

Rockbank Major Town Centre Urban Design Framework Technical Report - Transport

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Rockbank Major Town Centre

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 and Rockbank PSP. 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 Rockbank Town Centre. With consideration of these various and relevant matters, the recommended guiding approach, and identified issues and opportunities, which are summarised as follows:

- Rockbank represents one of the key PSPs in the West Growth Corridor, as it is centred on an existing railway station and has direct access to the Western Freeway.
- State Government has announced their commitment to upgrading the Rickbank train station as part of the Ballarat Line Upgrade. The 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 upgrade at the start of Rockbank'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 Rockbank PSP will provide sufficient road capacity, but in areas of high population and employment densities, such as the Rockbank Town Centre, more space efficient modes (walking, cycling and public transport) must be prioritised.
- The proposed Rockbank Road has been included in the PSP with the purpose to form the central north – south spine of the precinct and provide direct access to the town centre and the Western Freeway. The timeframes for the development of Rockbank Road are not yet established. However, given its current rural two-lane arrangements, it is recommended to be provided when Leakes Road exceeds 7,000vpd, which relates to traffic volumes associated with a typical urban arterial road.
- The Rockbank PSP road network modelling indicates there will be potential congestion points in the Rockbank Town Centre on the southern side of the station and the town centre access point via the intersection with Rockbank Road. In order to resolve such potential congestion issues, the following approaches are recommended:
 - Not have pick-up activities occurring on the northern side of the town centre. Rather, provide suitable areas with direct access to Rockbank Road and Old Leakes Road
 - Limit property and car park access from the town centre main road (more from the surrounding arterial and connector roads). Internal Town Centre roads should have pedestrian, bicycle and/or public transport priority as part of VicRoads SmartRoads Policy for road network management.
- With the Rockbank Train Station, part of its success will be based on the integration with bus services, via a well located transport hub. There is proposed to be direct road connections on each side, that bus services could use to access and integrate with this station. This facility would ideally be bus only and not shared with private car use to achieve a high level of service to users, help prioritise connecting bus use, and minimize the intrusion of high turnover kiss and go activities through the Town Centre.
- The bus network must provide a high level of coverage throughout the Rockbank PSP, i.e. 95% of residents and jobs within 400m of a bus route.
- Bus services providing access to the Rockbank Town Centre are proposed via a route through the town centre. This arrangement will be beneficial as long as priority bus

measures are provided along the proposed route, and internal vehicle movements are minimised. Such potential measures would include, bus head starts, onboard transponders, and in lane bus stops to further help minimise vehicle intrusion and perform a traffic calming measure.

- Within the Rockbank 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, to make them a place for people to spend time.
 - Crossing facilities on each intersecting road that prioritise pedestrians, such as zebra crossings and/or wombat crossings.
 - Traffic signals that prioritise pedestrian crossing movements
- It is expected that broadly the following bicycle facilities will be provided within and connecting the Rockbank Town Centre, , 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 connector level roads with 60km/h or lower sign posted speed limits(separated facilities on roads with higher speed limits)
 - Mixed traffic conditions on low speed locate 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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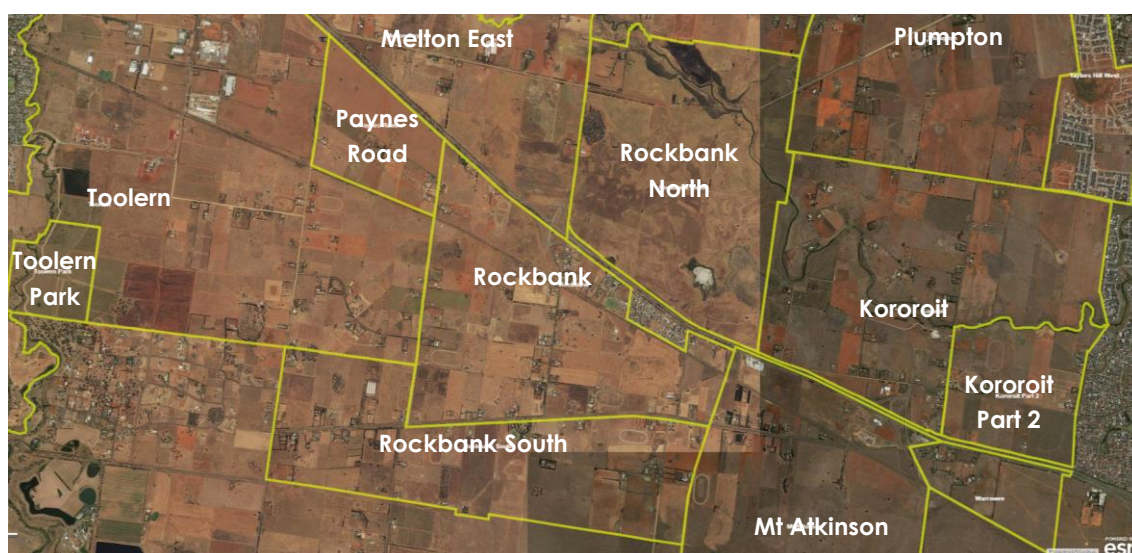
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1. Introduction

1.1 Background

Rockbank is located 30km northwest of Melbourne's CBD, on the urban fringe of metropolitan Melbourne, and has been identified to be a suitable area for new urban development, along with a number of other greenfield precincts, as shown in Figure 1.1. The Rockbank precinct comprises some 752 hectares, and is centred on the existing Rockbank railway station, with the Melton Rail Line running through it. The existing township is located to the northeast and the Western Freeway extends along the northern frontage of the precinct.

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



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

The Rockbank 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 C145 to the Melton Planning Scheme in 2016. The Rockbank 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 Rockbank Town Centre is at the core of this precinct, and will serve it and a number of those around it as a primary commercial centre and transport hub. The Major Town Centre is now being advanced through the creation of an Urban Design Framework (UDF), to provide a clear and integrated vision for and how the Major Town Centre will be developed over the coming years.

From a traffic and transport planning perspective with the Rockbank Major Town Centre UDF, it is understood that private car use is currently the predominate for of transport. However, the development of the Town Centre poses significant opportunities to generate a shift towards more sustainable travel behaviour to / from the town centre . Therefore, it is important that public and active transport modes are integrated with the existing and proposed land uses as the Town Centre develops, so public and active transport are viable and convenient options, especially given the opportunity the Rockbank Rail Station provides as a transport hub. Internal to the town centre, active transport modes must be prioritised, not only to support their use for short multi-purpose trips,

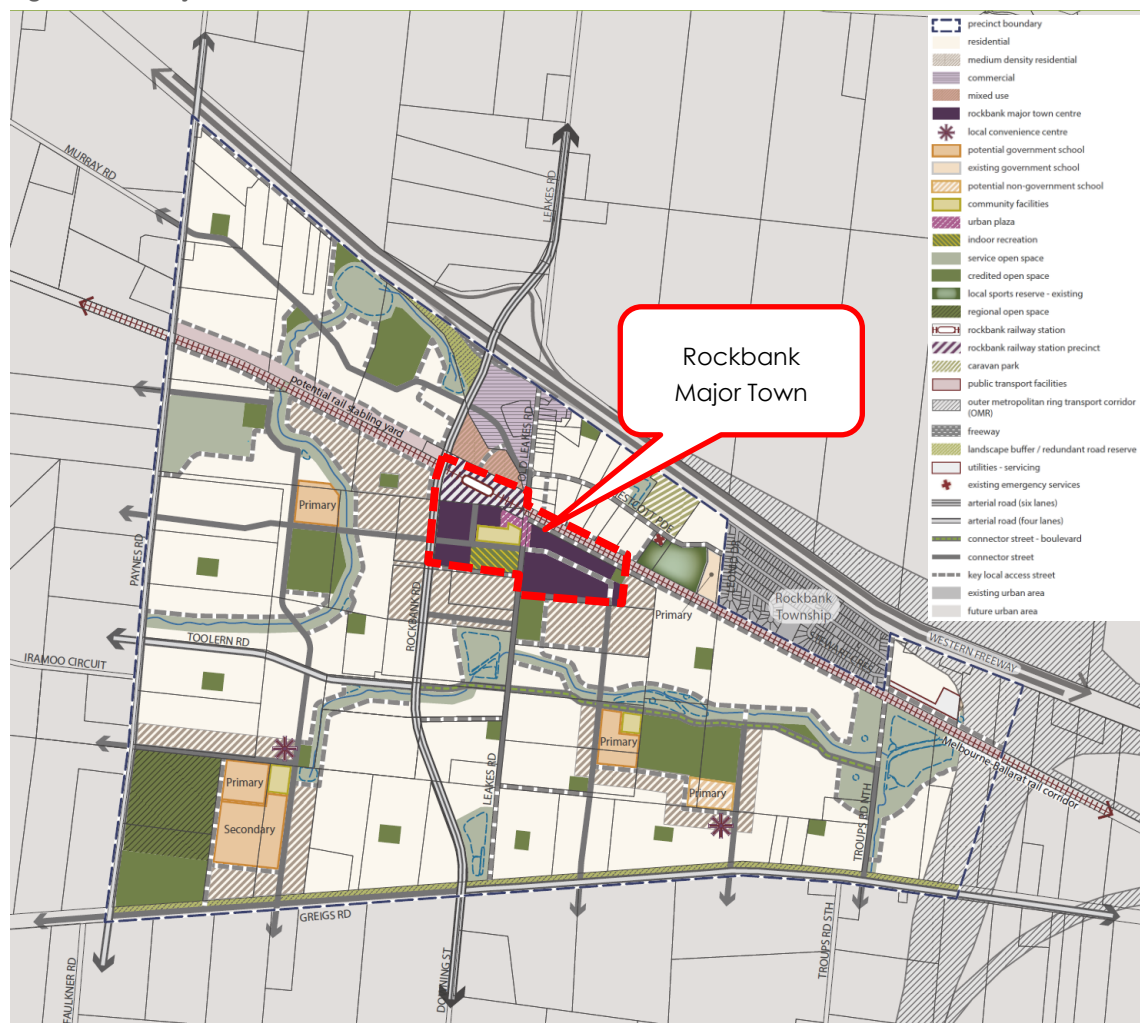
but to achieve a more desirable level of amenity and social cohesion, and facilitate more sustainable and efficient travel habits.

In this regard, GTA Consultants (GTA) in partnership with Tract and other specialist sub-consultants have been commissioned by MCC to prepare the Rockbank Major Town Centre UDF.

1.2 Study Area

The Rockbank Major Town Centre, as outlined in the Rockbank PSP, comprises some 20 hectares and proposed to consist of a mix of commercial, educational and community uses, which is expected to support in the order of 2,000 jobs. It is located on the southern side of the Melton Rail Line and Rockbank Station, and Leakes Road running through it, as shown in shown in Figure 1.2.

Figure 1.2: Subject Site



Source: Rockbank PSP

1.3 Purpose of the UDF

The following objectives for the Rockbank Major Town Centre 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 Rockbank Major Town Centre UDF requires a holistic and integrated framework that not only sets out the future blue-print to work towards, but consideration and guidance on how this vision is achieved

1.4 Purpose of this Report

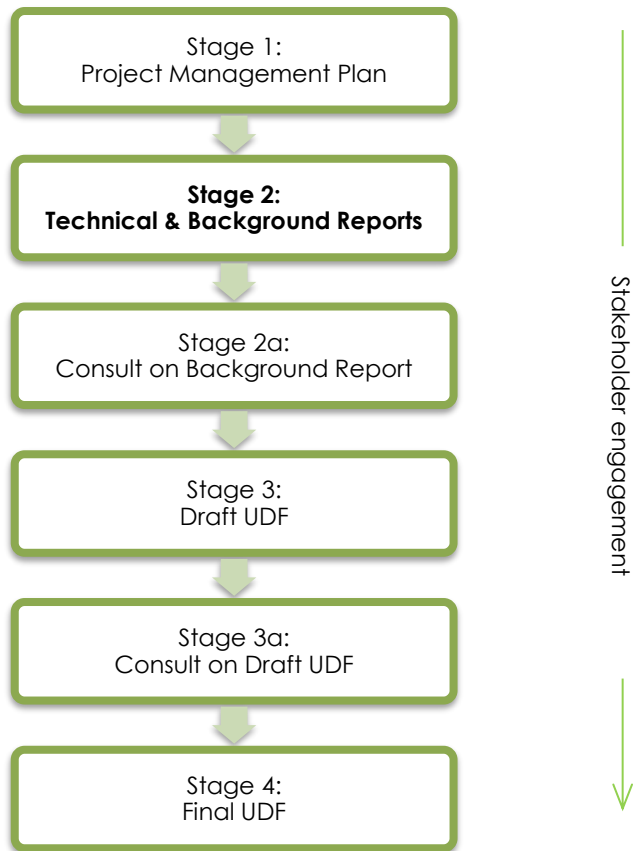
This technical report sets out a summary of the available transport data and traffic analysis completed to date, as well as any key transport issues and opportunities that have been identified. This report will inform the overall project Background Report, which will in turn facilitate the drafting of the Urban Design Framework. 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

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).

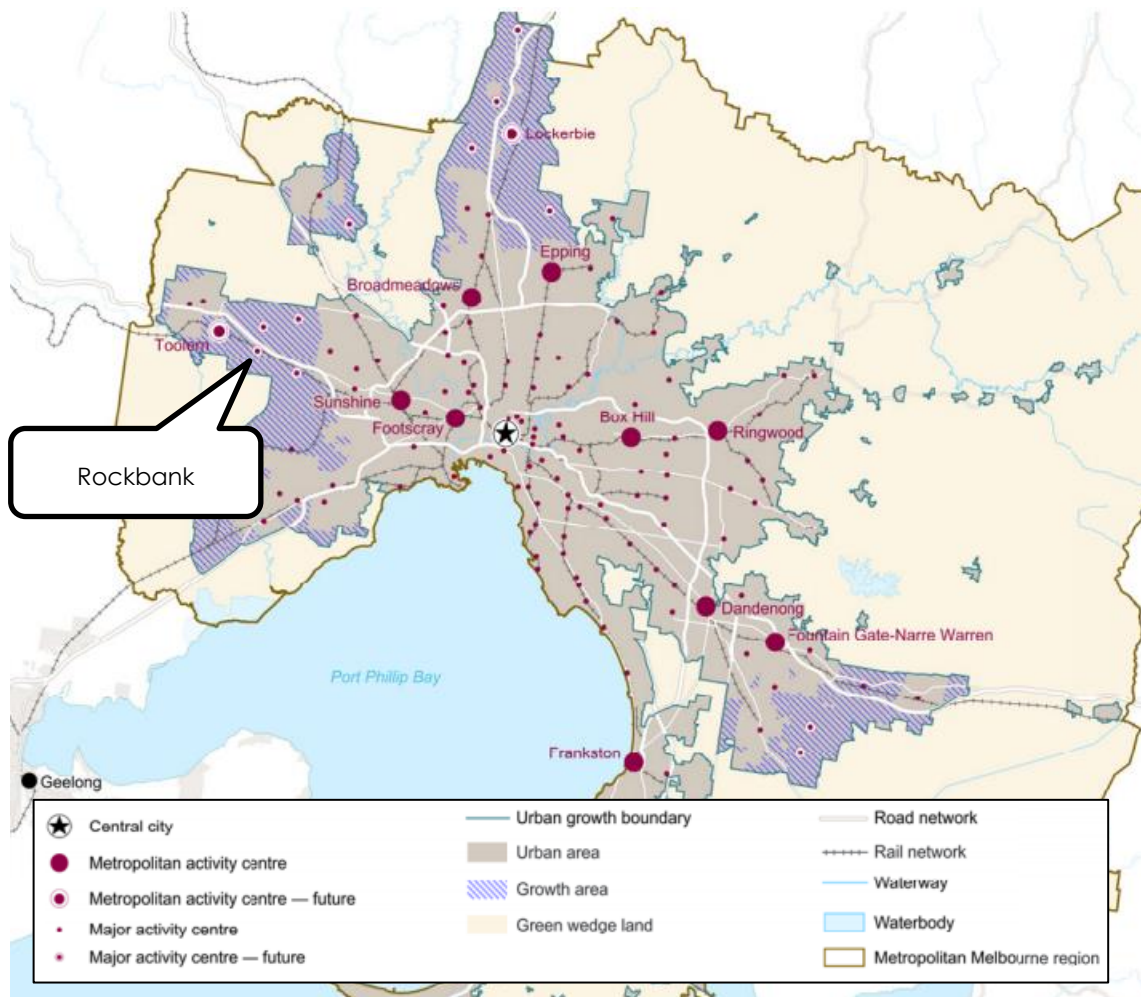
The Plan provides guidance on the way housing, commercial and industrial development will be provided, based off the following key nine principles, which are supported by a range of actions:

- *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, preferably clustered around existing or proposed railway stations, such as in Rockbank. An excerpt from The Plan is shown in Figure 2.1, which identifies Rockbank as a future major activity centre.

Figure 2.1: Plan Melbourne – Metropolitan and major activity centres



Source: Map 14, Plan Melbourne

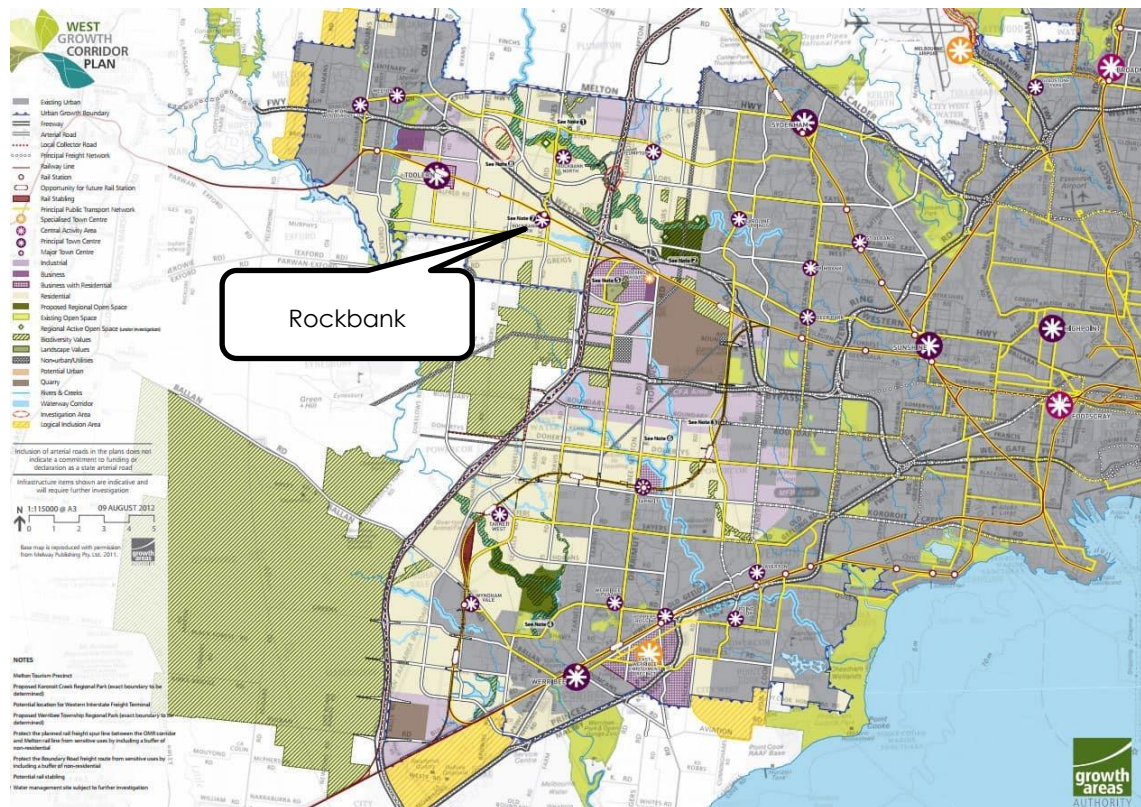
2.1.3 West Growth Corridor Plan

The Rockbank 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 4.4.1 that Major Town Centres will be supported by each of the large scale residential precincts they are located in. They are centrally located within the precincts and aim to be accessible by multiple transport modes. Moreover, the Plan discusses in Section 4.4.3 that

the proposed Rockbank Major Town Centre provides an opportunity to be developed into a transit oriented area. However, this will require great care to be taken to ensure that any new infrastructure projects, including grade separations, rail line upgrade and stabling and the Outer Metropolitan Ring (OMG) Transport Corridor enables continued access to the precinct and town centre, and not unduly impact on amenity.

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 Rockbank Major Town Centre will need to be considered as part of developing the UDF. At this time, the only modal priority indicated in the area is the Western Freeway, which is a 'Preferred Traffic Route'. Network Development Plan – Metropolitan Rail

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.

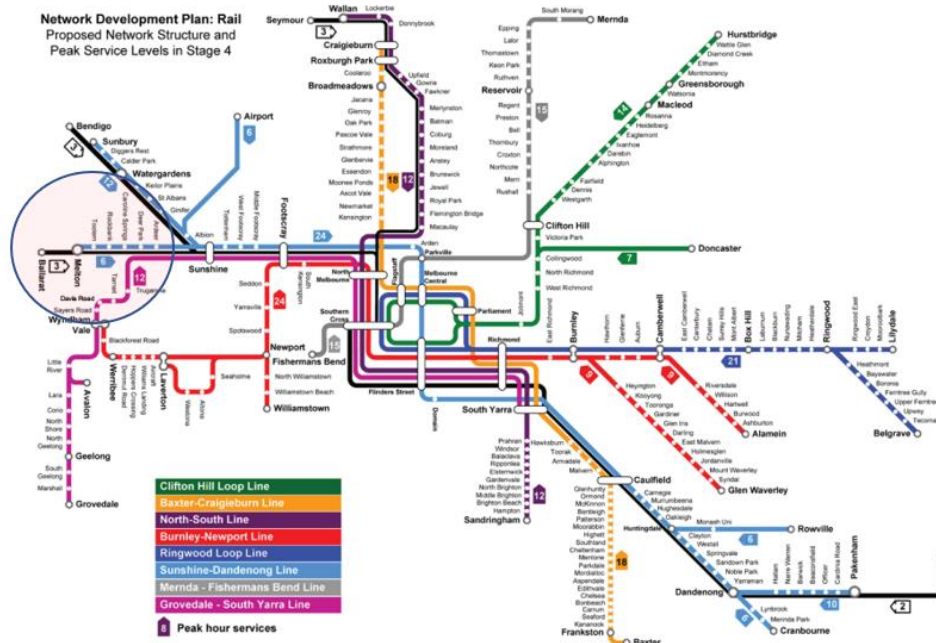
The plan consists of the following four stage plan over a 20 year period:

- 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.

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 4.4 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).

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

Figure 2.4: Example Principle Pedestrian Network Extract

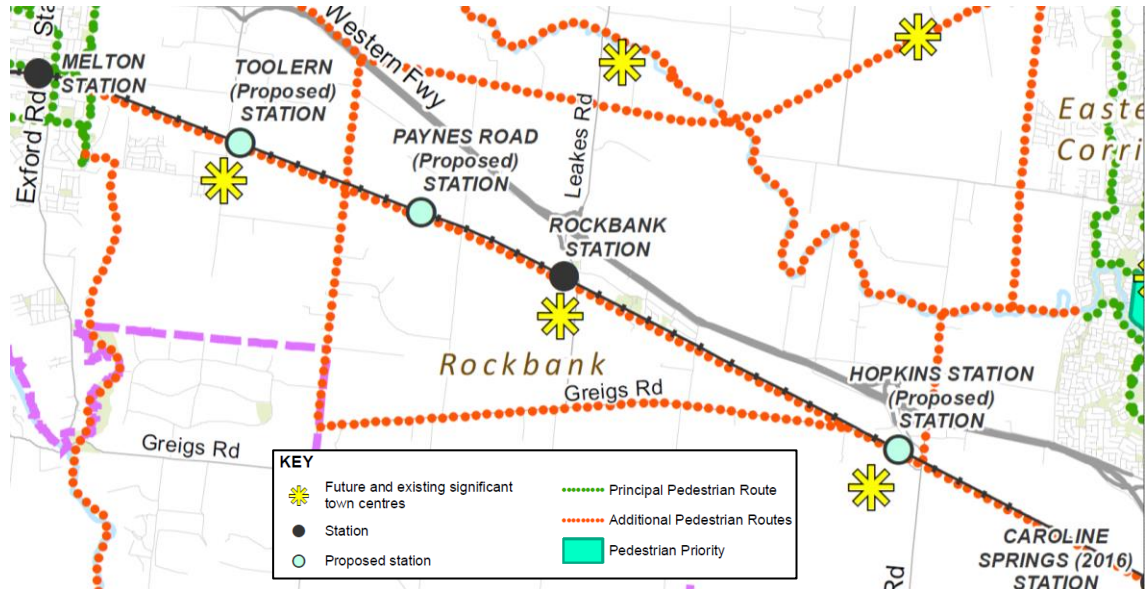
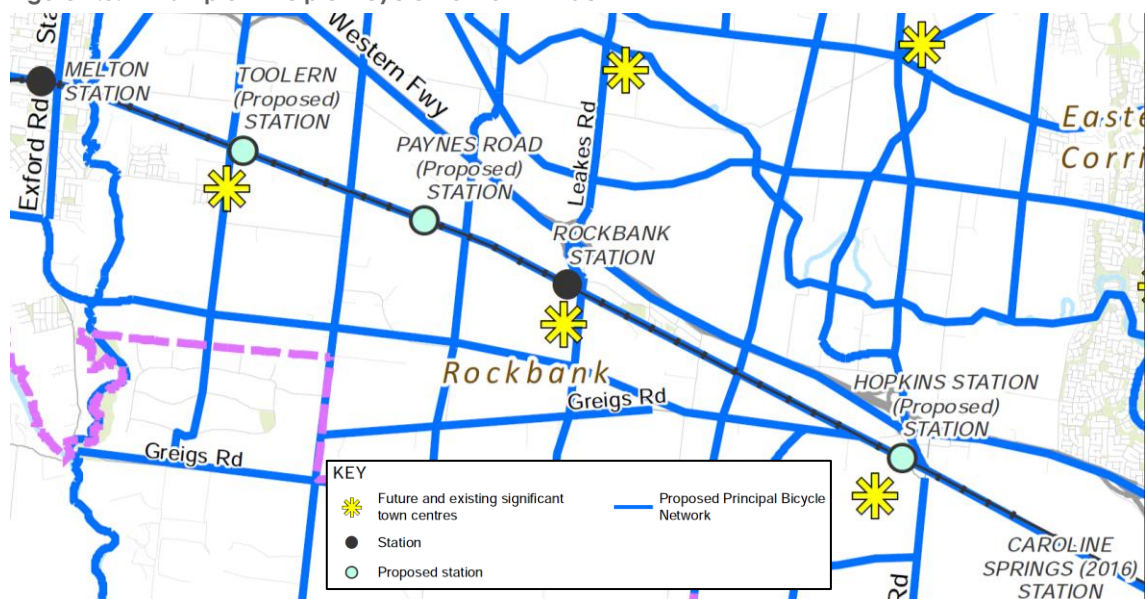


Figure 2.5: Example Principle Bicycle Network Extract

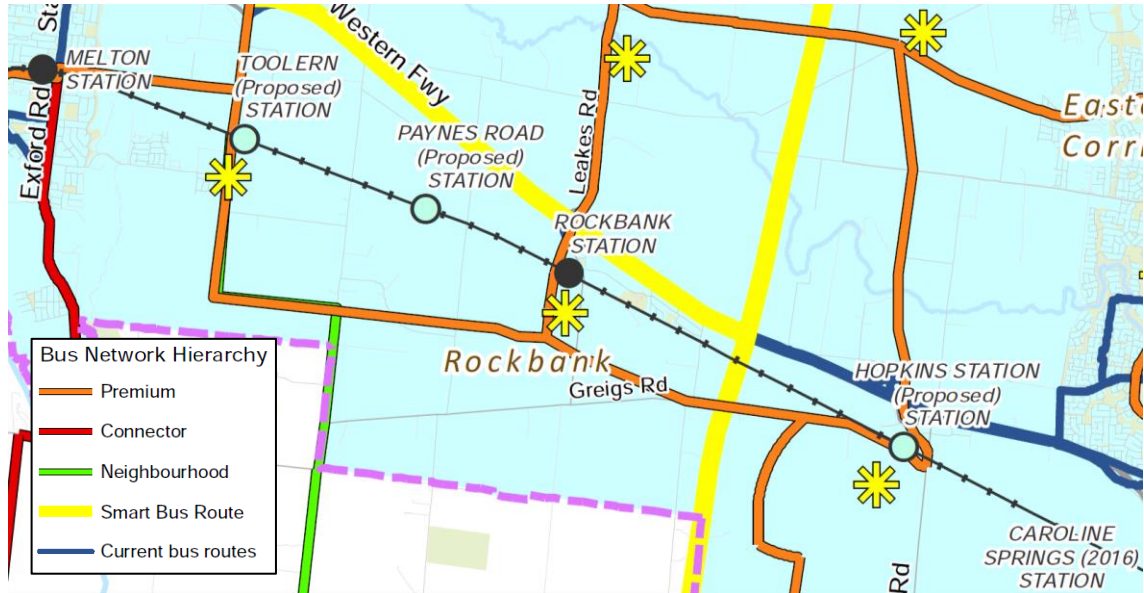


5.3 Public Transport

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 Major 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 Rockbank Major Town Centre and Rail 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 Rockbank PSP is shown in Figure 2.6.

Figure 2.6: Proposed Bus Network and Route Hierarchy Extract

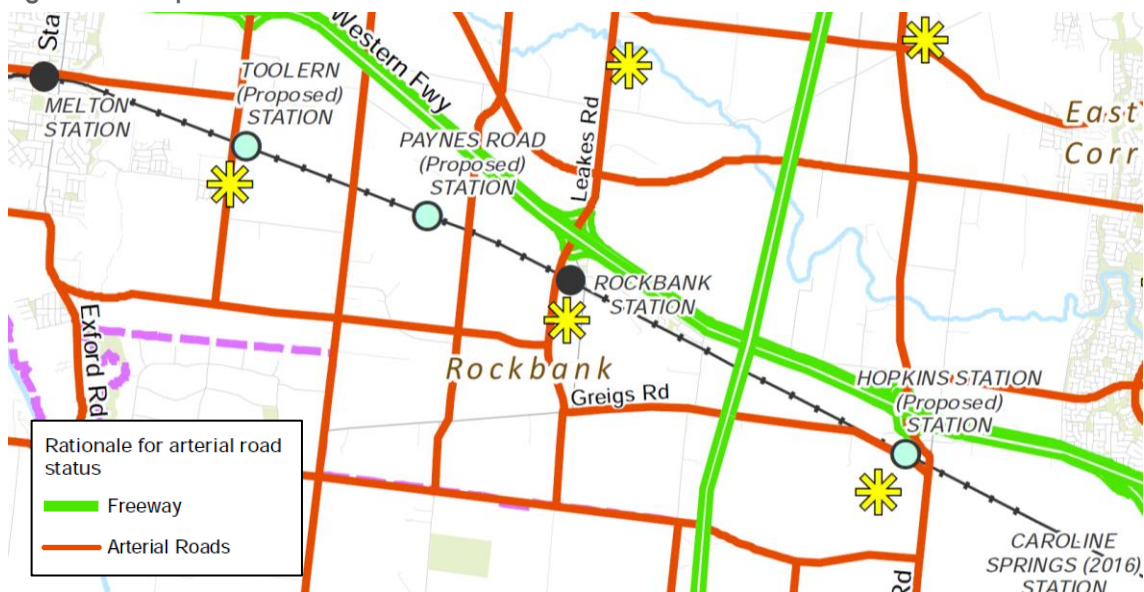


5.4 Roads

The Council recognises that although a key objective of the Strategy is to reduce car dependency, road transport will still be the constituent mode of travel through the municipality for most people. 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 Rockbank PSP is shown in Figure 2.6.

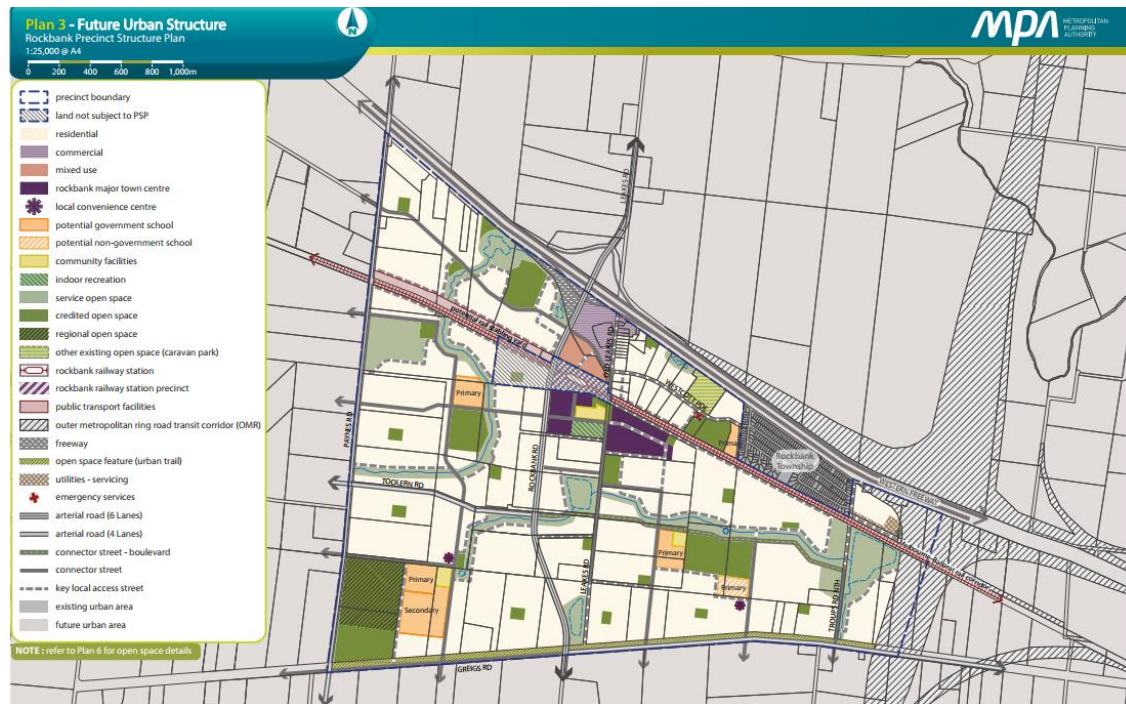
Figure 2.7: Proposed Arterial Road Network Extract



2.3 Rockbank Precinct Structure Plan (PSP)

The Rockbank PSP was developed by the VPA in consultation with MCC and relevant government agencies to guide urban development in Rockbank. The PSP applies to approximately 752 hectares of land bounded by the Western Freeway to the north, Paynes Road to the west, Greigs Road to the south and the future OMG Transport Corridor to the east, as shown in Figure 2.8.

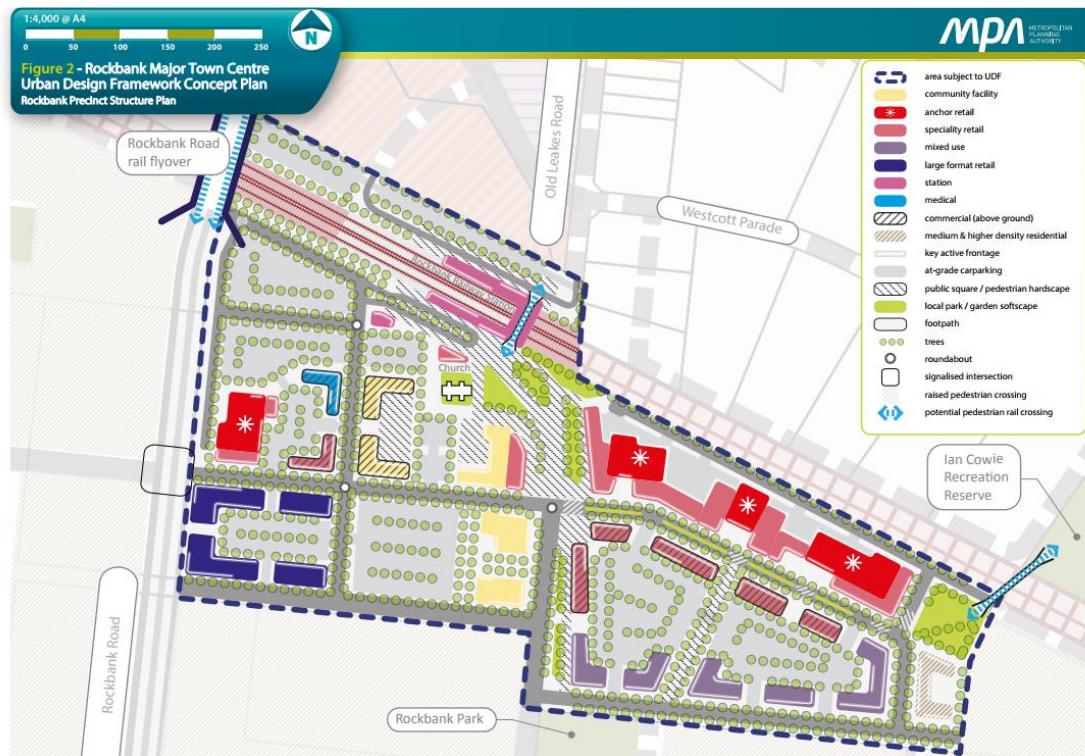
Figure 2.8: Future Urban Structure



Source: Rockbank Precinct Structure Plan, p.8

Rockbank Major Town Centre will be established as the key focal point of the Rockbank PSP. The Town Centre will serve as the PSP's commercial and transport hub, and will consequently be clustered around the existing Rockbank Railway Station, which is to be upgraded. Higher density housing will be prevalent within and surrounding the Town Centre, as shown in Figure 2.9.

Figure 2.9: Rockbank Major Town Centre Urban Design Framework Concept Plan



Source: Rockbank Precinct Structure Plan, p.20

The future development plans and supporting background information for the Rockbank PSP and Rockbank Major Town Centre UDF are discussed further in Section 4.

3. Existing Conditions

3.1 Study Area

The area constituting the Rockbank PSP predominately consists of farmland, with some urban development located on the periphery of the existing Rockbank Township (outside the boundary of the PSP). The area that will form the Rockbank Major Town Centre UDF area comprises the Rockbank Station, a church and several residences, but is otherwise undeveloped. The area is located south of the Western Freeway and bisected by Leakes Road, as illustrated in Figure 3.1.

Figure 3.1: Rockbank Major Town Centre UDF Study Area

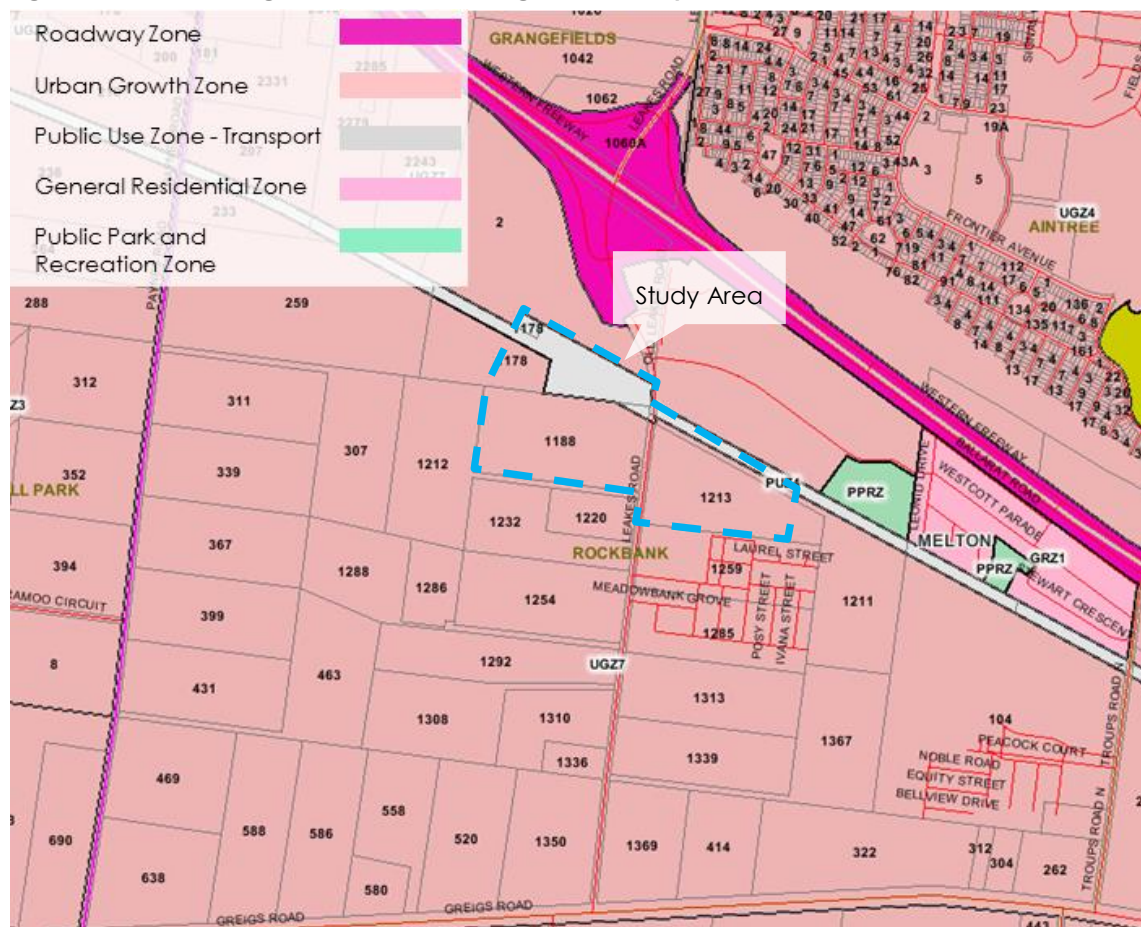


Reproduced from Nearmap

3.1.1 Land Uses

The vast majority of land within the UDF study area is zoned for urban growth, except for the existing Rockbank Township, which consists of zoned residential and recreation land uses, 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

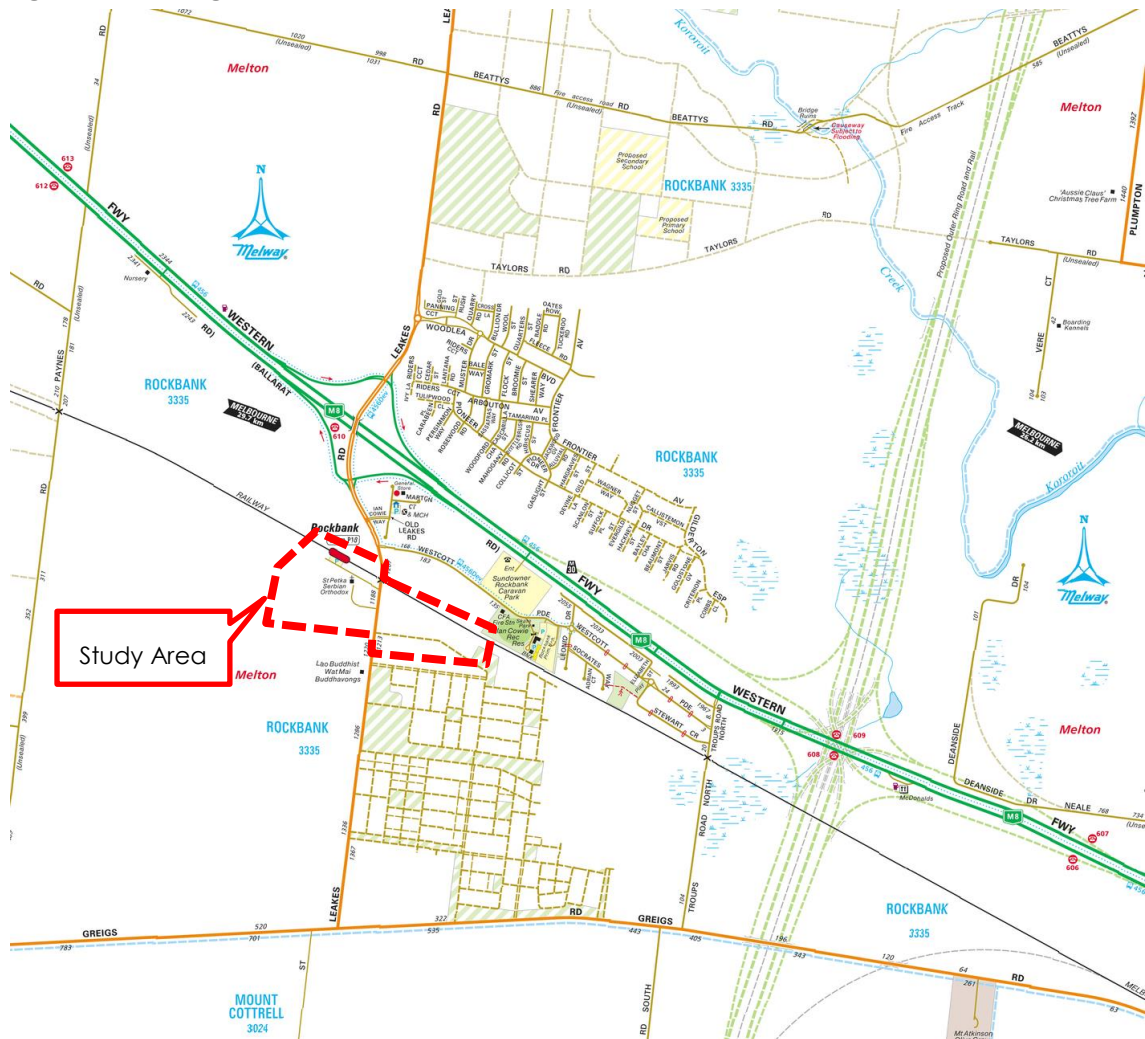
The 2016 ABS Census data indicates that the population of Rockbank is currently 1,536, which are accommodated by 650 dwellings. Moreover, the ABS Census data suggests that there has been population growth of 14% and an increase in dwelling numbers of 15% between 2011 and 2016 in Rockbank.

It is noted that the suburb's population is almost exclusively concentrated to the existing Rockbank Township. The existing population and number of dwellings located within the UDF study area is very low and not expected to have changed most 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 Leakes 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 90km/h. The Freeway carries approximately 57,000 vehicles daily¹.

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

¹ Source: VicRoads Open Data

3.2.2 Leakes Road

Leakes Road is 2.35km long and extends between Holden Road in the north and Greigs Road in the south. The road provides the existing Rockbank Township with access to the Western Freeway and Rockbank Station. An at-grade level crossing exists between Leakes Road and the Melton Rail Line.

Leakes 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 20m wide road reserve (approximately). Leakes Road is classified as a connector road and has a sign posted speed limit of 60km/h north of the level crossing and 80km/h south of the level crossing. Approximately 1,200 vehicles use Leakes Road daily¹.

Approximately 500m of the road currently extends north-south through the UDF study area.

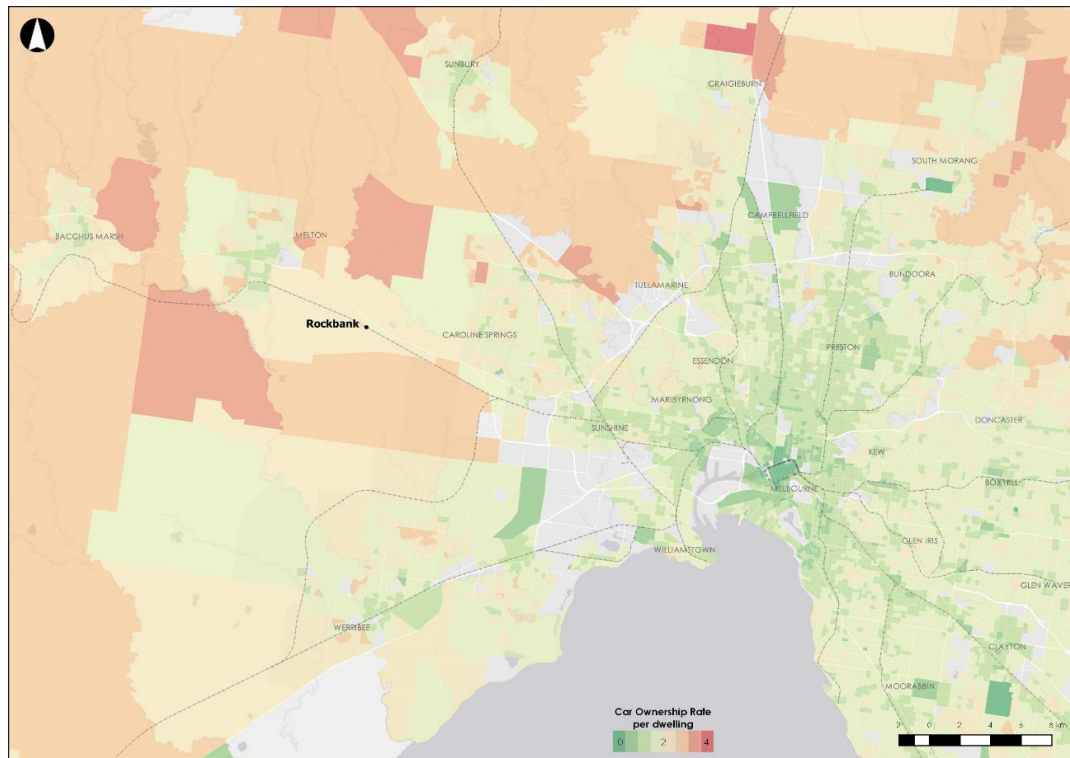
3.2.3 Other Roads

The only other road that exists within the study area is a dirt access road connecting Leakes Road to Rockbank Railway Station.

3.3 Car Ownership

The ABS 2016 Census indicates that in the area that will form the Rockbank PSP, the existing rate of car ownership is approximately 2.5 vehicles per dwelling. The adjacent Rockbank Township has a car ownership rate of 1.7 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

Rockbank is currently serviced by a railway station, which is located within the UDF study area. The station is located on the Melbourne to Maryborough V/Line, which provides direct connections to Southern Cross Station (in the east) and Melton and Ballarat (in the west). Most of the line to the west of Sunshine consists of a bidirectional track, although a short crossing loop exists near the Rockbank Station. An at-grade level crossing is located within the UDF study area, where Leakes Road crosses the railway line.

A summary of key information regarding the train service that the Rockbank Station connects 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)

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 area 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 Leakes Road and the Western Freeway; services to Sunshine stop north of the intersection (approximately 900m north of the UDF study area) and services to Melton stop south of the intersection (approximately 500m north of the UDF study area). Bus shelters, bays and signage are provided at each stop.

One in three services from Melton to Sunshine diverts through the Rockbank Township, stopping at several locations including at the corner of Leakes Road and Westcott Parade, approximately 150m north of Rockbank Station and the UDF study area. No bus shelter, bus bay or signage is currently provided at the stop.

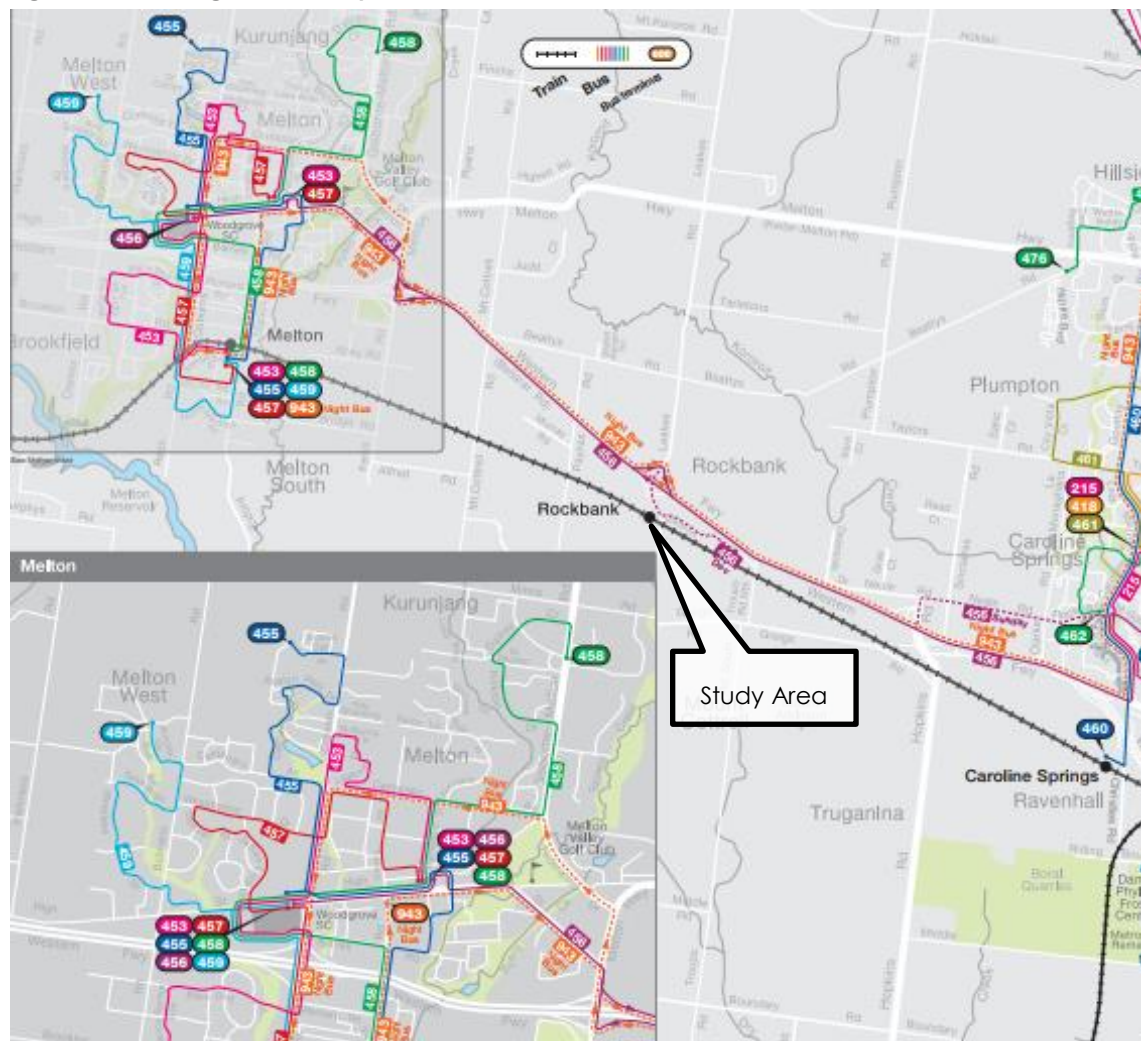
A summary of key information regarding the bus service in the vicinity of the UDF study area is presented in Table 3.2 and the broader bus network illustrated in Figure 3.6.

Table 3.2: Bus Service Summary

Route	Duration to Sunshine (from Leakes Rd / Western Hwy)	Duration to Melton (from Leakes Rd / Western Hwy)	Daily services (each direction)	Timeframe	Frequency
456- Melton to Sunshine via Rockbank	42 minutes	19 minutes	31	5:30am – 9:45pm	23 – 37 minutes

Source: Public Transport Victoria

Figure 3.6: Existing Public Transport



Reproduced from Public Transport Victoria

3.5 Active Transport

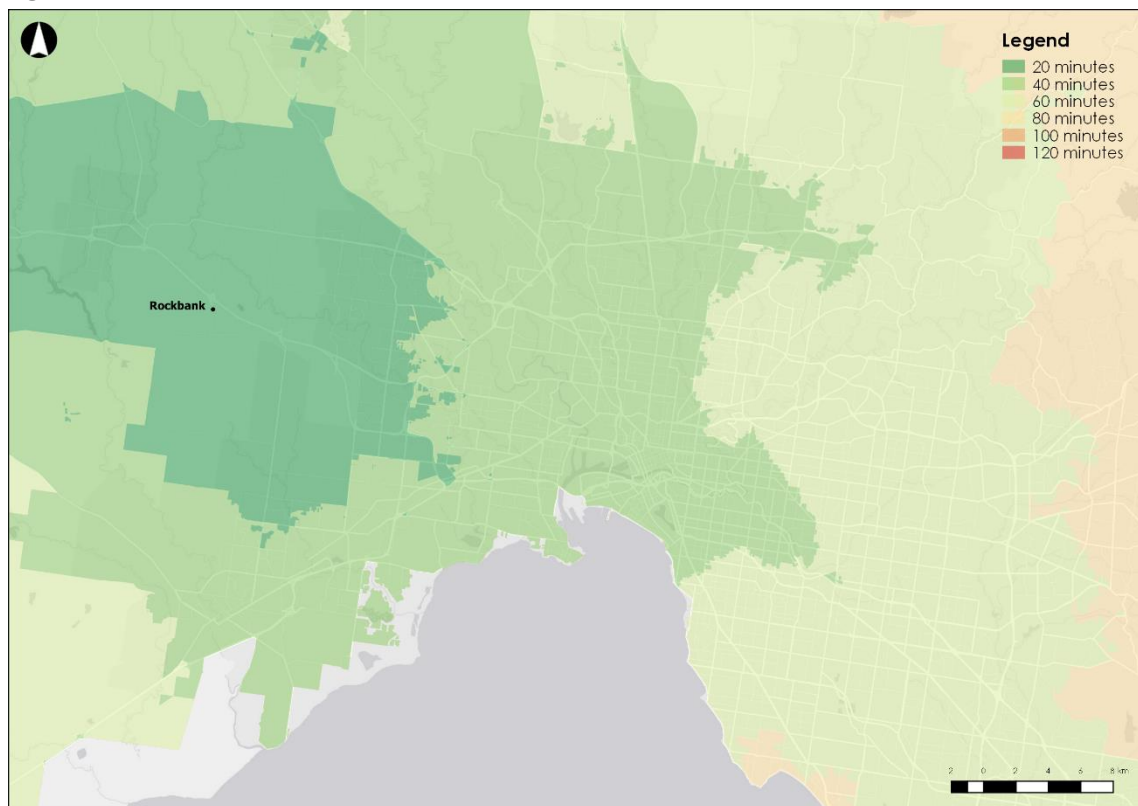
The UDF study area does not currently consist of any designated walking or cycling infrastructure.

3.6 Accessibility

3.6.1 Road

Due to its proximity to the Western Freeway, the UDF study area has a high level of road based accessibility, with most 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 Rockbank

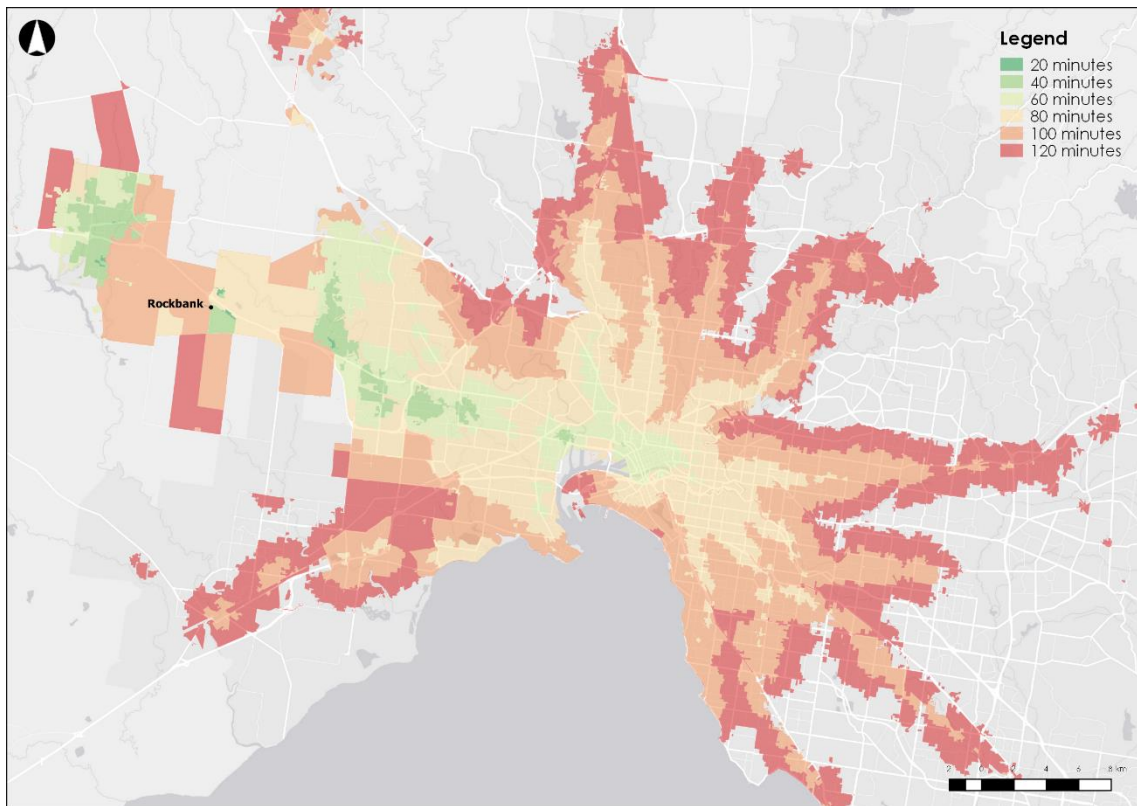


Reproduced from VITM

3.6.2 Public Transport

Accessibility from the UDF study area is currently more limited by public transport, as depicted in Figure 3.8. Suburbs located on the Melbourne – Ballarat rail corridor can be accessed within 60 minutes, while the rest of the metropolitan Melbourne rail network able to be used to reach their proximate areas within 120mins.

Figure 3.8: Public transport travel time from Rockbank



Reproduced from Public Transport Victoria

4. Future Conditions

4.1 Rockbank 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 22,200 people and provide employment for 2,100 people. An average minimum housing density of approximately 16.5 dwellings per net developable hectare will be delivered across the PSP. A summary of the demographic data outlined in the PSP is summarised in Table 4.1.

Table 4.1: Summary of Rockbank PSP future development

Location	Item	Figure	Source
Rockbank PSP	Population	22,200	Rockbank PSP (2015), p. 13
	Dwellings (total)	7,932	Rockbank PSP (2015), p. 13
	Dwellings (density)	16.5 per net developable hectare	Rockbank PSP (2015), p. 13
	Jobs	2,112	Rockbank PSP (2015), p. 24

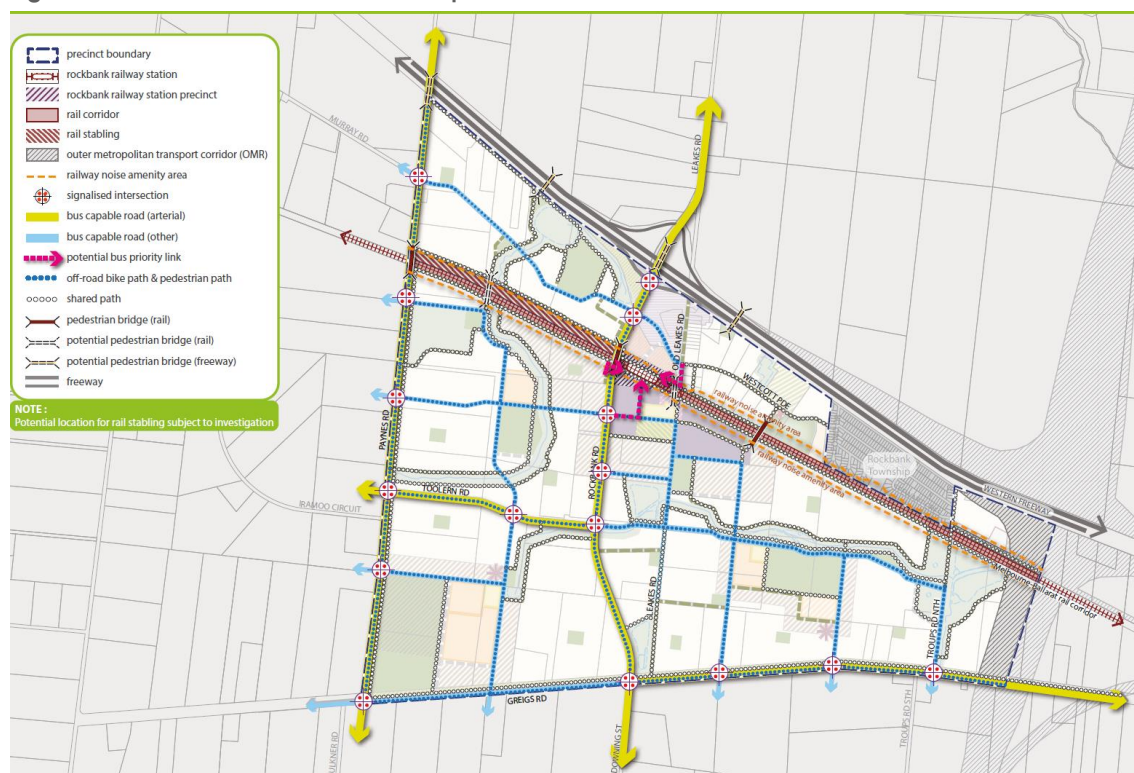
The PSP also sets out what the proposed transport network will be. In this regard, the Road Network Plan, and the Public Transport and Path Network in Figure 4.1 and Figure 4.2, respectively.

Figure 4.1: Rockbank PSP – Road Network Plan



Source: Rockbank PSP, August 2016 - Plan 8, pg. 36

Figure 4.2: Rockbank PSP – Public Transport and Path Network



Source: Rockbank PSP, August 2016 - Plan 9, pg. 40

4.2 Rockbank Major Town Centre

The Rockbank Major Town Centre will serve as the core activity centre of the PSP area. The Town Centre will consist of commercial and retail premises, civic buildings, services, leisure facilities and urban parks. It will be clustered around the existing Rockbank 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 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. A summary of the demographic data for Rockbank Major Town Centre is summarised in Table 4.2.

Table 4.2: Summary of Rockbank Major Town Centre UDF future development

Location	Item	Figure	Source
Rockbank Major Town Centre UDF	Population	X	X
	Dwellings (total)	985	Rockbank PSP (2015), p. 17
	Dwellings (density)	24	Rockbank PSP (2015), p. 17
	Jobs	X	X

In Section 3.6.1 of the Rockbank PSP there are also a number of transport and movement requirements and guidelines that relate to the development of the Town Centre, which are reproduced below in Figure 4.3.

Figure 4.3: Rockbank PSP – Town Centre Transport, Access & Connectivity

TOWN CENTRE TRANSPORT, ACCESS & CONNECTIVITY REQUIREMENTS	
R32	Heavy vehicle movements (loading and deliveries) must not front high streets and should be located to the rear and/or side street and be sleeved or screened.
R33	High streets must be designed for a low speed environment of 30km/h or less such that vehicles and cyclists share the carriageway and pedestrians can safely cross the road.
R34	Pedestrian movement must be prioritised in the design of high streets whilst maintaining local traffic access and movements.
R35	Safe and easy access for pedestrian and cycle trips must be provided to the town centre through the layout and design of the surrounding street network.
R36	Transport routes, hubs and stops must be located to facilitate access to key destinations and generate activity in the town centre.
R37	Car park entrances directly from high streets must be minimised and alternative access must be provided from other streets.
R38	Bicycle parking must be provided at entry points to the town centre and designed to provide weather protection, passive surveillance and lighting to the satisfaction of the responsible authority.
TOWN CENTRE TRANSPORT, ACCESS & CONNECTIVITY GUIDELINES	
G25	Pedestrian priority should be provided across all side roads along main streets and all car park entrances.
G26	Increased permeability in the road network within and surrounding the town centre should be delivered via shorter block lengths and the avoidance of culs-de-sac.
G27	Pedestrian movements should be prioritised by providing links between key destinations within the town centre.
G28	Car parking should be provided efficiently through use of shared, consolidated parking areas.
G29	Safe pedestrian access should be provided throughout all car parking areas.
G30	Pedestrian permeability and off road connections through the town centre should be encouraged.

4.3 Transport Infrastructure Projects

Table 4.3 sets out the proposed or committed transport infrastructure projects that will affect the transport outcomes of the UDF study area in the future.

Table 4.3: Transport infrastructure projects affecting the UDF study area

Infrastructure	Project	Description	Funding Commitment?	Source
Rail	Ballarat Line Upgrade	Rockbank Railway Station will be upgraded, which will include the construction of two new platforms, a new pedestrian overpass and new car parking	Yes	Melbourne Metro Rail 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	No	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 immediately east of the Rockbank PSP area	No	VicRoads
Road	Rockbank Road	Construction of Rockbank Road, which will be a 6-lane arterial road functioning as the north-south spine of the precinct	No	Rockbank PSP (2015), p. 9
Intersection	Rockbank Road and 'RB East West Road 1'	Construction of a signalised 4-way intersection to interim standard, with land purchase to cater for the delivery of ultimate standard	No	Rockbank PSP (2015), p. 47
Bridge	Leakes Road Western Freeway Interchange	Construction of the upgrade to the Leakes Road and Western Freeway interchange to ultimate standard	No	Rockbank PSP (2015), p. 48
Bridge	Rockbank Road Bridge	Construction of a rail-road grade separation at the intersection of Rockbank Road and the Melbourne – Ballarat rail corridor	No	Rockbank PSP (2015), p. 48
Level Crossing	Leakes Road Level Crossing Upgrade (interim)	Construction of an upgraded level crossing, including automatic gates and pedestrian crossings	No	Rockbank PSP (2015), p. 49
Level Crossing	Leakes Road Level Crossing Removal (ultimate)	Closure and deconstruction of level crossing to ensure grade separation	No	Rockbank PSP (2015), p. 45

4.4 Ballarat Line Upgrade

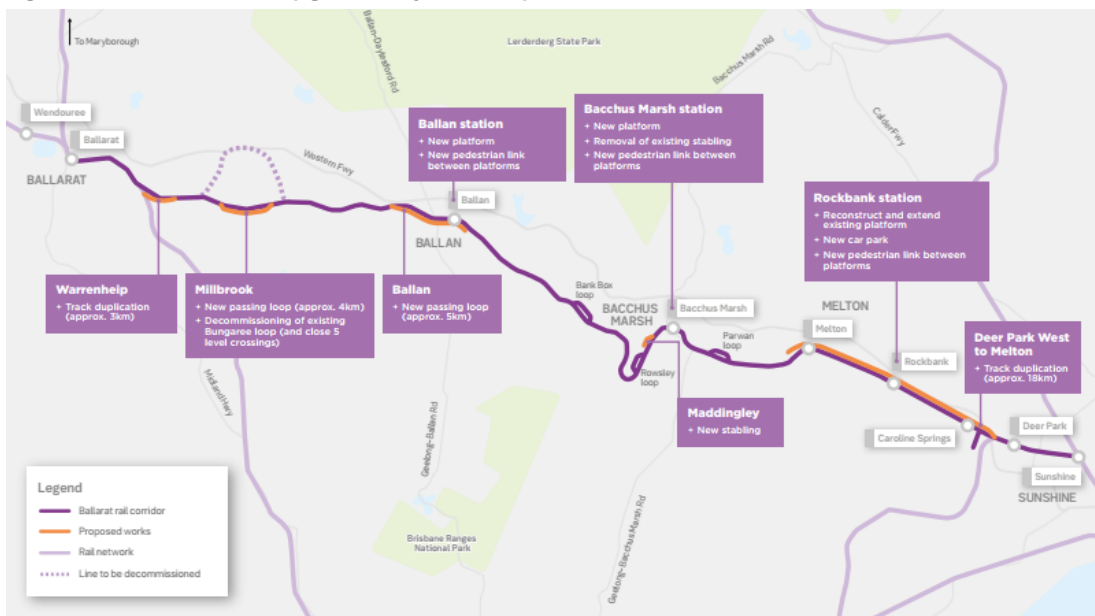
The Ballarat Line Upgrade (BLU) has been approved and will begin construction later this year, with a target completion date of late 2019. The BLU is expected to increase the frequency and improve the reliability of rail services to Melbourne's outer western suburbs of Melton, Baccuhus Marsh, Ballan 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 4.4:

- 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 4.4: Ballarat Line Upgrade Project – Scope of Works

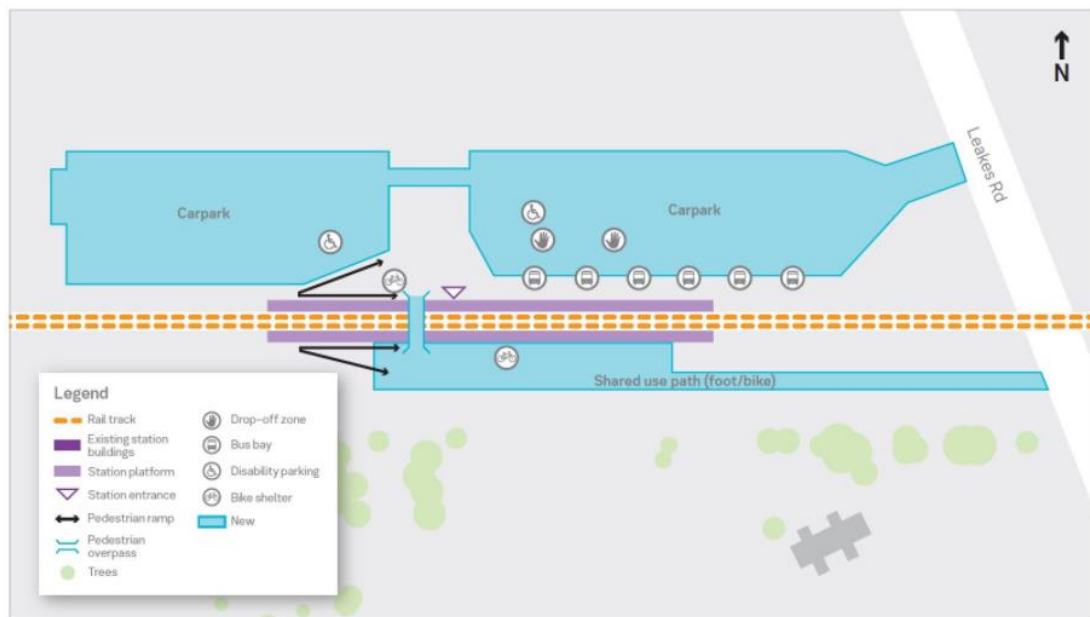


Source: <http://ballaratlineupgrade.vic.gov.au/>

The project will include upgrading the Rockbank Railway Station, to integrate and improve access with all transport modes through the following works, and as shown in Figure 4.5:

- Demolition of the existing station and rebuilding two new platforms
- Construction of a new accessible pedestrian overpass linking the platforms
- Providing a new sealed carpark, bus bays, taxi bays, secure bike storage areas and drop-off zones (i.e. transport hub)
- Improved security and lighting, and improved landscaping in the area
- Setting aside areas for future station development

Figure 4.5: Rockbank Station Upgrade (Concept Only Image)



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

4.5 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, Melton, Tullamarine, Craigieburn / Mickleham and Epping / Thomastown.

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

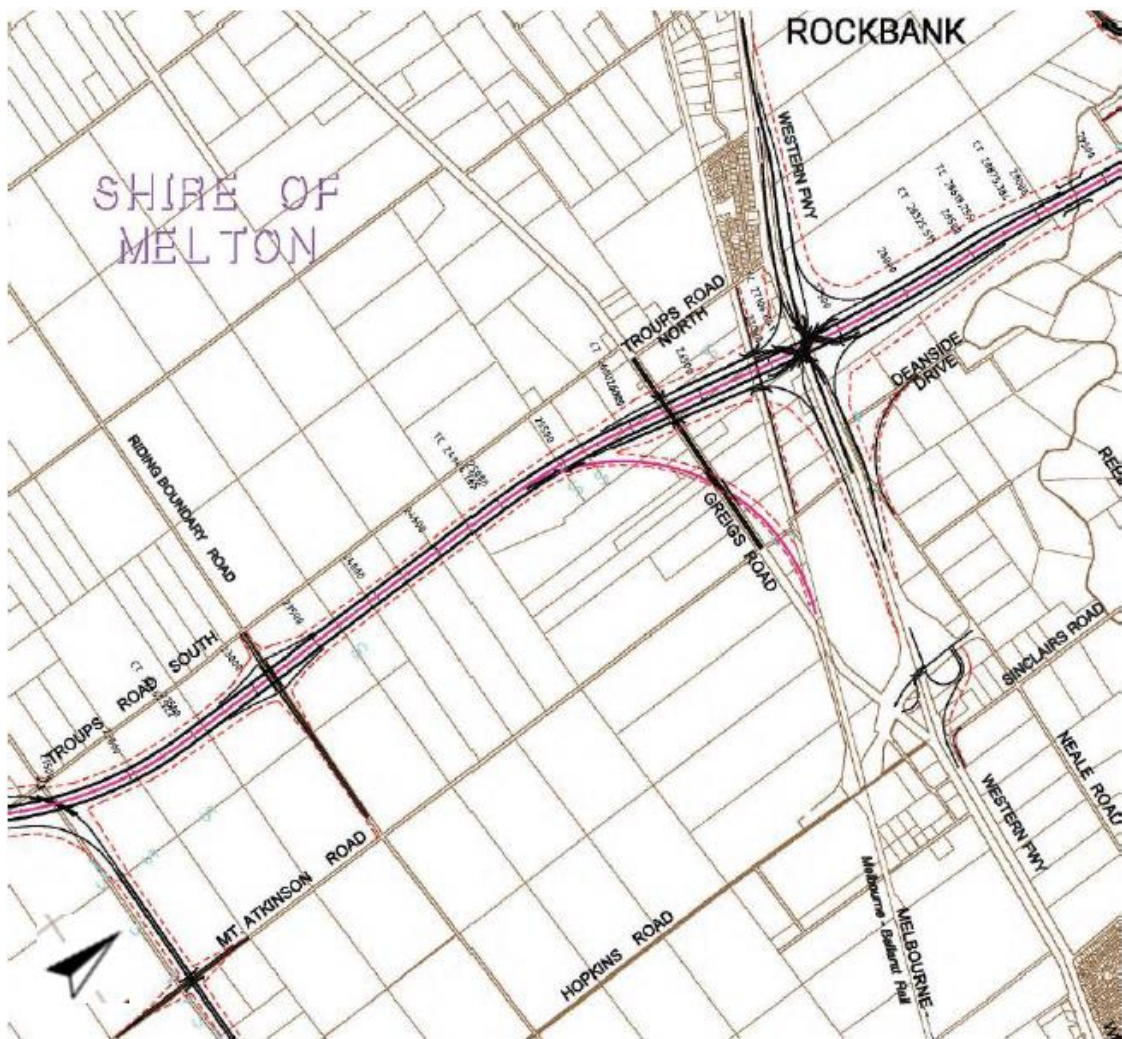
- Freeway standard road, capable of up to six lanes in each direction (only up to four lanes where rail is being accommodated)
- Railway line in the median, capable of up to four tracks that will support interstate freight and high-speed passenger trains

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 and proximate to the Rockbank PSP, the OMR Transport Corridor interchange arrangement with the Western Freeway is expected to broadly be as per the layout shown in

Figure 4.6: OMR Transport Corridor Interchange Arrangement with the Western Freeway



4.6 Rockbank Road

The proposed Rockbank Road has been included in the PSP with the purpose to form the central north – south spine of the precinct and provide direct access to the town centre and the Western Freeway.

As stated in the Rockbank PSP the proposed development of Rockbank Road is proposed in three stages:

- **Stage 1:** Early development of town centre to utilise existing Leakes Road to move north-south through an upgraded level crossing at the rail corridor.
- **Stage 2:** Rockbank Road to be constructed 'at grade' to the south as town centre continues to develop
- **Stage 3:** Rockbank Road rail flyover constructed and Leakes Road level crossing closed, creating a pedestrian-friendly town centre.

The timeframes for the development of Rockbank Road are not yet established. However, the requirement will be dependent on traffic volumes exceeding 7,000vpd which will ultimately require an arterial road access.

5. Transport Modelling

5.1 Continual Planning Flux

As previously mentioned, the Rockbank 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 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 Rockbank Major Town Centre are not expected to have a significant change to those identified through the below transport modelling outputs.

5.2 Victorian Integrated Transport Model

5.2.1 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 Rockbank PSP and Major Town Centre. 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, Rockbank Station upgrades, 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.

5.2.2 Demographic Data

Within the VITM zones that make up the Rockbank PSP they indicate there will ultimately (2046) be the demographic numbers presented in Table 5.1, with further details provided in Appendix A.

Table 5.1: Rockbank PSP VITM Zones - 2046 Demographic Data

Demographic Type	Rockbank PSP
Residential Population	18,720
Household Numbers	6,660
Employment Numbers	1,110
Student Numbers	1,190

Based on the VITM demographic numbers presented in Table 5.1, against what is indicated in the approved Rockbank PSP, there are expected to be an additional 2,500 residents, 1,300 dwellings and almost double the number of jobs.

5.2.3 Mode Splits

Within the VITM zones that make up the Rockbank PSP they indicate there will be the number of car and public transport trips generated in 2046 presented in Table 5.2, with further details provided in Appendix A.

Table 5.2: Rockbank PSP VITM Zones - 2046 Car and PT Trip Data

Mode Type	Daily Trip Numbers	Proportion of Trips
Car	78,710	82%
Public Transport	16,940	18%

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, its typically around 5%.

The Rockbank Train Station is proposed to become a transport hub. It will likely service the Rockbank 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 5.3.

Table 5.3: Rockbank Train Station Daily User Numbers in VITM

Movement	2016	2031	2046
Boarding	22	37,460	22,930
Alighting	62	36,530	18,430
Total	84	73,990	41,360

It is noted that the above daily boarding and alighting numbers are based on an unconstrained arrangement, so VITM assumes that there are enough train services for all those that want to use them. In reality, the number will likely be less, but it shows there will be significant demands for these services by those that live in the area but work in the central city area. Moreover, the decrease in the daily boarding and alighting numbers between 2031 and 2046 relate to other stations in the area being provided, which will take some of the 2031 demand.

5.2.4 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 5.1 and Figure 5.2 respectively, with further details provided in Appendix A.

Figure 5.1: 2031 Daily Traffic Volumes in VITM

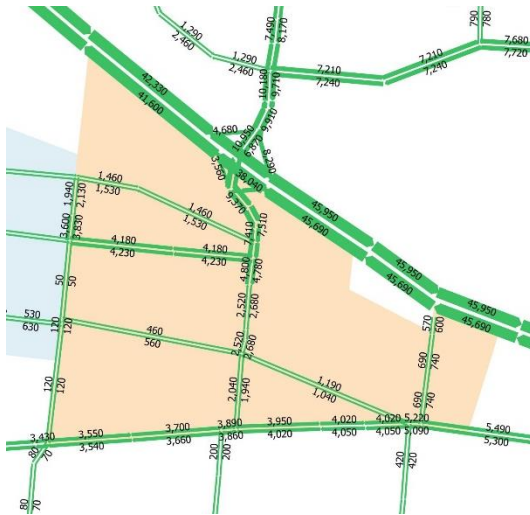
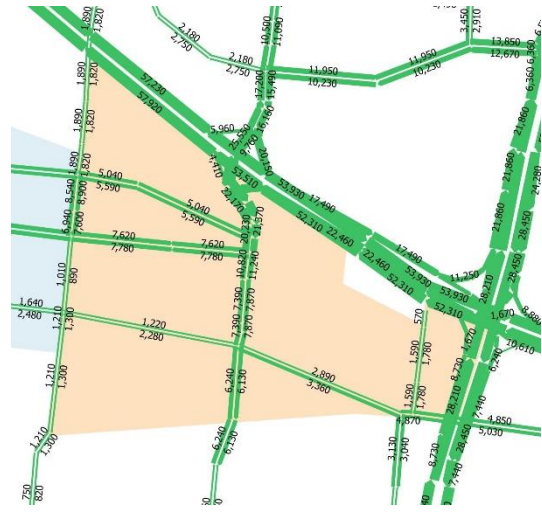


Figure 5.2: 2046 Daily Traffic Volumes in VITM



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

- Leakes Road will start accommodating arterial level traffic volumes by 2031, if only as it nears the interchange with the Western Freeway interchange, but if road is not upgraded and/or Rockbank Road implemented, then the associated volumes and congestion will have a negative impact on the amenity of the town centre.
- The OMR Transport Corridor isn't expected till after 2031 and will have an interchange with the Western Freeway.
- Greigs Road will accommodate connector level traffic volumes in 2031 and be realigned to the south some point thereafter, as part of the associated development in the area.

5.2.5 Road Network Performance

In terms of what ability the proposed road network will have to accommodate the anticipated traffic volumes in and around the Rockbank PSP, we have extracted the peak period volumes and compared them against their typical capacities' of the associated road types and configurations.

In this regard, the likely performance of the roads in and around the Rockbank PSP will be in the AM and PM peak periods in 2031 and 2046, these are shown in Figure 5.3 to Figure 5.6, with further details provided in Appendix A.

Figure 5.3: 2031 AM VITM Road Network V/C's

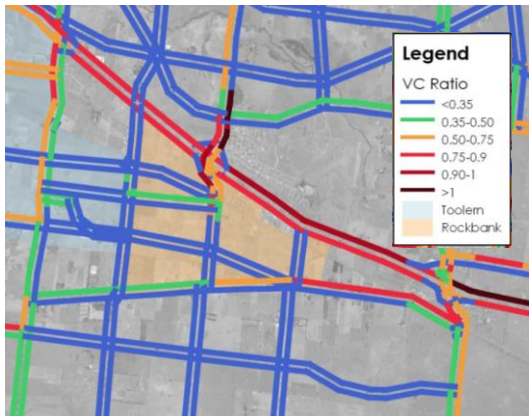


Figure 5.4: 2031 PM VITM Road Network V/C's

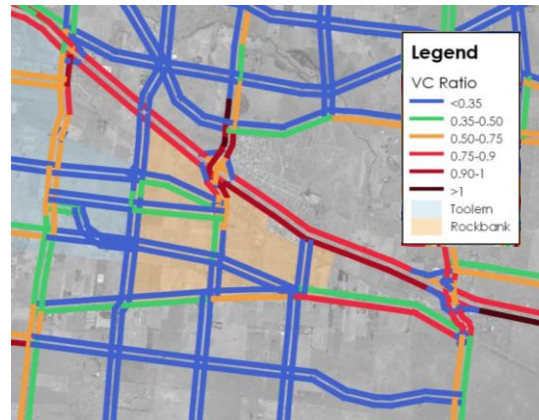


Figure 5.5: 2046 AM VITM Road Network V/C's

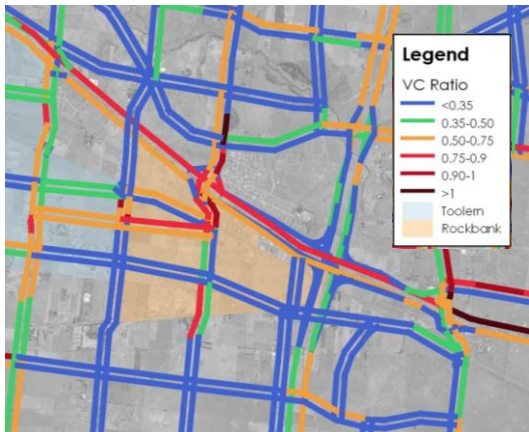
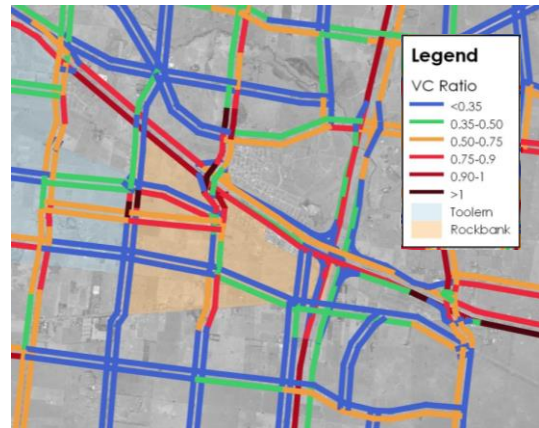


Figure 5.6: 2046 PM VITM Road Network V/C's



Based on Figure 5.3 to Figure 5.6, the following is noted about the ability for the road network in and around the Rockbank PSP in 2031 and 2046:

- Within the Rockbank 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.
- In accessing the Rockbank PSP in 2031, there are a number of roads that are likely to experience V/C ratios approaching, but not exceeding 1.0, namely Greigs Road to/from the east, and Leakes Road on approach to the Western Freeway interchange.
- Within the Rockbank PSP in 2046 the arterial road network is still expected to be able to reasonably accommodate the anticipated traffic volumes, but some of the roads in the western half connecting Paynes Road and Leakes Road will have V/C ratios approaching, but not exceeding 1.0. This is due to Paynes Road not having an interchange with the Western Freeway, so the trips generated in this area will need to travel through the Rockbank PSP, resulting in reduced amenity within the town centre.
- In accessing the Rockbank PSP in 2046, the arterial road network to/from the south and east will be further developed and be able to accommodate the anticipated traffic volumes. However, as described above, there will be V/C ratios approaching 1.0 with the road connecting Paynes Road to the Leakes Road interchange with the Western Freeway.

5.3 Rockbank PSP Transport Modelling Report

5.3.1 Overview

In 2012 the Victorian Planning Authority (then Metropolitan Planning Authority) engaged Jacobs to develop a sub-regional transport model of the West Growth Corridor. The sub-regional model was derived from a 2012 version of VITM, but refined to reflect the proposed PSP areas to enable more detailed planning, testing and analysis of the proposed transport network.

Subsequent to this, Jacobs then undertook transport modelling of the Rockbank PSP in 2014, where they further refined the West Growth Corridor transport model to test and confirm the suitability of the internal and connecting transport network for the Rockbank PSP.

A summary of the key inputs and outputs presented in the associated Transport Modelling Report, dated 3 September 2014, is provided below.

5.3.2 Demographic Data

The refined zoning associated with the transport model for the Rockbank PSP indicated that there will ultimately (2046) be the demographic numbers for the PSP and Town Centre presented in Table 5.4.

Table 5.4: Rockbank PSP Model - 2046 Demographic Numbers

Demographic Type	Rockbank PSP	Rockbank Major Town Centre
Residential Population	22,819	1,885
Household Numbers	8,149	840
Employment Numbers	2,243	1,429
Student Numbers	4,550	0

Based on the Rockbank PSP transport model numbers presented in Table 5.4, they are as expected generally consistent with what is indicated in the approved Rockbank PSP.

5.3.3 Mode Splits

While not specifically reported in the Transport Modelling Report, they are expected to be generally consistent with those identified through VITM. What is reported is the Rockbank train station is expected to have a total of 5,700 boarding's in 2046, which is significantly less than those provided from VITM, which reflects the unconstrained arrangement built into the current modelling.

Additionally, it should be noted that the electrification of the rail line and the additional proposed improvements would result in additional rail capacity and ultimately help improve the public transport mode share.

5.3.4 Road Network Volumes

The reference case traffic volumes in 2046 from the Transport Modelling Report is presented in Figure 5.7. When compared to the VITM daily traffic volumes on the proposed arterial road network, the volumes are not significantly different, but the east-west road network between the OMR Transport Corridor and Mount Cottrell Road is more developed and reflective of what is proposed in the Rockbank PSP (refer to Figure 4.1) to service the various PSP's in the area.

Figure 5.7: Rockbank PSP Model – 2046 Daily Traffic Volumes



5.3.5 Road Network Performance

In terms of the ability of the revised proposed road network to accommodate the anticipated 2046 traffic volumes in and around the Rockbank PSP, the AM and PM peak period Volumes / Capacity Ratio plots from the Transport Modelling Report are provided in Figure 5.8 and Figure 5.9, respectively.

These V/C ratio plots indicate that the proposed road network will likely operate quite well, except for a few areas around the station during the PM peak when pick-up activities are occurring, access into and out of the town centre via the intersection with Rockbank Road and various approaches to the Western Freeway interchanges.

These limited areas of high V/C ratios are considered reasonable given the 2046 time horizon, that a high reliance on private car use mode share is continued to be assumed and that at least the potential issues at the Rockbank access point with the town centre can likely be resolved through various design measures.

Figure 5.8: Rockbank PSP Model – 2046 AM V/C Ratio Plot



Figure 5.9: Rockbank PSP Model – 2046 PM V/C Ratio Plot



5.4 Implications on Town Centre

Based on the transport modelling presented in this section of the technical report, the broader road network of the Rockbank PSP is considered to be suitable to support the future level of development. Ideally, an increased push towards more sustainable transport modes is made, as the anticipated mode splits in 2046 are considered to be based on a 'business as usual' approach. This is considered to not take full advantage of the Rockbank Station being connected to the town centre and it being a greenfield site where the provision of and implementation of a holistic active and public transport network is possible.

Beyond this broader approach recommended for transport access and movement to the town centre, it is also noted that there is expected to be the following areas associated with the town centre that high V/C ratios are expected (likely lead to congested road congestions):

- The southern side of the station during the PM peak when pick-up activities are occurring
- Access into and out of the town centre via the intersection with Rockbank Road

There is considered to be opportunities to help resolve these potential congestion spots through this project, such as limiting through traffic routes with the town centre, where property access points and car parking is located. Making the town centre less car dependent and need for vehicles to driven into and around it will help resolve these potential issues. Additionally, behavioural change programs and initiatives should be combined with improved public and active transport facilities in order to achieve a shift away from private car use. This is essential to reducing the reliance on the private vehicle and the impacts this can have on the environment, health and sunken costs that could be better utilised to help support a desired high quality amenity for the community.

6. Issues and Opportunities

6.1 Overview

There is a significant amount of background material relating to the planning of the West Growth Corridor and Rockbank PSP. 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 the Rockbank Town Centre UDF, the below is provided.

6.2 Planning Context

Background Material

In the West Growth Corridor, Rockbank represents one of the key PSPs, with it centred on an existing railway station and having direct access to the Western Freeway.

On this basis, it is expected to be a priority in the overall development of the West Growth Corridor, and for the State Government. As such, there is considered to be an opportunity to strongly advocate for the delivery of the key infrastructure needed to unlock and support its future development levels, such as the Ballarat Line Upgrade, the Outer Metropolitan Ring and the electrification of the Melton Rail Line.

Key to the development of the Rockbank PSP is the train station and the precinct around it, which will form a transport hub that connects with the local bus and path networks. Given that the station is being upgraded as part of the committed Ballarat Line Upgrade (BLU), further focus should be given to the development of the overall precinct and development of the adjacent properties, which form part of the Rockbank Town Centre.

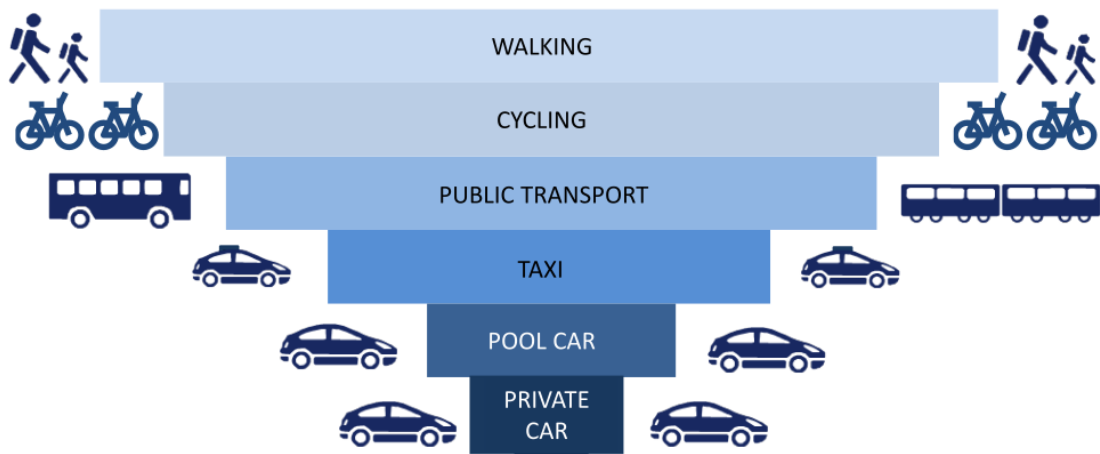
Planning Approach

At broad sense, the planning of the Rockbank Town Centre is recommended to be based on the following two key approaches:

i **Modal Hierarchy**

Definitely within the Rockbank Town Centre, the various modes that will be used to access and movement around within it should be prioritised as per Figure 6.1 to achieve a high amenity environment that support community interactions and cohesion.

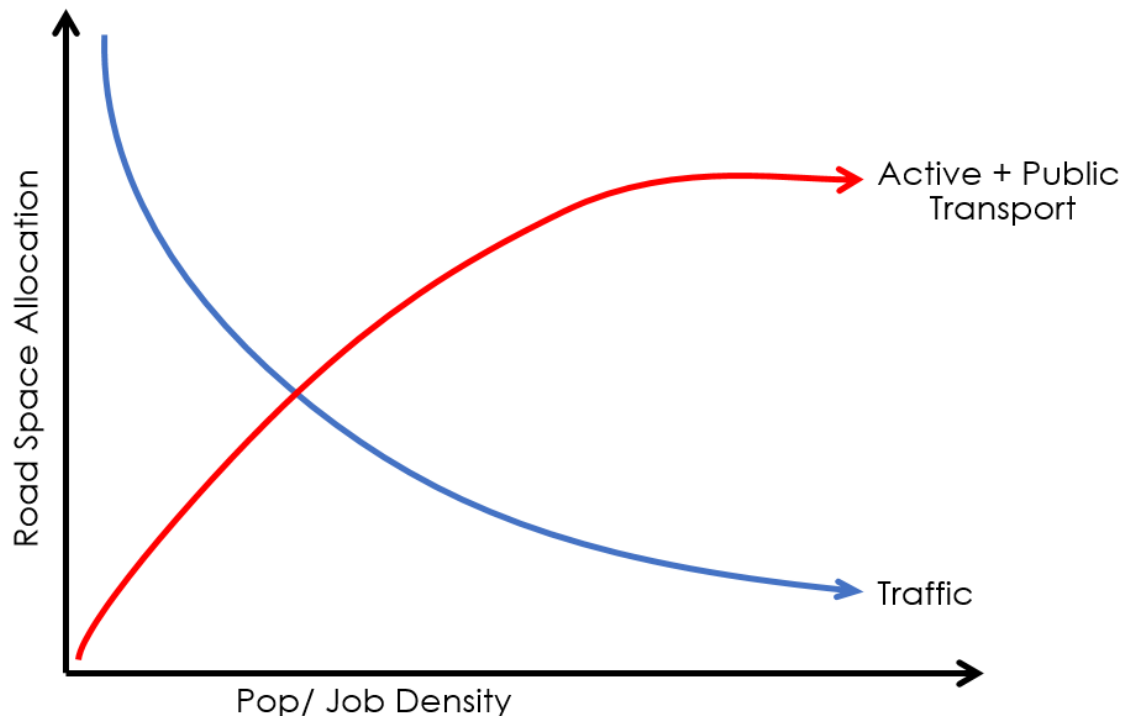
Figure 6.1: Town Centre Modal Priorities



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 Rockbank Town Centre, and especially within it, 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 the town centre. This relationship is shown in Figure 6.2.

Figure 6.2: Road Space Allocation



6.3 Road Network

There is a broader arterial and connector road network being developed for the West Growth Corridor, including the Rockbank 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.

One of the major future road projects is the OMR Transport Corridor, which will be located at the eastern end of the Rockbank PSP. Moreover, there is a potential opportunity, if rail services are included and station located near the eastern end of the Rockbank PSP, to connect with it via paths, bus services and cars.

More specifically to the Rockbank Town Centre, the Rockbank PSP road network modelling indicates the following potential congestion points:

- The southern side of the station during the PM peak when pick-up activities are occurring
- Access into and out of the town centre via the intersection with Rockbank Road

However, there is considered to be opportunities through the Rockbank Town Centre UDF to resolve any such potential congestion issues, such as through the following:

- Not have pick-up activities occurring on the northern side of the town centre. Rather, provide suitable areas with direct access to Rockbank Road and Old Leakes Road
- Limit property and car park access from the town centre main road (more from the surrounding arterial and connector roads)
- Integrate behaviour change initiatives with infrastructure projects to achieve an increased shift away from private car use

6.4 Public Transport

6.4.1 Train services

With the proposed upgrades to the station and the electrification of the line as part of the committed Ballarat Line Upgrade (BLU), it is important to ensure that the grade separated line does not cause a severance to pedestrian and vehicle movements. Rather, it should be an opportunity to increase permeability across the rail line, which essentially travels along the northern side of the Rockbank Town Centre, and centre of the Rockbank PSP.

Also, and as mentioned above, the proposed upgrade of the station provides an opportunity to further focus on and develop the overall precinct as a transport hub, with links to bus stops, kiss and go areas, path connections and parking facilities, as well as a gateway to the Rockbank Town Centre.

6.4.2 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 south of the Western Freeway are non-existent. This will need to be addressed to service the proposed Rockbank PSP development levels.

With the Rockbank Train Station, part of its success will be based on the integration with bus services, via a well located transport hub. There is proposed to be direct road connections on each

side, that bus services could use to access and integrate with this station. This facility would ideally be bus only and not shared with private car use to achieve a high level of service to users, help prioritise connecting bus use, and minimize the intrusion of high turnover kiss and go activities in, or at least proximate to, the Town Centre.

Beyond these arrangements at the Rockbank Train Station, bus services providing access to the Rockbank Town Centre are proposed via a route through it. This arrangement will be beneficial as long as priority measures are provided along the route and internal vehicle movements are minimised through the indicated road network arrangements, of more peripheral property and car park access to the Town Centre instead of the internal roads.

The internal bus route to the Rockbank Town Centre provides an opportunity through in lane bus stops to further help minimise vehicle intrusion and traffic calming those that do.

6.5 Active Transport

6.5.1 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 Rockbank Town Centre, such as shown through the Path Network Plan in the Rockbank PSP.

Collectively these facilities should be sufficient to service the Rockbank PSP. However, the 2km local catchment of the Rockbank Town Centre should be prioritised, both from an implementation and intersection / crossing perspective, to suitably encourage their use in accessing them.

Rockbank Town Centre

Within the 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.

6.5.2 Cycling Infrastructure

Principal Bicycle Network

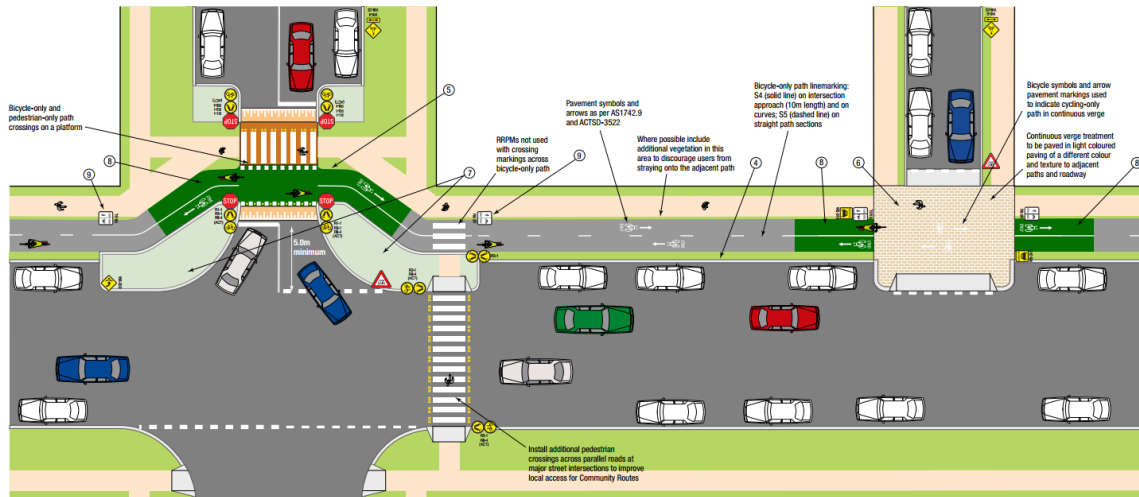
There is a Principle Bicycle Network set out in the Moving Melton – Integrated Transport Strategy, which essentially follows the arterial road network. It is expected that high quality facilities will also be provided on the connector level roads and within the key Rockbank Town Centre, such as shown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

Collectively these facilities, along with on-road facilities on lower order roads, should be sufficient to service the Rockbank PSP. However, the 5km local catchment of the Rockbank Town Centre should be prioritised, both from an implementation and intersection / crossing perspective, to suitably encourage their use in accessing them.

Rockbank Town Centre

Within the town centre, the road environment is expected to be a low speed one, enabling cyclists to mix with traffic. Alternatively, and on the 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 6.3.

Figure 6.3: 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.

6.6 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 Rockbank Town Centre, 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 have prepared a paper which analyses four possible futures based on prevailing urban 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

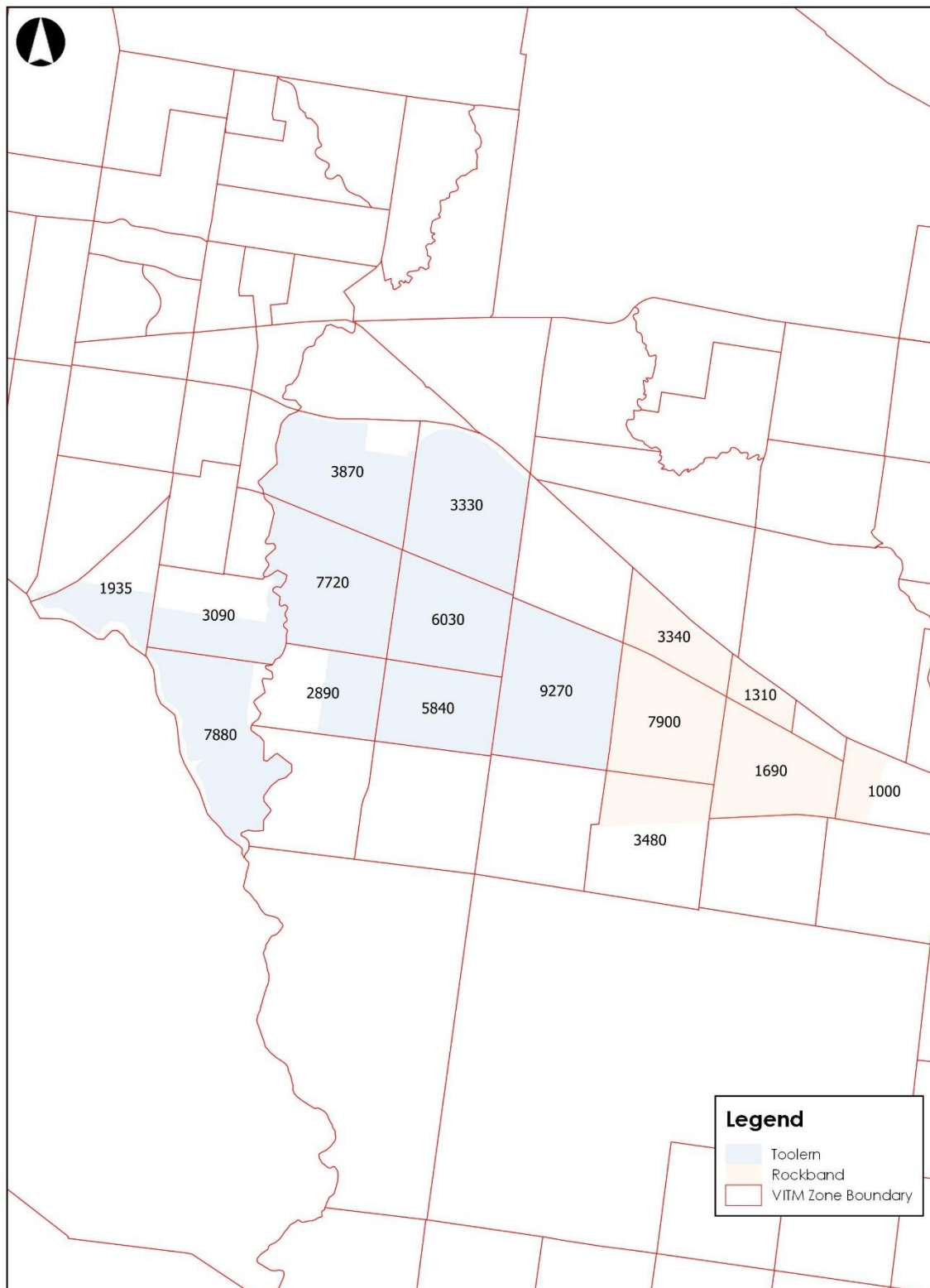


Figure A.5: 2046 Employment Numbers

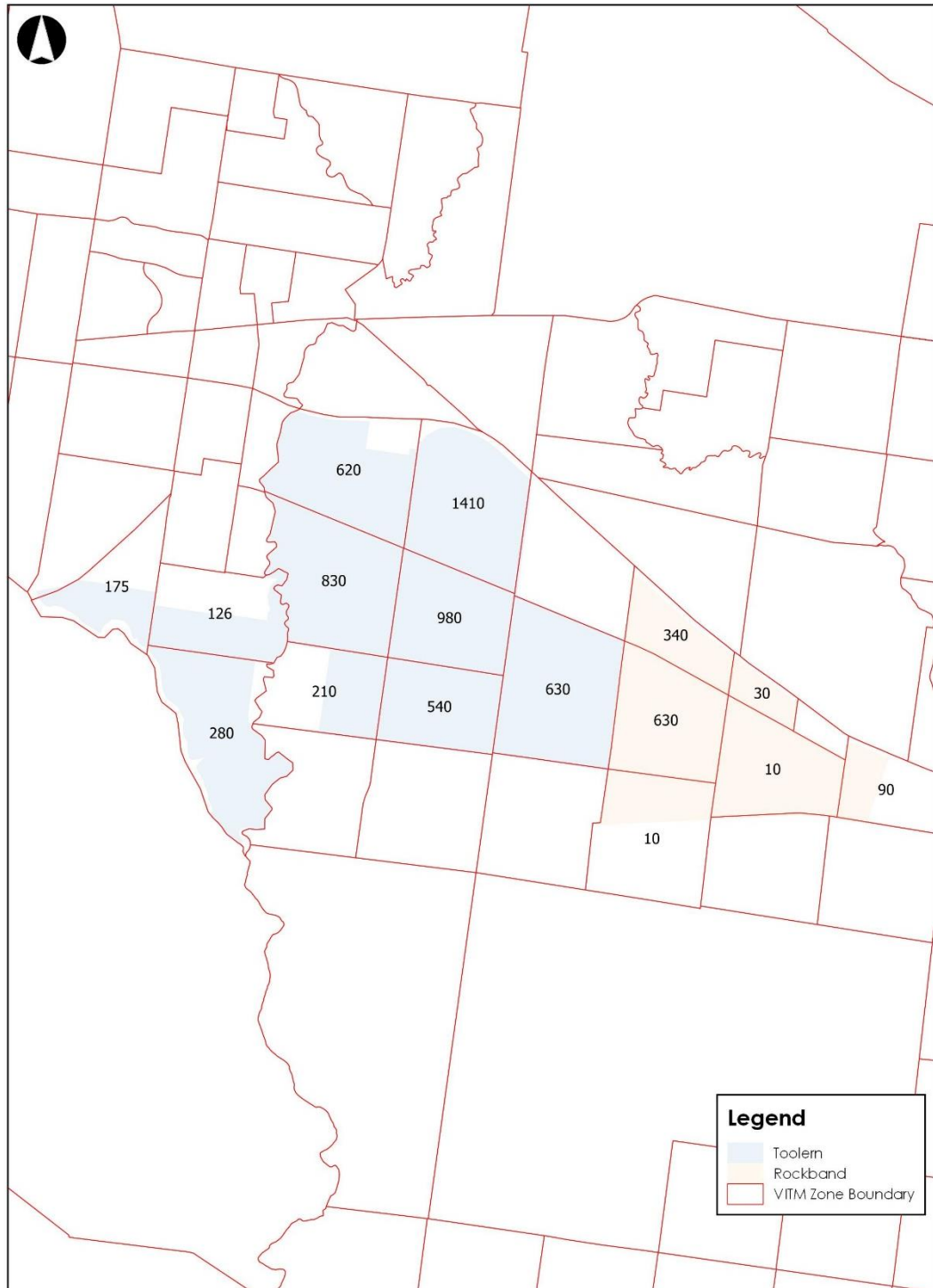


Figure A.6: 2046 Student Numbers

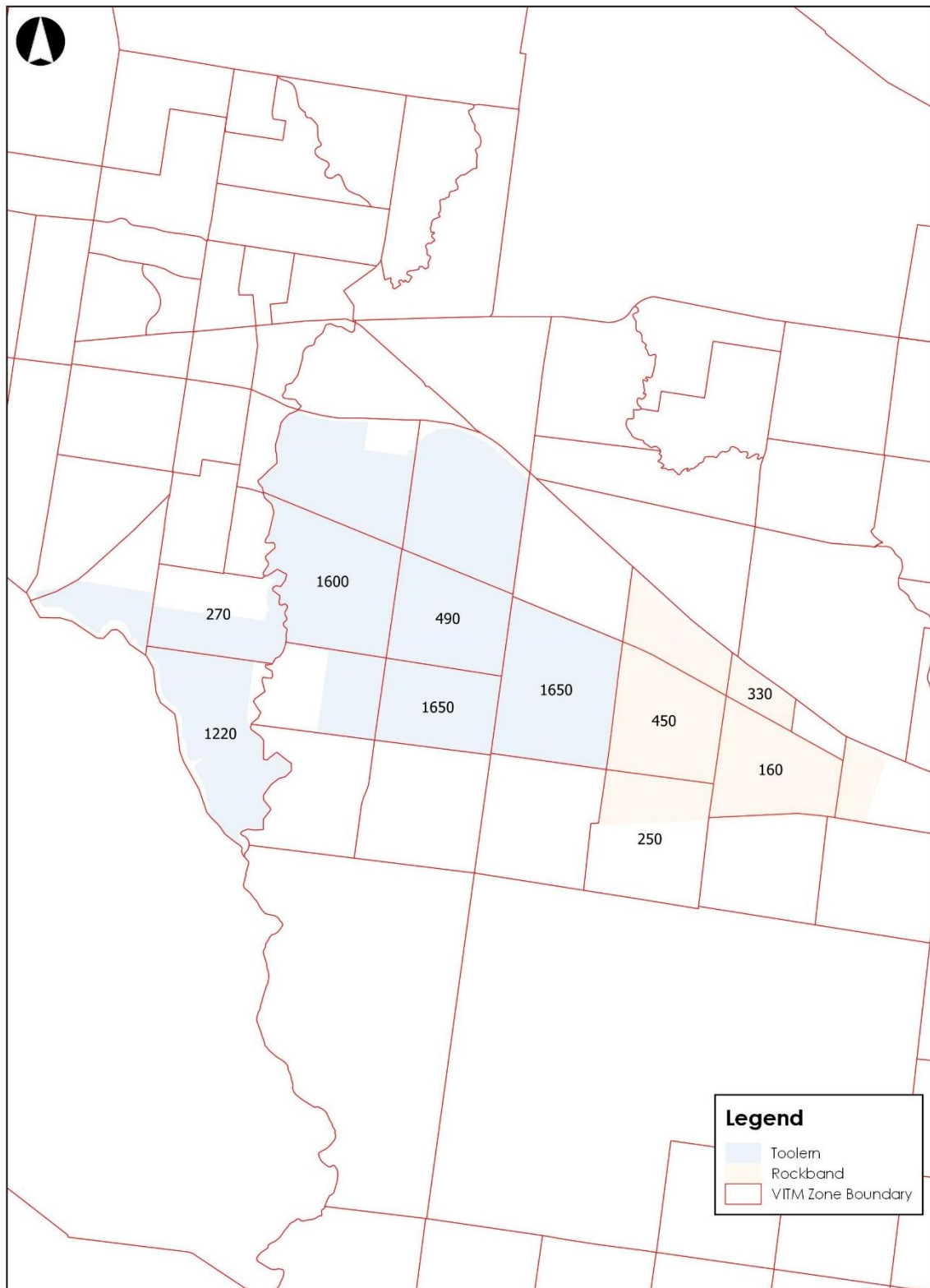
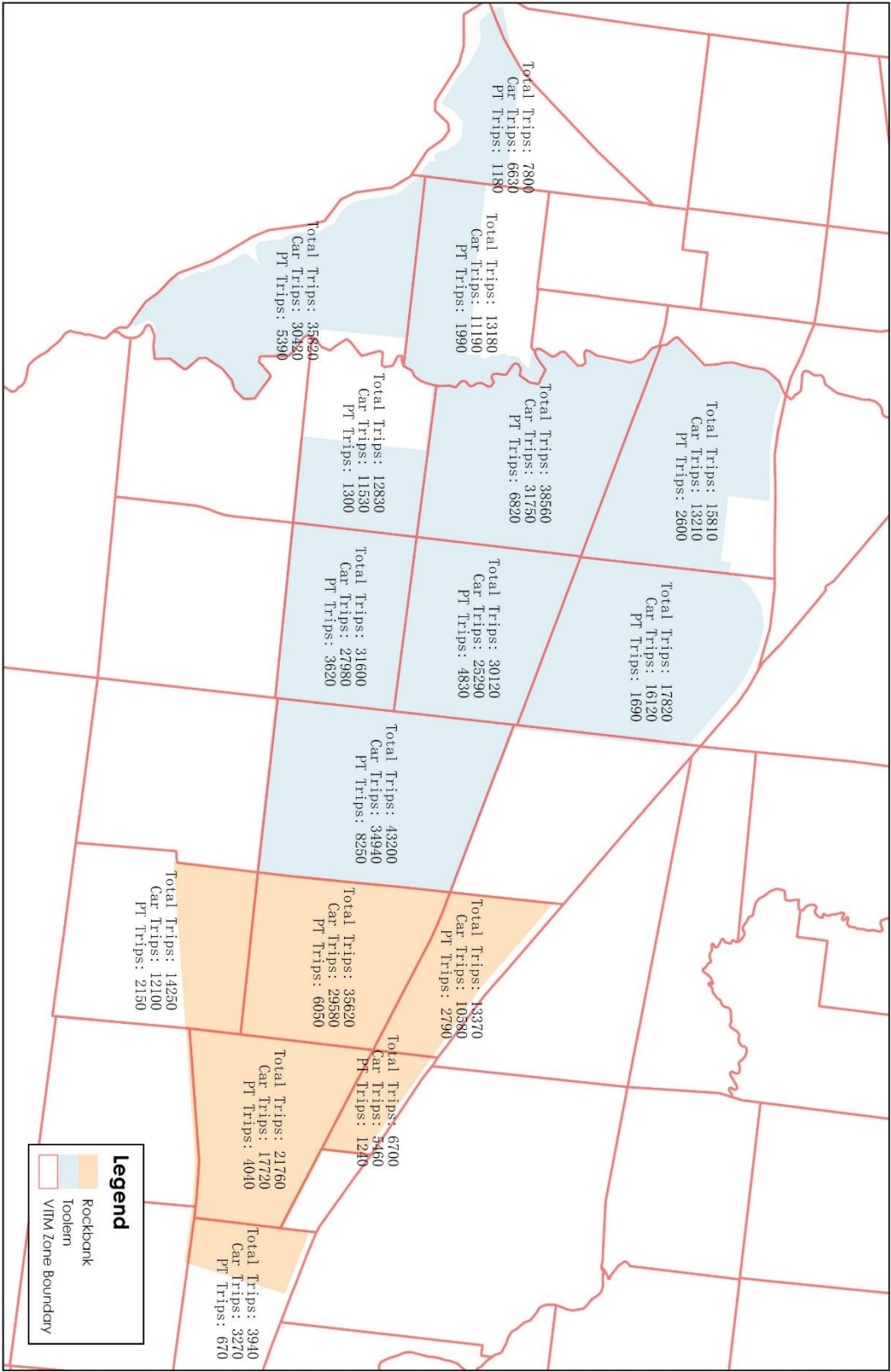


Figure A.7: 2046 Car and PT Trip Numbers



Legend

Traffic Volume

- Volume 0-1,000
- Volume 1,000-3,000
- Volume 3,000-6,000
- Volume 6,000-9,000
- Volume 9,000-12,000
- Volume 12,000-15,000
- Volume 15,000-18,000
- Volume 18,000-24,000
- Volume 24,000-30,000
- Volume >30,000

Rockbank

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Figure A.9: 2031 Arterial Road Daily Volumes

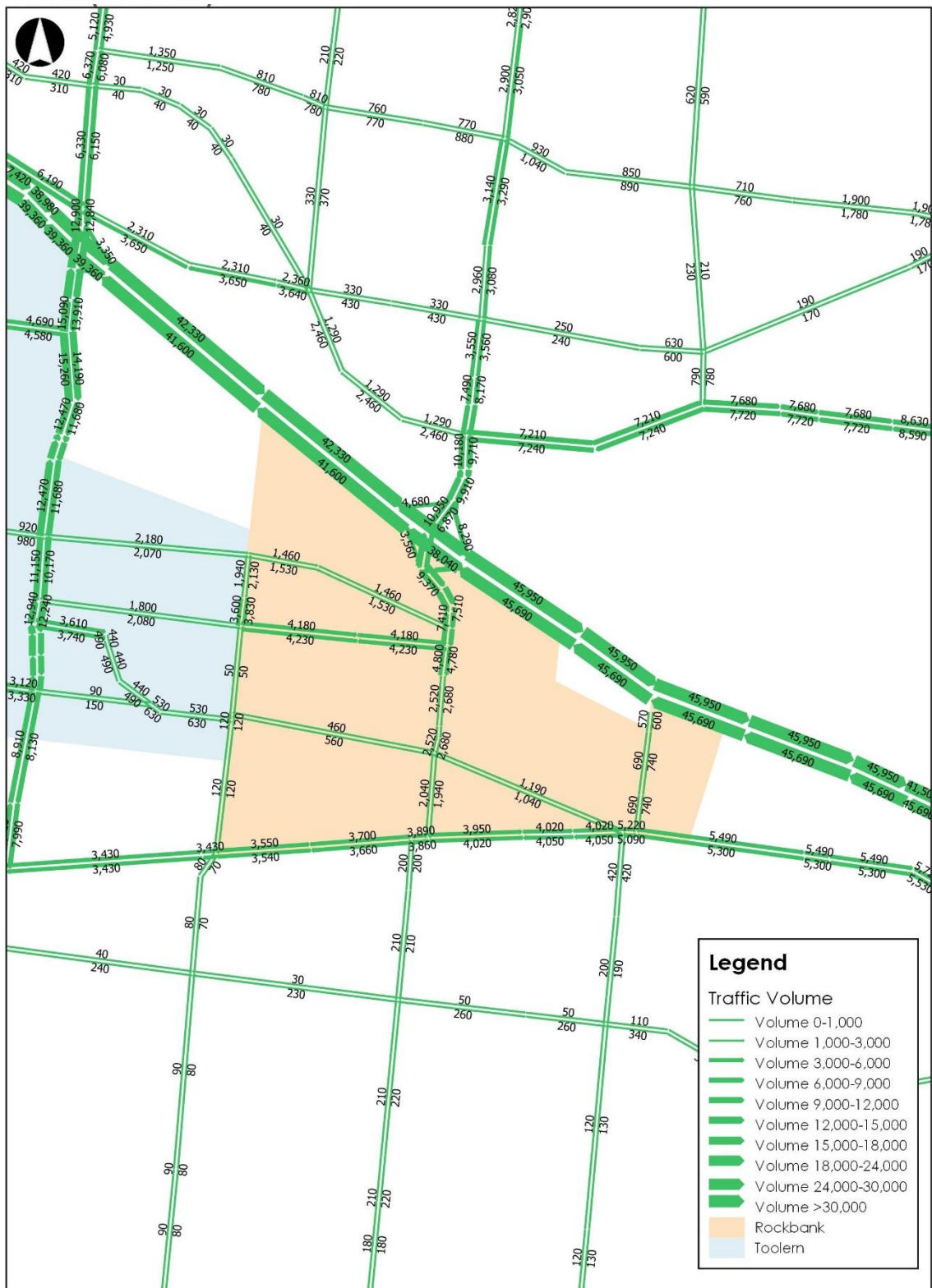


Figure A.10: 2046 Arterial Road Daily Volumes

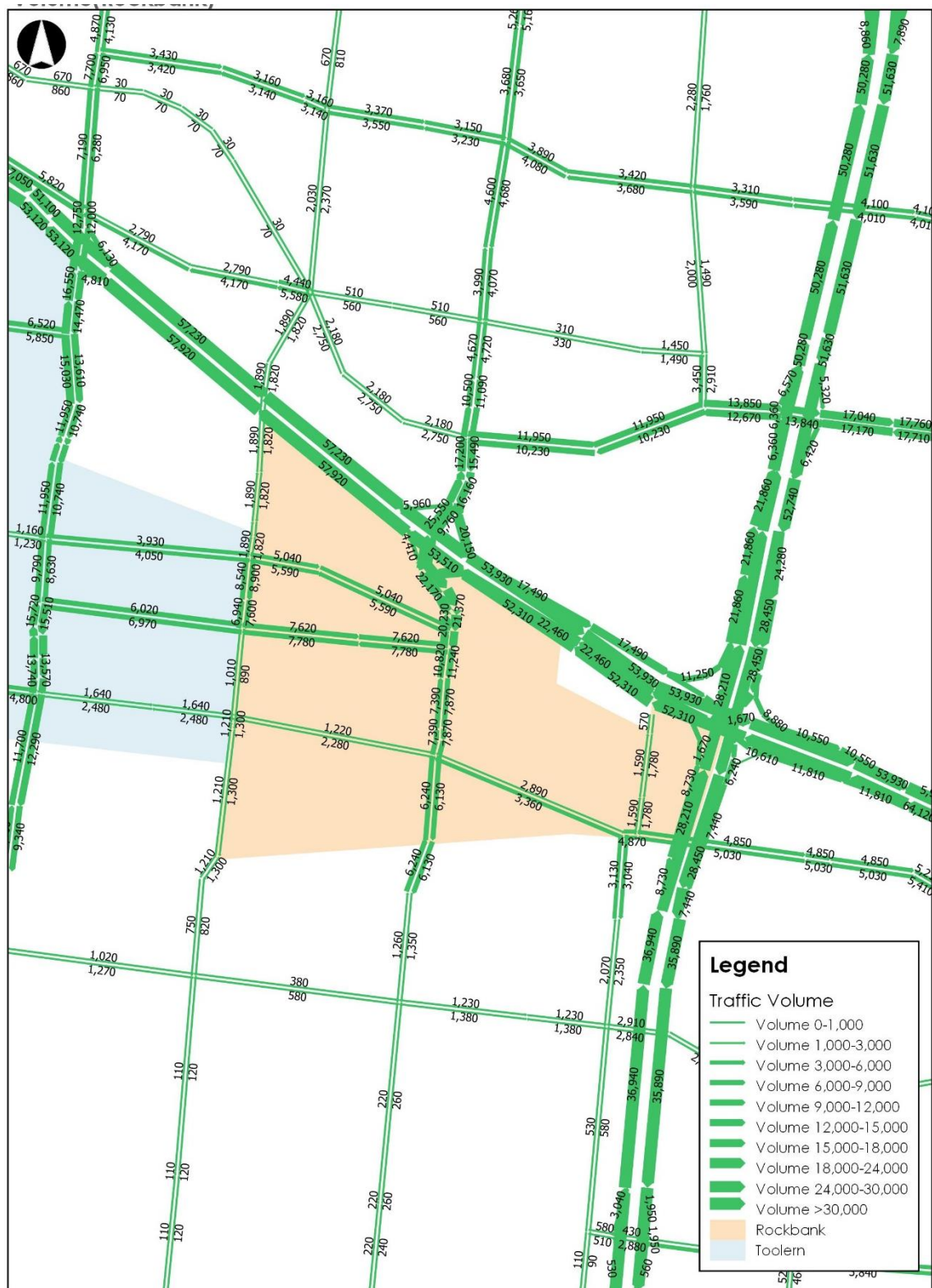


Figure A.11: 2016 AM Peak Road Network Volume / Capacity Ratio Plot

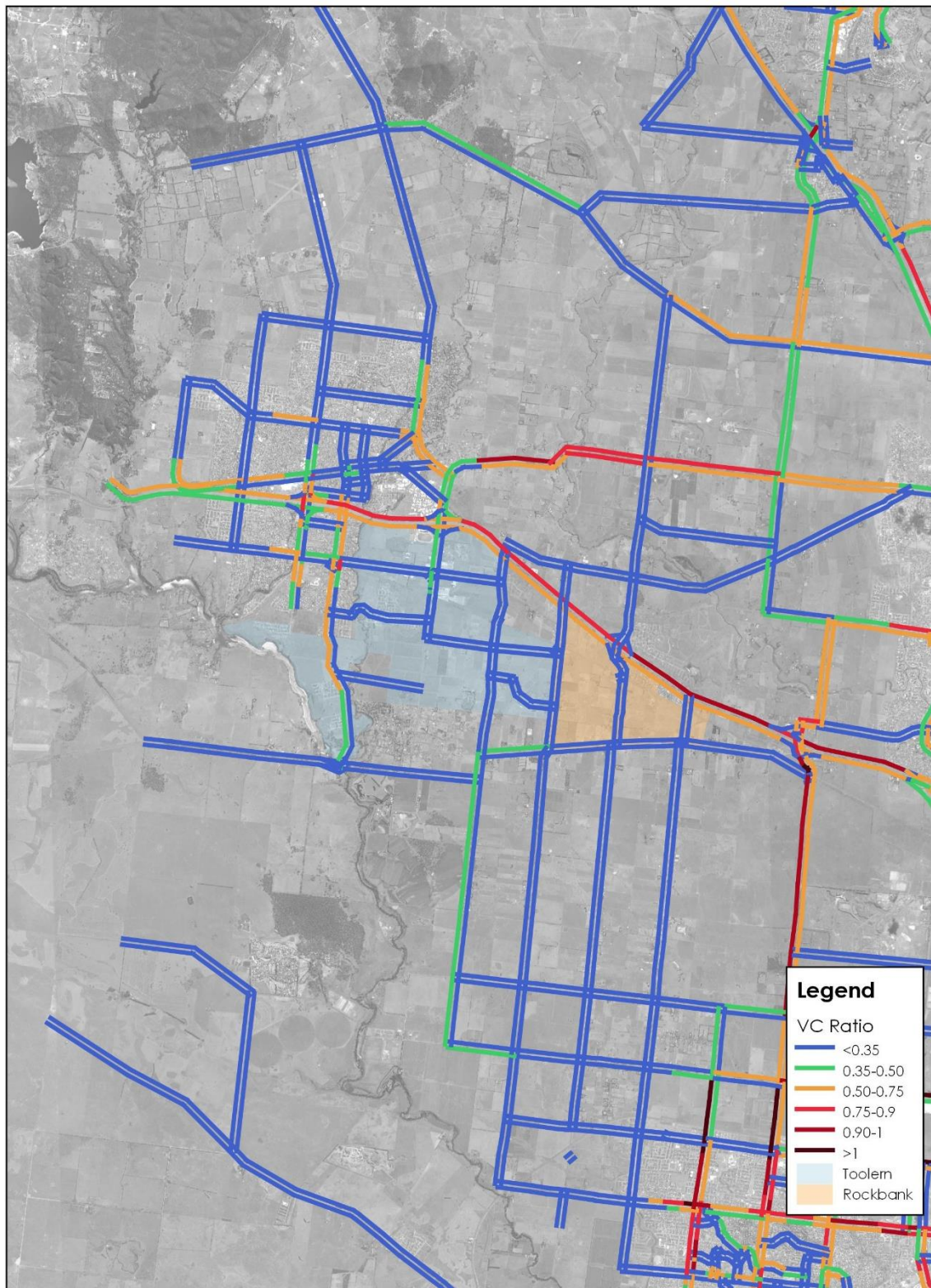


Figure A.12: 2016 PM Peak Road Network Volume / Capacity Ratio Plot

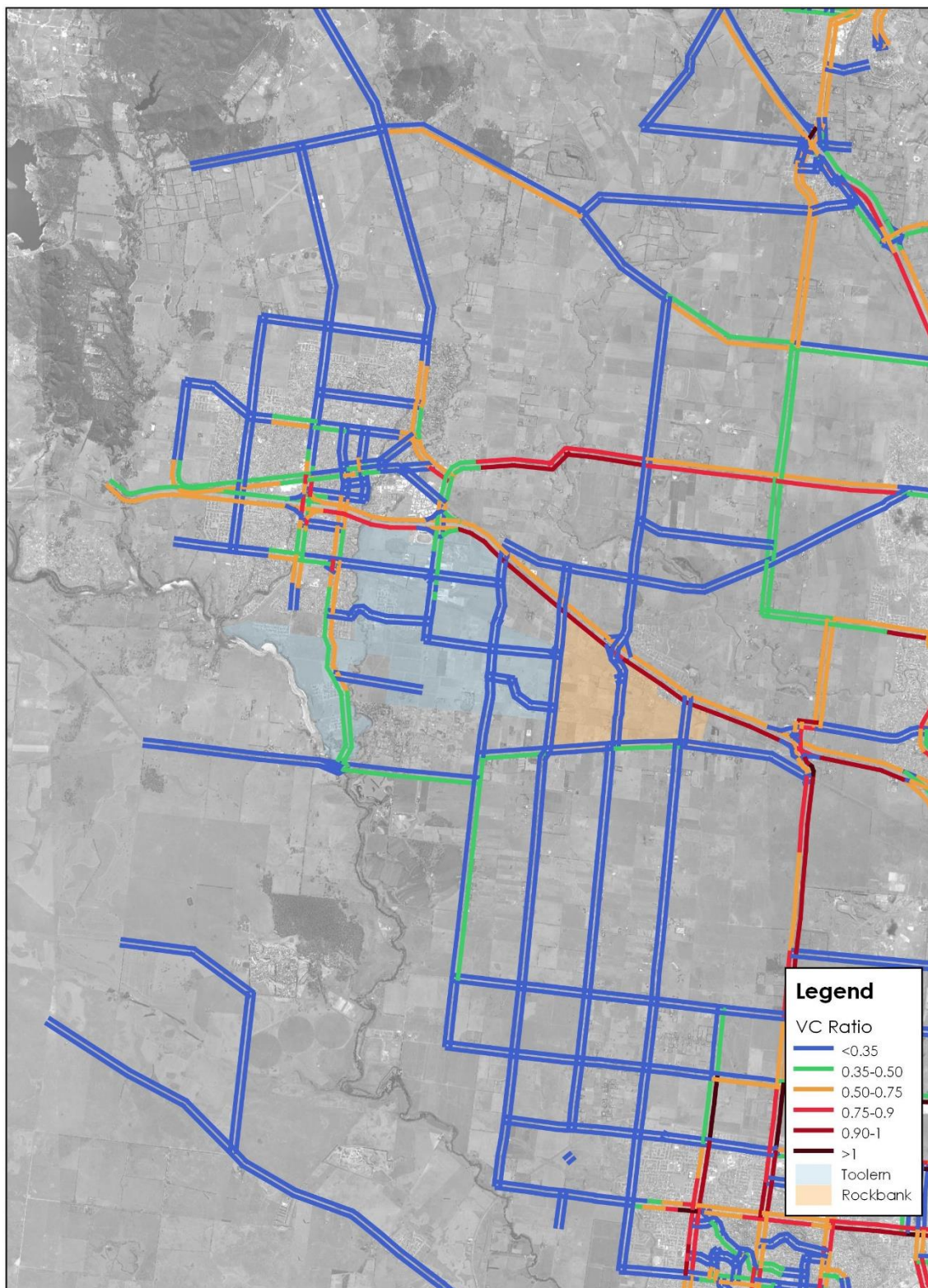


Figure A.13: 2031 AM Peak Road Network Volume / Capacity Ratio Plot

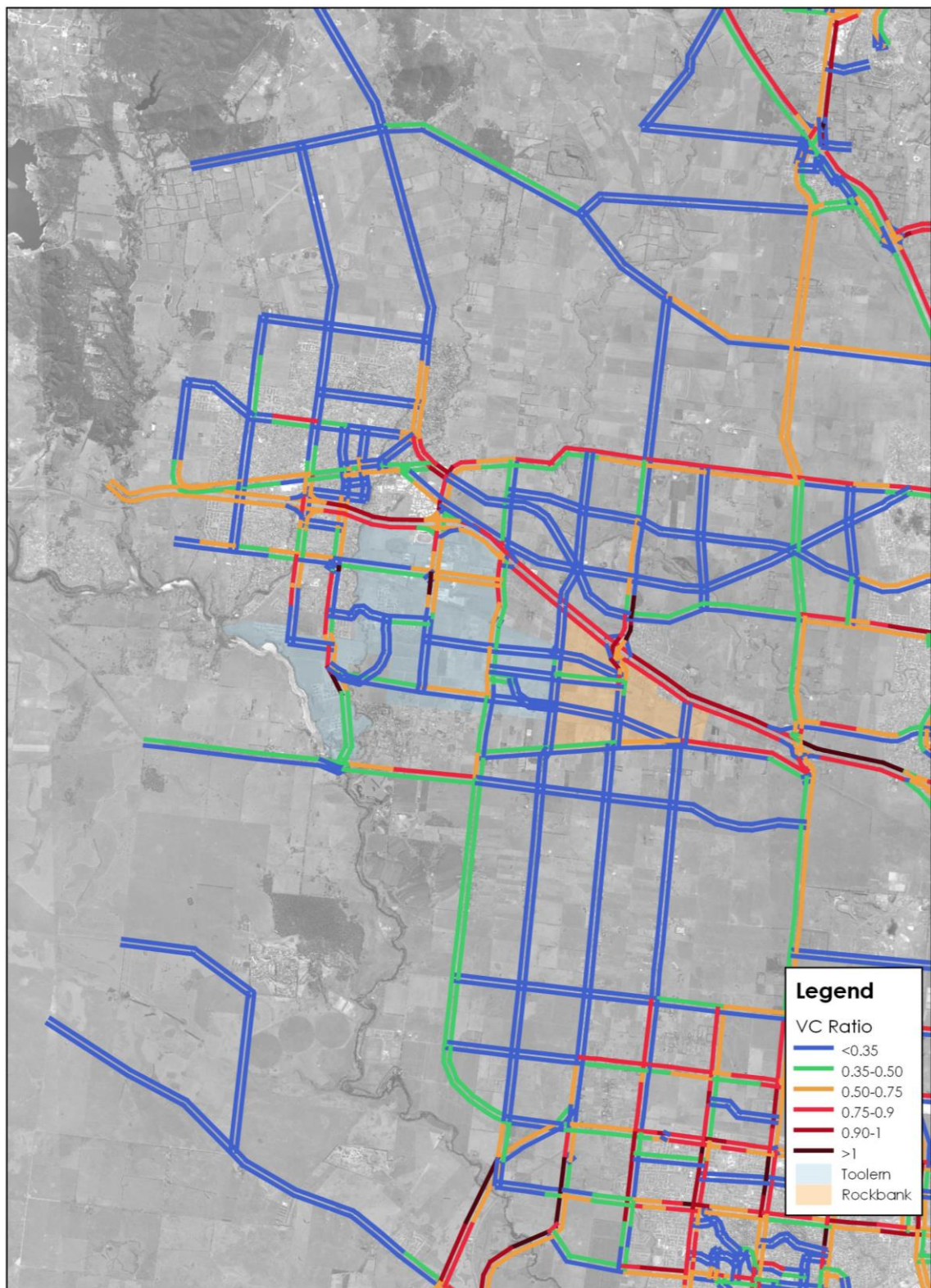


Figure A.14: 2031 PM Peak Road Network Volume / Capacity Ratio Plot

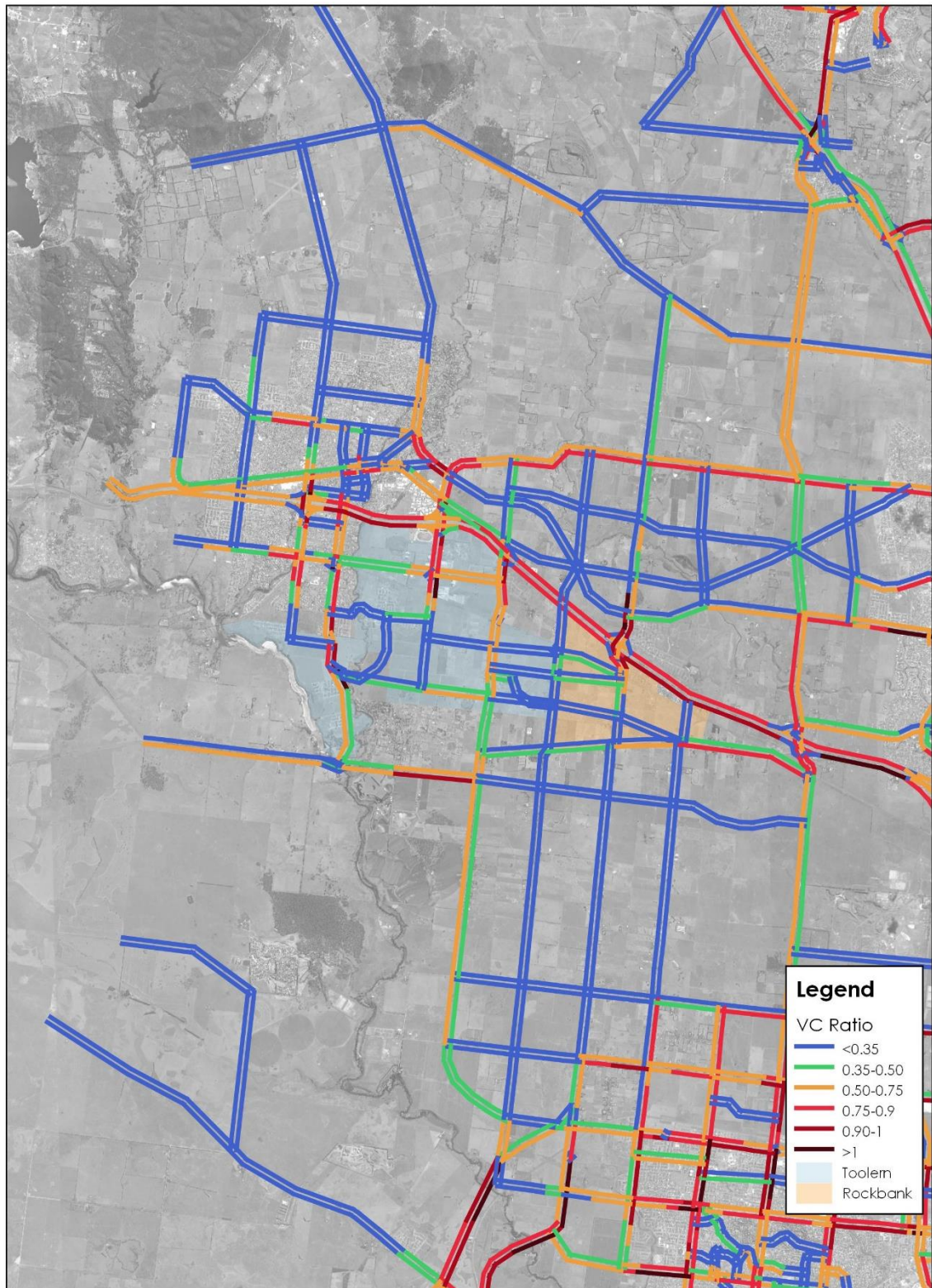


Figure A.15: 2046 AM Peak Road Network Volume / Capacity Ratio Plot

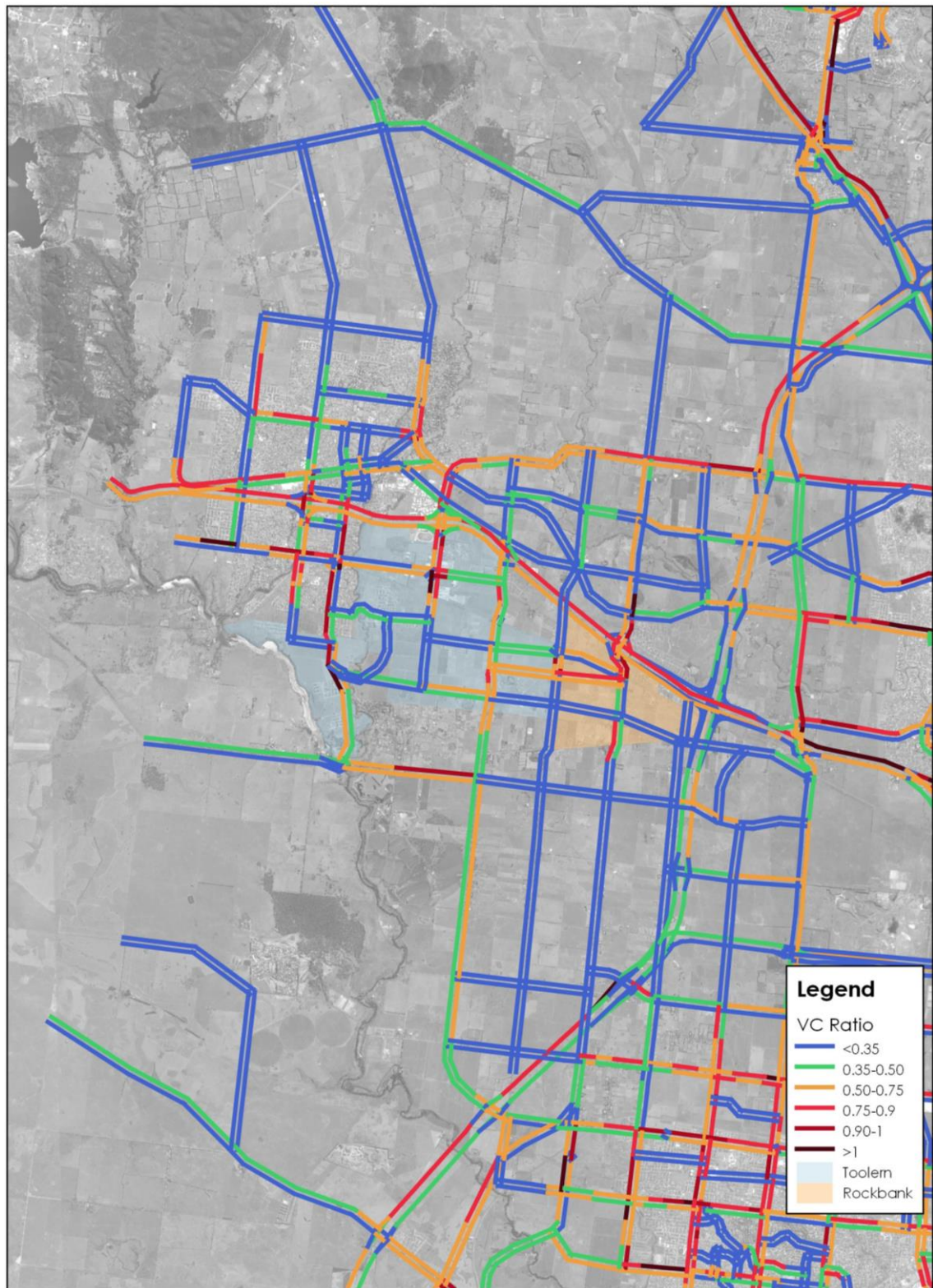
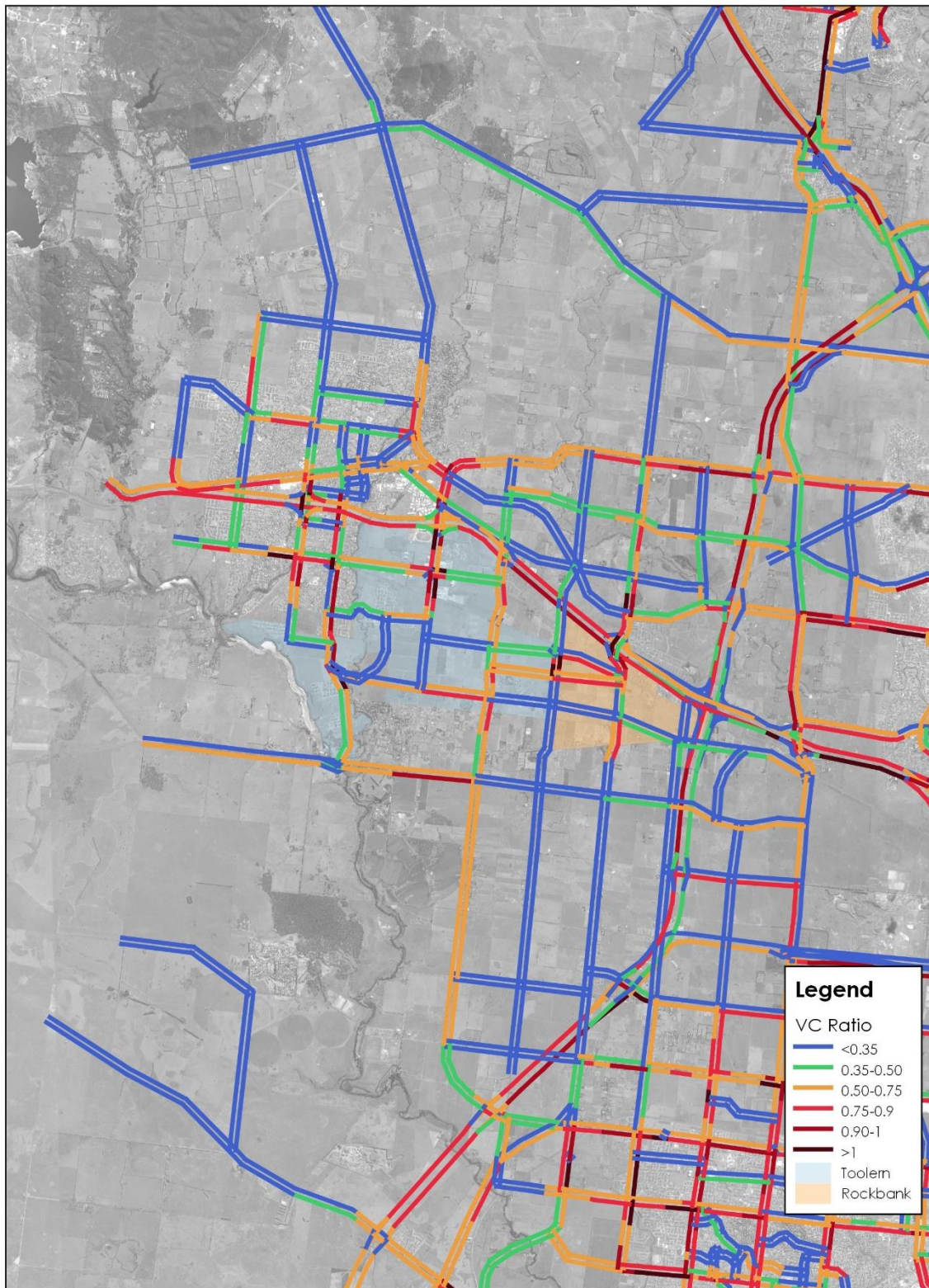


Figure A.16: 2046 PM Peak Road Network Volume / Capacity Ratio Plot



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