre and Employment and Mixed-Use Land will need to be considered as part of developing their UDFs. At this time, the only modal priority indicated in the area is the Western Freeway, which is a 'Preferred Traffic Route'.

2.1.5 PTV Rail Network Development Plan

In 2012 the PTV released the Network Development Plan for Metropolitan Rail which examines the requirements for Melbourne's train system in the short, medium and long term.

The plan consists of the following four stage plan over a 20 year period:

- Overcome existing network constraints and provide a strong foundation for further expansion of capacity in the future
- Introduce a metro-style train system for Melbourne
- Extend the network into growth areas and existing areas without good access to rail services
- Prepare for further growth and protect future option

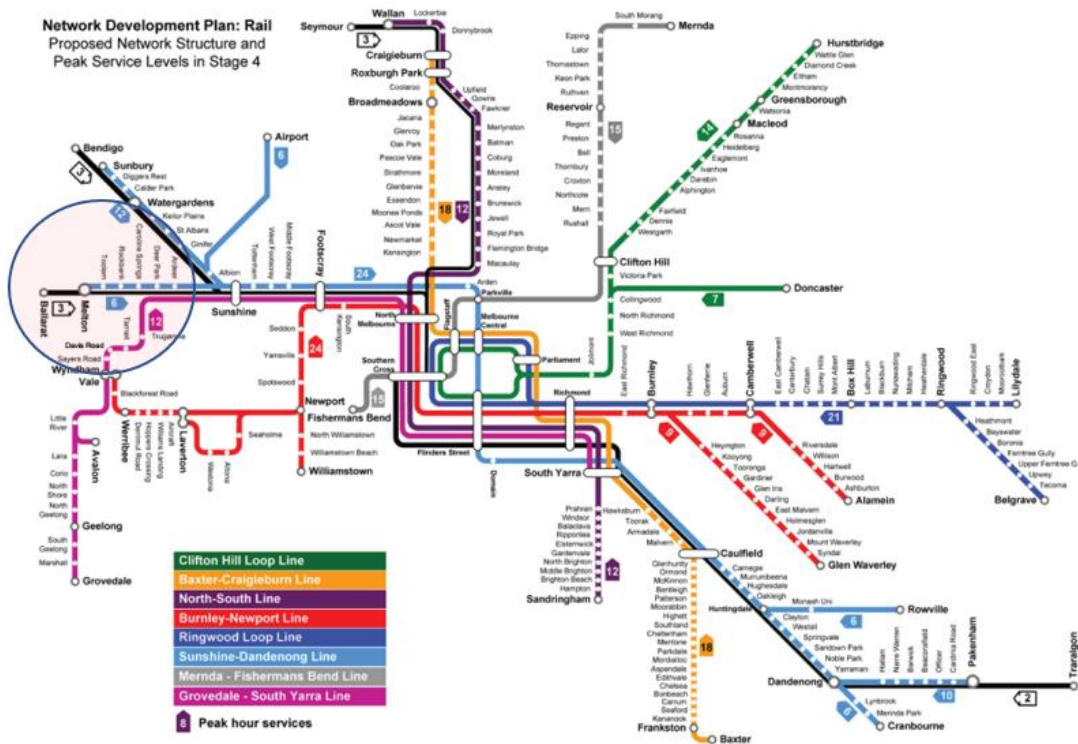
As part of the 20 year plan, several key projects were identified which would specifically improve services on the Melton Line. This included the delivery of an additional train station at Toolern, duplication and electrification of the rail line to Melton.

Commitment has been made to a new train station in Toolern to service Melbourne's outer-western suburbs. The proposed train station will result in significant increase accessibility of the area by public transport.

The station is proposed to be located between Rockbank and Melton (near Ferris Road in Melton South) and is proposed to be constructed by the end of 2019.

Figure 2.3 illustrates the stage four network development plan which includes the development of Toolern Rail Station.

Figure 2.3: Stage 4 (Ultimate) Rail Network Development Plan



The plan states that the Melton duplication will require duplication from Deer Park to Melton as well as the construction of passing loops on the Ballarat corridor and new stabling at Melton Station. The objective of these upgrades is to improve peak capacity and off-peak services from Melton to Ballarat.

Section 4.5 of this report details the Ballarat Line Upgrade (BLU) which has been approved and will begin construction later this year, with a target completion date of late 2019.

2.2 Melton City Council

2.2.1 Moving Melton – Integrated Transport Strategy

The Moving Melton – Integrated Transport Strategy (the Strategy) was adopted by MCC in 2015 to provide guidance on how the transport network within the municipality will need to change into the future to accommodate the anticipated population growth and development. The Strategy identifies a high car dependency, and low level of public and active transport options currently available within Melton. The key policies outlined in the Strategy most relevant to this project are reproduced as followed:

5.1 Active Transport

The Strategy discusses how active transport modes should be made more available and accessible to everyone in the community. The Strategy identifies that the active transport network needs to be connected, convivial, conspicuous, comfortable and convenient in order to be effective. The Council intends to ensure that neighbourhood facilities are accessible by bike, and local facilities are accessible by foot. The Council also intends to work in conjunction with the VPA to develop principle pedestrian and bicycle networks in the PSPs (i.e. also consistent with SmartRoads). As can be seen below in Figure 2.3 and Figure 2.4 pedestrian / bicycle links along the rail corridor and cycle connection along Ferris Road are highlighted as key priorities.

Extracts from the example principle pedestrian and bicycle networks shown in the Strategy for the proximate area to the Toolern PSP are shown in Figure 2.4 and Figure 2.5. Figure 2.6

Figure 2.4: Example Principle Pedestrian Network Extract

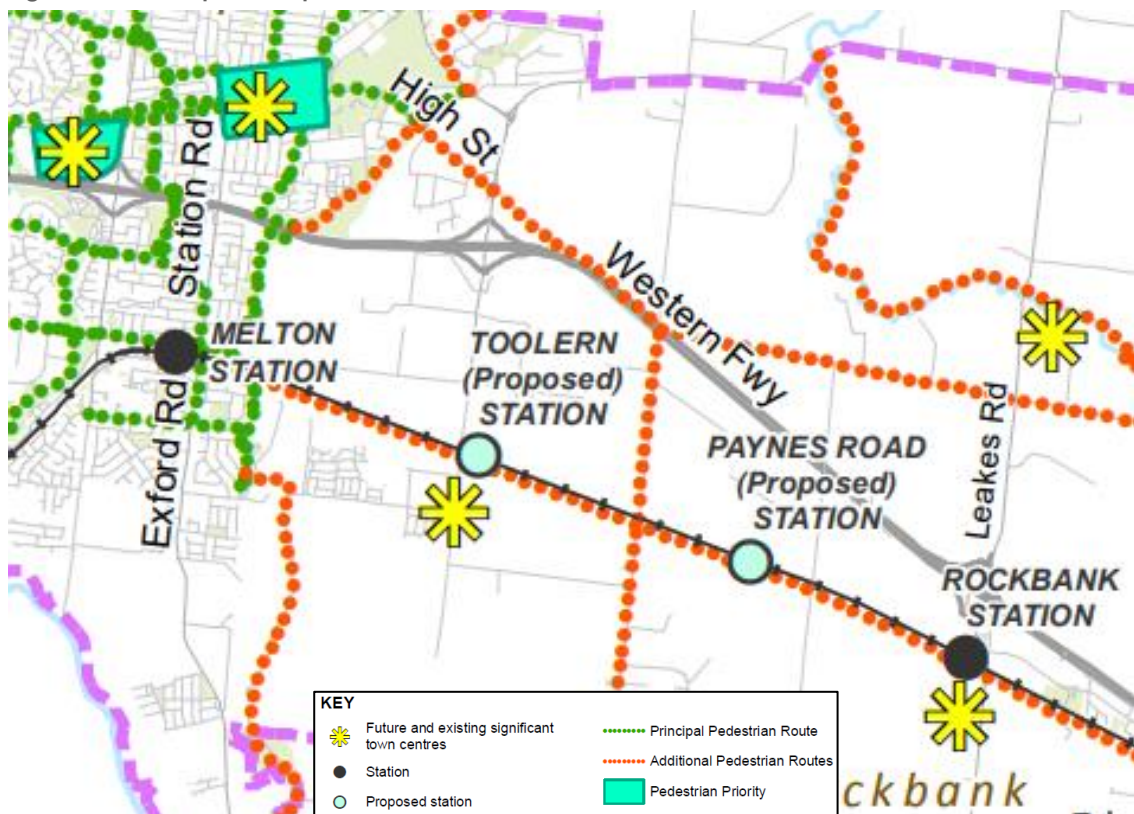
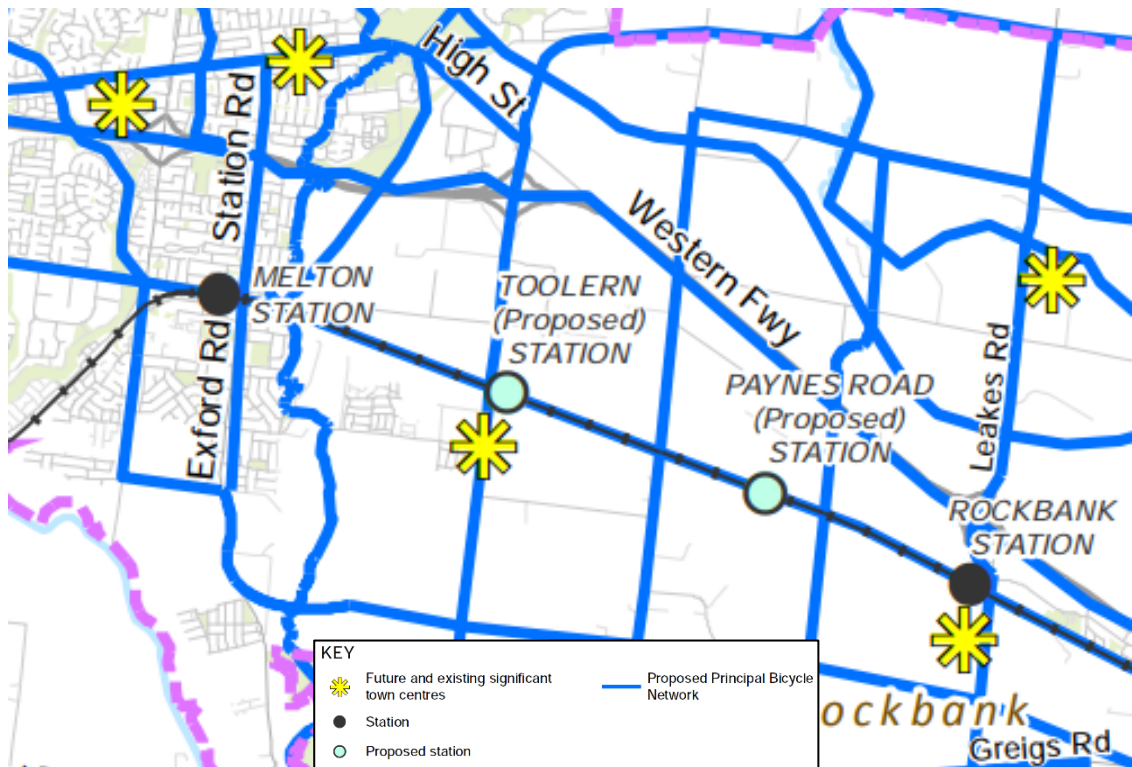


Figure 2.5: Example Principle Bicycle Network Extract

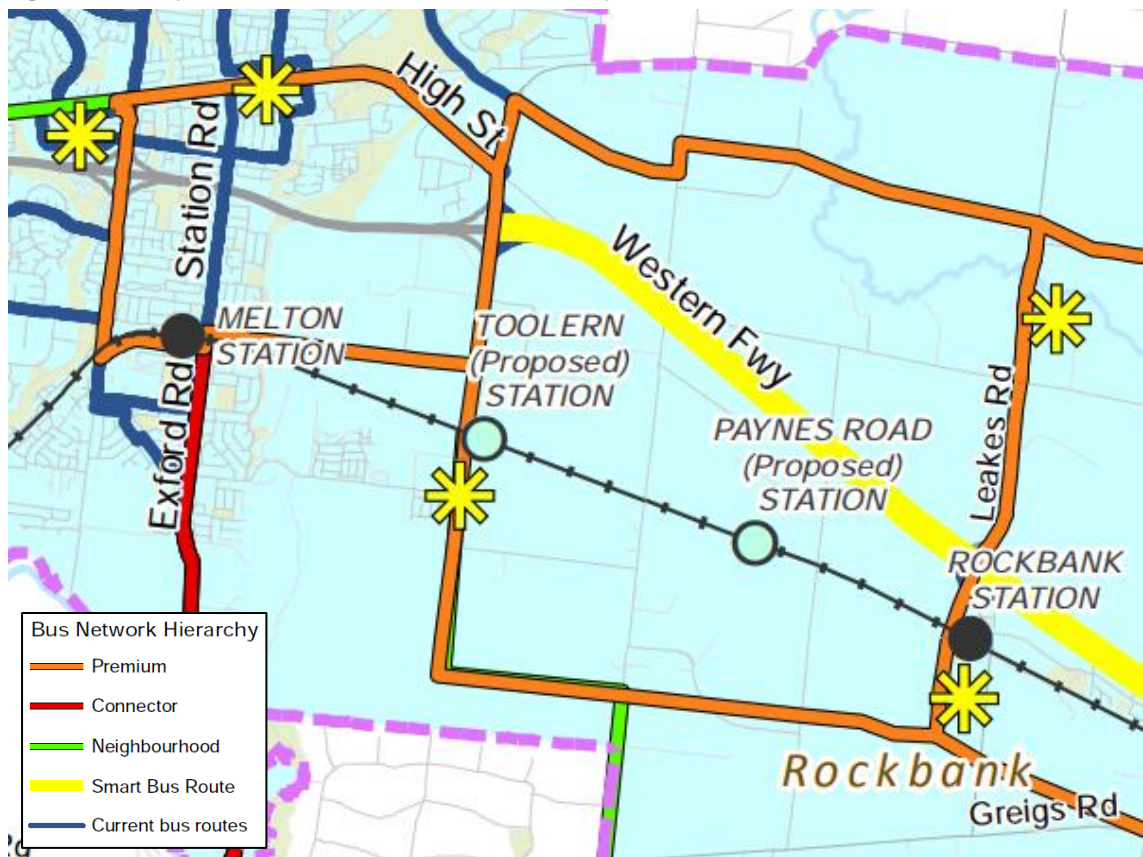


5.3 Public Transport

The Strategy outlines how the provision of reliable and frequent public transport services is a key objective of the Council in supporting the anticipated population growth in the municipality. The Strategy discusses how access to Town Centres will be especially critical in enhancing their commercial viability and delivering appropriate access to services for the local community. The Council will advocate for upgrades to the Melbourne - Ballarat rail corridor and the implementation of an expanded bus network through the municipality to cater for the anticipated urban growth. This includes the creation of new bus routes connecting local areas to the Toolern Town Centre and a proposed new railway station (potentially forming a transport hub).

An extract of the proposed bus network and route hierarchy from the Strategy for the proximate area to the Toolern PSP is shown in Figure 2.6.

Figure 2.6: Proposed Bus Network and Route Hierarchy Extract

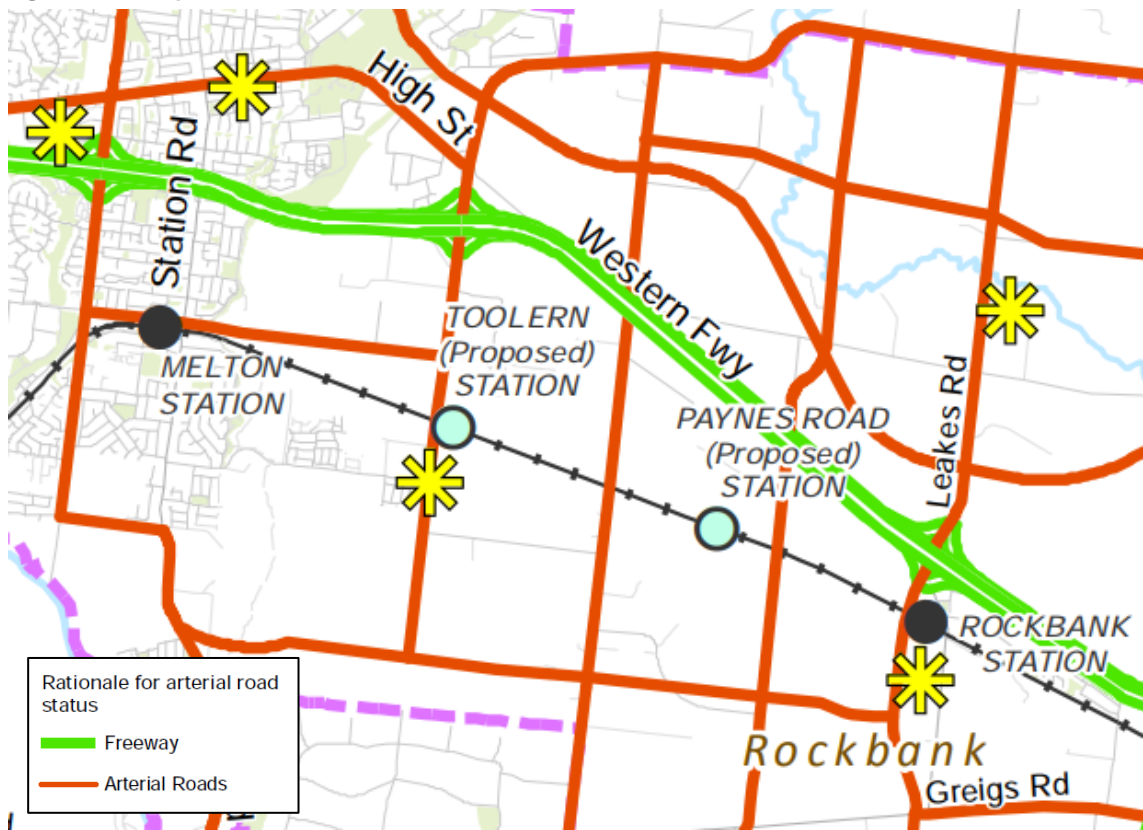


5.4 Roads

The Council recognises that although a key objective of the Strategy is to reduce car dependency, road transport is still a constituent mode of travel through the municipality. The Council will advocate for connectivity to the metropolitan area and Melbourne Airport through the delivery of key pieces of infrastructure. The planning of local road networks will utilise the existing grid layout in the greenfield areas between Melton and Caroline Springs, and include allowance for cycle routes, shared paths, footpaths and/or public transport routes where appropriate.

An extract of the proposed arterial road network from the Strategy for the proximate area to the Toolern PSP is shown in Figure 2.7. One of the key projects identified in the Strategy is to improve access to the Western Freeway at Melton. The importance of the Western Freeway for road accessibility is highlighted below in figure 2.6.

Figure 2.7: Proposed Arterial Road Network Extract

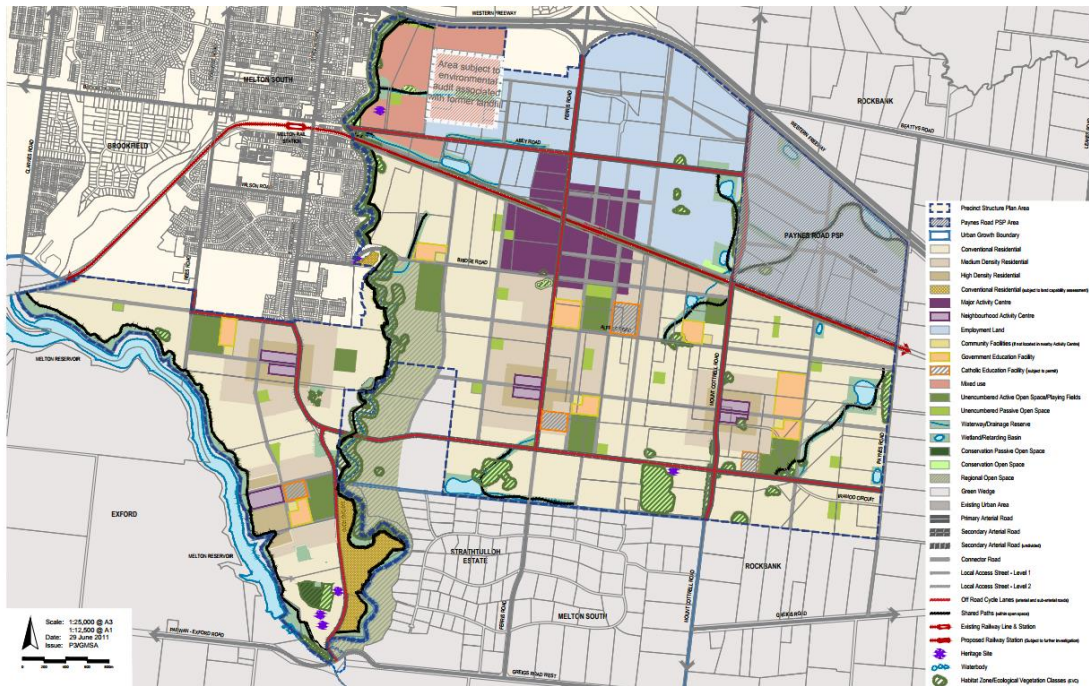


2.2.2 Toolern Precinct Structure Plan (PSP)

The Toolern PSP was developed by the VPA in consultation with MCC and relevant government agencies to guide urban development in Toolern. The PSP applies to approximately 2,200 hectares of land bounded by the Western Freeway to the north, Mount Cotterell Road to the east, Toolern to the west, Melton Reservoir to the southwest and a yet to be constructed road in the south.

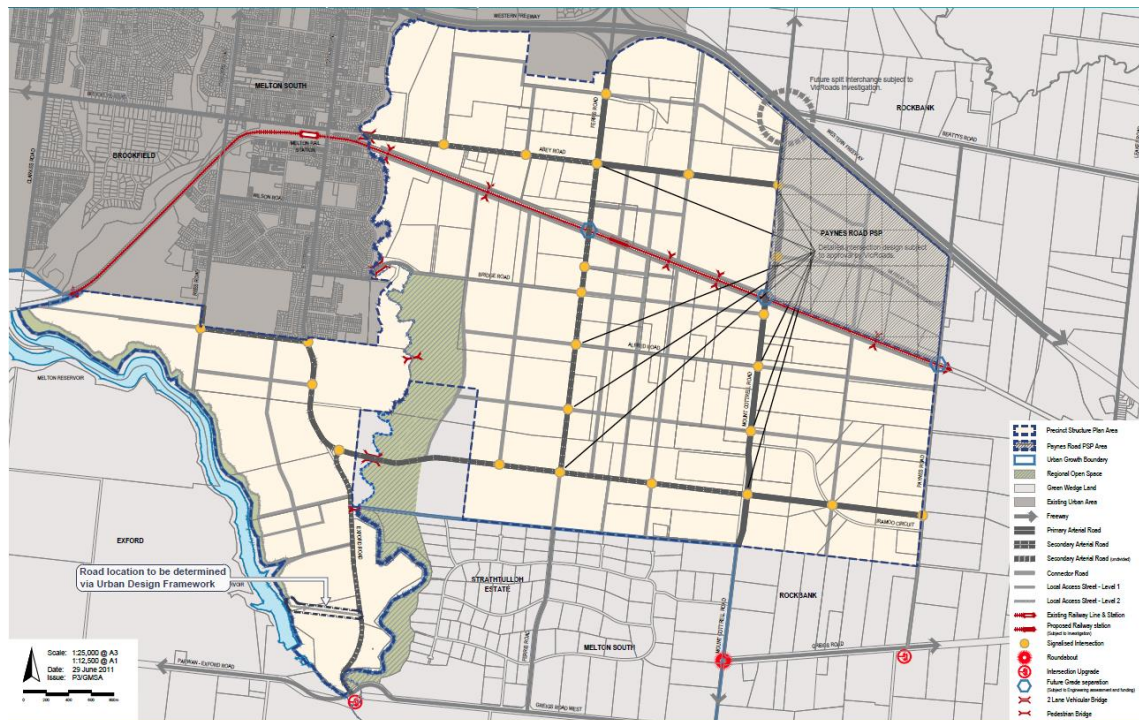
The Future Urban Structure and Road Network plans in the Toolern PSP are shown in Figure 2.8 and Figure 2.9.

Figure 2.8: Toolern PSP - Future Urban Structure



Source: Toolern Precinct Structure Plan, p.14

Figure 2.9: Toolern PSP – Road Network



Source: Toolern Precinct Structure Plan, p.48

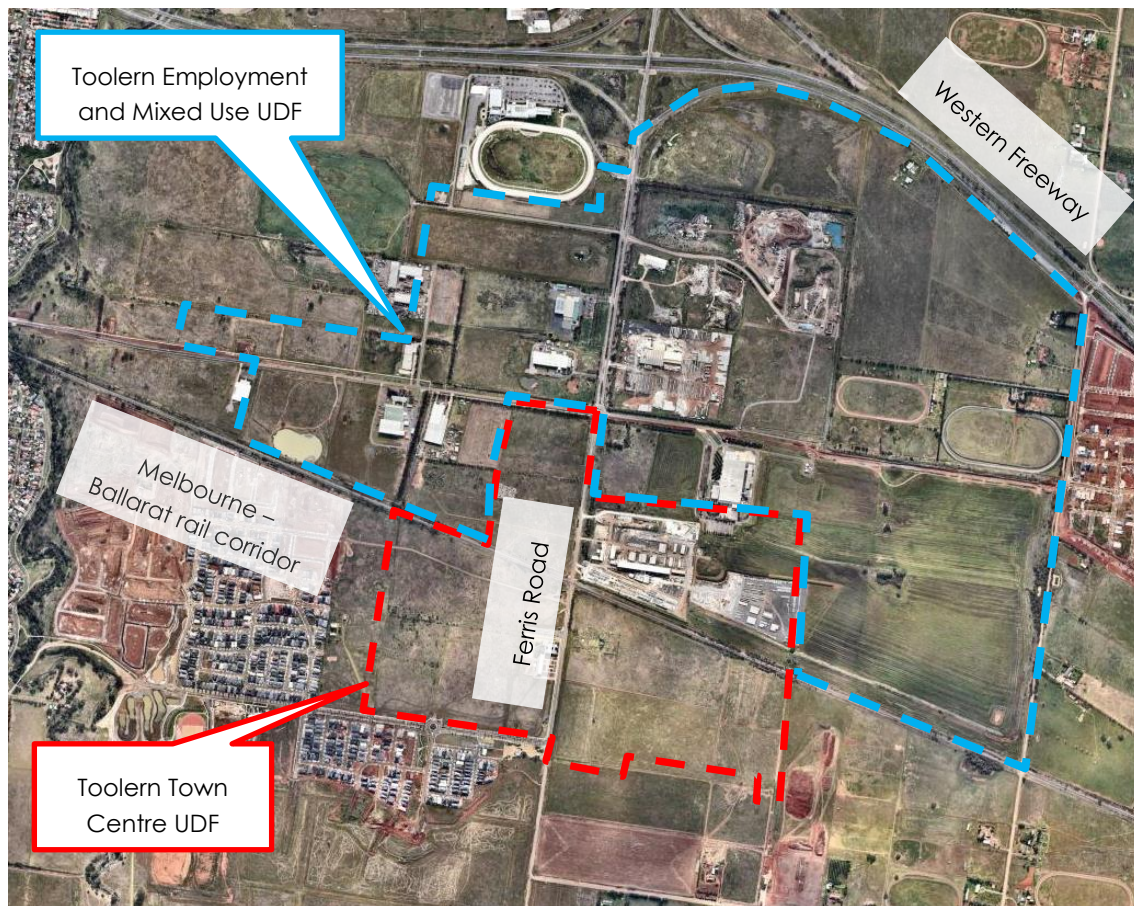
The future development plans and supporting background information for the Toolern Town Centre, and Employment and Mixed-Use Land UDFs are discussed further in Section 4.

3. Existing Conditions

3.1 Study Area

The area constituting the Toolern PSP predominately consists of farmland, with some urban development located on Ferris Road. The areas that will form the Toolern Town Centre UDF area and the Employment and Mixed-Use Land UDF comprises of some industrial land uses, but are otherwise undeveloped. The collective area is located south of the Western Freeway and bisected by Ferris Road in a north-south direction and the Melbourne-Ballarat rail corridor in an east-west direction, as shown in Figure 3.1.

Figure 3.1: Toolern Town Centre UDF Study Area and Toolern Employment and Mixed Use Study Area

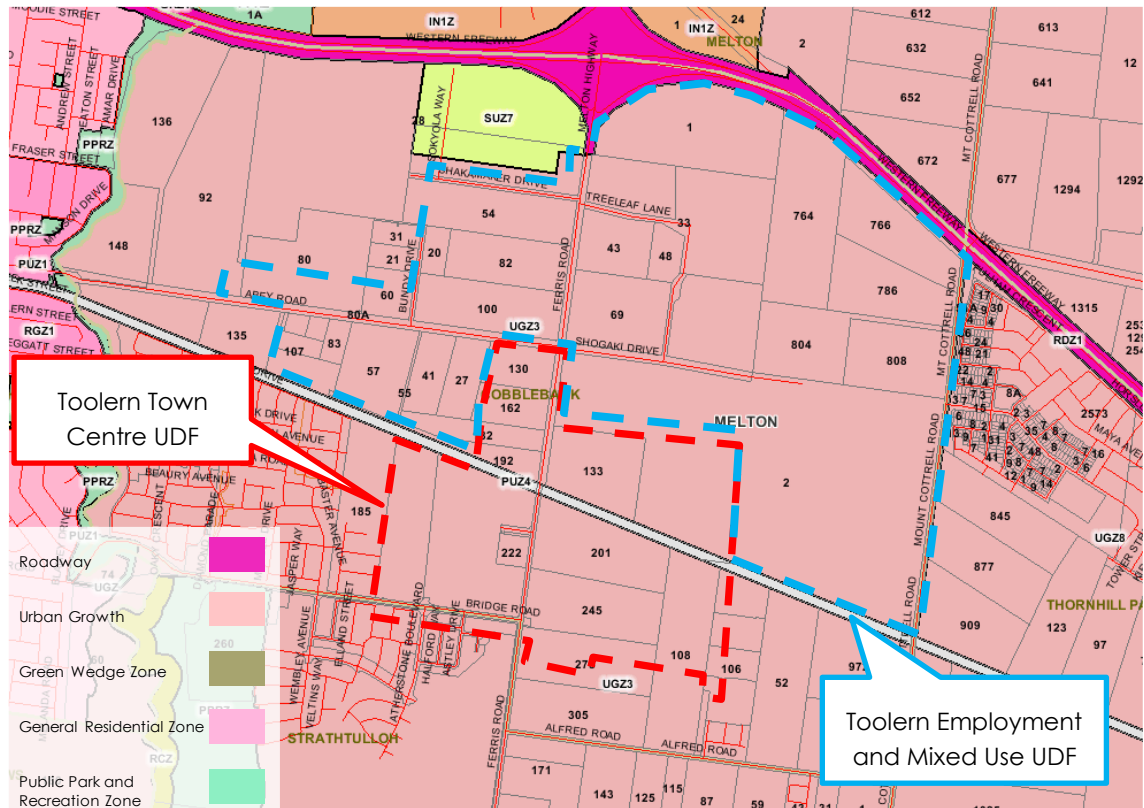


Reproduced from Nearmap

3.1.1 Land Uses

The vast majority of land within the UDF study area is zoned for urban growth, as shown in Figure 3.2.

Figure 3.2: Land Zoning within and surrounding the UDF Study Area



Reproduced from Land Channel Website

3.1.2 Population and Dwellings

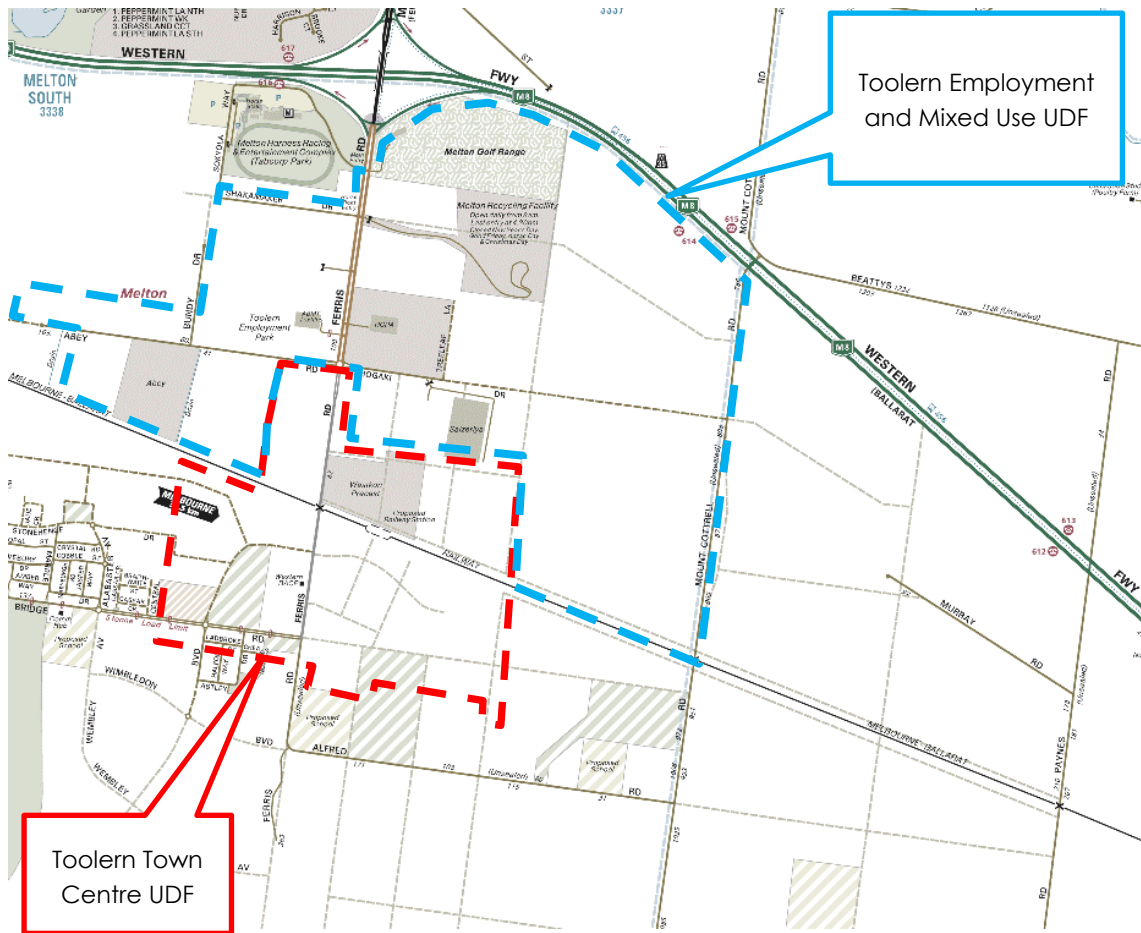
The areas that will form the Toolern Town Centre, and Employment and Mixed Use Land UDFs are located within the boundaries of Melton South. The 2016 ABS Census data indicates that the population of Melton South is currently 11,517, which are accommodated by 4,684 dwellings. Moreover, the ABS Census data suggests that there has been population growth of 29% and an increase in dwelling numbers of 24% between 2011 and 2016 in Melton South.

It is noted that the suburb's population is almost exclusively concentrated to the west of Toolern Creek, which is outside the boundary of the Toolern PSP. The existing population and number of dwellings located within the UDF areas are very low and not expected to have changed much over recent years.

3.2 Road Network

The existing road network within and connecting the study area is shown in Figure 3.3, with descriptions of the key roads outlined thereafter.

Figure 3.3: Existing Road Network



3.2.1 Western Freeway

The Western Freeway is a VicRoads controlled Freeway and is the primary road connection between Melbourne and Adelaide. The Freeway connects to the Western Ring Road in the east, which provides direct access to Melbourne’s western suburbs, northern suburbs and CBD (via the West Gate Freeway). It also connects to Melton and Ballarat in the west, after which it is designated as a highway. Access to the Western Freeway from Ferris Road is provided via a full diamond interchange.

In the vicinity of the UDF study area, the Western Freeway is a two-way road aligned in an east-west direction and configured with two lanes in each direction (separated by a central reservation) with a sign-posted speed limit of 110km/h. The Freeway carries approximately 57,000 vehicles daily¹.

While the Western Freeway is located outside the boundaries of the UDF study areas, its transport implications are profound for Toolern because it provides motorists and freight with access to Melbourne’s CBD (east direction) and Melton (west direction).

¹ Source: VicRoads Open Data

3.2.2 Ferris Road

Ferris Road is 3.8km long and extends between the Western Freeway in the north and Strathtulloh Circuit (just north of Greigs Road) in the south. The road provides connection to the Western Freeway and to adjoining roads that lead to Rockbank and Melton Stations.

Ferris Road is currently a two-way semi-rural road aligned in a north-south direction and configured with a two-lane, 7.0m wide carriageway set with a 14m wide road reserve (approximately). Currently there are limited pedestrian footpaths along the Ferris Road and with footpath only along the Atherstone Development. Ferris Road is classified as a collector road south of Abey Road and a major road in the north. Approximately 1,600 vehicles use the road daily.¹

Ferris Road bisects the UDF areas and will serve as their primary north-south access route.

3.2.3 Abey Road

Abbey Road is 2.1km long and extends between Ferris Road in the east and Toolern Creek in the west (continues into Brooklyn Road). The road provides direct connection to Melton Railway Station and South Melton.

Abey Road is currently a two-way semi-rural road aligned in an east-west direction and configured with a two-lane, 8.4m wide carriageway set with an 8.4m wide road reserve. Abey Road is classified as a local access road.

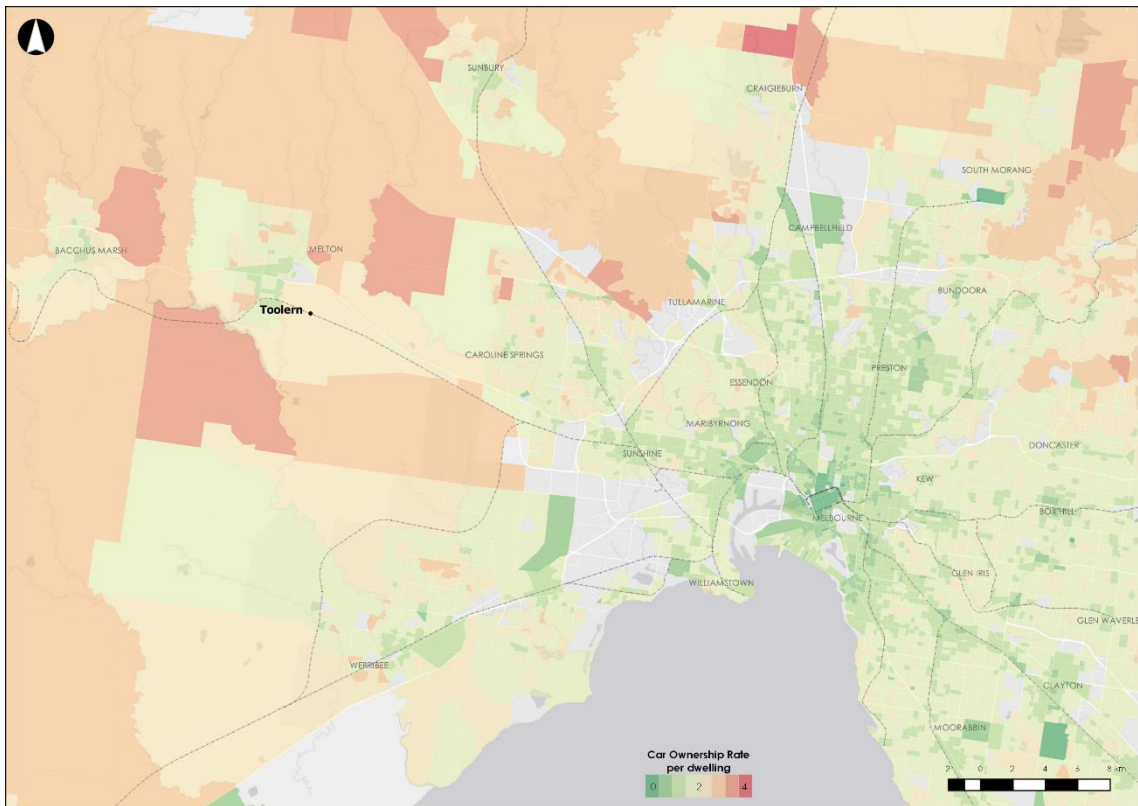
3.2.4 Other Roads

Shogaki Drive, which is an eastern continuation of Abey Road, is the only other sealed public road located within the study areas.

3.3 Car Ownership

The ABS 2016 Census indicates that in the area that will form the Toolern PSP, the existing rate of car ownership is approximately 2.15 vehicles per dwelling. As shown in Figure 3.4, the car ownership rate in the area is high with a rate above 2.0 vehicles per dwelling, when compared to other areas of metropolitan Melbourne, which has an average of 1.64 vehicles per dwelling.

Figure 3.4: Car ownership rate per dwelling in Greater Metropolitan Melbourne, 2016



Source: Australian Bureau of Statistics

3.4 Public Transport

3.4.1 Train services

Toolem currently does not have a railway station. Currently, the closest stations are located in Rockbank (east) and Melton (west). However, as discussed earlier, there is commitment to build a new train station in Toolem to service Melbourne's outer-western suburbs. The station is proposed to be located between Rockbank and Melton (near Ferris Road in Melton South) and is proposed to be constructed by the end of 2019.

A summary of existing key information regarding the train services that Melton and Rockbank Stations connect to is presented in Table 3.1, and the broader V/Line network illustrated in Figure 3.5.

Table 3.1: Melbourne to Maryborough V/Line

Station	Duration to Melbourne	Daily services (each direction)	Timeframe	Frequency
Rockbank	35 minutes	22	5:00am – 12:45am	15 – 30 minutes (peak) 30 – 60 minutes (off-peak)
Melton	41 minutes	31	5:00am – 12:45am	15 – 30 minutes (peak) 30 – 60 minutes (off-peak)

Source: Public Transport Victoria

Figure 3.5: Regional Rail Network



Reproduced from V/Line

3.4.2 Bus Services

The only existing bus route that operates in the vicinity of the UDF study areas is Route 456. The route operates between Sunshine Station to the east and Woodgrave Shopping Centre in Melton to the west, via the Western Freeway and Caroline Springs. All services stop at the intersection of Mount Cottrell Road and the Western Freeway; services to Sunshine stop north of the intersection and services to Melton stop south of the intersection. The stops are located adjacent the northern boundary of the Employment and Mixed Use UDF area, although they are more than 2km from the Toolern Town Centre UDF area. Signage and bus bays exist, though there are no bus shelters provided.

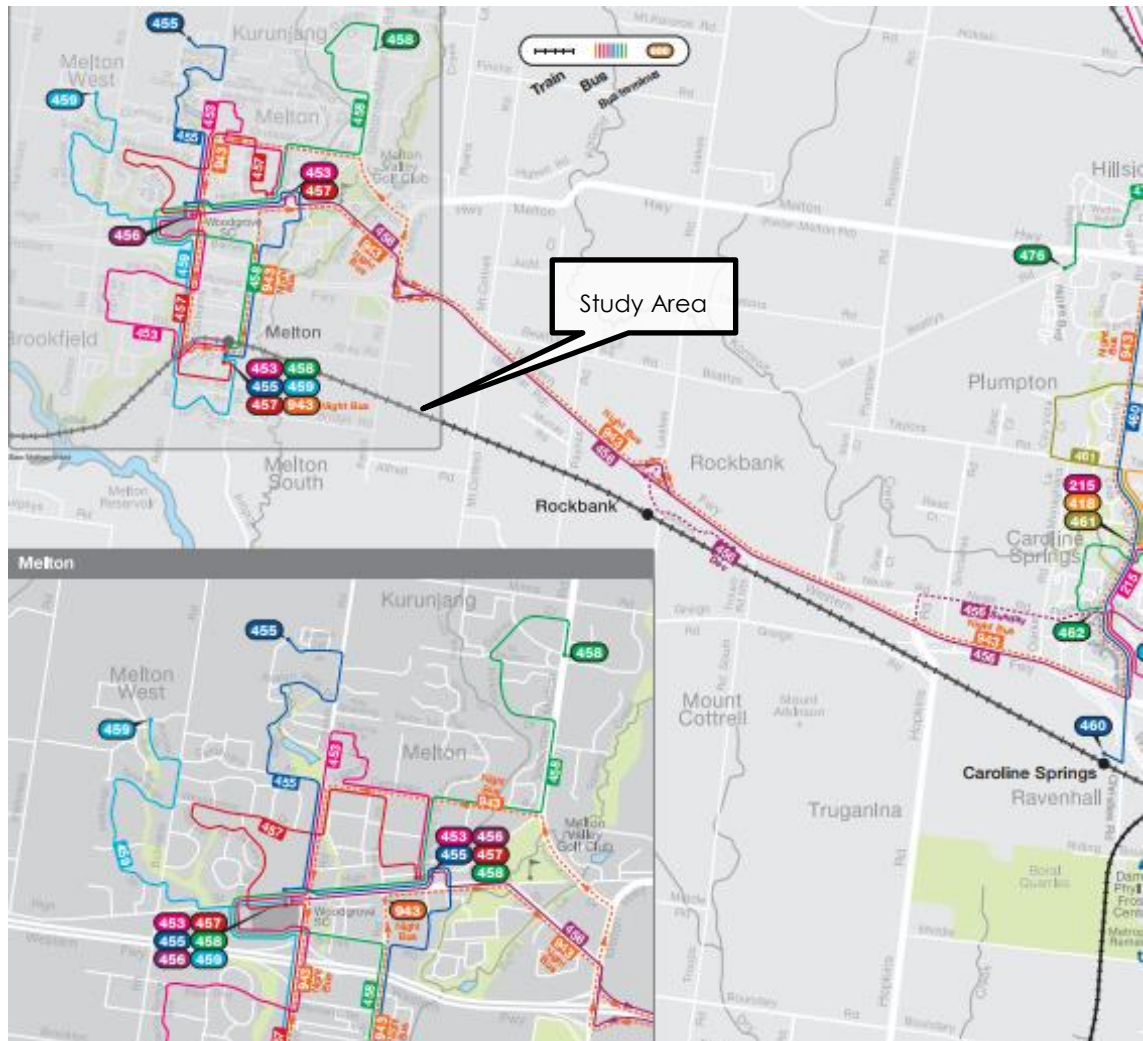
A summary of key information regarding the bus service in the vicinity of the UDF study areas is presented in Table 3.2 and the broader bus network illustrated in Figure 3.6.

Table 3.2: Bus Service Summary

Route	Duration to Sunshine (from Mount Cottrell Rd / Western Hwy)	Duration to Melton (from Mount Cottrell Rd / Western Hwy)	Daily services (each direction)	Timeframe	Frequency
456- Melton to Sunshine via Rockbank	49 minutes	16 minutes	31	5:30am – 9:45pm	20-40 minutes

Source: Public Transport Victoria

Figure 3.6: Existing Public Transport



Reproduced from Public Transport Victoria

3.5 Active Transport

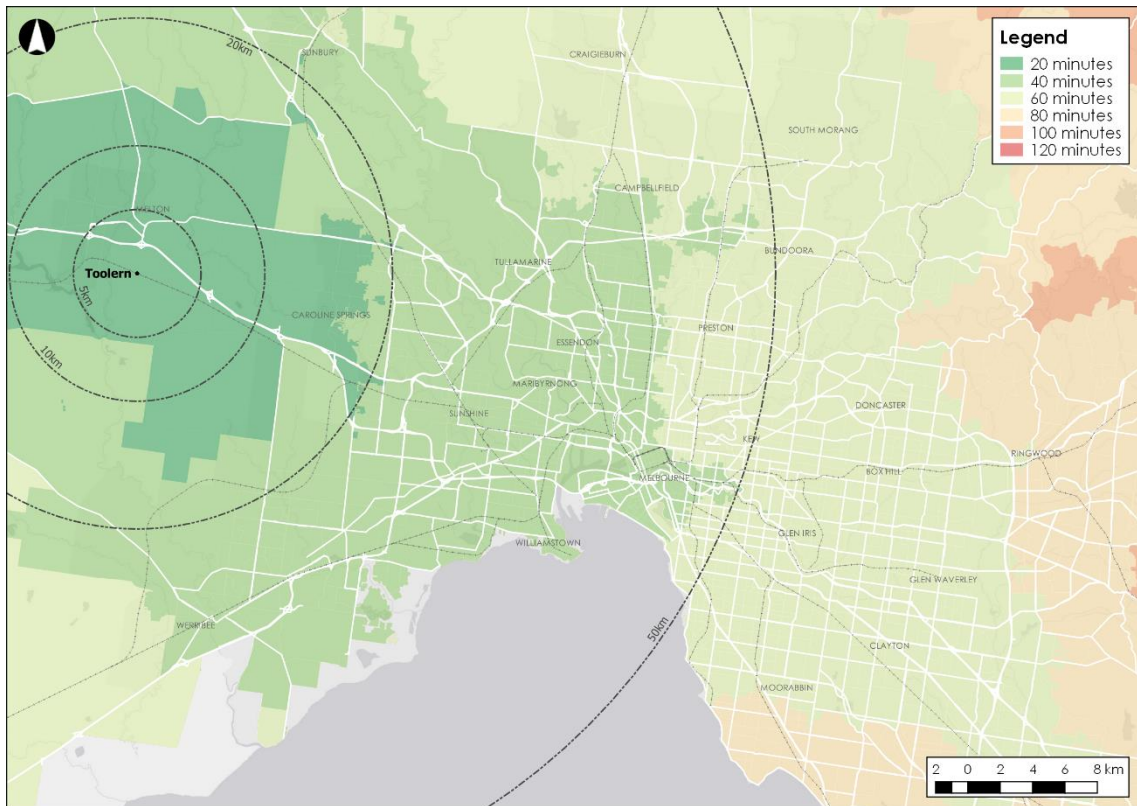
The UDF study areas do not currently consist of any designated walking or cycling infrastructure.

3.6 Accessibility

3.6.1 Road

Due to proximity to the Western Freeway, the Toolern UDF study areas have a high level of road based accessibility, with some outer western suburbs within 20 minutes by road, as shown in Figure 3.7. Moreover, the inner western, inner southeastern, northern and central Melbourne suburbs can be accessed by road within 40 minutes of the UDF study area.

Figure 3.7: Road travel time from Toolern

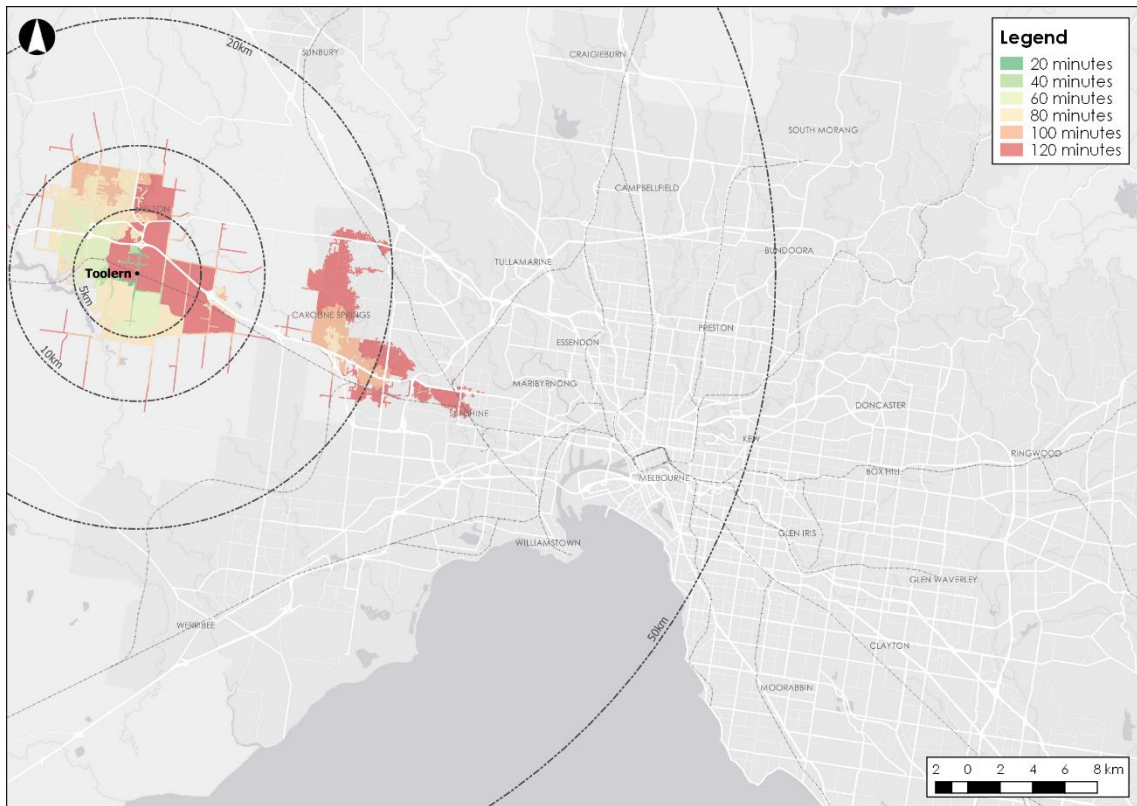


Reproduced from VITM

3.6.2 Public Transport

Accessibility from the Toolern UDF study areas is currently much more limited by public transport, as depicted in Figure 3.8. Since access to public transport services requires walking significant distances, only a small area of outer western Melbourne can be accessed within 120 minutes by public transport.

Figure 3.8: Public transport travel time from Rockbank



Reproduced from Public Transport Victoria

4. Future Conditions

4.1 Toolern PSP

The PSP envisages the transition of this agricultural area into a vibrant suburb with a diversity of housing choices, provision of jobs, services and commercial opportunities and excellent transport connectivity. The PSP area is forecasted to support a population of approximately 55,000 people and provide employment for 25,000 people. An average minimum housing density of approximately 15 dwellings per net developable hectare will be delivered across the PSP, with higher densities achieved near activity centres. A summary of the demographic data outlined in the PSP is summarised in Table 4.1.

Table 4.1: Summary of Toolern PSP future development

Location	Item	Figure	Source
Toolern PSP	Population	55,000	Toolern PSP (2015), p. 16
	Dwellings (density)	24,000 households	Toolern PSP (2015), p. 16
	Jobs	30,000	Toolern PSP (2015), p. 16

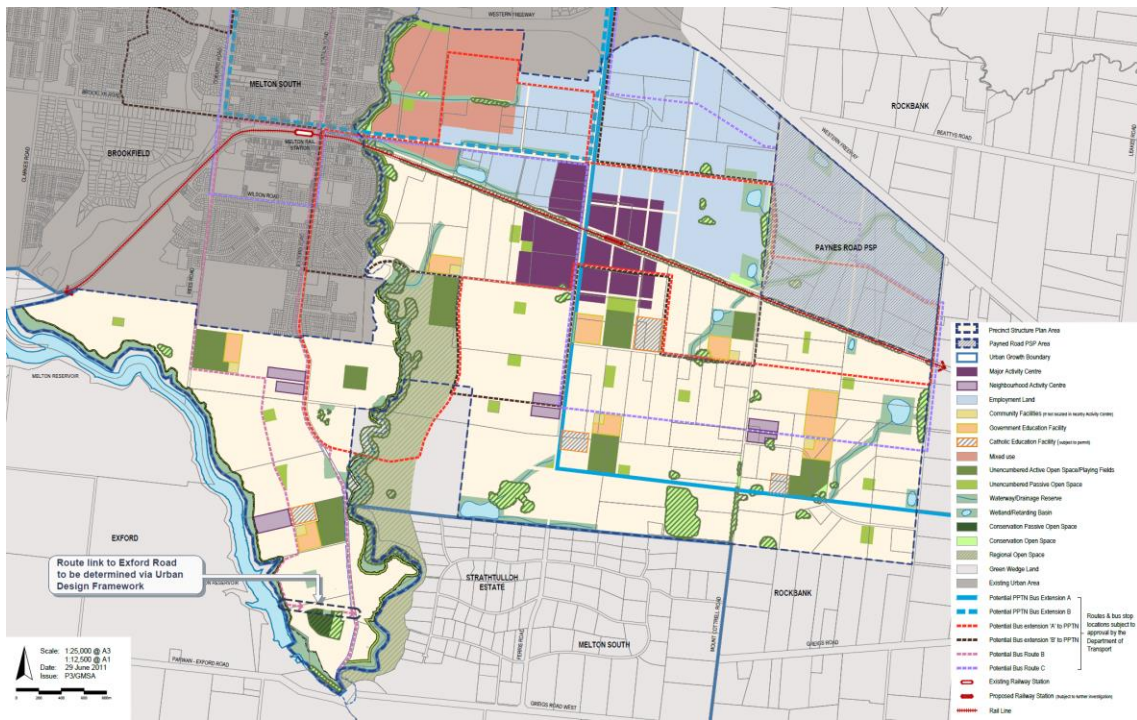
The PSP also sets out what the proposed transport network will be. In this regard, the Road Network, Public Transport and Walking and Trails plans in Figure 4.1, Figure 4.2 and Figure 4.3, respectively.

Figure 4.1: Toolern PSP – Road Network Plan



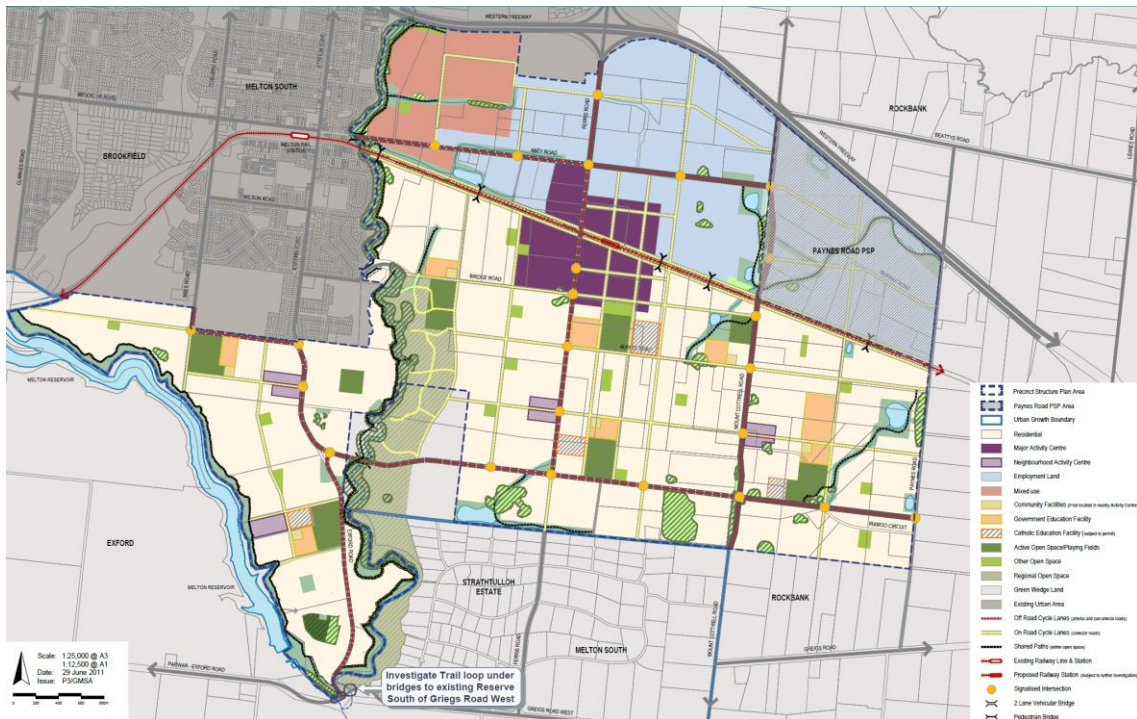
Source: Toolern PSP, December 2015 - Plan 15, pg. 48

Figure 4.2: Toolern PSP – Public Transport



Source: Toolern PSP, December 2015 - Plan 16, pg. 60

Figure 4.3: Toolern PSP – Walking and Trails Plan



Source: Toolern PSP, December 2015 - Plan 17, pg. 62

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Toolern Employment and Mixed Use UDF and Revision of the Toolern Town Centre UDF, Urban Design Framework

4.2 Toolern Town Centre

The Toolern Town Centre will serve as the core activity centre of the PSP area and the wider outer western metro region. The Town Centre will consist of commercial and retail premises (approximately 70,000 sqm of floor space), civic buildings, health, education and community services, leisure facilities and urban parks. It will be clustered around the proposed Toolern Railway Station, providing commuters with direct mass transit to Melbourne's CBD. Provisions for cycling and pedestrian movements will also be emphasized in the implementation of the Town Centre to promote the use of alternative modes of transport to private vehicles. Higher density housing will be provided within and surrounding the Town Centre, which will deliver housing diversity in the PSP and the option to live walking distance to the Town Centre and Railway Station affordably.

In Section 4.3 of the Toolern PSP there are also a number of functions that relate to the development of the Town Centre, which are reproduced below in Figure 4.5.

Figure 4.4: Toolern PSP – Town Centre Functions

- The Major Activity Centre serves as the primary Activity Centre and transport hub for the Toolern Precinct Structure Plan area. The Centre will provide higher order retailing, services, civic, leisure and social infrastructure.
- The Centre will develop in accordance with the Toolern Precinct Structure Plan towards a total of approximately 3,000 dwellings and 70,000 sqm of retail floor space which will be delivered in stages in response to demand.
- Anchored by a main street and shopping side streets, the Centre's retail offer is expected to include three or four large supermarkets, discount department stores, a small department store, a wide range of specialty and comparison retail shops, restaurants and cafes, and a variety leisure and entertainment activities.
- The Centre will provide business, civic and government services serving Toolern and the wider Melton catchment, including health services and suites, a library, a municipal service centre, police services, law courts, emergency services, consulting suites and home offices.
- It will have an adjacent Government and Secondary College and tertiary education facility.
- Passive and active open spaces will comprise an active recreation reserve, a 'town green', a 'town square', and a mix of ancillary civic spaces.

4.3 Toolern Employment and Mixed-Use Land

The Toolern Employment and Mixed-Use Land will serve as a key employment hub in the area and will provide the opportunity for a diversity of businesses to flourish. The objective of developing the Employment and Mixed-Use Land is to help ensure one job is created for each household in the PSP.

In Section 4.3 of the Toolern PSP there are also a number of objectives that relate to the development of the Employment and Mixed-Use Land, which are reproduced below in Figure 4.5.

Figure 4.5: Toolern PSP – Employment and Mixed-Use Land Objectives

Theme	Planning and design guidelines
Building types, lot size and land use	<p>The following planning and design guidelines <i>must</i> be met:</p> <ul style="list-style-type: none"> • Provide a range of lot sizes that will accommodate a variety of floor plates and building types. • Locate new uses which may impinge on amenity to the east of Ferris Road. • Position office components of industrial buildings to the street front. <p>The following planning and design guidelines <i>should</i> be met:</p> <ul style="list-style-type: none"> • Locate new large floor plate and industrial uses to the east of Ferris Road with good access to the arterial network. • Locate small-scale buildings to the west of Ferris Road. • Locate taller buildings or those of more notable design on prominent sites and at major intersections.
Frontages	<p>The following planning and design guidelines <i>should</i> be met:</p> <ul style="list-style-type: none"> • Minimise front building setbacks with clearly defined principal entrances addressing streets or public spaces. • 'Activate' ground-level frontages on commercial sections of streets and ensure the design of upper levels is compatible with overall façade character. • Contain signage within built form or in an integrated/shared structure.
Height and massing	<p>The following planning and design guidelines <i>must</i> be met:</p> <ul style="list-style-type: none"> • Ensure height, massing and disposition of buildings on the opposite side of roads surrounding the Major Activity Centre are generally consistent with the height, massing and disposition of buildings within the Major Activity Centre. • Reduce the visual bulk of large buildings through building and landscape design.
Parking and service areas	<p>The following planning and design guidelines <i>should</i> be met:</p> <ul style="list-style-type: none"> • Locate off-street parking behind buildings fronting commercial streets, or in basements or parking structures. • Provide access to off-street parking and service areas from side-streets or rear laneways. • Screen off-street parking and service areas from the public realm. • Provide direct pedestrian access to public streets from parking areas.
Pedestrian and cyclist movement	<p>The following planning and design guidelines <i>must</i> be met:</p> <ul style="list-style-type: none"> • Plan for accessible and safe pedestrian and cycling links to, from and within the employment area, and linked to the broader walking and cycling network. • Provide a continuous pedestrian connection between the Major Activity Centre and Employment Area.
Landscaping	<p>The following planning and design guidelines <i>must</i> be met:</p> <ul style="list-style-type: none"> • Provide only low landscaping along the Western Freeway frontage. <p>The following planning and design guidelines <i>should</i> be met:</p> <ul style="list-style-type: none"> • Provide appropriately designed landscaping treatments, setbacks and buffers to minimise the impacts of blank sections of facade fronting principal streets.

4.4 Transport Infrastructure Projects

Table 4.2 sets out the proposed or committed transport infrastructure projects that will affect the transport outcomes of the UDF study areas in the future.

Table 4.2: Transport infrastructure projects affecting the Toolern UDF study areas

Infrastructure	Project	Description	Funding Commitment?	Source
Rail	Toolern Railway Station	Proposed new station on the Ballarat Line	Yes	Victorian Planning Authority
Rail	Ballarat Line Upgrade	Rail track will be duplicated from Deer Park West to Melton, allowing for increased service frequency	Yes	Melbourne Metro Rail Authority
Rail	Melton Line Electrification	Potential future electrification of the railway from Deer Park to Melton to establish a new metropolitan commuter service	Yes	Melbourne Metro Rail Authority
Road	Outer Metropolitan Ring Road	The Outer Metropolitan Ring Road is a proposed freeway that will create a new high-speed road transport link between key centres in Melbourne's north and west. The alignment is expected to be located east of the Toolern PSP area	No	VicRoads

4.5 Ballarat Line Upgrade

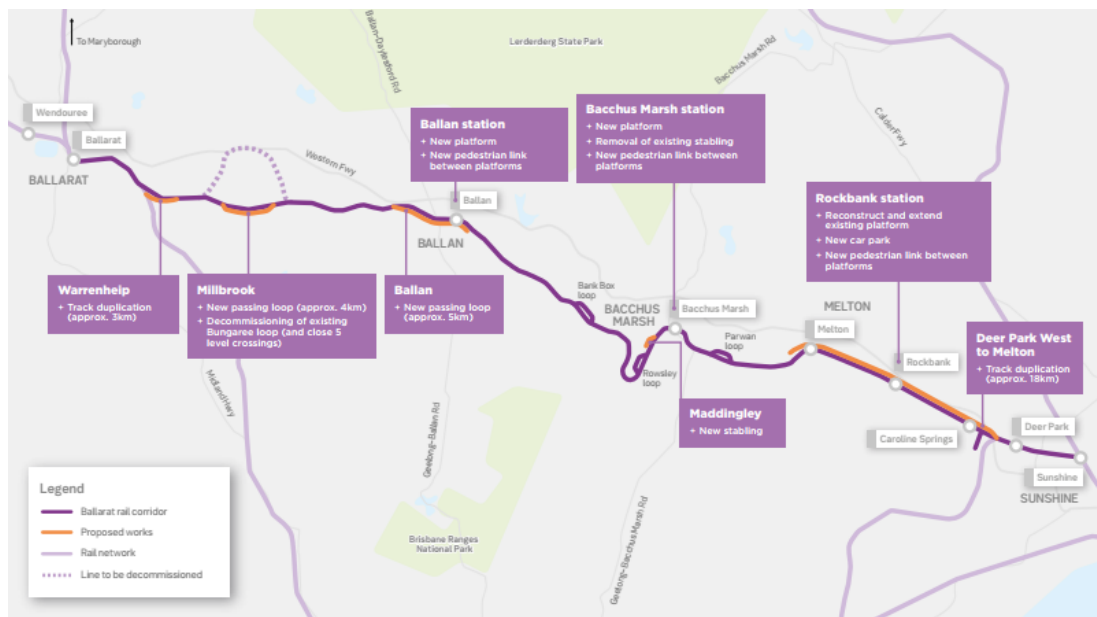
The Ballarat Line Upgrade (BLU) has been approved and will begin construction late this year, with a target completion date of late 2019. The BLU is expected to increase the frequency and improve

the reliability of rail services to the outer western suburbs of Melton, Bacchus Marsh, Ballan and Ballarat.

The BLU comprises the following rail and station upgrades to the existing Ballarat railway line between Deer Park West and Warrenheip, which are also shown in Figure 4.6.

- Duplication of approximately 18km of track between Deer Park West and Melton
- Upgrade of Rockbank Station, including extending platforms, constructing a new pedestrian link between platforms and building a new car park
- Additional platforms with new pedestrian links between them at the Bacchus Marsh Station and Ballan Station
- New stabling facilities at Maddingley (Kerrs Road), and the removal of existing stabling facilities at Bacchus Marsh
- A five kilometre passing loop at Ballan
- A new four kilometre passing loop, at Millbrook, making it possible to close the existing Bungaree loop and remove five level crossings
- Duplication of three kilometres of track east of Warrenheip Junction.

Figure 4.6: Ballarat Line Upgrade Project – Scope of Works



Source: <http://ballaratlineupgrade.vic.gov.au/>

4.6 Outer Metropolitan Ring Transport Corridor

The Outer Metropolitan Ring (OMR) Transport Corridor is proposed to accommodate a 100 kilometre long high-speed transport link for people and freight in Melbourne's north and west, through Werribee, the Melton Municipality, Tullamarine, Craigieburn / Mickleham and Epping / Thomastown.

The OMR Transport Corridor is proposed to consist of the following transport facilities:

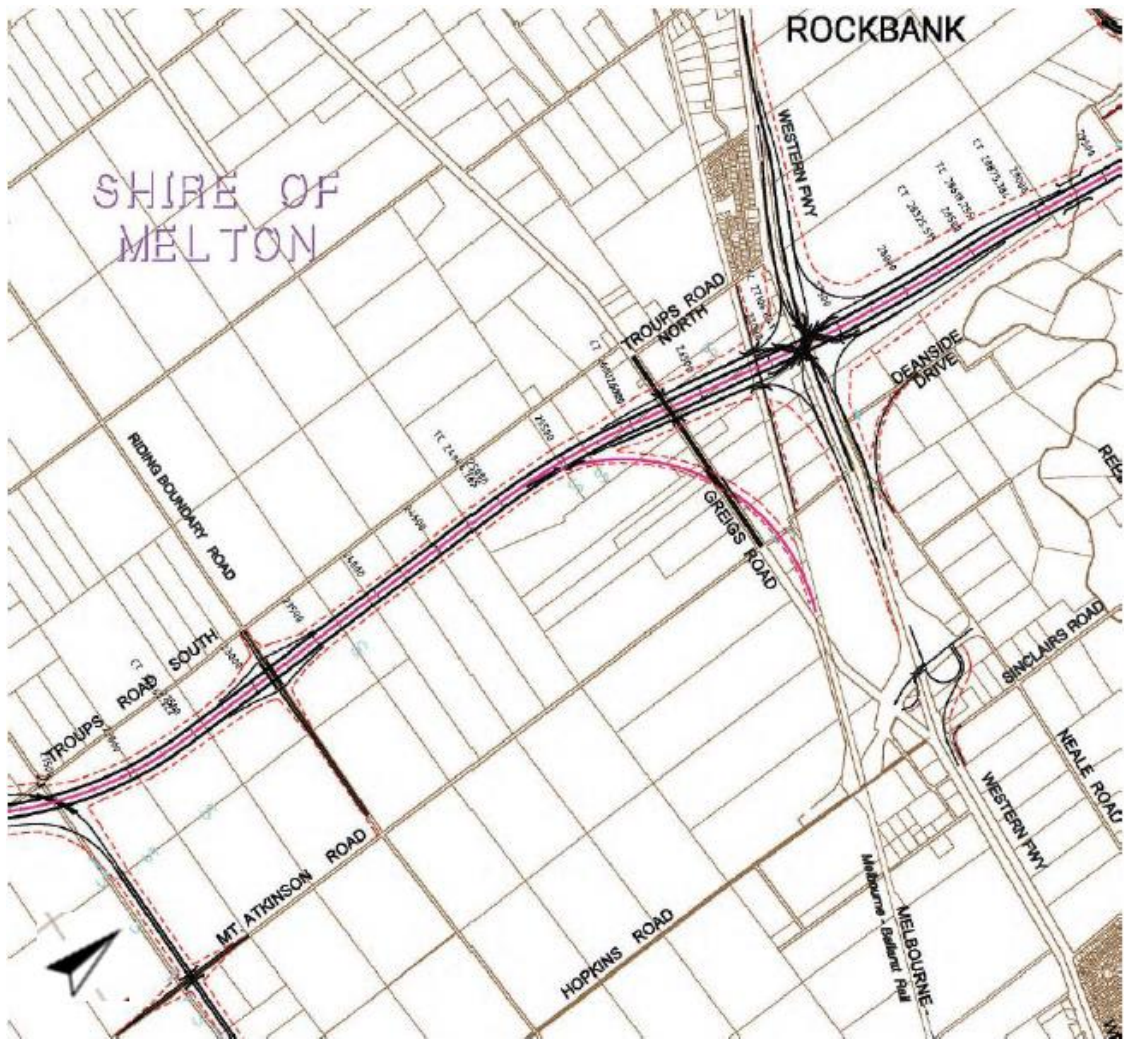
- Freeway standard road, capable of up to six lanes in each direction (only up to four lanes where rail is being accommodated)
- Railway line in the median, capable of up to four tracks that will support interstate freight and high-speed passenger trains

The purpose of the OMR Transport Corridor, as stated on the VicRoads website, is to provide the following:

- *Create better connections to key international transport hubs such as Melbourne Airport, Avalon Airport and the Port of Geelong*
- *Improve access to the proposed Donnybrook/Beveridge Interstate Rail Terminal*
- *Serve as an important travel and freight route to interstate and regional destinations*
- *Link residential and employment growth areas in the north and west of Melbourne*
- *Improve access in this major employment corridor, which includes Avalon Airport, Werribee, Melton, Melbourne Airport, Mickleham and Donnybrook.*

Moreover, Amendment VC68, gazetted on 6 August 2010, reserved the OMR Transport Corridor in municipal planning schemes, through a Public Acquisition Overlay. Further work and approval stages are required before any construction activities occur, but at this time the OMR Transport Corridor interchange arrangement with the Western Freeway is expected to broadly be as per the layout shown in Figure 4.7.

Figure 4.7: OMR Transport Corridor Interchange Arrangement with the Western Freeway



5. Current Toolern Town Centre UDF

5.1 Overview

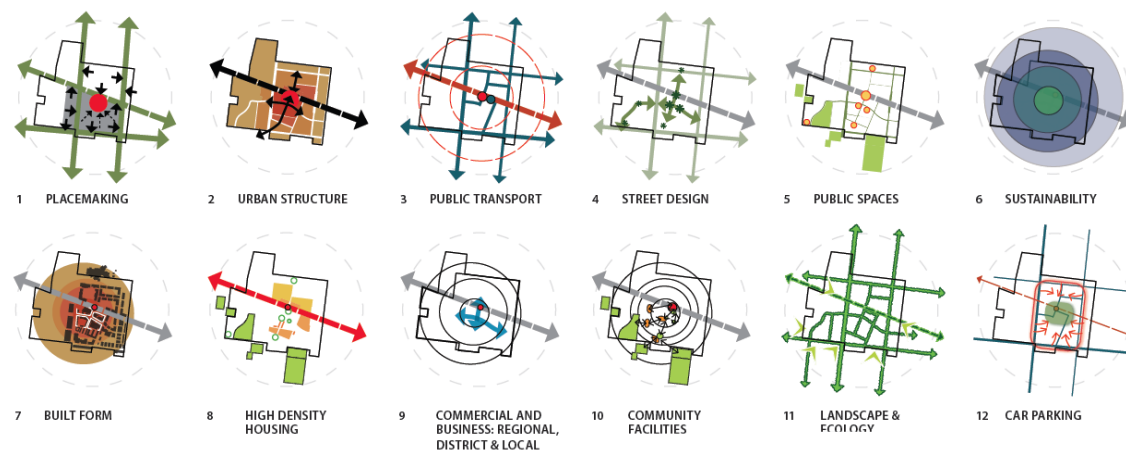
In 2012 there was an Urban Design Framework prepared for the Toolern Town Centre, which set out a vision to make it a destination in its own right, by making it a compact and dynamic transit-orientated centre, with mixed uses, higher densities and integration with the broader catchment. Moreover, the following five primary objectives were met with the development of the 2012 Toolern Town Centre UDF:

1. Provide a town centre structure which facilitates immediate development and investment to attract services and development to encourage residential and commercial growth in Toolern
2. Provide the framework to the delivery of a town centre with a strong sense of place and identity which promotes healthy lifestyle patterns and a high level of social interaction.
3. Identify the fundamental structure elements of the UDF which are critical in delivering the short, medium and long-term visions for the town centre.
4. Identify the catalyst projects that inform and facilitate the staging of development.
5. Provide a land use and development framework to co-ordinate public and private investment in relation to development and staging.

5.2 Strategic Principles

At the core of the Toolern Town Centre UDF was the 12 strategic principles that would be used to help guide its development and ultimate implementation. These 12 strategic principles are presented in Figure 5.1.

Figure 5.1: Toolern Town Centre UDF – 12 Strategic Principles



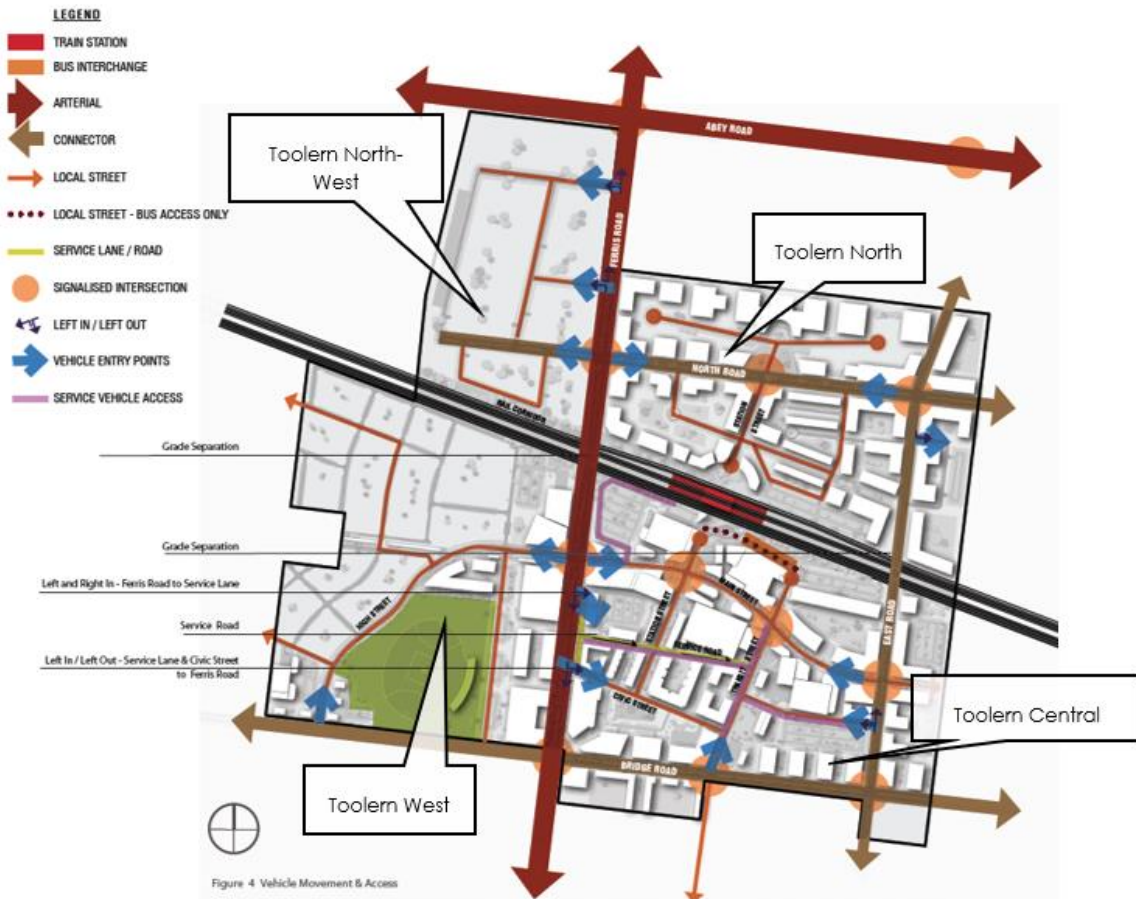
Of these strategic principles, three directly relate to transport (i.e. Public Transport, Street Design and Car Park), these strategic principles need to be considered in an integrated fashion, and they mesh within town centres to ultimately provide the fabric that the community interacts on.

Moreover, these three transport related strategic principles all point to prioritising more sustainable transport modes in accessing the town centre, and making the centre itself pedestrian friendly to achieve a designed level of amenity and community cohesion.

5.3 Movement and Access

The proposed transport arrangements for the Toolern Town Centre are set out through the proposed Movement and Access Arrangements. More specifically, the Vehicle Movement and Access Plan, and Primary Pedestrian and Cycling Movement Plan, have been reproduced in Figure 5.2 and Figure 5.3, respectively.

Figure 5.2: Toolern Town Centre UDF – Vehicle Movement and Access



As illustrated in Figure 5.2, the UDF identifies four quadrants as part of the Toolern UDF is divided roughly by Ferris Road (north-south) and the Melbourne – Ballarat Railway (east-west). The proposed Vehicle Movement and Access Plan reproduced in Figure 5.2 indicates a typical grid based road network at an arterial and connector level. The local road network within Toolern Central is more circuitous, as it feeds the various internal areas, however there is a attractive through route in the southeast area via Main Street, which will need to be designed to avoid its use as a through route with a lack signal coordination (prioritise pedestrian crossing movements), limit property and car park access, and provide a low speed environment.

Figure 5.3: Toolern Town Centre UDF – Primary Pedestrian and Cycling Movement



The proposed Primary Pedestrian and Cycling Movement Plan reproduced in Figure 5.3 indicates a comprehensive pedestrian and cycling network that could be used to access the town centre. Moreover, pedestrian priority is proposed through the core of the town centre in the southeast on the broader area, which includes a link to and through the future station. Bicycle routes also lead to the station, including along the rail line, but on different sides, which is acceptable for those with a destination at the station, but may prove to be a challenge to those travelling through as cyclists will need to navigate crossing the rail line when travelling between Melton and Rockbank, which could result in discouraging further afield cycling trips.

Also, the detail around how the various routes will be accommodated along each route and especially at crossings of intersections is critical to the overall success of the facilities and encouraging people to use them to access the town centre.

End-of-trip facilities will be required at key gateway and destination places. These are recommended to be provided as public facilities and not solely relied on to be provided as part of private development.

Beyond the town centre, broader pedestrian and bicycle facilities need to be provided and align with these proposed within the town centre, as its catchment will be the residential and employment areas within approx. 2km for pedestrians and 5km for cyclists (equates to an approx. 20min travel time).

6. Transport Modelling

6.1 Continual Planning Flux

As previously mentioned, the Toolern PSP is located in Melbourne's West Growth Corridor (i.e. northwest fringe of metropolitan Melbourne, between Melton and Sunshine). The level of housing, employment, services and transport infrastructure expected to be delivered within this area is constantly evolving, through such activities as the Rockbank Major Town Centre UDF. As such, any outputs are considered to only be accurate at the time of preparation, based on the information and level of detail available at their time of their preparation.

This is the same with any transport modelling outputs. They are only as accurate as the land use and infrastructure inputs that were provided at their time of preparation. As such, the below transport modelling outputs will have been accurate at their time of preparation, but given their historic nature (even if only of a few years), they will not reflect the current expected levels of housing, employment, services and transport infrastructure to be implemented in the West Growth Corridor. The most notable differences are understood to relate to employment numbers, with Plan Melbourne '20-minute neighbourhood' objective resulting in a recent push to increase the number of jobs within the West Growth Corridor, so people can be nearer employment opportunities. As to when the associated land use data will be collated and inputted to update relevant transport models is not known at this time.

However, the land use and infrastructure arrangements affecting transport access and movement to the Toolern Town Centre, and Toolern Employment and Mixed-Use Land are not expected to have a significant change to those identified through the below transport modelling outputs as the general scale and size of change remains.

6.2 Victorian Integrated Transport Model

6.2.1 Overview

The Victorian Integrated Transport Model (VITM) is a tool developed and maintained by the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) to assist in the planning of road and public transport infrastructure in Victoria.

VITM is a multimodal strategic model that uses future population, employment, and land use data projections to forecast travel behaviour and the impacts of changes to the road and public transport networks. As such, VITM already includes future population projections within the West Growth Corridor, including the Toolern PSP, Town Centre, and Employment and Mixed-Use Land. VITM utilises this demographic data to identify the transport demand that needs to be accommodated by the transport network.

VITM contains all existing and anticipated major freeways, main arterials, and connector roads within the Melbourne Statistical Division. As such, the OMR Transport Corridor, proposed arterial road network and their interchanges are included in the future model years. It also includes the existing and anticipated metropolitan public transport network, so the Melbourne Metro Rail Project, Ballarat Line Upgrade, a future Toolern Station, and other service and network improvements planned through the Metropolitan Rail and Bus Network Development Plans are included in the future year models. However, the influence and impact of active transport is not

as well integrated within VITM, as a mode split estimate is applied to the daily anticipated volumes of a given area and the associated number of trips are removed, so not applied to the transport network.

As such, VITM provides a coarse but strategic understanding of how user demands will change into the future, including potential mode shifts, and the likely potential performance of the resulting transport network, as well as comparisons of potential infrastructure options.

The outputs presented below are based on the 2016 V2 VITM model (VITM2016_160317_V1_2) provided by DEDJTR to our office.

6.2.2 Demographic Data

Within the VITM zones that make up the Toolern PSP they indicate there will ultimately (2046) be the demographic numbers presented in Table 6.1, with further details provided in Appendix A.

Table 6.1: Toolern PSP VITM Zones - 2046 Demographic Data

Demographic Type	Toolern PSP
Residential Population	51,855
Household Numbers	19,067
Employment Numbers	5,801
Student Numbers	6,880

Based on the VITM demographic numbers presented in Table 6.1, against what is indicated in the approved Toolern PSP, there are expected to be marginally more residents and dwellings, but almost five times the number of jobs (+20,000).

6.2.3 Mode Splits

Within the VITM zones that make up the Toolern PSP they indicate there will be the number of car and public transport trips generated in 2046 presented in Table 6.2, with further details provided in Appendix A.

Table 6.2: Toolern PSP VITM Zones - 2046 Car and PT Trip Data

Mode Type	Daily Trip Numbers	Proportion of Trips
Car	209,060	85%
Public Transport	37,670	15%

As noted above, VITM adopts a mode split estimate for active transport for a given area and the associated number of trips are removed, so not applied to the transport network. In terms of what the active transport mode split is, it's typically around 5%.

The future Toolern Train Station is proposed to become a transport hub. It will likely service the Toolern PSP and some of the adjacent greenfield PSP's. In terms of the number of users of the station, VITM indicates the daily boarding and alighting numbers presented in Table 6.3.

Table 6.3: Toolern Train Station Daily User Numbers in VITM

Movement	2016	2031	2046
Boarding	0	10,000	7,990
Alighting	0	7,900	8,860
Total	0	17,900	16,850

6.2.4 Road Network Volumes

Resulting from the above demographic and trip generation numbers, the resulting traffic volumes on the arterial road network in and around the Rockbank PSP in 2031 and 2046 is presented in Figure 6.1 and Figure 6.2 respectively, with further details provided in Appendix A.

Figure 6.1: 2031 Daily Traffic Volumes in VITM

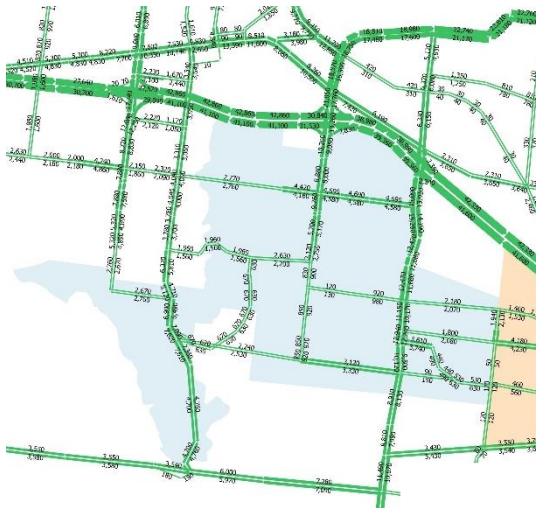
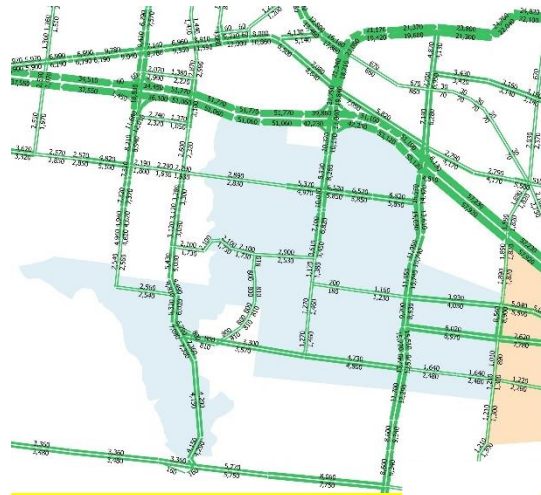


Figure 6.2: 2046 Daily Traffic Volumes in VITM



Most notable in the above daily traffic volumes on the arterial roads within and around the Toolern PSP is the following:

- Ferris Road south of the Western Freeway will start accommodating arterial level traffic volumes in 2031 (+7,000vpd), if only as it nears the interchange with the Western Freeway.
- The Melton Highway forms the northern approach to the interchange with the Western Freeway, and the traffic volumes are expected to double between 2016 and 2031.
- Mount Cottrell Road is a very attractive north-south route, potentially due to the congestion associated with the Ferris Road interchange with the Western Freeway interchange.

6.2.5 Road Network Performance

In terms of what ability the proposed road network will have to accommodate the anticipated traffic volumes in and around the Toolern PSP, we have extracted the peak period volumes and compared them against their typical capacities' of the associated road types and configurations (i.e. V/C plots).

In this regard, the likely performance of the roads in and around the Toolern PSP in the AM and PM peak periods in 2031 and 2046 are shown in Figure 6.3 to Figure 6.6, with further details provided in Appendix A.

Figure 6.3: 2031 AM VITM Road Network V/C's

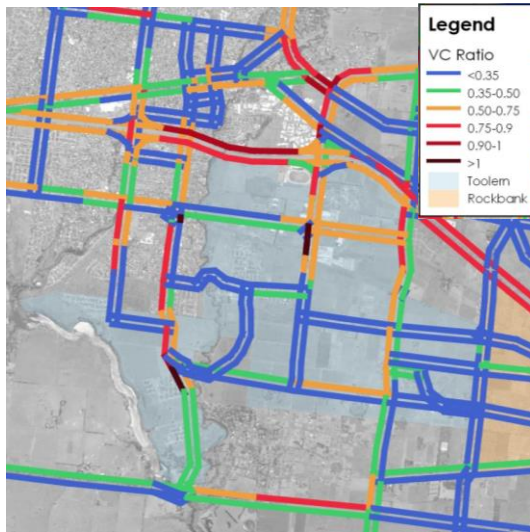


Figure 6.4: 2031 PM VITM Road Network V/C's

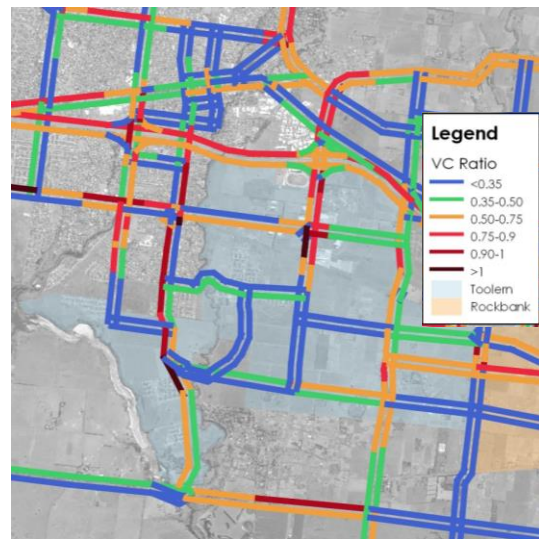


Figure 6.5: 2046 AM VITM Road Network V/C's

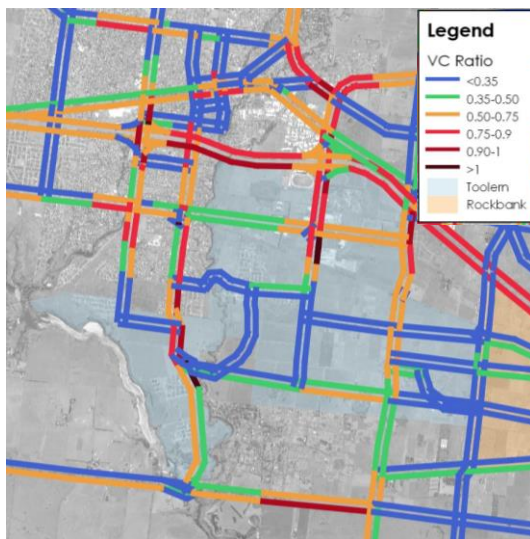
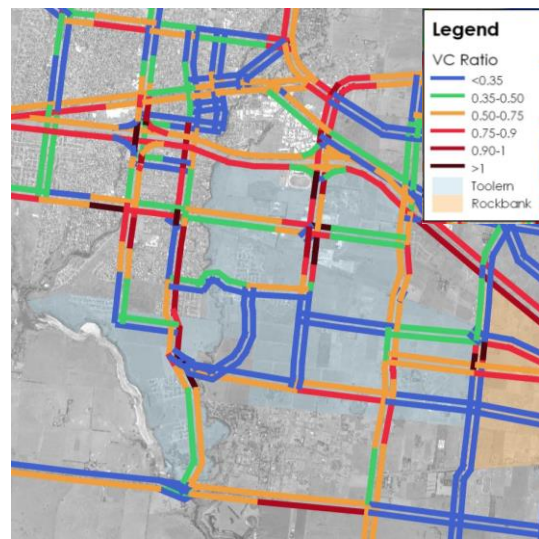


Figure 6.6: 2046 PM VITM Road Network V/C's



Based on Figure 6.3 to Figure 6.6, the following is noted about the ability for the road network in and around the Toolern PSP in 2031 and 2046:

- Within the Toolern PSP in 2031 the arterial road network is expected to be able to reasonably accommodate the anticipated traffic volumes, with a maximum V/C ratio of 0.75, except for Ferris Road, Mount Cottrell Road and Exford Road. Of these, there is a section on the departure side of Ferris Road at its intersection with Shogaki Drive that exceeds its theoretical capacity, i.e. V/C ratio > 1.0, which will require upgraded roads and intersection connections.
- Within the Toolern PSP in 2046 the arterial road network is expected to operate in a similar manner as 2031, except that there are additional road sections expected to exceed their theoretical capacity, namely Ferris Road's approach to the Western Freeway interchange and a section of Paynes Road. Suitable upgrades on these roads

would need to occur, unless managed through alternative transport facilities to better manage the associated transport demand.

6.3 Toolern PSP Transport Modelling Report

6.3.1 Overview

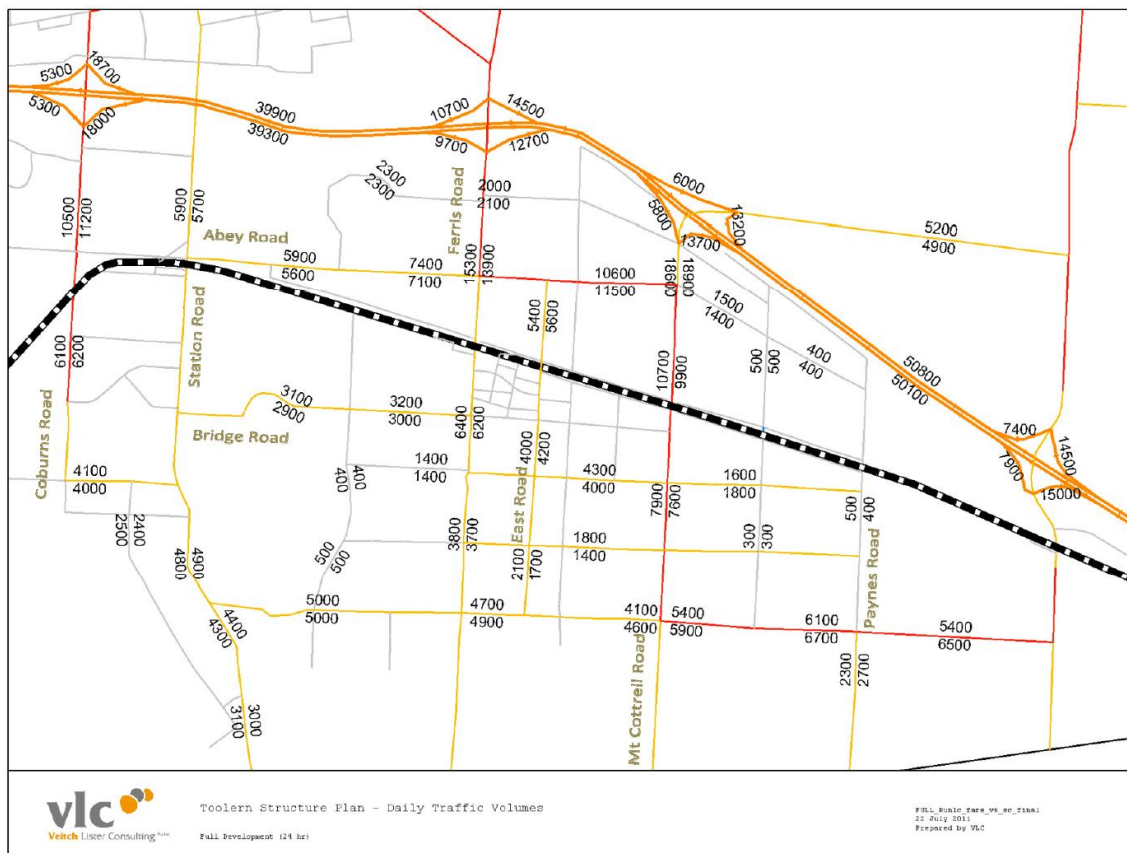
Veitch Lister Consulting undertook modelling for the Toolern PSP in 2008 using the Zenith transport model, which has been used by the State Government to assess various major transport projects. They were subsequently engaged in 2011 as part of the developing the Toolern Town Centre UDF to review the 2008 model to reflect the revised land uses, a more refined road network for the town centre and noting changes to the urban growth boundary.

A summary of the key outputs presented in the associated Transport Modelling Report, dated 25 July 2011, is provided below.

6.3.2 PSP Road Network Volumes

The results from the Veitch Lister modelling for the full development of the PSP in 2031 is presented in Figure 6.7. The Figure illustrates the daily traffic volumes on each of the main external and internal roads of the Toolern PSP.

Figure 6.7: Toolern PSP Model – 2031 Daily Traffic Volumes

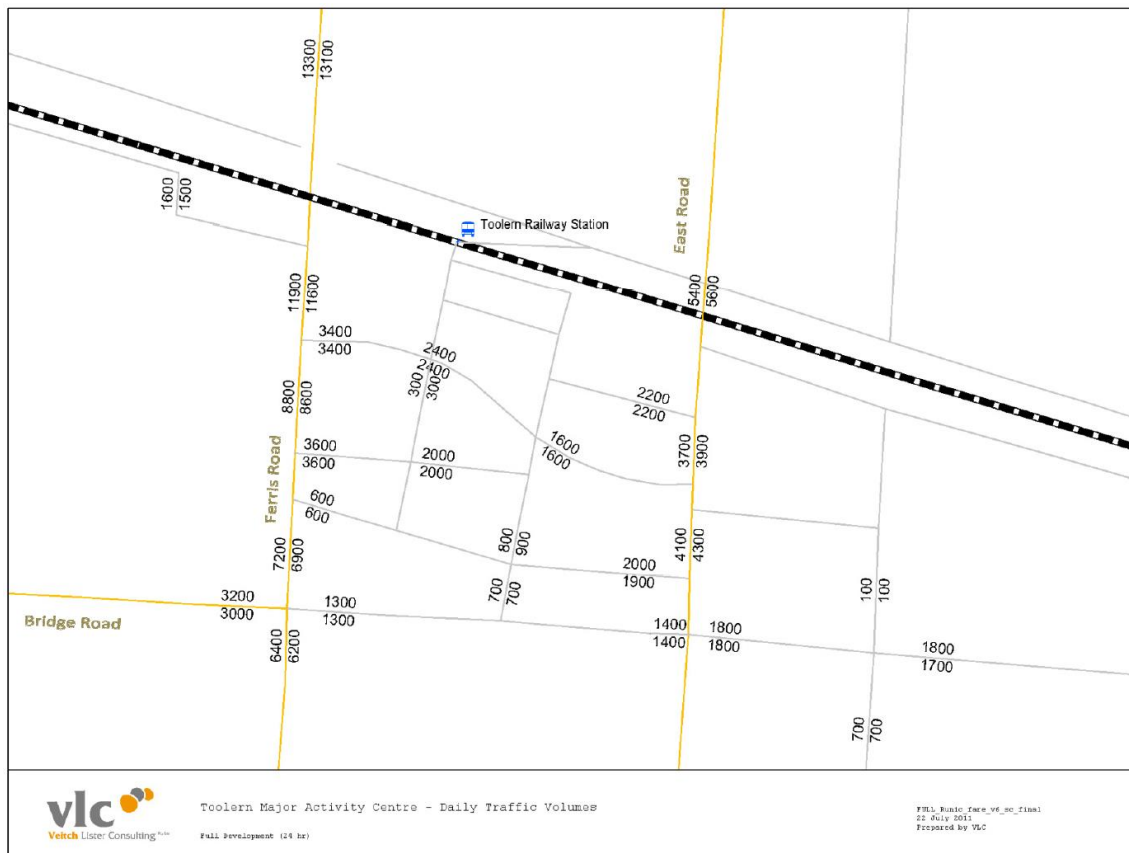


The daily traffic volumes presented in Figure 6.7 from the Veitch Lister modelling of the Toolern PSP are similar to those extracted from VITM. However, a more defined road network is provided the Veitch Lister modelling, including an additional interchange with the Western Freeway and Mount Cottrell Road.

6.3.3 Town Centre Road Network Volumes

The results from the Veitch Lister modelling for the full development of the Town Centre in 2031 is presented in Figure 6.8. The Figure illustrates the daily traffic volumes on each of the main roads that make up and provide access to the Toolern Town Centre.

Figure 6.8: Toolern Town Centre Model – 2031 Daily Traffic Volumes



The daily traffic volumes presented in Figure 6.8 from the Veitch Lister modelling of the Toolern Town Centre tie into those on the key roads in the area, which as mentioned are generally consistent with those extracted from VITM. Moreover, the traffic volumes within the town centre are all of a connector level, except those of the main north-south arterial road of Ferris Road. As such, there is considered a good ability to achieve a low speed more pedestrianised environment within the Town Centre, but management of the interface with and crossing of the north-south arterial roads will need to be undertaken so as to not impact the amenity being aimed for within the Town Centre.

6.4 Implications on Town Centre and Employment Precinct

Based on the transport modelling presented in this section of the technical report, the broader road network of the Toolern PSP is expected to be suitable to support the future level of development. There will be some locations of congestion, such as the key signalised access points to the town centre from the arterial road, but these are expected to be able to be designed out, such as through limiting property and car park access within the town centre from the internal local roads (at least the main street) and more from the sounding arterial and connector level roads. This can be achieved through the designation of the internal local roads of the Town Centre as pedestrian, bicycle and/or public transport priority routes, to connect with and align with VicRoads SmartRoads Policy approach to road network management.

However, further revised modelling is required to account for the increased employment numbers (i.e. 20,000 more jobs than anticipated in VITM) before this can be confirmed. In addition, the refined road network is required for both the Town Centre, and Employment and Mixed-Use Land to suitably test and ensure it can support the future proposed level of development. Such activities are expected to be completed shortly, as part of the UDF project.

7. Issues and Opportunities

7.1 Overview

There is a significant amount of background material relating to the planning of the West Growth Corridor, Toolern PSP, Toolern Town Centre, and Toolern Employment and Mixed-Use Land. This has been set out through the previous sections of the technical report. In terms of the issues and opportunities that exist with the development of a revised UDF for the Toolern Town Centre and a UDF for the Toolern Employment and Mixed-Use Land, the below is provided.

7.2 Planning Context

Background Material

In the West Growth Corridor, Toolern represents one of the key PSPs, with it proposed to accommodate the highest order Town Centre (Principle Town Centre), and Plan Melbourne indicates it as one of the two future Metropolitan Activity Centres. The Toolern PSP will also accommodate a major employment precinct, with in the order of 25,000 jobs.

On this basis, its development is critical to the development of the overall West Growth Corridor, so should be a high priority for the State Government, and be able to be strongly advocated for to deliver the key infrastructure needed to unlock and support its future development levels.

Key to the development of the Toolern PSP is the proposed train station and the precinct around it, which will form a transport hub that connects with the local bus and path networks. As such, a focus should be given to getting a commitment for and timing of implementation of the Toolern Train Station, especially given the current commitment for the Ballarat Line Upgrade (BLU).

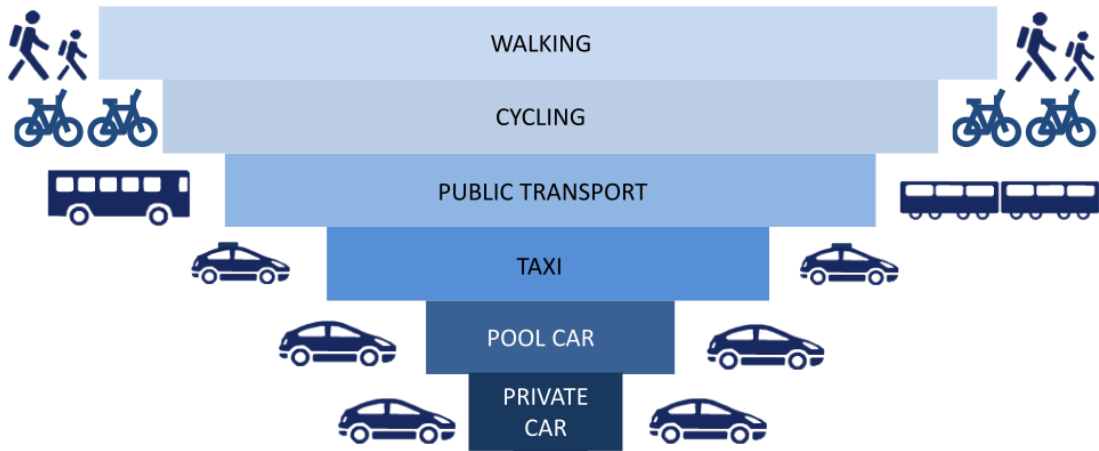
Planning Approach

At broad sense, the planning of the Toolern Town Centre and Toolern Employment and Mixed-Use Land is recommended to be based on the following two key approaches:

i **Modal Hierarchy**

Definitely within the Toolern Town Centre, but also in high density areas of the Toolern Employment and Mixed-Use Land, the various modes that will be used to access and movement within them should be prioritised as per Figure 7.1 to achieve a high amenity environment that supports community interactions and cohesion.

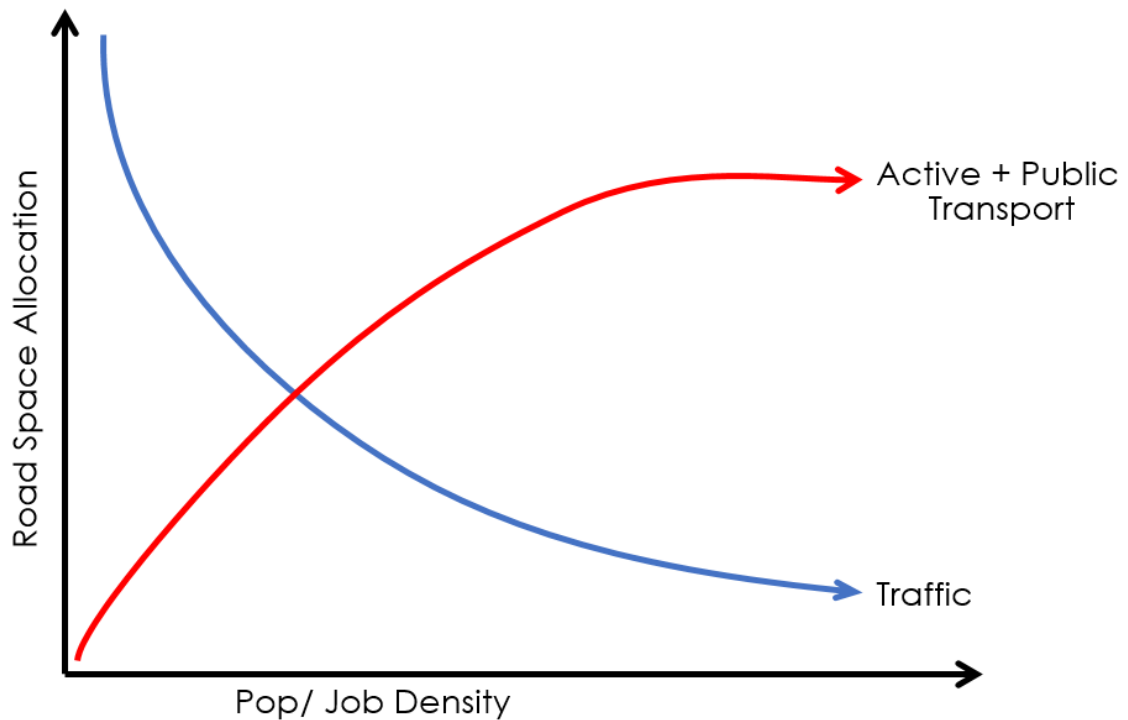
Figure 7.1: Town Centre Modal Priorities



ii **Road Space Allocation**

Population / job densities drive how road spaces are allocated. As the density increases, there is a need for more space efficient transport modes to be prioritised. As such, as you get closer to the Toolern Town Centre and Toolern Employment and Mixed-Use Land, the more space efficient modes of walking, cycling and public transport should be prioritised within each road corridor. Or alternatively, as single occupant private car use is the less space efficient transport mode, then it should be suppressed where practical within these higher density areas. This relationship is shown in Figure 7.2.

Figure 7.2: Road Space Allocation



7.3 Road Network

There is a broader arterial and connector road network being developed for the West Growth Corridor, including the Toolern PSP and those adjacent. Various modelling activities have and continue to be completed to ensure they provide the sufficient level of capacity to support the anticipated level of private vehicle and freight movements.

More specifically to the Toolern Town Centre, and Toolern Employment and Mixed-Use Land, the below is noted as the key issues and opportunities for them from a road network, public and active transport perspective.

Toolern Town Centre

As with the previous UDF for the Toolern Town Centre, there will be a grid based road network at an arterial and connector level breaking the area up into a number of sub-areas. The local road network within these sub-areas should be circuitous, so it only feeds the various internal areas and not provide opportunities for through vehicle movements.

Beyond achieving an orderly road network structure and its use, as outlined above, a key road in the town centre network will be Main Road, which currently extends between Ferris Road and East Road, which could potentially be a fairly attractive through route, instead of a place for people to spend time.

To avoid its use as a through route and be a place for people to spend time, the following design measures are recommended:

- Give more traffic signal time to pedestrian crossing movements than the minimum by taking it away from vehicle movements, as well as reduce the over cycle time lengths to increase crossing frequencies
- Limit property and car park access from Main Road (more from the surrounding arterial and connector roads) - promote access from rear laneways, as the Main Road should have pedestrian, bicycle and/or public transport priority
- Provide a low speed environment (30km/h or less) through suitable surfacing and traffic calming measures to make it more attractive to people to spend time.

Toolern Employment and Mixed-Use Land

The Toolern Employment and Mixed-Use Land will accommodate a range of commercial land use types, both in terms of activities but size. As such, a supporting road network that helps activate small sites, provides good access to arterial roads for larger sites, and minimises conflict between car park access and frontages of sites is desired.

This much like the current proposed road network for the town centre, will be built off the main arterial roads with connector level roads forming a grid based network, and local roads providing property access to smaller lots in a circuitous manner to minimise the attractiveness of through movements.

7.4 Public Transport

7.4.1 Train services

As mentioned above the Toolern Station is key to helping unlock the Toolern PSP, as well as help coordinate other initiatives, such as the integration of bus routes, kiss and go areas, and connecting path network to form a transport hub.

7.4.2 Bus services

The area between Melton and Caroline Springs is currently serviced by only one bus route along the Western Freeway. Internal connections and coverage to the areas beyond the Western Freeway are non-existent. This will need to be addressed to service the proposed Toolern PSP development levels and other surrounding PSP areas.

When the Toolern Railway Station is delivered, part of its success will be based on the integration with bus services, via a well located transport hub. A 1 hectare land budget has been included in the Toolern PSP, but its specific location is yet to be identified. Rather, its location is expected to be identified through the UDF.

As there is no direct road connection to the station currently proposed, it is expected that bus interchange will be provided off Ferris Road and/or East Road, adjacent to the rail line. To make these stops connected to the train station, it should be located as close as possible, by being prioritised over commuter car parking facilities. Also, high quality path connections will be required, including across the adjacent arterial roads, to connect the interchange with its proximate catchment (i.e. the Town Centre).

The above arrangements with the train station will be considered further when the bus network is planned for the area. In this regard, the bus network should provide a high level of coverage, i.e. 95% of residents and jobs within 400m of a bus route, particularly until the train station is delivered.

Providing such coverage is achievable for the Toolern Employment and Mixed-Use Land, as the arterial and connector road network will likely be spaced to provide this.

In terms of the Toolern Town Centre, the train station will provide the main public transport service offering, but providing routes on the peripheral arterial and connector road network should enable the desired level of coverage.

7.5 Active Transport

7.5.1 Pedestrian Infrastructure

Principal Pedestrian Network

There is a Principle Pedestrian Network set out in the Moving Melton – Integrated Transport Strategy, which essentially follows the arterial road network. It is expected that high quality facilities will also be provided on the connector level roads and within the key activity areas, such as shown through the Path and Trails Network Plan in the Toolern PSP.

Collectively these facilities should be sufficient to service the Toolern PSP. However, the 2km local catchments of the key areas, such as the Toolern Town Centre, and Toolern Employment and Mixed-Use Land should be prioritised, both from an implementation and intersection / crossing perspective, to encourage pedestrian and cycling movements for 'short' local trips.

Toolern Town Centre

Within the town centre, the road environment and pedestrian crossing arrangements are expected to prioritise pedestrian movements, as proposed in the previous Toolern Town Centre UDF. This is expected to be delivered through the following design elements:

- Provide a low speed environment (30km/h or less) through suitable surfacing and traffic calming measures, and/or being shared spaces.

- Crossing facilities on each intersecting road that prioritise pedestrians, such as zebra crossings and/or wombat crossings.
- Traffic signals that prioritise pedestrian crossing movements
- Footpaths with suitable widths to accommodate two wheelchairs passing (minimum 1.8m widths)
- Tactile paving
- Wheelchair accessible ramps (maximum gradient 1:20)
- Colour contrasting street furniture to ensure a safe walking environment for visually impaired pedestrians
- Shading for pedestrian were appropriate
- Attractive landscaping and urban design features to encourage pedestrian activity
- Crime Prevention through Environment Design (CPTED) e.g. lighting, clear sightlines to public realm spaces
- Wayfinding

Employment and Mixed-Use Land

It is expected that pedestrian paths will be provided along most road ways and crossing facilities on all intersecting roads they are located along. In this regard, the following design aspects should be provided with such pedestrian facilities:

- Be off-set from property boundaries and access points to give clear sight lines
- Suitable width for expected demands, including allowance for street furniture and building activation
- Prioritised crossings when linking to key destinations and connecting public transport stops.

7.5.2 Cycling Infrastructure

Principal Bicycle Network

There is a Principal Bicycle Network set out in the Moving Melton – Integrated Transport Strategy, which essentially follows the arterial road network. It is expected that high quality facilities will also be provided on the connector level roads and within the key activity areas, such as shown through the Path and Trails Network Plan in the Toolern PSP.

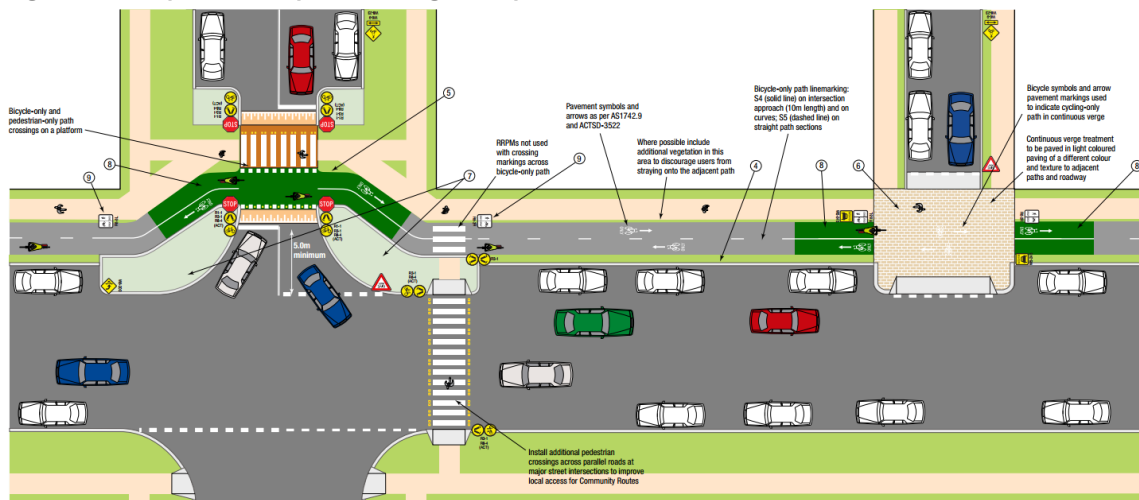
In terms of what the most appropriate bicycle facility types are for a given road corridor, reference should be given to the VicRoads Design Guidance for strategically important cycling corridors, namely Figure 4 in the guide.

Collectively these facilities, along with on-road facilities on lower order roads, should be sufficient to service the Toolern PSP. However, the 5km local catchments of the key areas, such as the Toolern Town Centre, and Toolern Employment and Mixed-Use Land should be prioritised, both from an implementation and intersection / crossing perspective, to suitably encourage their use in accessing them.

Toolern Town Centre

Within the town centre, connecting arterial and connector roads (within 5km), the bicycle facilities should be provided through separated facilities, with crossing facilities that are generally consistent with those shown in Figure 7.3.. Additionally, the road environment is expected to be a low speed one, enabling cyclists to mix with traffic if required.

Figure 7.3: Separated Bicycle Crossing Facility of Access Lane and Access Street



Source: <http://activeinfrastructure.net.au/practitioner-tool/docs/id-b5tdhzn19ukmaemi/ACTSD-0505-DRAFT-170607.pdf>

End-of-trip facilities will be required at key gateway and destination places. These are recommended to be provided as public facilities and not solely relied on to be provided as part of private development.

Toolern Employment and Mixed-Use Land

It is expected that broadly the following bicycle facilities will be provided within the Toolern Employment and Mixed-Use Land are, and its 5km catchment:

- Separated bicycle facilities along all arterial roads
- On-road bicycle lanes on connector level roads which are sign posted with 60km/h or lower speeds and separated facilities on higher speed roads
- Mixed traffic conditions on low speed local roads (i.e. 30km/h or less)
- Prioritised crossings when linking to the path network, key destinations and public transport facilities.

End-of-trip facilities will be also required at key gateway and destination places. These are recommended to be provided as public facilities and not solely relied on to be provided as part of private development.

In addition, a range of urban design characteristics will be incorporated to encourage active transport; this includes lighting, integrating land uses with the streetscapes and permeable networks.

7.6 Urban Development Trends and Technologies

Changing trends in the way people travel and integrate with their surroundings, combined with rapidly developing transport technologies needs to be considered with the planning of any new development. As such, with the development of the Toolern Town Centre, and Employment and Mixed-Use area, consideration must be made to how best to prepare for these changes, utilise opportunities and ultimately future proof the town centre. As part of ongoing research, GTA has prepared a paper which analyses four possible futures based on prevailing urban technology development trends. The four scenarios that were analysed were:

- Individual car ownership and urban expansion
- Individual car ownership and urban consolidation

- Mobility as a service (MaaS) and urban expansion
- MaaS and Urban Consolidation

The paper identified the scenario of MaaS and Urban Consolidation as the best outcome. This scenario consists of travellers having either a subscription or 'buy' transport as they need it, combined with intensification of development along defined public transport corridors.

The paper also addressed potential policy challenges that will need to be confronted. Further information can be found on the following link to the paper

<https://gtaconsultants.worldsecuresystems.com/ThoughtLeadership/AEV%20Urban%20Consolidation.pdf>.

Appendix A

VITM Outputs

Figure A.4: 2046 Residential Numbers

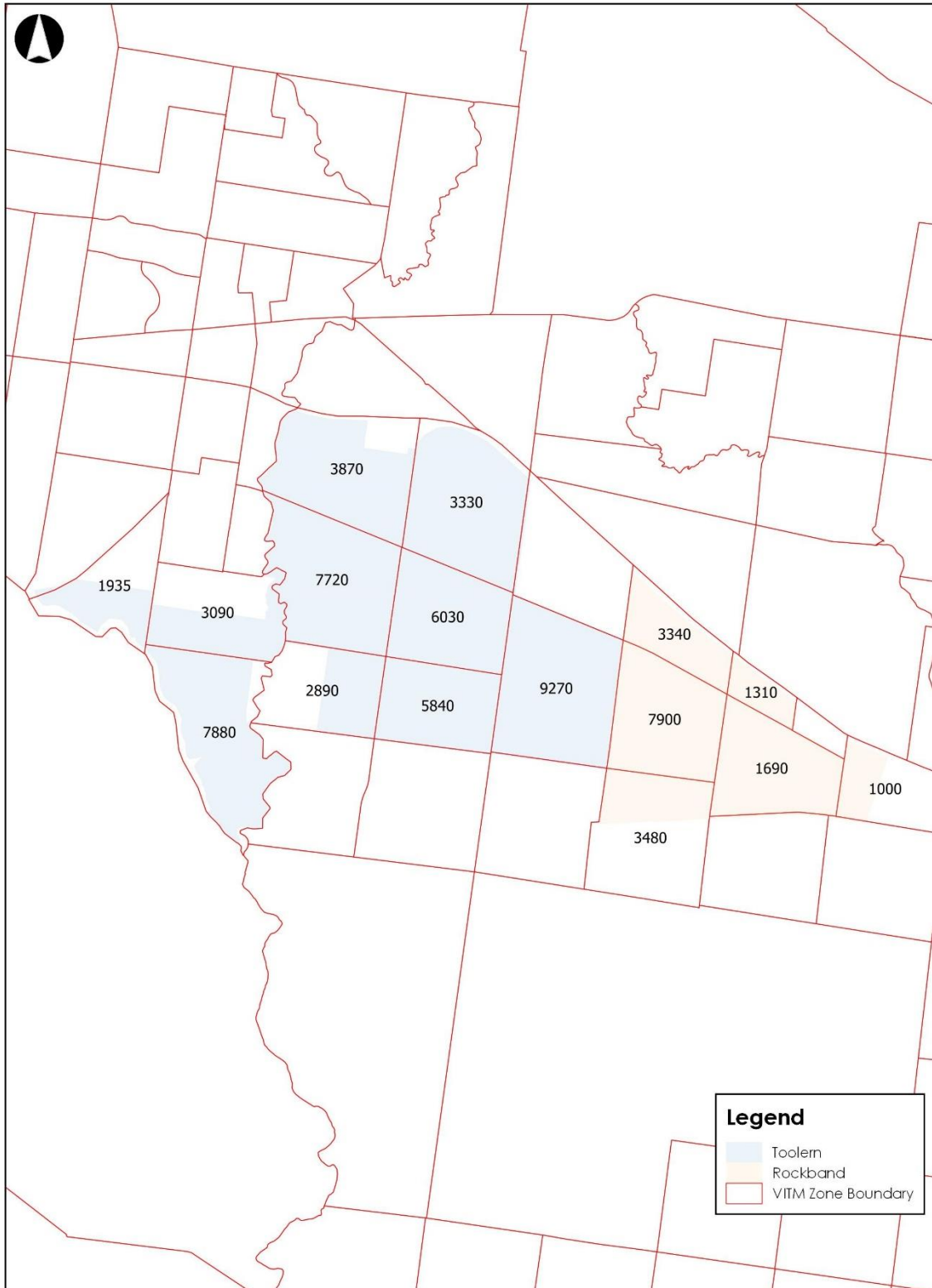


Figure A.5: 2046 Employment Numbers

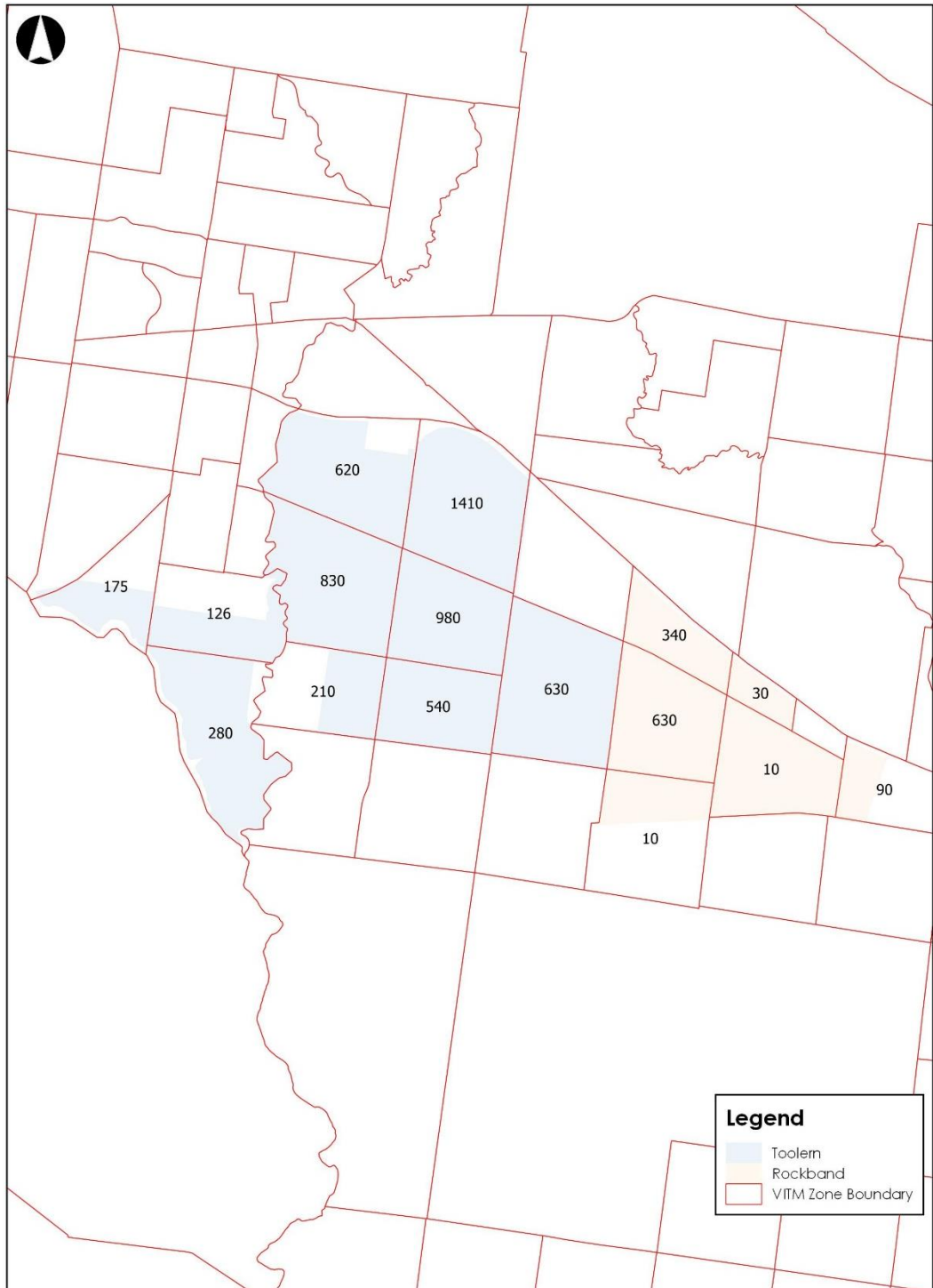


Figure A.6: 2046 Student Numbers

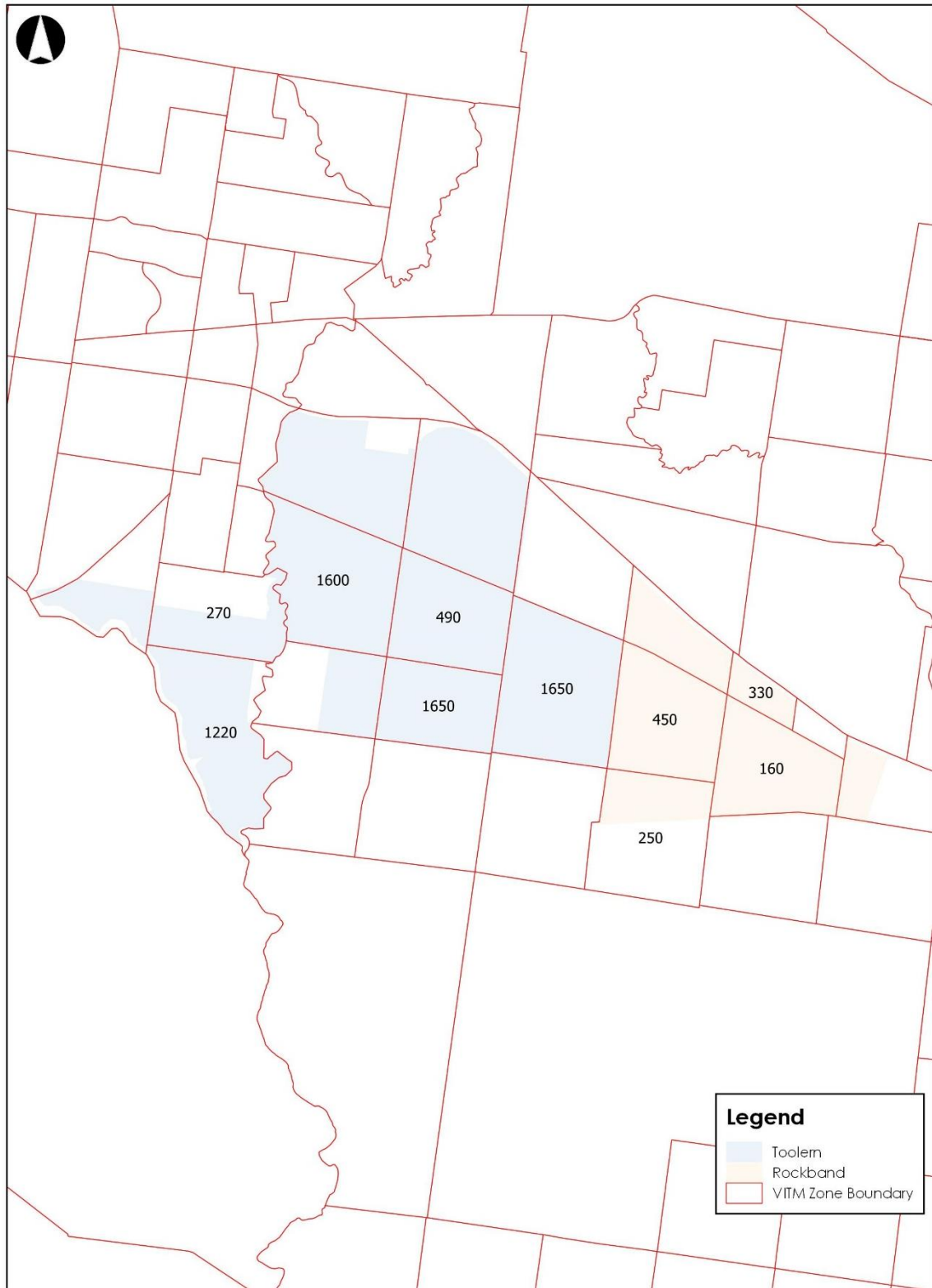


Figure A.7: 2046 Car and PT Trip Numbers

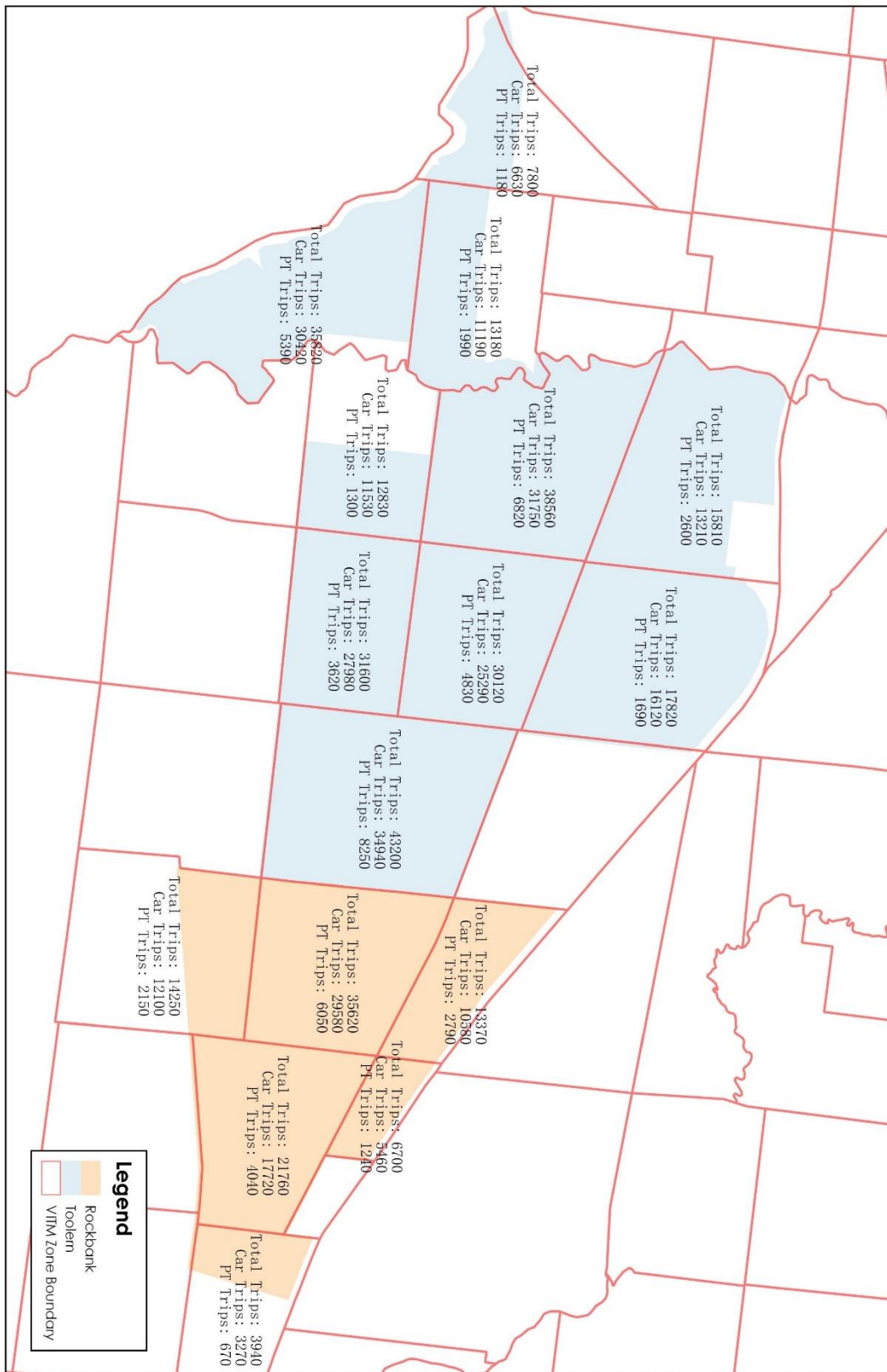


Figure A.8: 2016 Arterial Road Daily Volumes

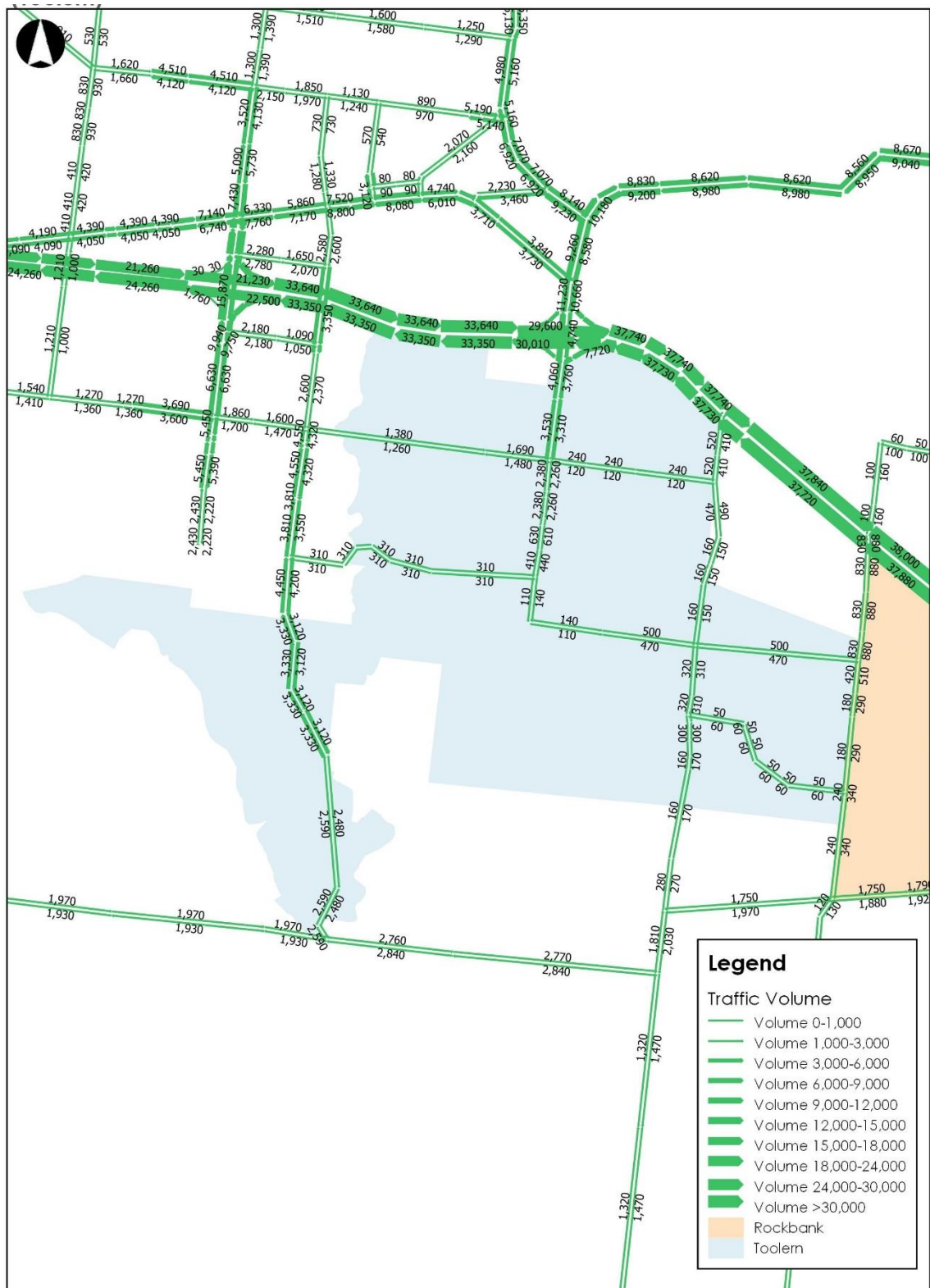


Figure A.9: 2031 Arterial Road Daily Volumes

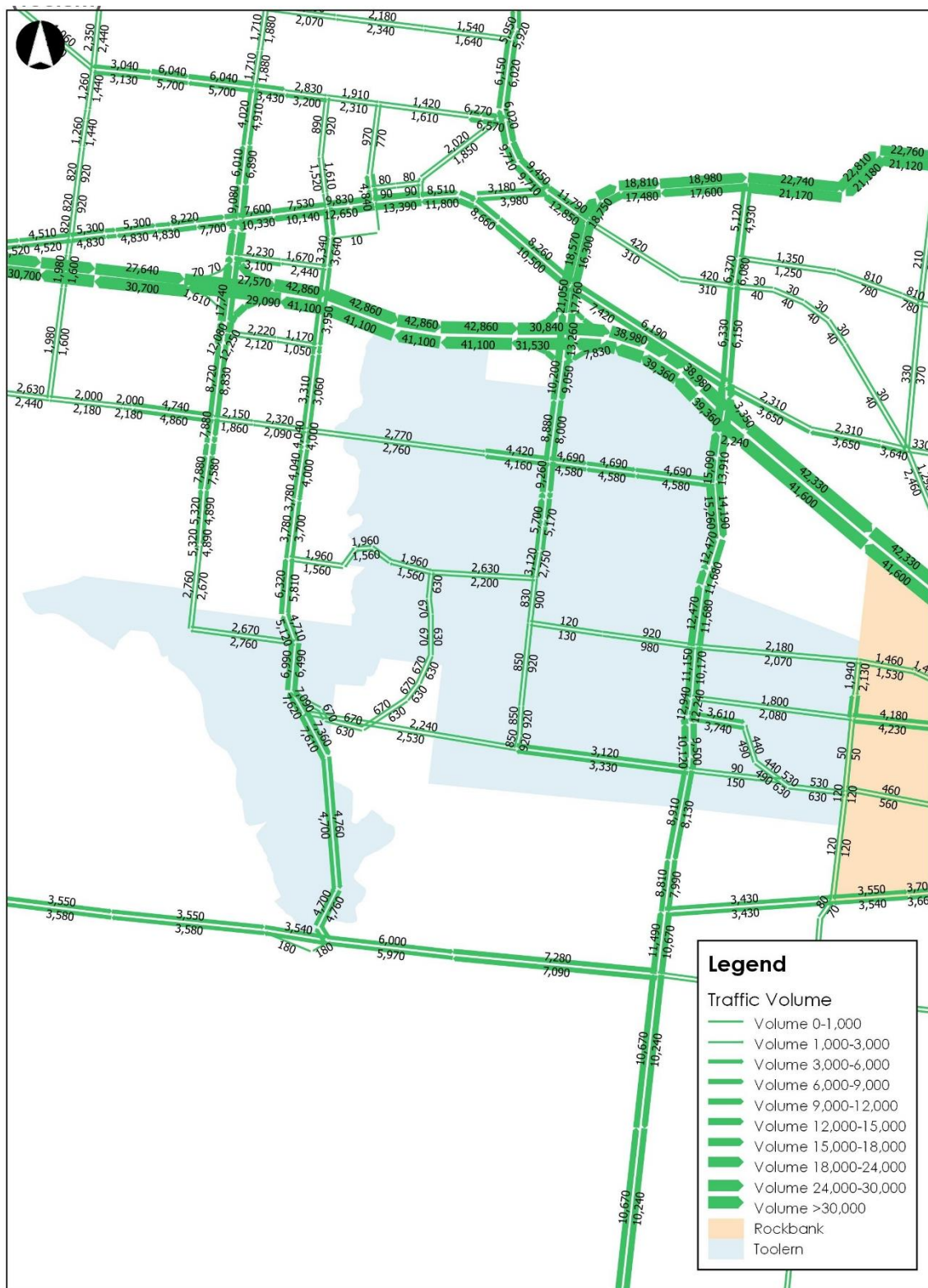


Figure A.10: 2046 Arterial Road Daily Volumes

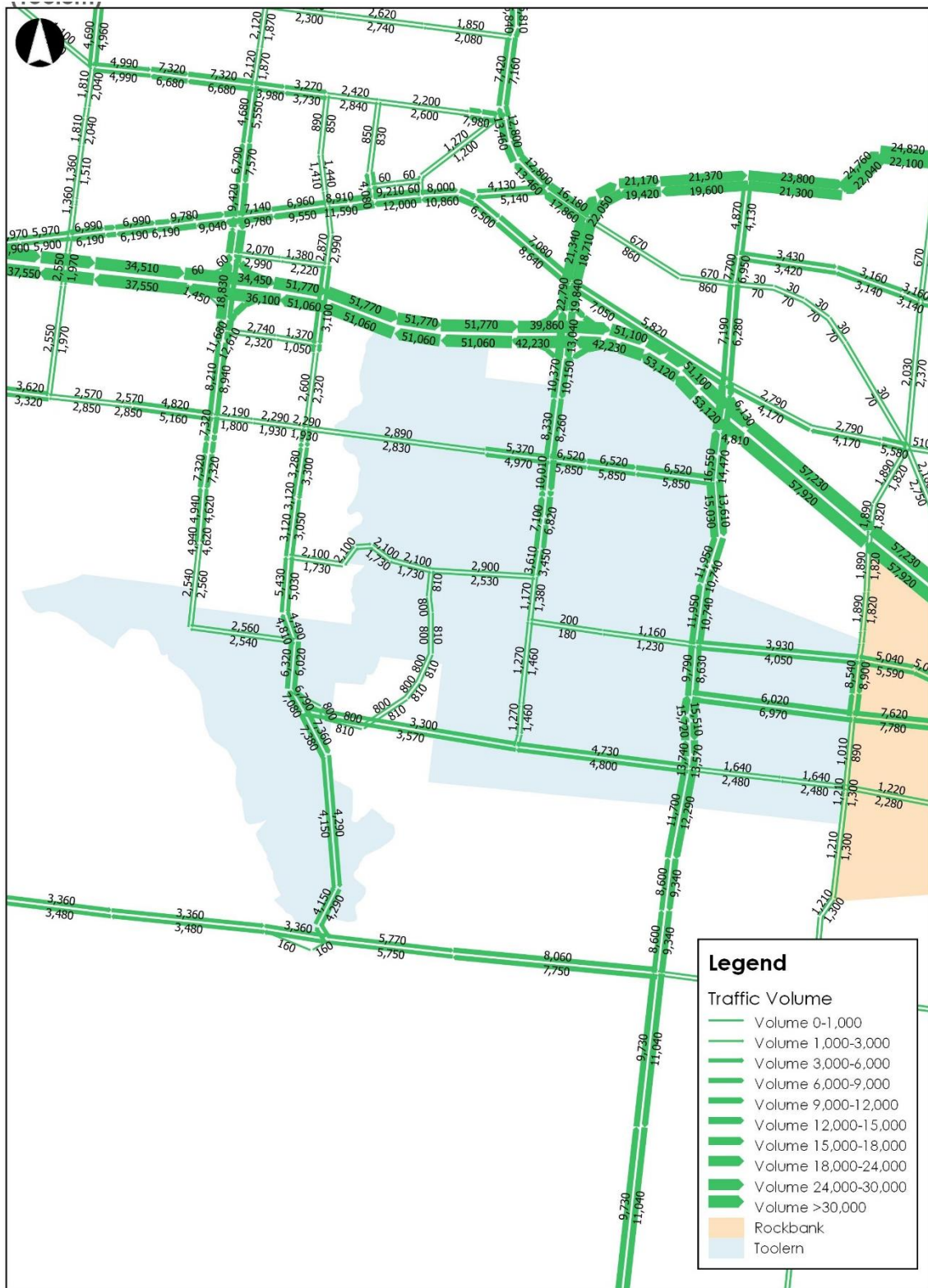


Figure A.11: 2016 AM Peak Road Network Volume / Capacity Ratio Plot

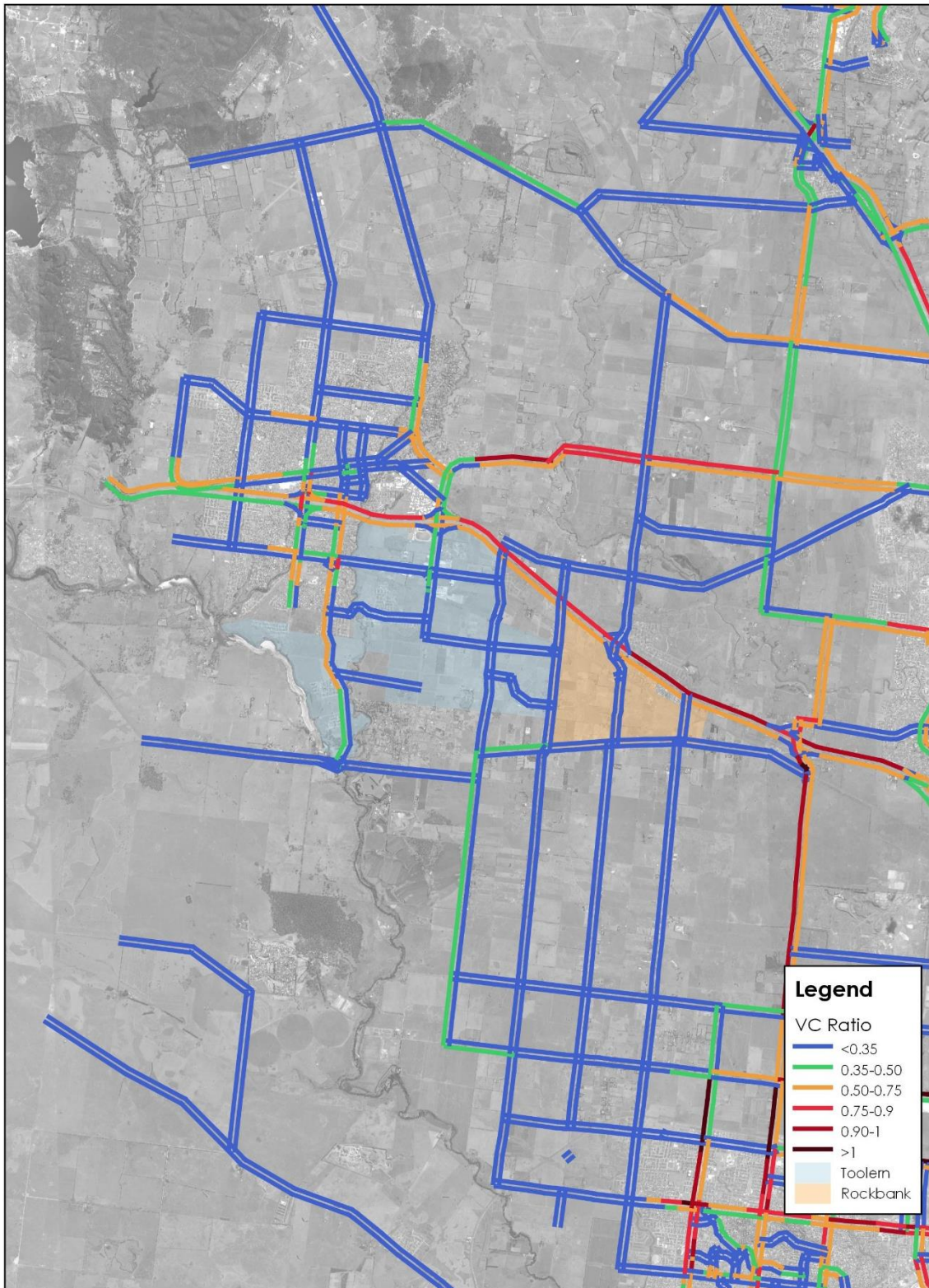


Figure A.12: 2016 PM Peak Road Network Volume / Capacity Ratio Plot

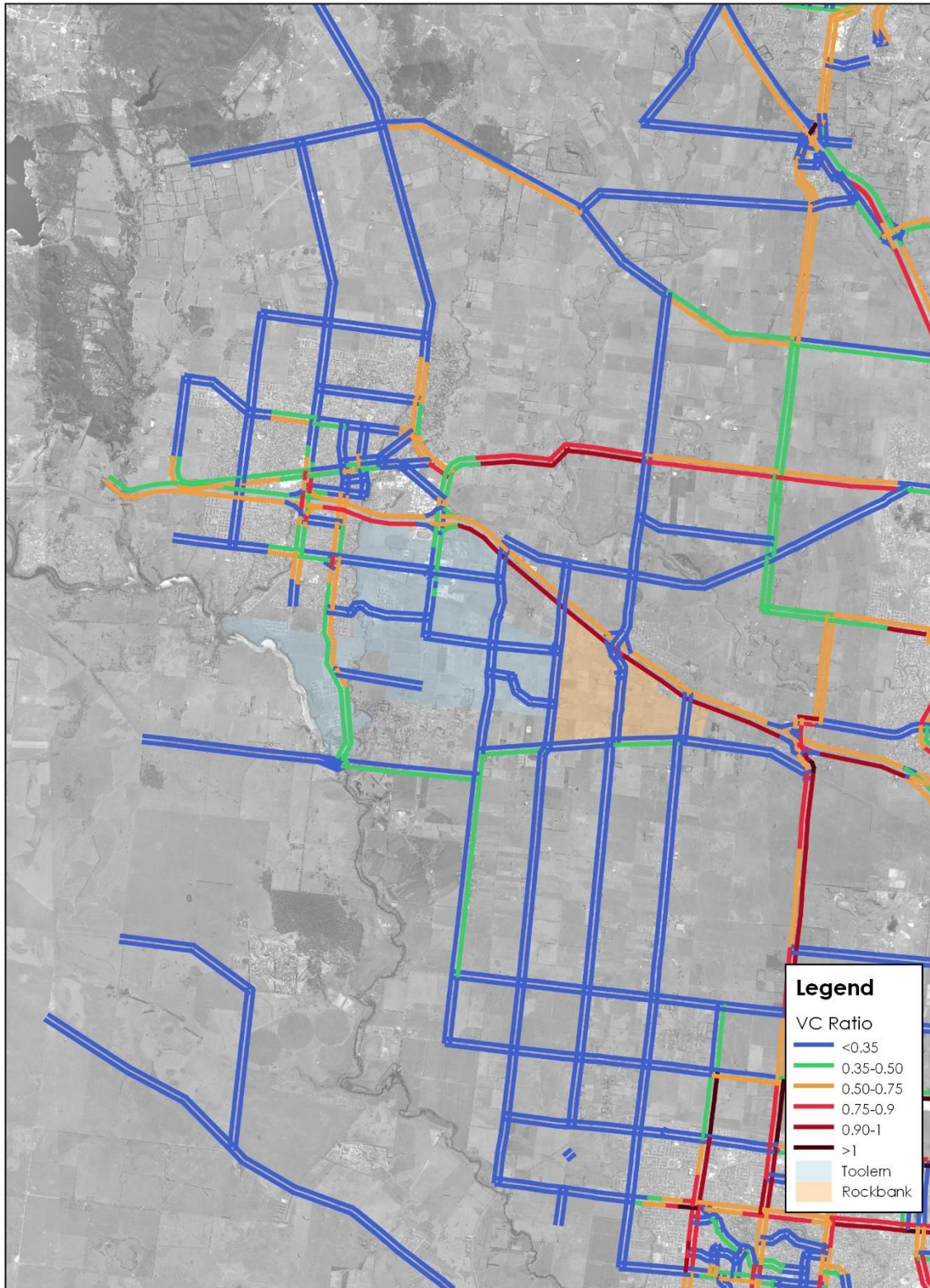


Figure A.13: 2031 AM Peak Road Network Volume / Capacity Ratio Plot

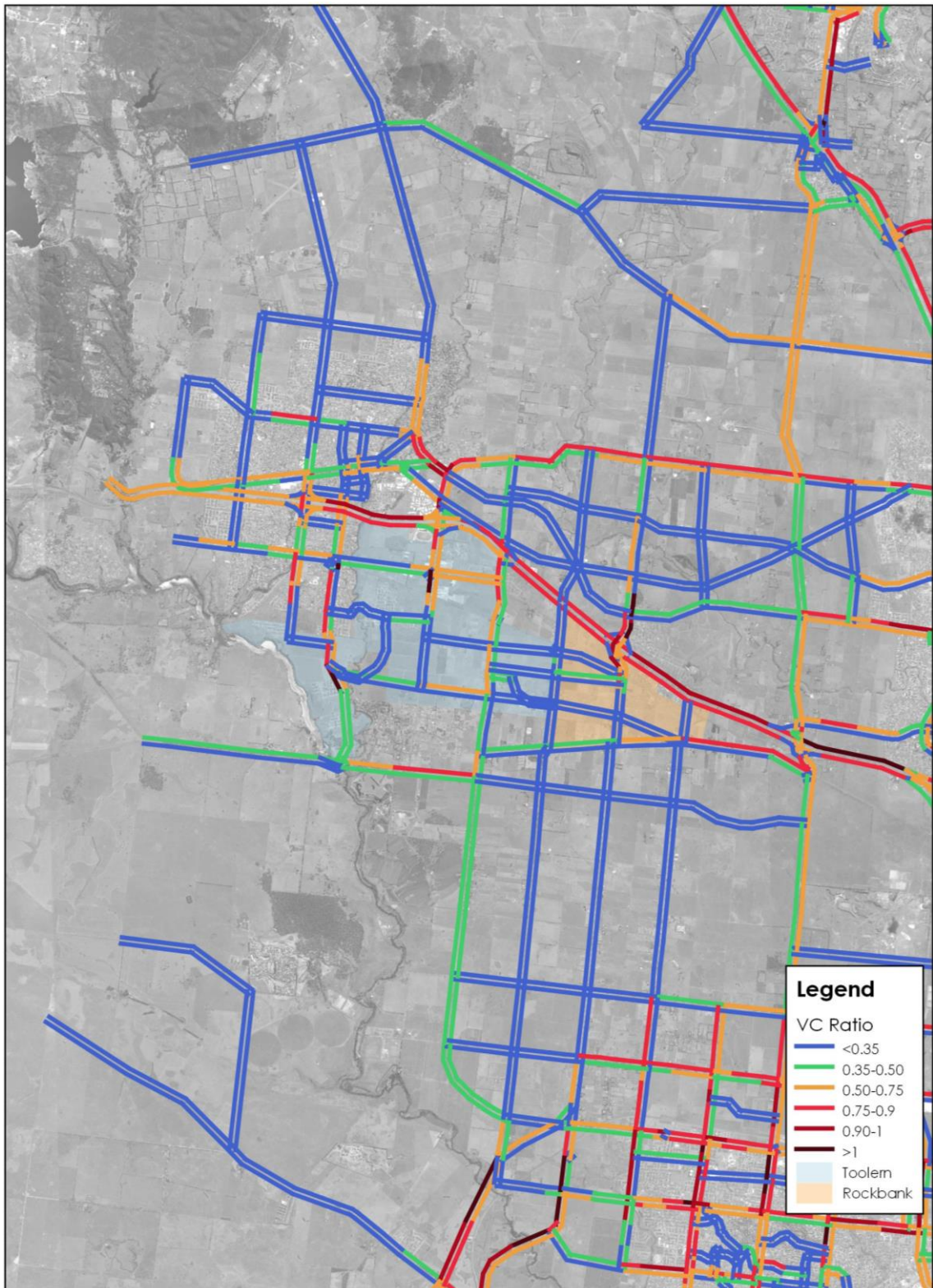


Figure A.14: 2031 PM Peak Road Network Volume / Capacity Ratio Plot

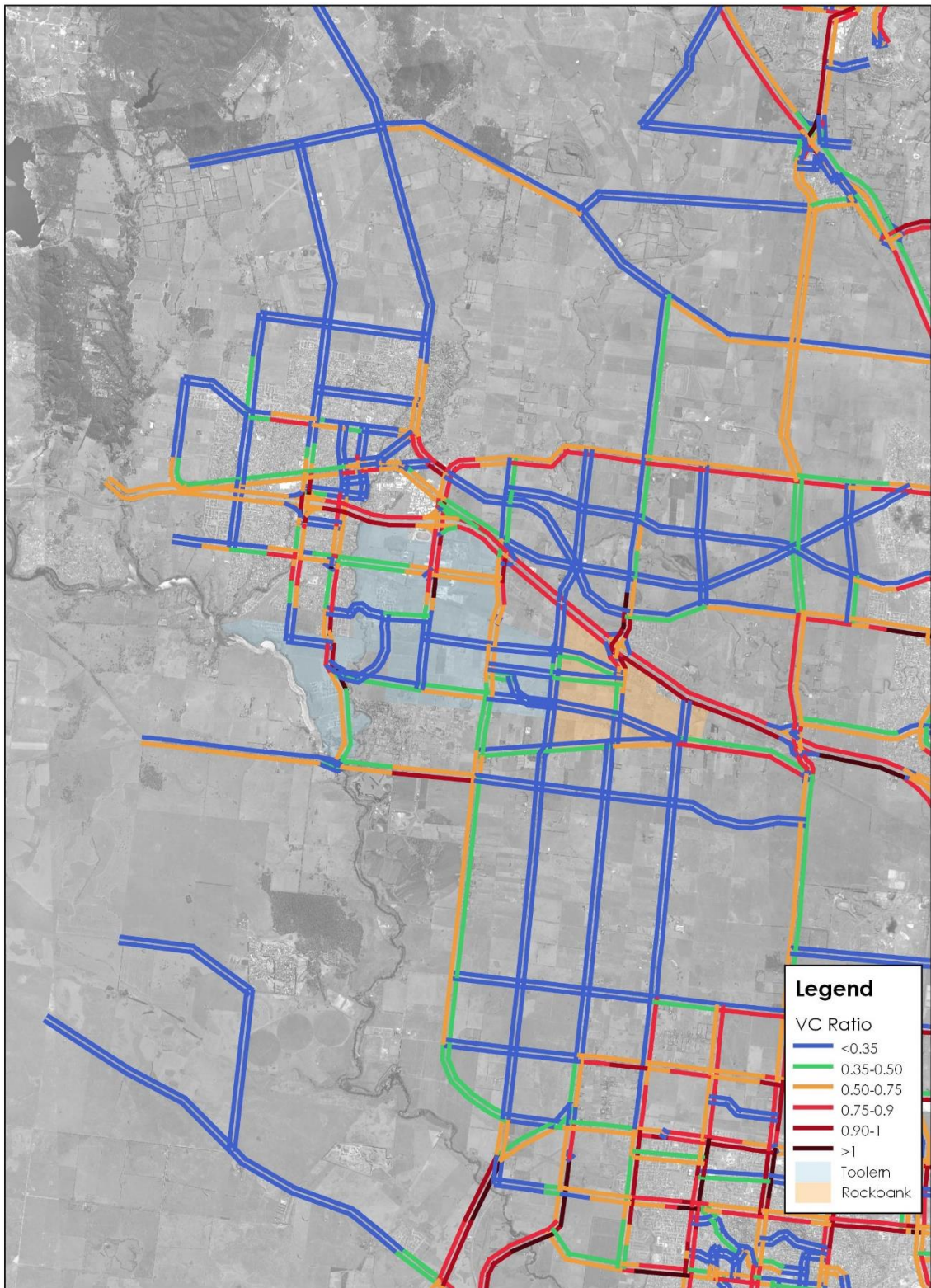


Figure A.15: 2046 AM Peak Road Network Volume / Capacity Ratio Plot

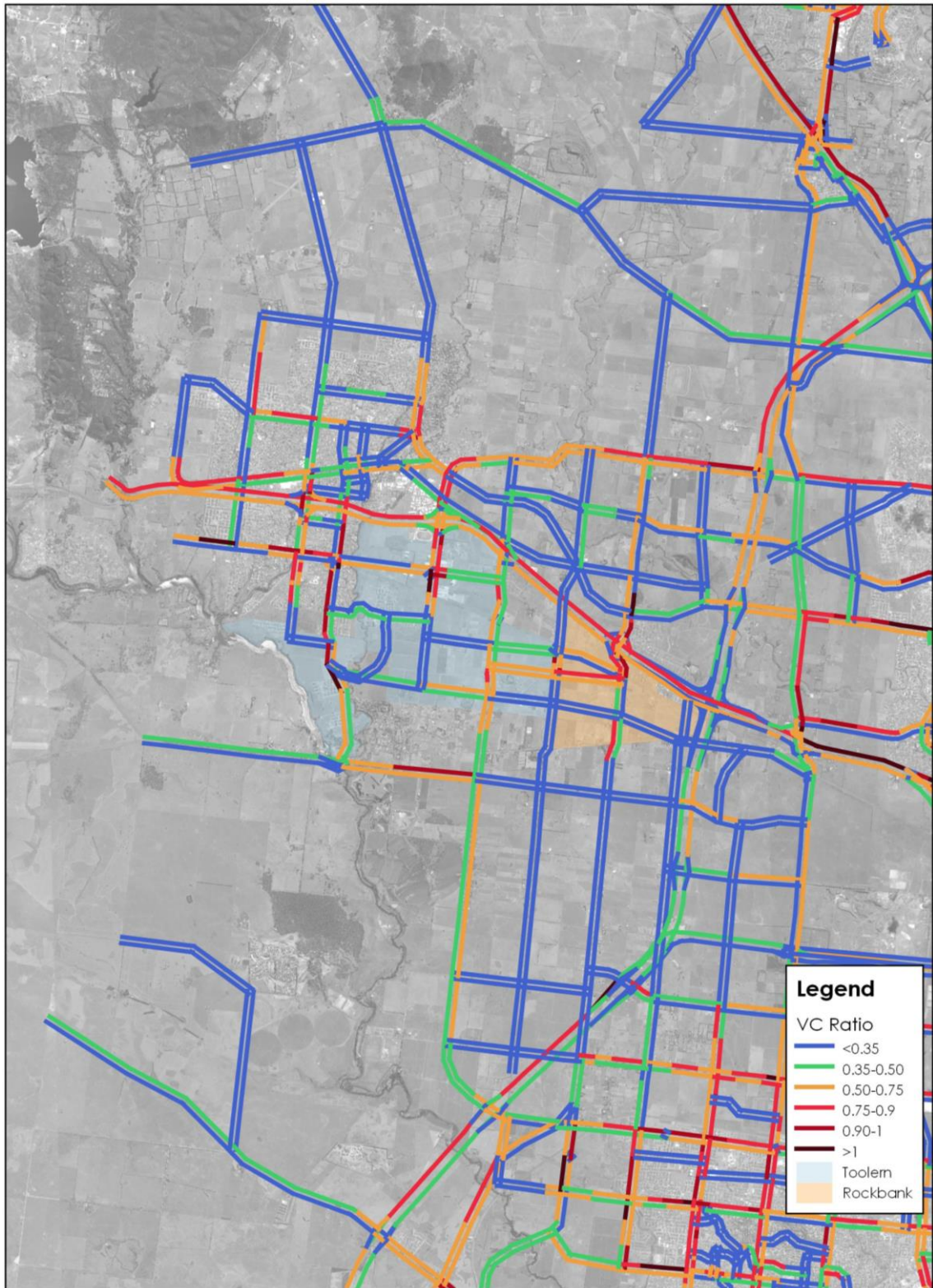
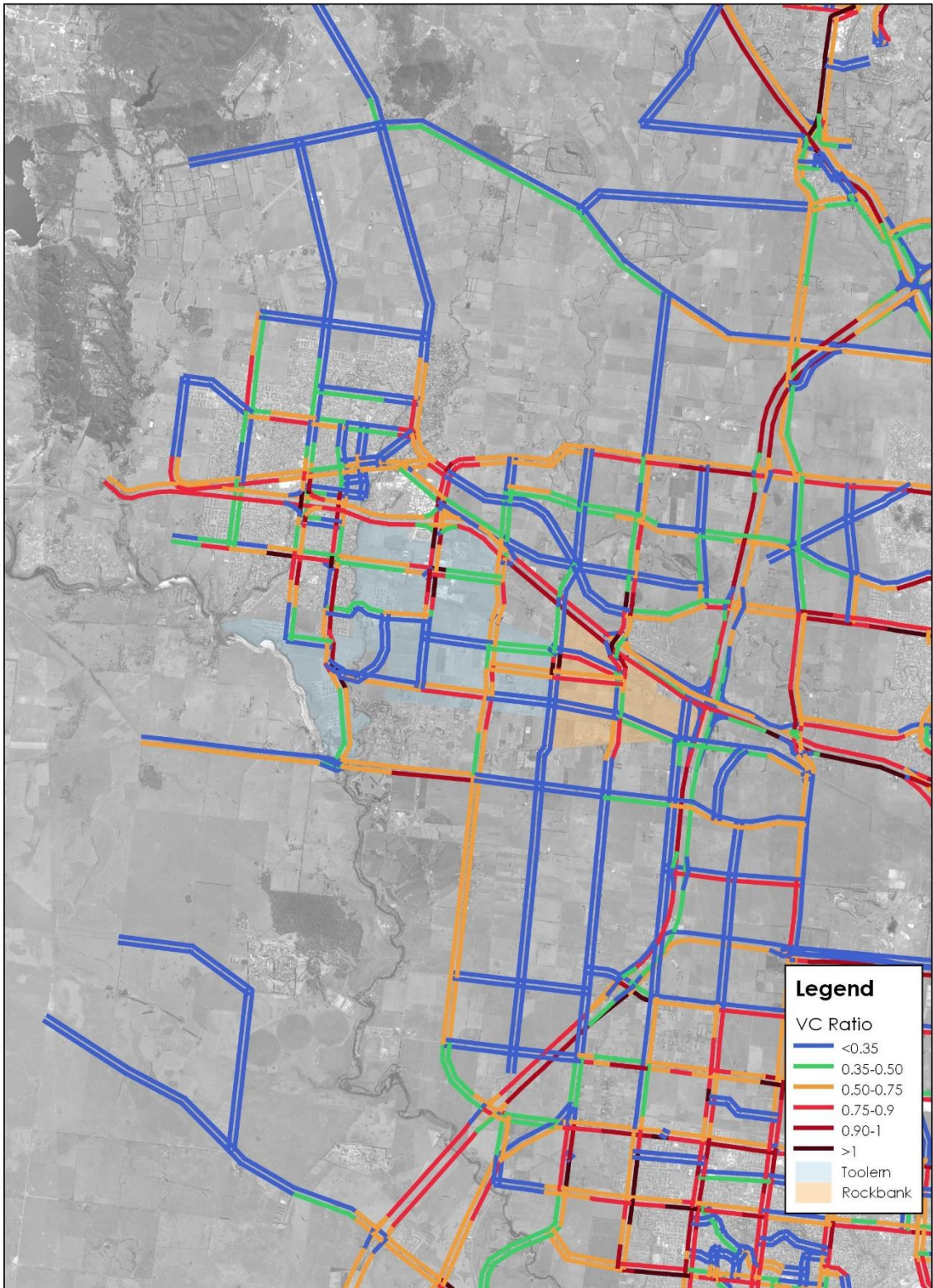


Figure A.16: 2046 PM Peak Road Network Volume / Capacity Ratio Plot



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