

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

Urban Design Framework

Addendum to the Technical Report – Transport Strategic Modelling

Prepared by: GTA Consultants (VIC) Pty Ltd for Tract Consultants

on 03/12/19

Reference: V132240

Issue #: A



**GTA**consultants

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# 1. TRANSPORT MODELLING

# 01

## 1.1. 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 Toolern 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 Cobblebank Metropolitan Activity Centre (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.

## 1.2. Victorian Integrated Transport Model

### 1.2.1. Overview

The Victorian Integrated Transport Model (VITM) is a tool developed and maintained by the Department of Transport (DoT) 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 Cobblebank Railway 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 2018 State Wide VITM (VITM18\_V1-02) provided by DoT to our office.

## 1.2.2. Demographic Data

Within the VITM zones that make up the Toolern PSP they indicate there will ultimately (2051) be the demographic numbers presented in Table 1.1, with further details provided in Appendix A.

**Table 1.1: Toolern PSP VITM Zones - 2051 Demographic Data**

Demographic Type	Toolern PSP
Residential Population	65,353
Household Numbers	24,004
Employment Numbers	26,289
Student Numbers	11,953

Based on the VITM demographic numbers presented in Table 1.1, against what is indicated in the approved Toolern PSP, there are expected to be marginally more residents and dwellings.

## 1.2.3. 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 2051 presented in Table 1.2, with further details provided in Appendix A.

**Table 1.2: Toolern PSP VITM Zones - 2051 Car and PT Trip Data**

Mode Type	Daily Trip Numbers	Proportion of Trips
Car	257,319	88%
Public Transport	16,862	6%
Walking and Cycling	16,862	6%

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.

The future Cobblebank Railway Station is proposed to become a transport hub. It will likely service the Toolern PSP and some of the adjacent greenfield PSPs. In terms of the number of users of the station, VITM indicates the daily boarding and alighting numbers presented in Table 1.3.

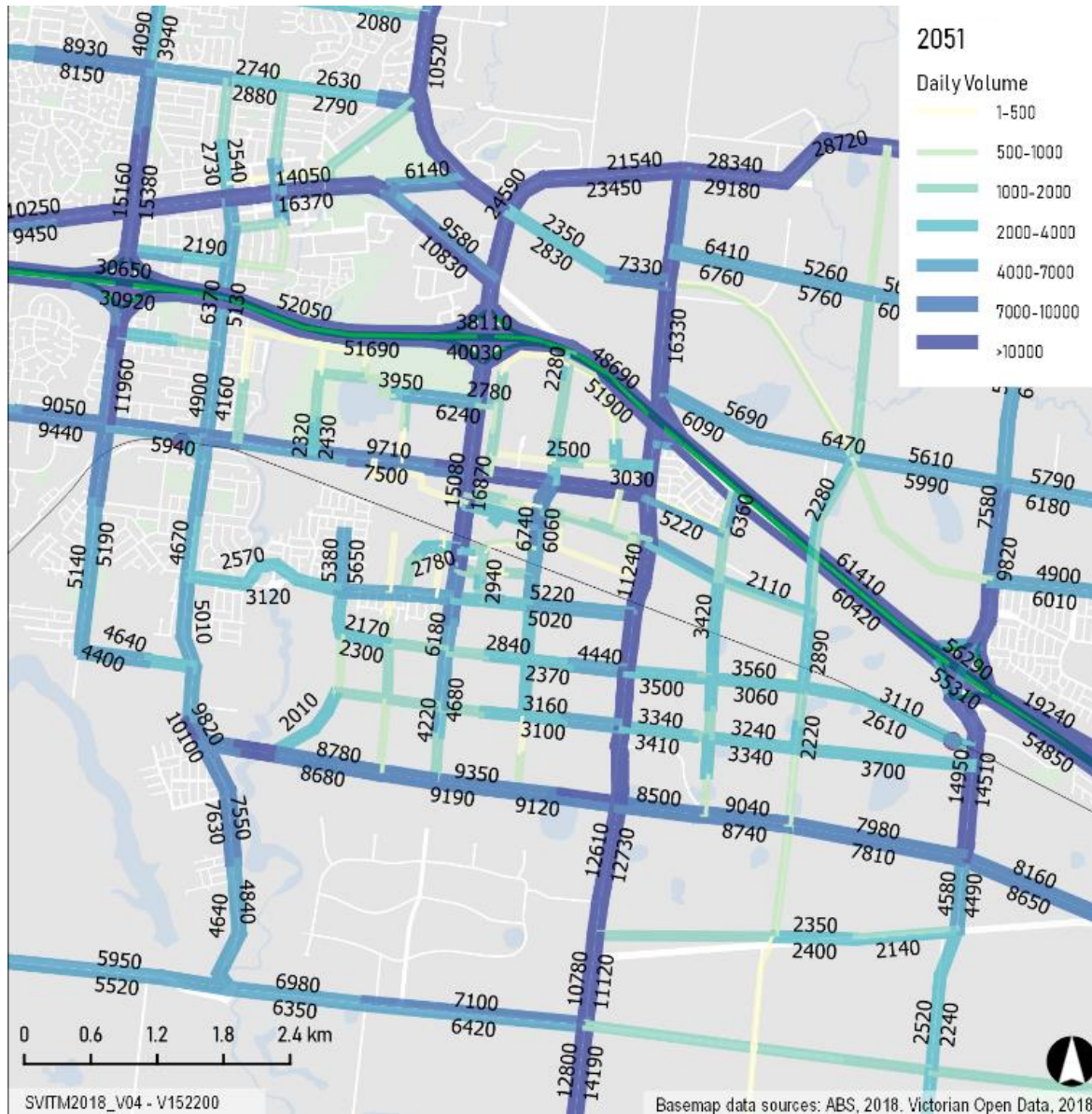
**Table 1.3: Cobblebank Railway Station Daily User Numbers in VITM**

Movement	2016	2051
Boarding	0	12,520
Alighting	0	11,732
Total	0	24,252

## 1.2.4. 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 2051 is presented in Figure 1.1, with further details provided in Appendix A.

Figure 1.1: 2051 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:

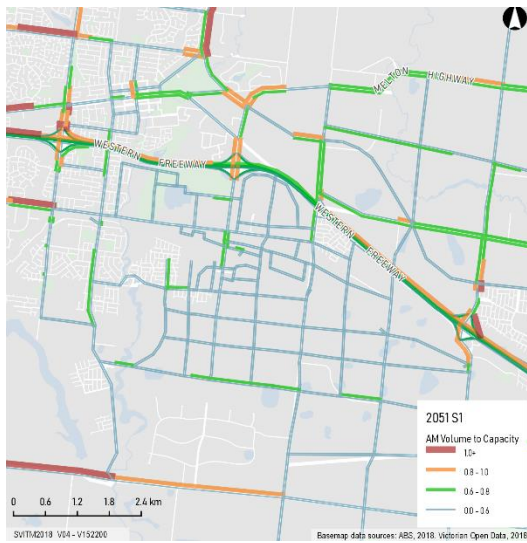
- Ferris Road south of the Western Freeway will start accommodating arterial level traffic volumes in 2051 (+7,000vpd), if only as it nears the interchange with the Western Freeway.
- The Melton Highway forms the northern approach to the interchange with the Western Freeway, and the traffic volumes are expected to increase fivefold between 2016 and 2051.
- 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.

## 1.2.5. Road Network Performance

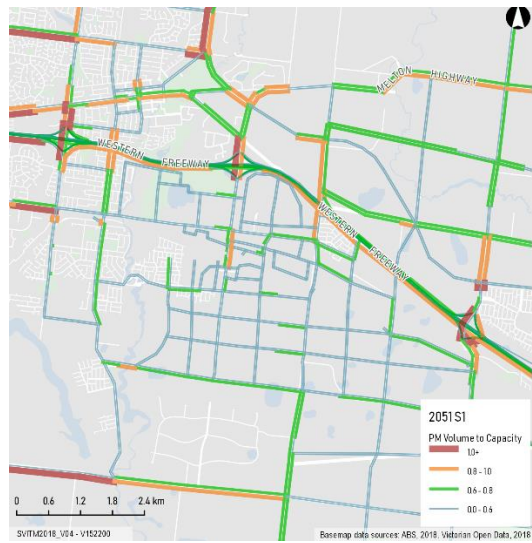
In terms of what ability the proposed road network will have to accommodate the anticipated traffic volumes in and around the Toolern PSP, we have extracted the peak period volumes and compared them against their typical capacities' of the associated road types and configurations (i.e. V/C plots).

In this regard, the likely performance of the roads in and around the Toolern PSP in the AM and PM peak periods in 2051 are shown in Figure 1.2 and Figure 1.3, with further details provided in Appendix A.

**Figure 1.2: 2051 AM VITM Road Network V/Cs**



**Figure 1.3: 2051 PM VITM Road Network V/Cs**



Based on Figure 1.2 and Figure 1.3, the following is noted about the ability for the road network in and around the Toolern PSP in 2051:

- Within the Toolern PSP in 2051 the arterial road network is expected to reasonably accommodate the anticipated traffic volumes, with a maximum V/C ratio of 0.8, except for sections of Ferris Road and Mount Cottrell Road. Of these, there are sections concerning the interaction with freeway entrances and exits onto Melton Highway / Ferris Road and Leakes Road that exceed their theoretical capacity. Suitable upgrades on these roads would need to occur, unless managed through alternative transport facilities to better manage the associated transport demand.

## 1.3. 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.



## 1.4. Suitability of Road Network

The modelled traffic volumes have been compared against the AustRoads Capacity Limit to enable a determination as to whether the proposed classification in the UDF is still appropriate. The results of this comparison are shown in Table 1.4.

**Table 1.4: Summary of Ultimate Daily Volumes on Key Roads (2051)**

No.	Road Name	Expected Daily Traffic Volume - both direction (VITM Model)	Proposed Classification and No. lanes	Austrroads Capacity Limit (based on No. lanes) [1]	Classification Appropriate?
1	Ferris Road	18,000 – 32,000	Secondary Arterial (4 lanes)	36,000vpd	Yes
2	Mount Cottrell Road	12,000 – 24,000	Secondary Arterial (4 lanes)	36,000vpd	Yes
3	Bridge Road	5,000 – 11,000	Connector Road (2 lanes)	18,000vpd	Yes
4	Hollingworth Street	2,800 – 5,500	Connector Road (2 lanes)	18,000vpd	Yes
5	East Road	6,000 – 12,000	Connector Road (2 lanes)	18,000vpd	Yes

[1] Capacity limits sourced from Austrroads Standards “Guide to Traffic Management – Part 3 Traffic Studies and Analysis” document from Table 4.3 as follows: 2-lane road: 18,000vpd, 4-lane road: 36,000vpd, 6-lane road 54,000vpd.

All of the volumes do not exceed the theoretical daily capacities set out in Table 1.4. Overall, the VITM model demonstrates that traffic is distributed in accordance with the proposed classification and functions of the key streets in the UDF.

# A. VITM OUTPUTS



# APPENDIX: VITM OUTPUTS

Figure A.1: 2016 Arterial Road Daily Volumes

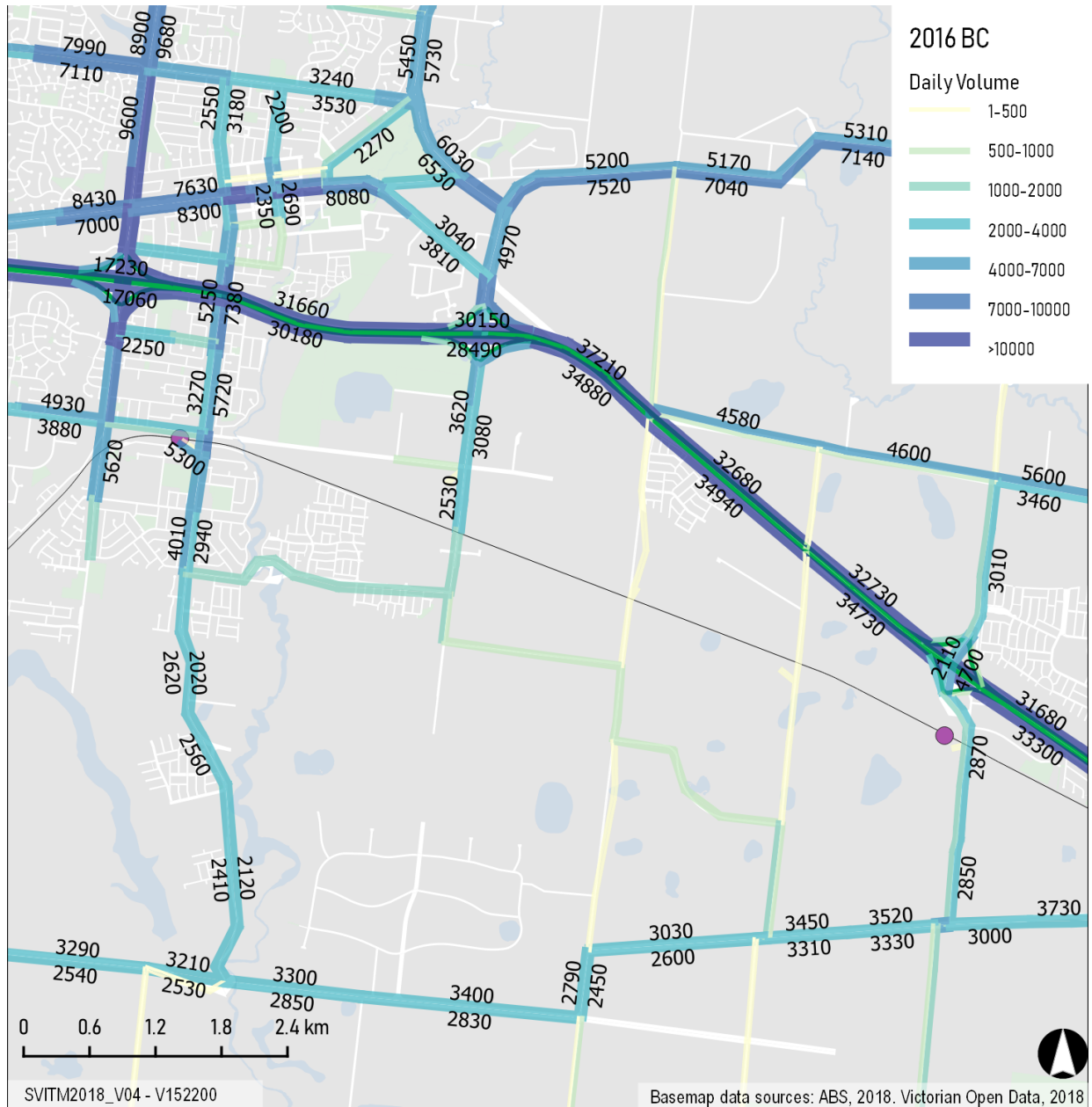


Figure A.2: 2051 Arterial Road Daily Volumes

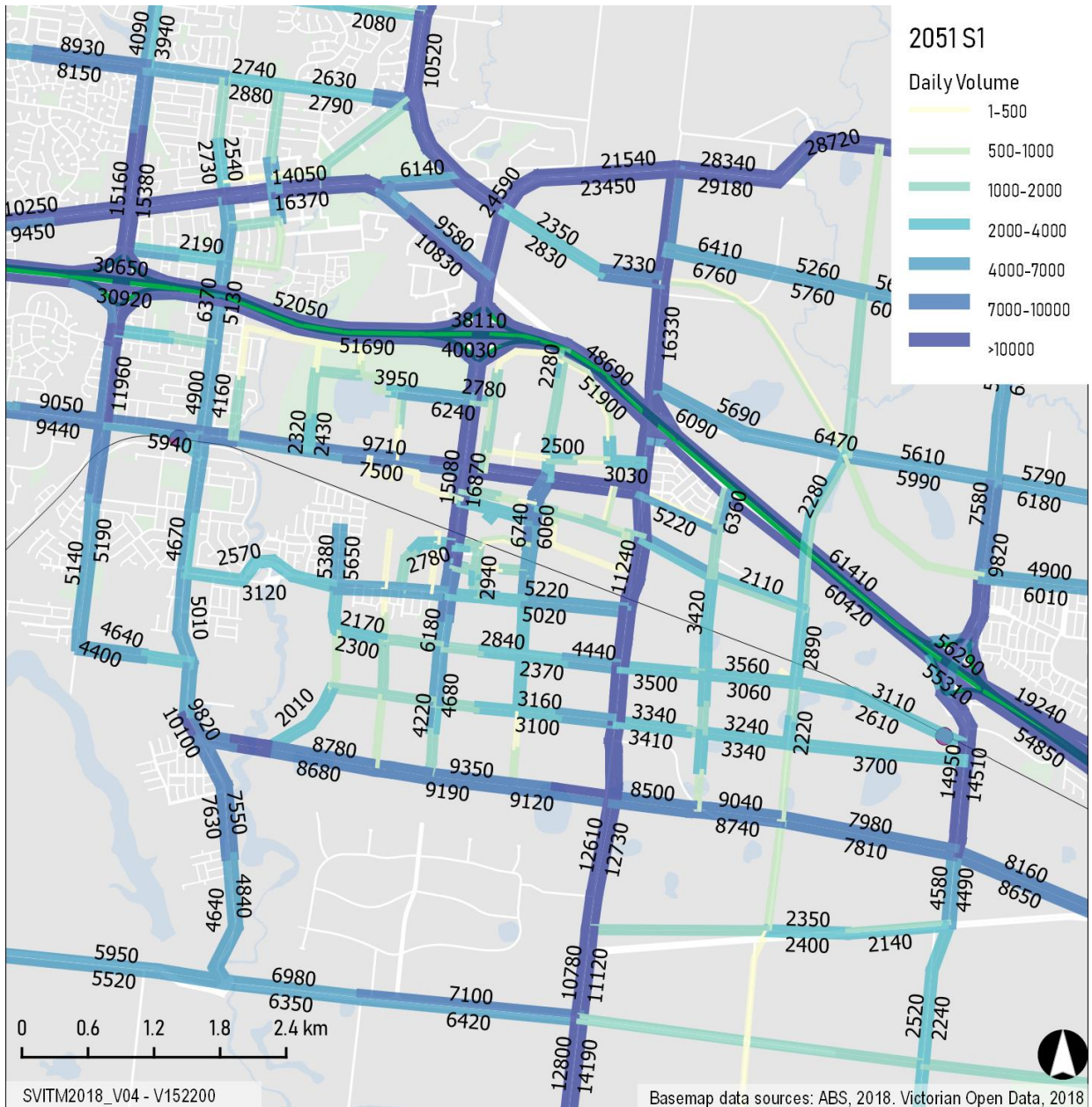
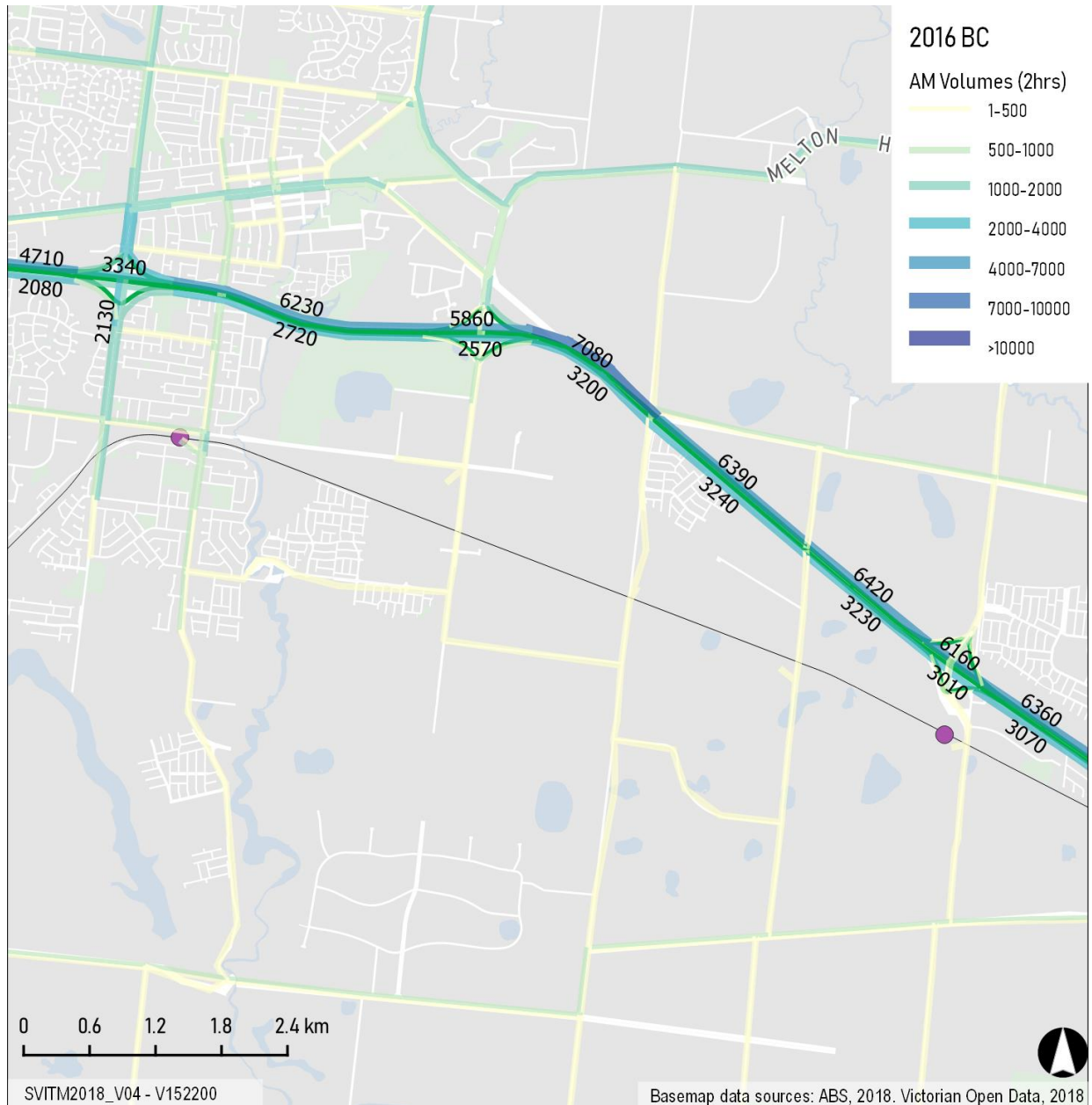


Figure A.3: 2016 AM Peak Road Network Traffic Volumes



# APPENDIX: VITM OUTPUTS

Figure A.4: 2016 PM Peak Road Network Traffic Volumes

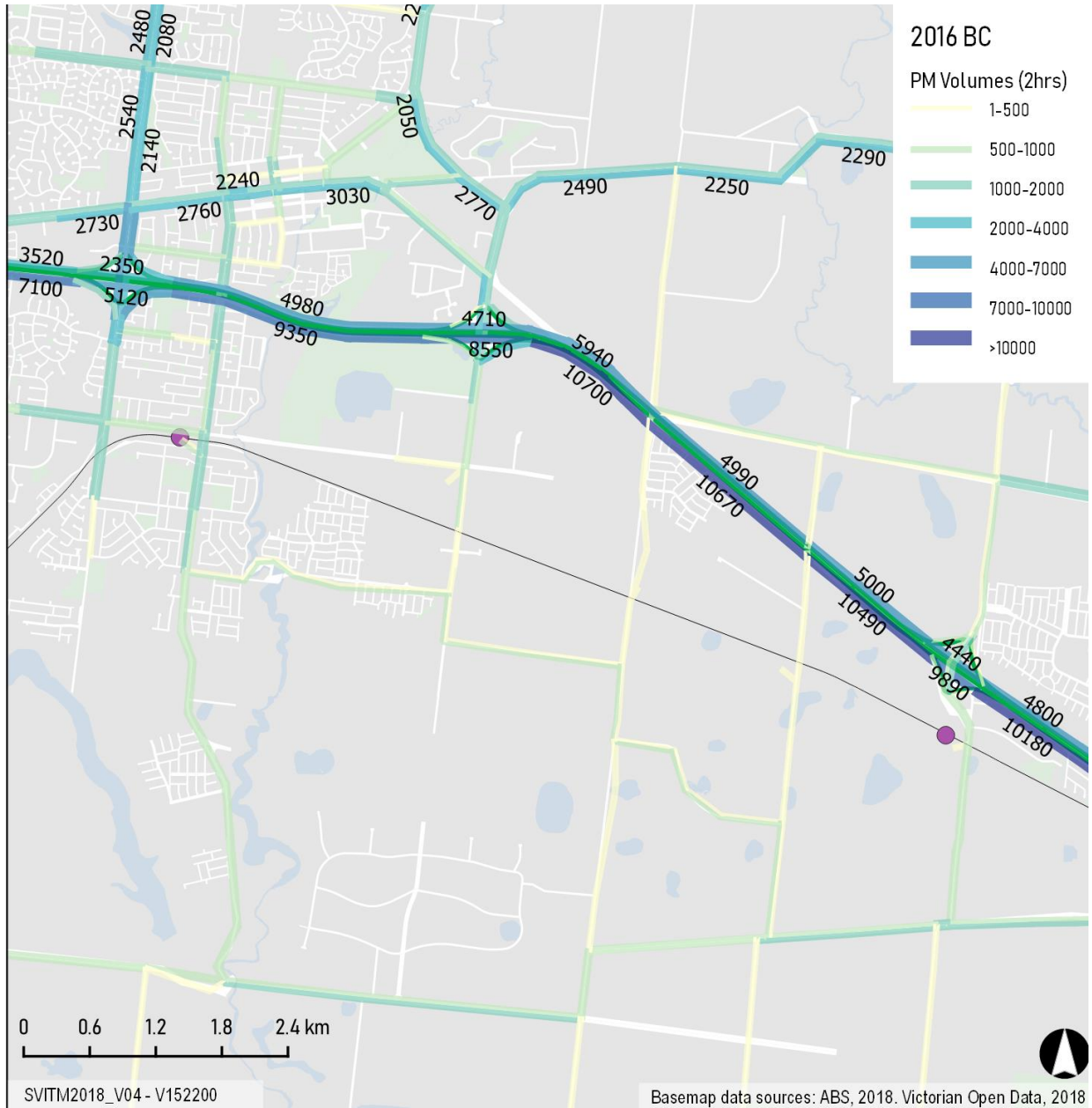


Figure A.5: 2051 AM Peak Road Network Traffic Volumes

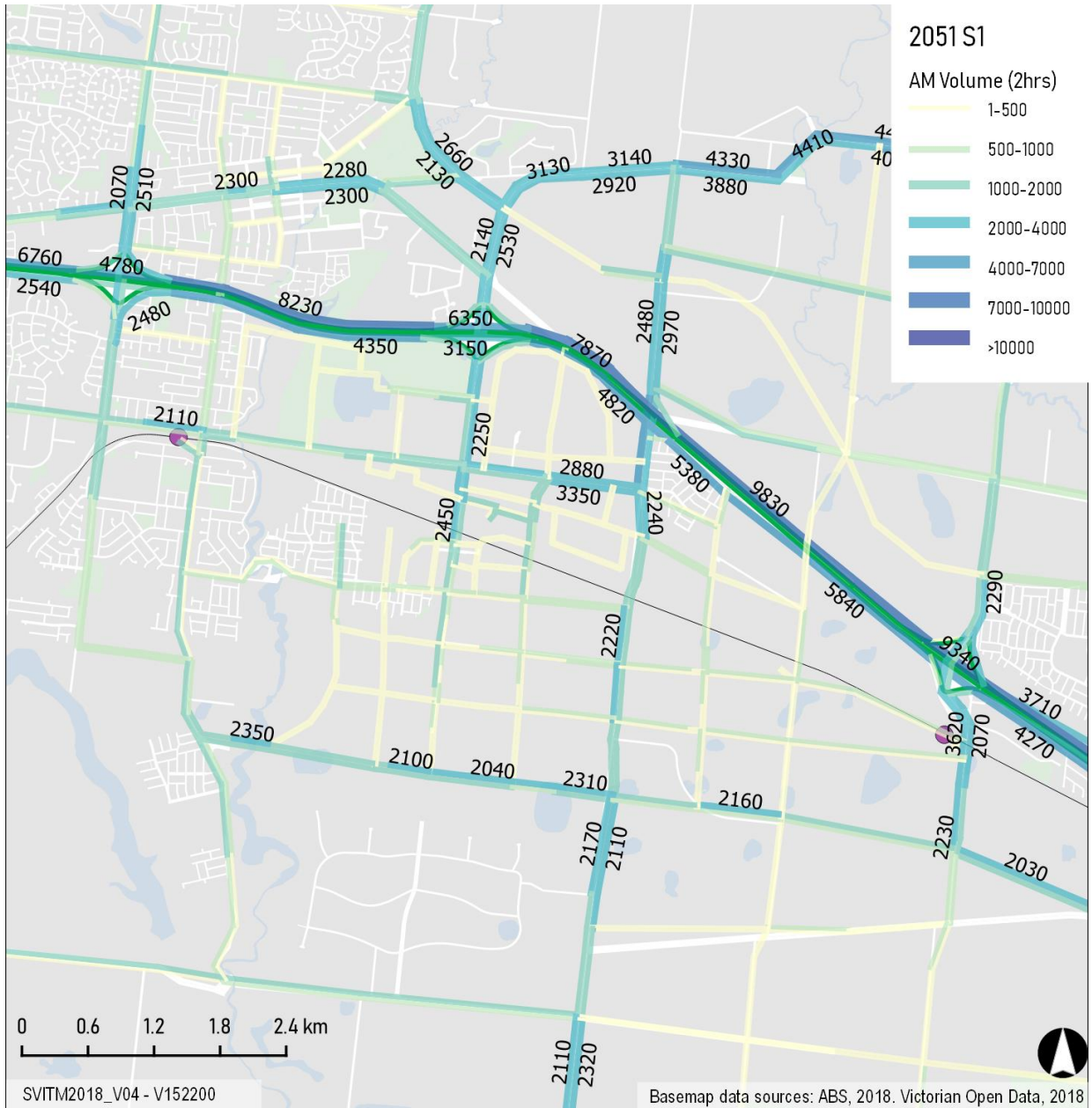


Figure A.6: 2051 PM Peak Road Network Traffic Volumes

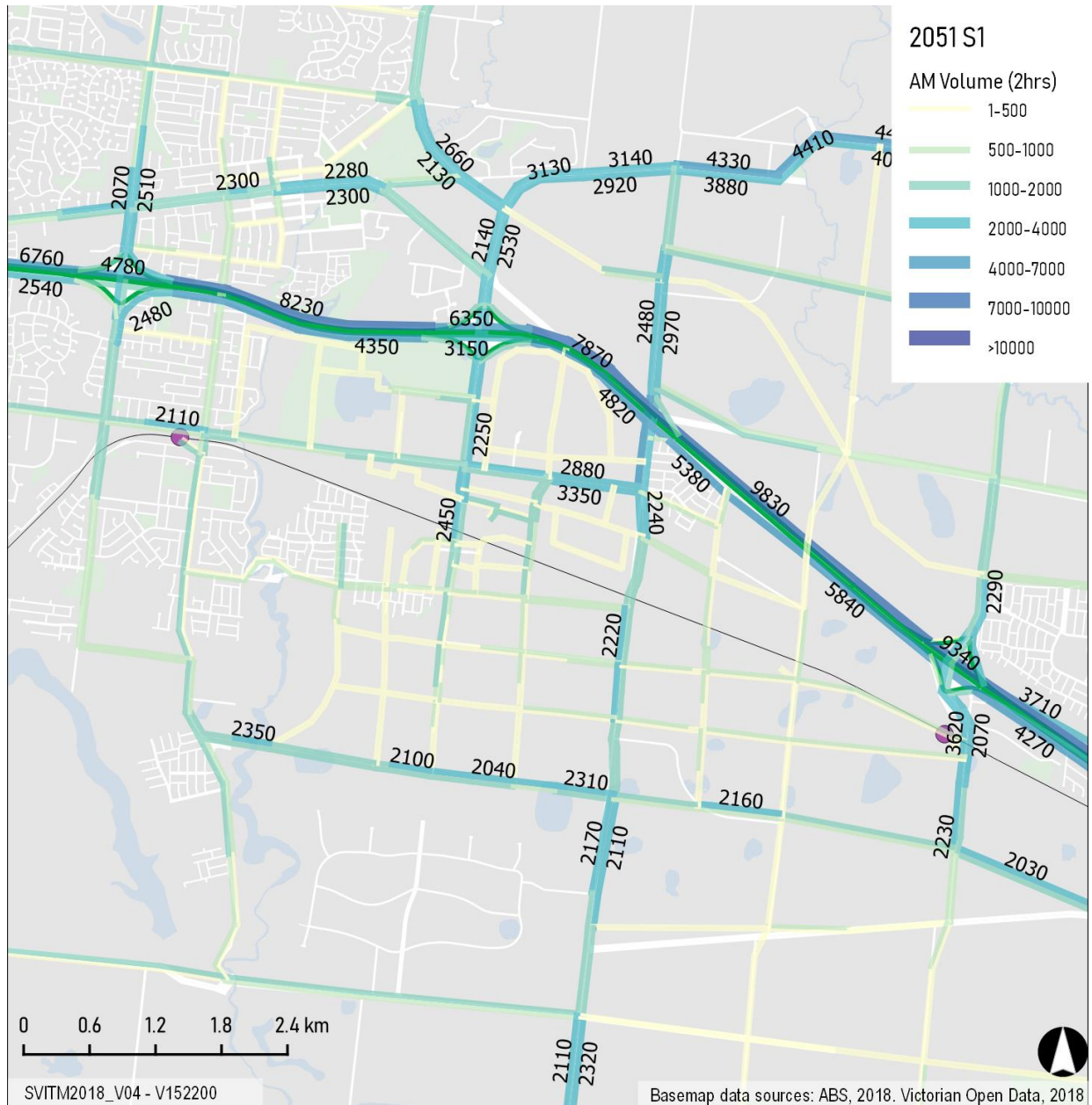




Figure A.7: 2016 AM Peak Road Network Volume / Capacity Ratio Plot

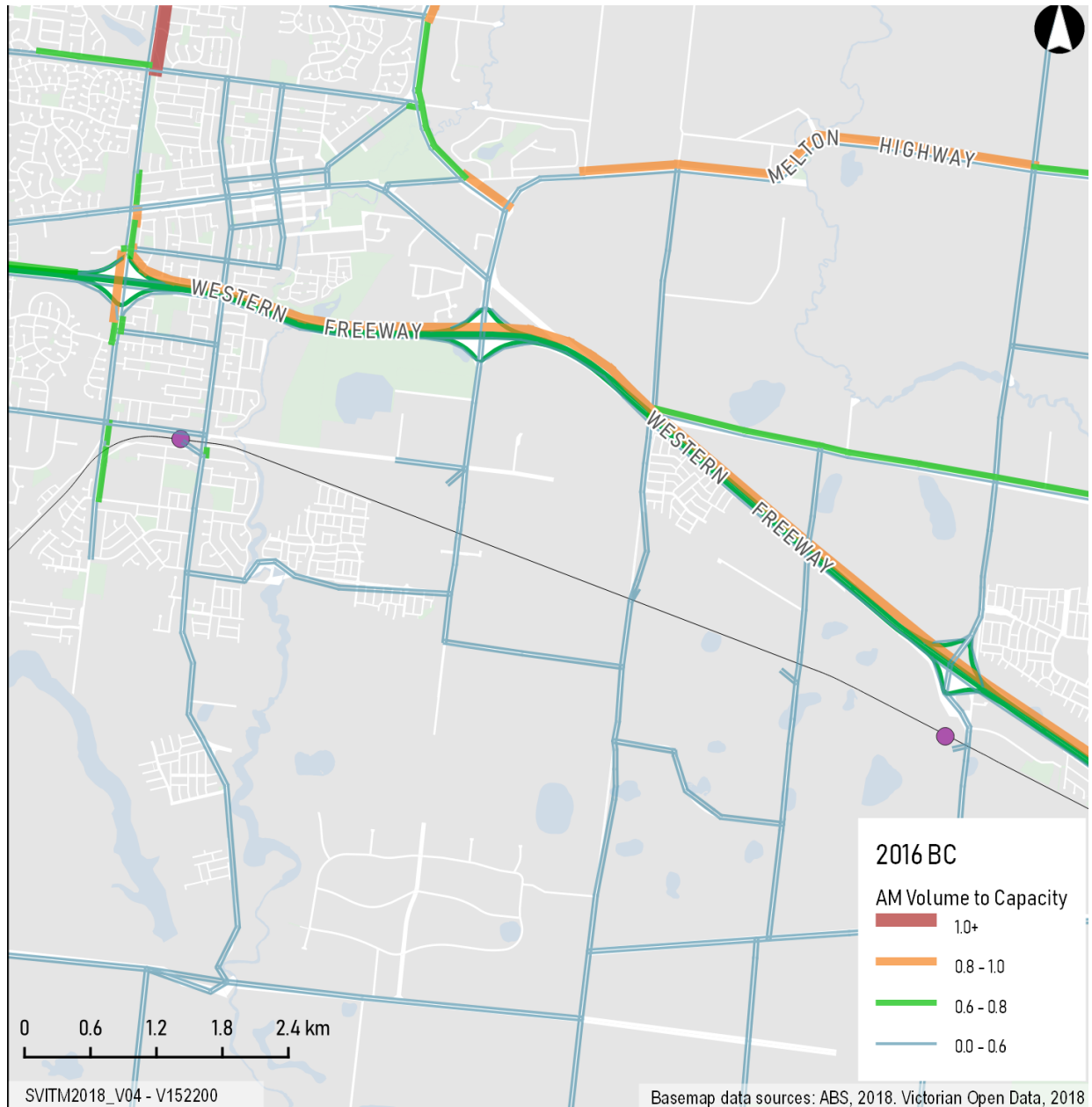


Figure A.8: 2016 PM Peak Road Network Volume / Capacity Ratio Plot

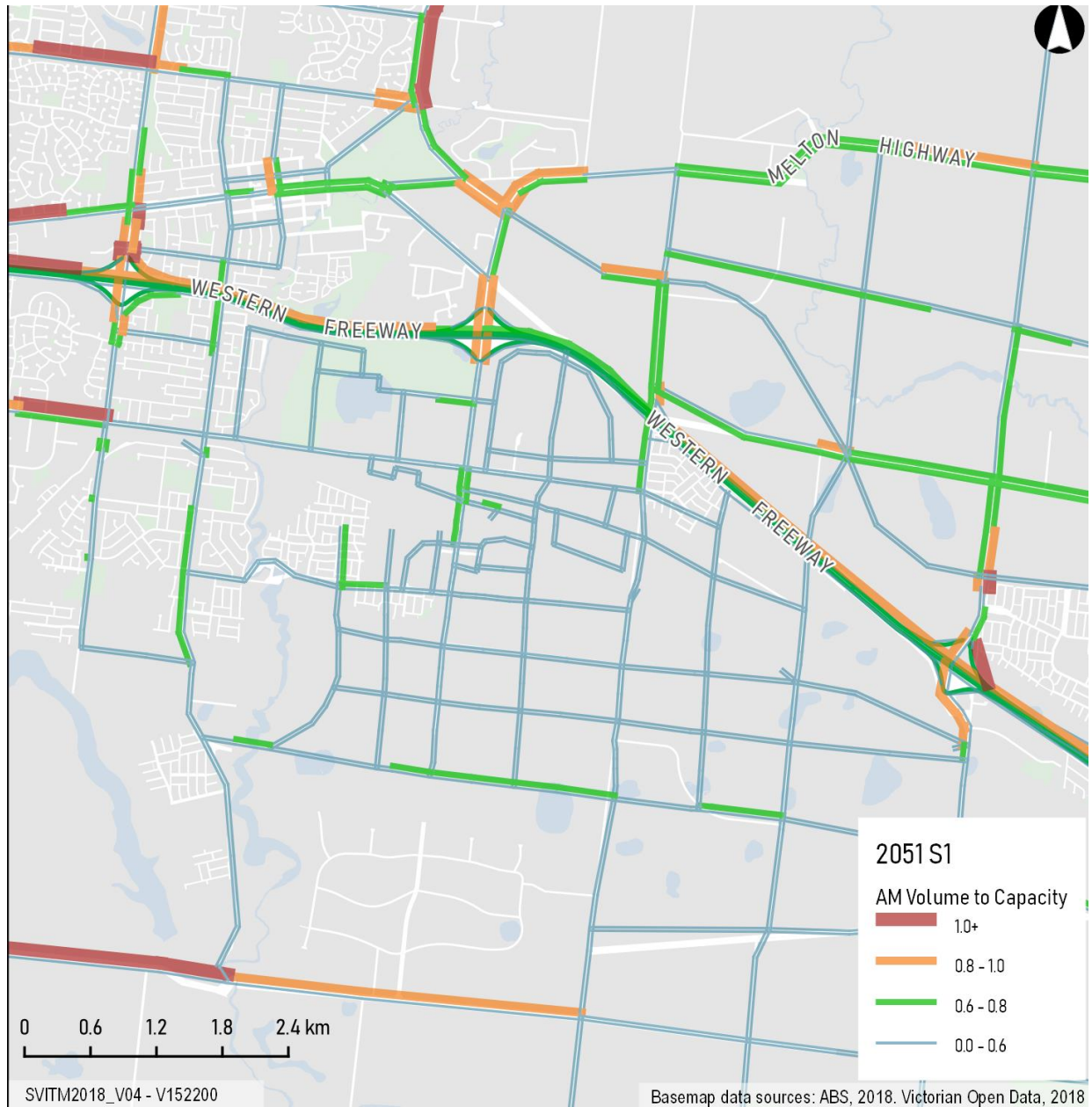


Figure A.9: 2051 AM Peak Road Network Volume / Capacity Ratio Plot

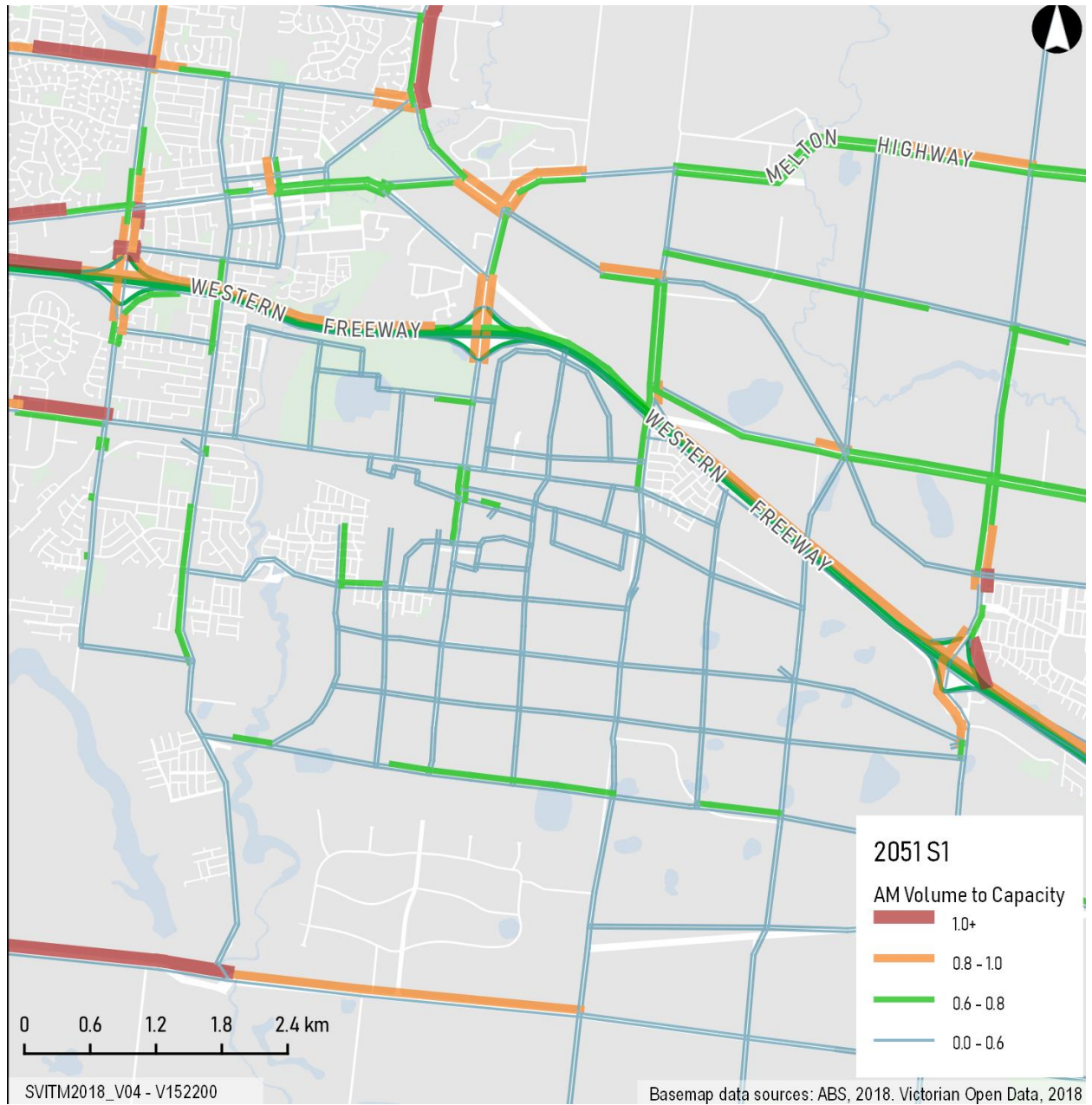
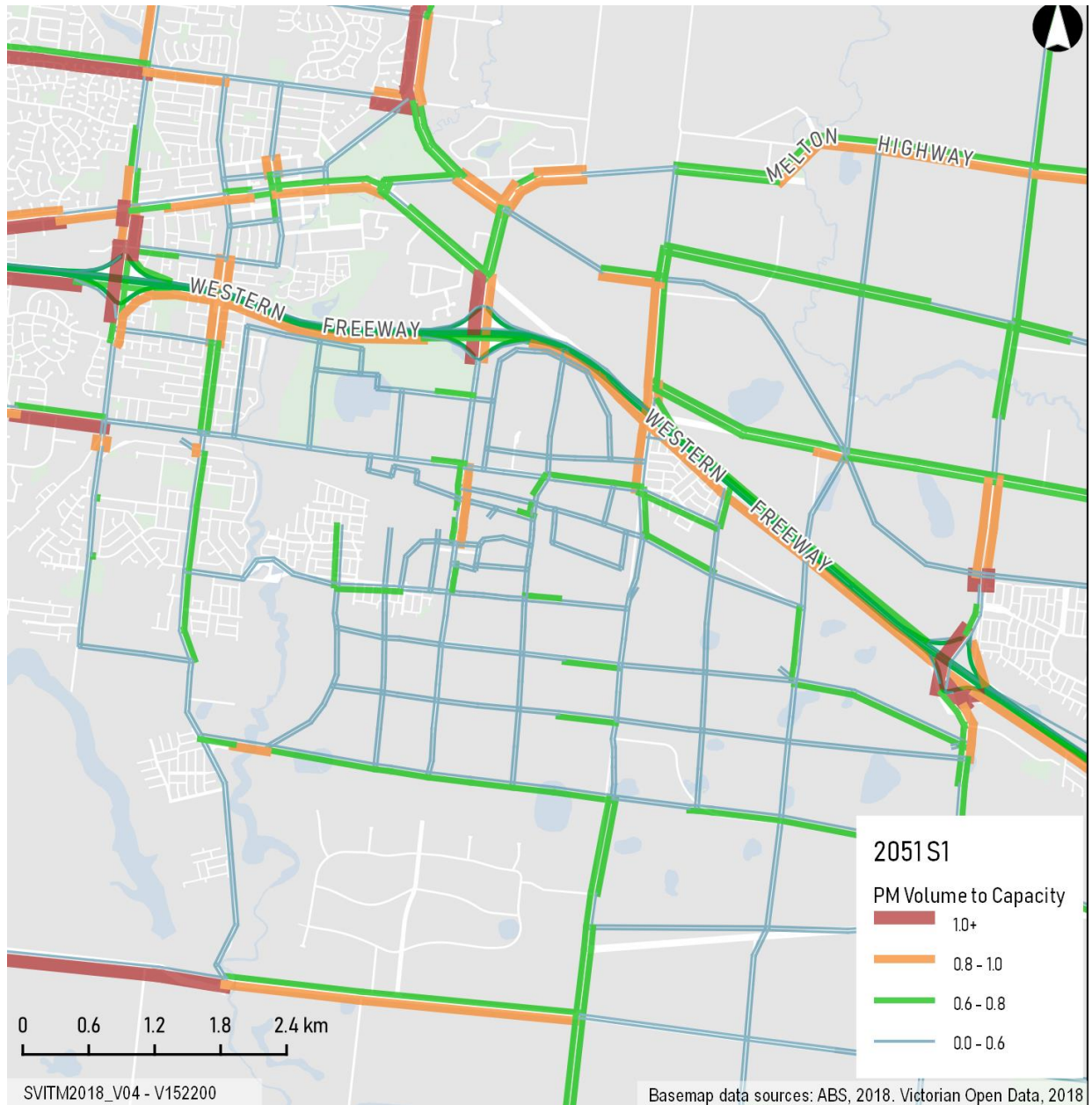


Figure A.10: 2051 PM Peak Road Network Volume / Capacity Ratio Plot



# APPENDIX: VITM OUTPUTS

Figure A.11: 2051 AM Peak Cobblebank Metropolitan Activity Centre (Toolern Town Centre) Volumes



# APPENDIX: VITM OUTPUTS

Figure A.12: 2051 PM Peak Cobblebank Metropolitan Activity Centre (Toolern Town Centre) Volumes



Figure A.13: 2051 AM Peak Cobblebank Metropolitan Activity Centre (Toolern Town Centre) Volume / Capacity Ratio Plot

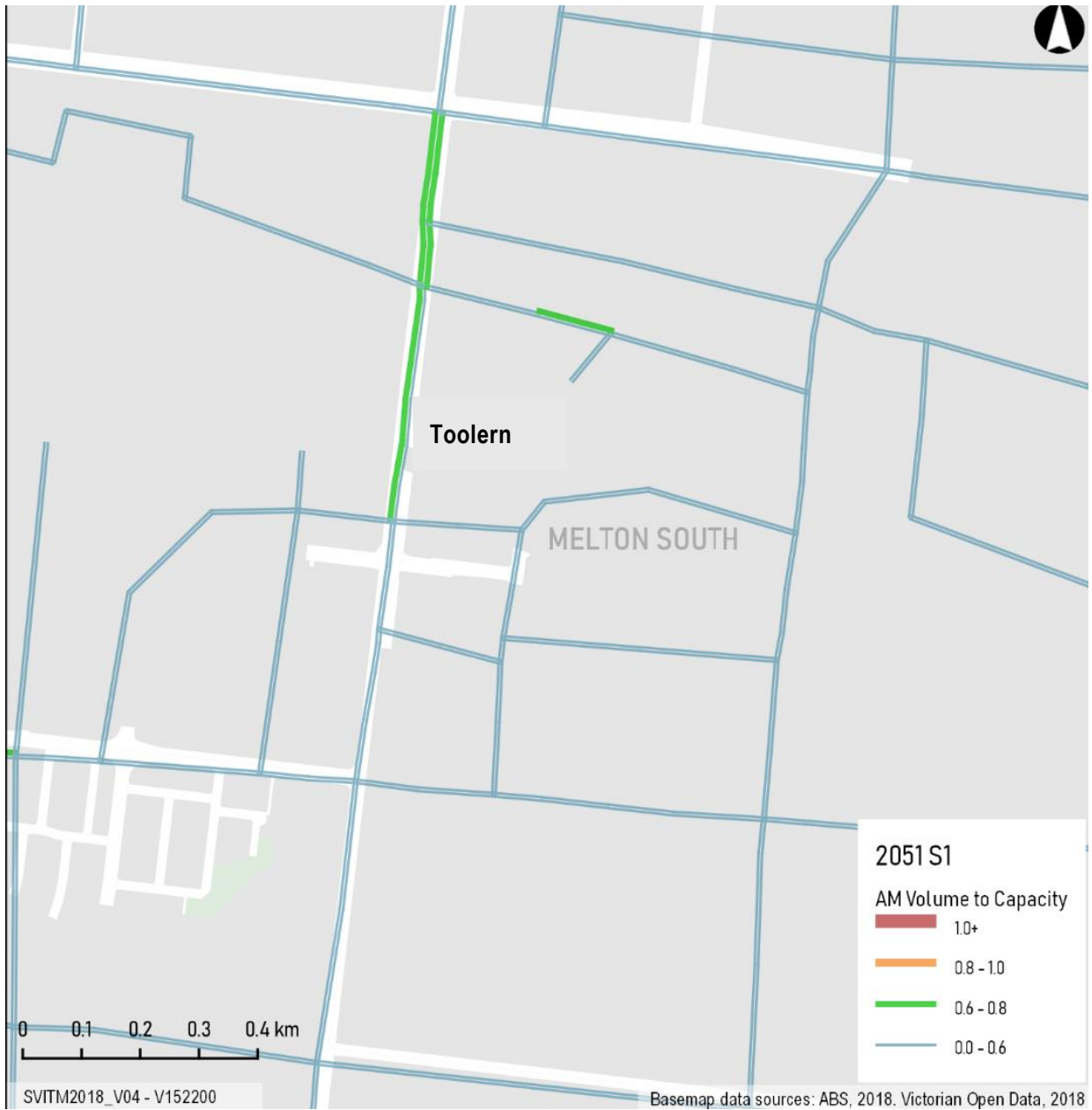
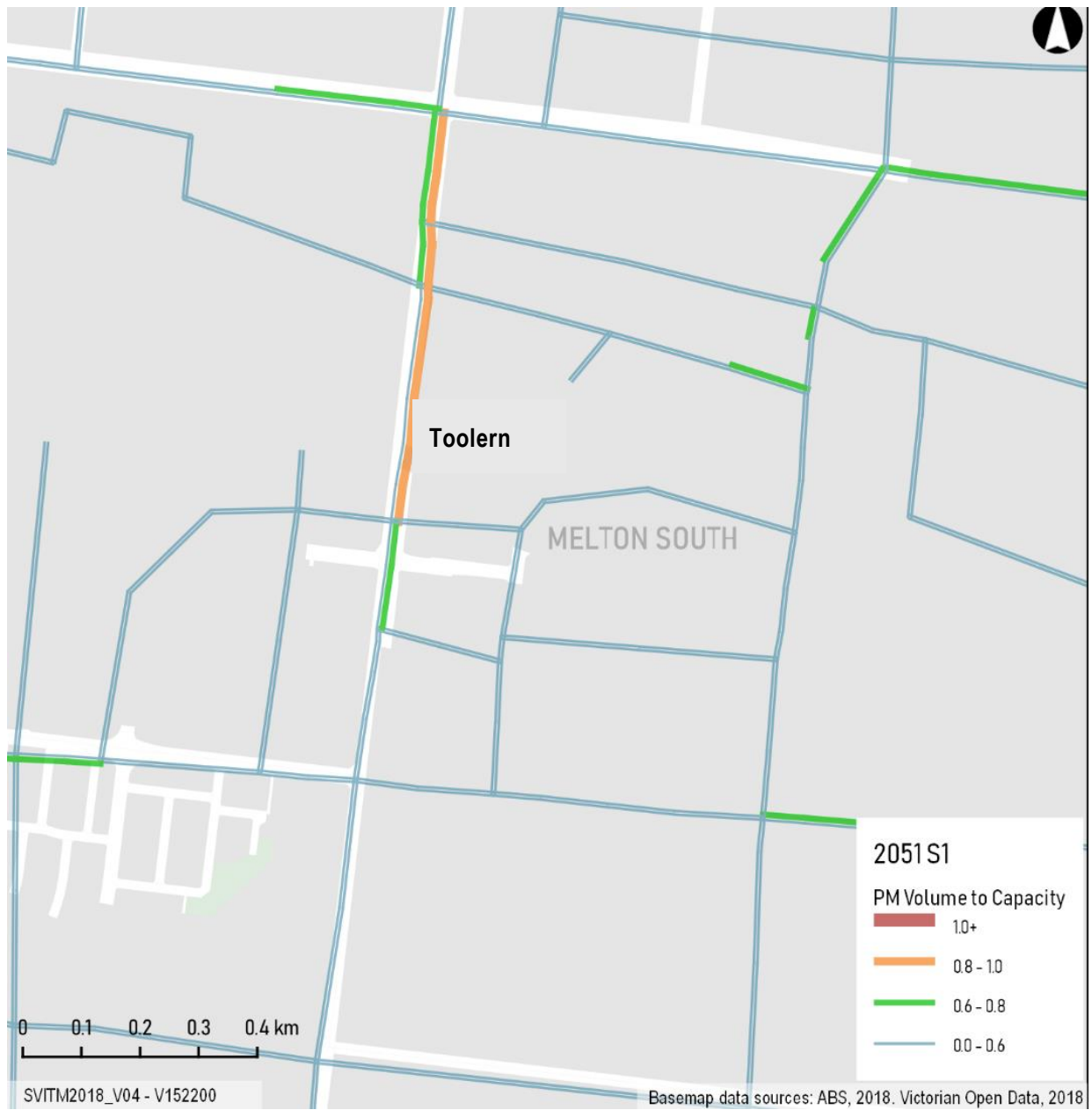


Figure A.14: 2051 PM Peak Cobblebank Metropolitan Activity Centre (Toolern Town Centre) Volume / Capacity Ratio Plot





# B. STRATEGIC MODEL LAND USE INPUTS

# B

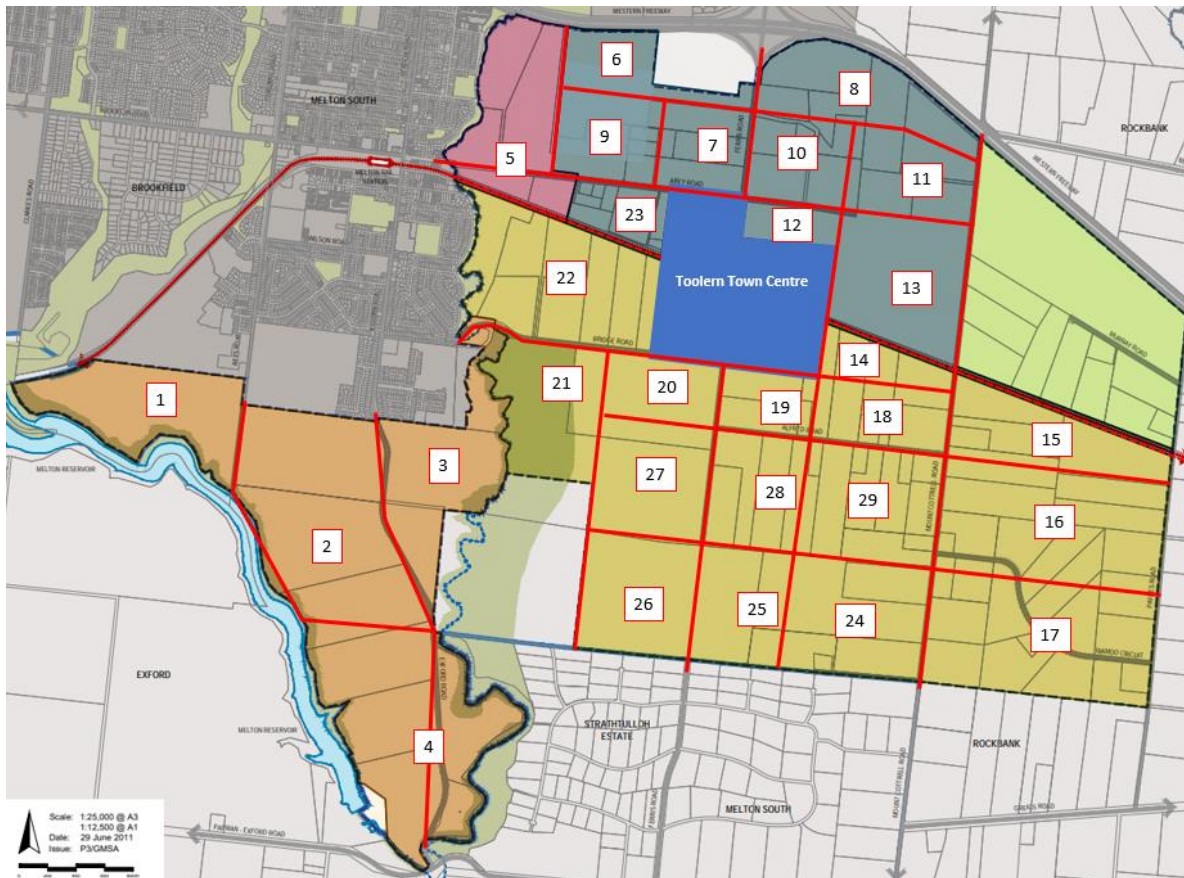
## APPENDIX: STRATEGIC MODEL LAND USE INPUTS

Table B.1: Toolern PSP (excl. Town Centre) Zonal Land Use Types and Populations

Zone	Population	Dwellings	Jobs		Enrolments		
			Retail	Total	Primary	Secondary	Tertiary
1	3,144	1,123	-	56	-	-	-
2	4,716	1,684	-	270	1,069	428	-
3	3,144	1,123	-	56	-	-	-
4	4,716	1,684	-	84	-	-	-
5	2,161	772	-	39	-	-	-
6	787	281	100	2,251	-	-	-
7	787	281	100	2,251	-	-	-
8	-	-	383	1,433	-	-	-
9	787	281	100	2,251	-	-	-
10	-	-	383	1,383	-	-	-
11	-	-	383	1,383	-	-	-
12	-	-	117	1,061	-	-	-
13	-	-	117	1,061	-	-	-
14	759	271	-	14	-	-	-
15	1,899	678	-	34	-	-	-
16	4,177	1,492	-	75	-	-	-
17	4,177	1,492	-	75	-	-	-
18	1,519	542	-	27	-	-	-
19	1,139	407	-	20	-	-	-
20	1,519	542	-	27	-	-	-
21	1,899	678	-	34	-	-	-
22	4,177	1,492	-	75	-	-	-
23	203	73	-	955	-	-	-
24	3,038	1,085	-	54	-	-	-
25	2,278	814	-	41	-	-	-
26	3,038	1,085	-	54	-	-	-
27	3,038	1,085	-	54	-	-	-
28	2,278	814	-	41	-	-	-
29	3,038	1,085	-	111	326	131	-
<b>Total</b>	<b>58,414</b>	<b>20,862</b>	<b>1,683</b>	<b>15,270</b>	<b>1,395</b>	<b>558</b>	<b>-</b>

# APPENDIX: STRATEGIC MODEL LAND USE INPUTS

Figure B.1: Toolern PSP (excl. Town Centre) network and zone structure



## APPENDIX: STRATEGIC MODEL LAND USE INPUTS

Table B.2: Cobblebank Metropolitan Activity Centre (Toolern Town Centre) Zonal Land Use Types and Populations

Zone	NDA (sqm)	Population	Dwellings	Jobs		Enrolments		
				Retail	Total	Primary	Secondary	Tertiary
1	53,434	204	99	364	364	0	0	0
2	23,399	180	88	120	120	0	0	0
3	17,118	112	55	36	266	0	0	4,000
4	14,382	98	48	43	202	0	0	0
5	20,088	47	23	20	538	0	0	4,000
6	7,713	0	0	0	257	0	0	0
7	5,784	52	25	24	45	0	0	0
8	10,903	17	8	88	244	0	0	0
9	33,821	172	84	194	533	0	0	0
10	10,190	0	0	0	340	0	0	0
11	17,021	0	0	0	567	0	0	0
12	31,607	0	0	0	810	0	0	1,000
13	8,481	58	28	74	74	0	0	0
14	8,974	82	40	52	52	0	0	0
15	10,864	84	41	84	84	0	0	0
<b>Total</b>	<b>273,779</b>	<b>1,105</b>	<b>538</b>	<b>1,099</b>	<b>4,497</b>	<b>0</b>	<b>0</b>	<b>9,000</b>

# APPENDIX: STRATEGIC MODEL LAND USE INPUTS

Figure B.2: Cobblebank Metropolitan Activity Centre (Toolern Town Centre) network and zone structure

