PSP 1078 Plumpton and PSP 1080 Kororoit

METROPOLITAN PLANNING AUTHORITY

Transport Modelling Report

Revision D

17 March 2015

JACOBS®

PSP 1078 Plumpton and PSP 1080 Kororoit

Project no:	IS078200
Document title:	Transport Modelling Report
Revision:	D
Date:	17 March 2015
Client name:	Metropolitan Planning Authority
Client no:	D/14/1241
Project manager:	Craig McPherson
Author:	Trent Ekanayake and Craig McPherson
File name:	SB20480 Plumpton and Kororoit PSP Modelling Report Rev D.1.docx

Jacobs Group (Australia) Pty Limited
ABN 37 001 024 095
Floor 11, 452 Flinders Street
Melbourne VIC 3000
PO Box 312, Flinders Lane
T +61 3 8668 3000
F +61 3 8668 3001
www.jacobs.com

Document history and status

Revision	Date	Description	Review	Approved
A	11 Feb 2015	Partial draft for progress reporting	CM	CM
B	17 Feb 2015	Completed draft for MPA and stakeholder review	CM	CM
C	10 Mar 2015	Incorporated MPA's comments	CM	CM
D	17 Mar 2015	Incorporated further editorial changes	CM	CM

Contents

Important note about this report

The sole purpose of this report and the associated services performed by Jacobs is to estimate future traffic and public transport travel in the Plumpton and Kororoit Precinct Structure Plan areas in accordance with the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed with the Client.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

Jacobs derived the data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context.

This report has been prepared on behalf of, and for the exclusive use of, Jacobs's Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

1. Introduction

1.1 Purpose

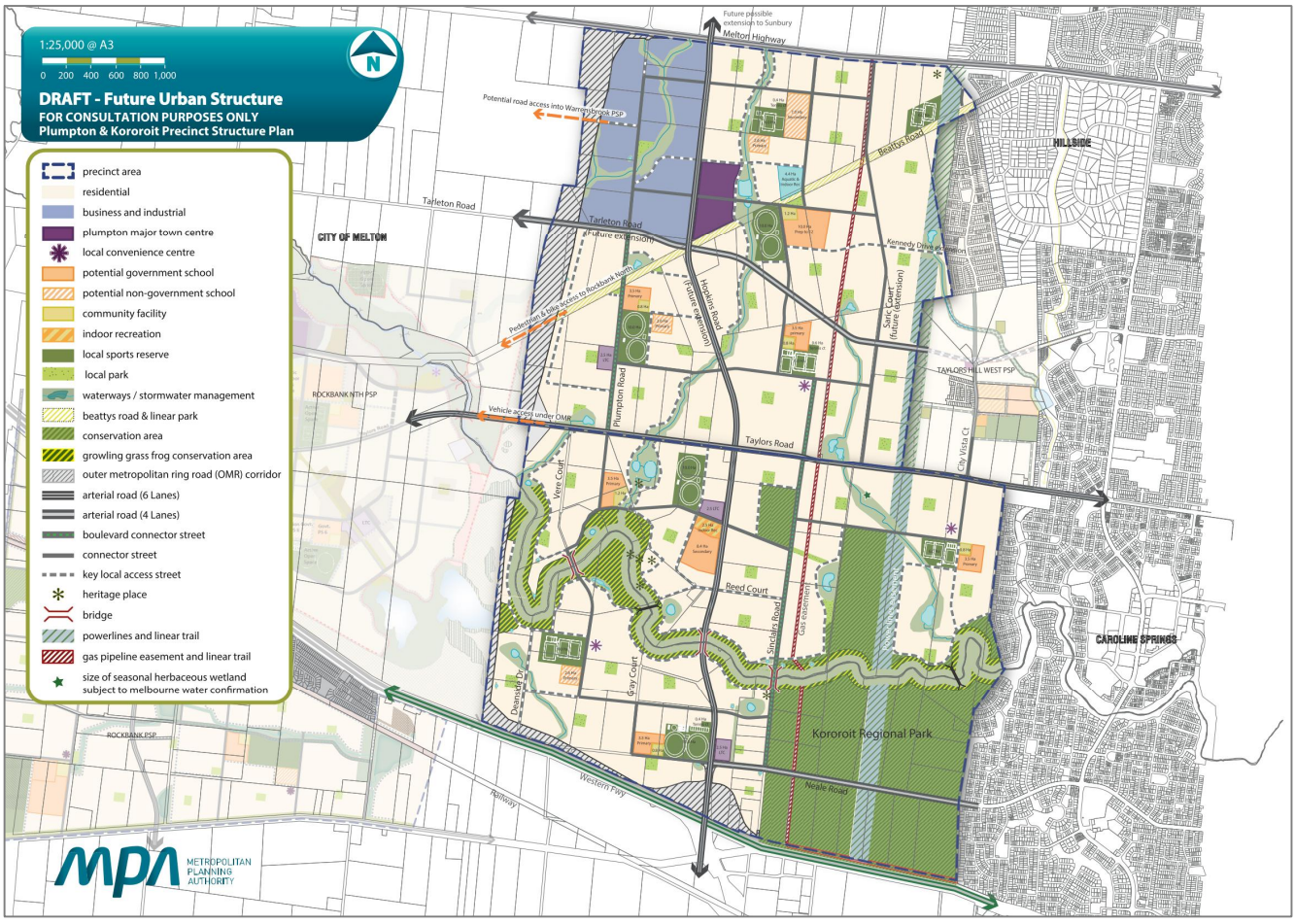
The purpose of this report is to describe the modelling of future travel associated with the Plumpton and Kororoit Precinct Structure Plans, and to determine the suitability of the proposed road network to carry future traffic.

1.2 Background

The Metropolitan Planning Authority (MPA) is currently developing Precinct Structure Plans (PSPs) for Plumpton (PSP 1078) and Kororoit (PSP 1080). These adjacent areas, presently predominantly rural, together contain nearly 2,200 hectares of land as part of the Western Growth Corridor. The areas identified for future urban development could accommodate about 19,000 dwellings and a new major town centre at Plumpton (see Figure 1.1).

Key to the success of these developments will be the design of well-connected transport networks within the PSP areas and good access to the surrounding road network.

Figure 1.1 : Draft Future Urban Structure for Plumpton and Kororoit (November 2014)



In 2012, the MPA commissioned a sub-regional transport model of the Western Growth Corridor which was derived from the state government's Victorian Integrated Transport Model (VITM). The Western Growth Corridor model provided a more detailed zoning system and road network in the western suburbs to allow more refined modelling of land use, employment and transport in these PSPs. This initial model was developed for 2046 only. A further modelling study by Jacobs for the nearby Rockbank PSP developed a 2026 model of the Western Growth Corridor.

The focus of the Plumpton and Kororoit study was to refine the 2046 ("ultimate") model and the 2026 ("interim") model. The outputs from these models were used to assess the capacity of the proposed road network and to assist in the design of key intersections in the PSPs.

1.3 Glossary

The following terms have been used in this report:

AM Peak: The AM peak represents the weekday period from 7:00am to 9:00am

Number of lanes: The quoted number of lanes on a link generally refers to the total number of lanes in both directions. A two-lane two-way road therefore has a single lane in each direction.

PM Peak: The PM peak represents the weekday period from 3:00pm to 6:00pm.

Select-link analysis: A method of analysing traffic movements by only showing the routes of trips that pass through a nominated link. A select-link analysis effectively shows the traffic catchment area for a given link.

V/C ratio: Volume-capacity ratio. See the following section for a discussion of how V/C ratios are applied in this study.

Acronyms

- DEDJTR – Department of Economic Development, Jobs, Transport and Resources
- MPA – Metropolitan Planning Authority
- WGC – Western Growth Corridor
- OMR – Outer Metropolitan Ring Road
- PSP – Precinct Structure Plan
- PTV – Public Transport Victoria
- VITM – Victorian Integrated Transport Model

1.4 Volume-Capacity Ratios

The volume-capacity ratio of a road segment is the ratio of the traffic volume to the theoretical capacity of the road. V/C ratios can be used to indicate the approximate level of congestion on the road network, where high ratios indicate more heavily-congested areas.

In this report, five V/C levels have been defined as given in Table 1.1.

Table 1.1: Typical traffic conditions for each V/C level

V/C Range	Condition	Colour
< 0.6	Not congested	Green
0.6 – 0.8	Approaching congested	Yellow
0.8 – 1.0	Congested	Orange
1.0 – 1.2	Very Congested	Red
> 1.2	Highly Congested	Black

In the V/C diagrams presented in chapters 3 to 9, these colours are used to indicate modelled congestion levels in the Plumpton and Kororoit road network.

Technically, values greater than 1.0 should not be permitted, however if no other suitable routes are available, the strategic transport model (VITM) will still allocate traffic to congested roads, resulting in V/C ratios greater than 1.0.

2. Modelling Process

This chapter describes the process used to set up the transport models for the Plumpton and Kororoit PSPs. The following sections describe:

- the sources of the 2026 and 2046 models (section 2.1 and 2.2);
- improvements to the level of detail in the land use zoning system (section 2.3);
- assumptions made about land use variables (section 2.4 and 2.6)
- updates to the road and public transport networks used with the models (section 2.5 and 2.7).

2.1 2046 Base Model

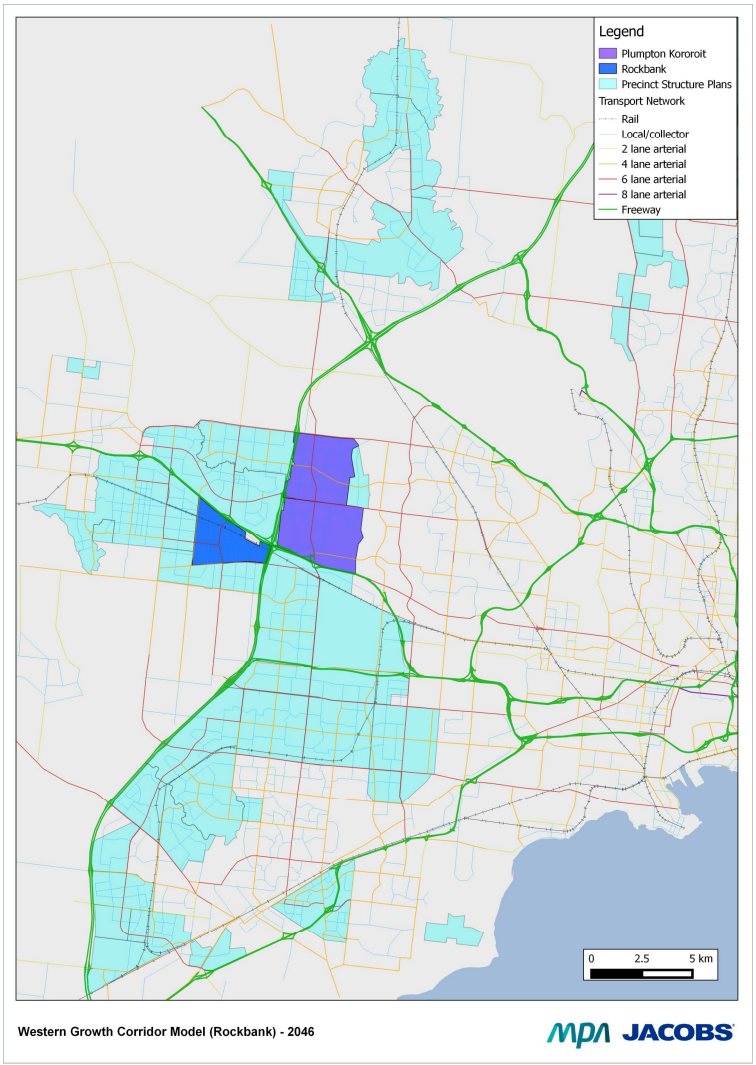
The 2046 Plumpton and Kororoit model was based on the version of the 2046 Western Growth Corridor model used with the Rockbank PSP[1]. This model is an extension to the Melbourne-wide VITM strategic model and provides greater detail in the western growth areas for precinct structure planning.

The Western Growth Corridor model covers the entire Melbourne metropolitan area, with greater land use detail provided in the western suburbs (see Figure 2.1).

The 2046 model was updated to provide greater detail in the Plumpton and Kororoit PSP areas. The updates included a revised zoning system, updated land use and refinement of the transport network.

[1] The original 2046 Western Growth Corridor Model was developed by AECOM for the MPA in 2012. The model was updated by Jacobs in 2014 for the Rockbank PSP transport modelling study.

Figure 2.1 : Transport network and PSP areas in the 2046 Western Growth Corridor Model

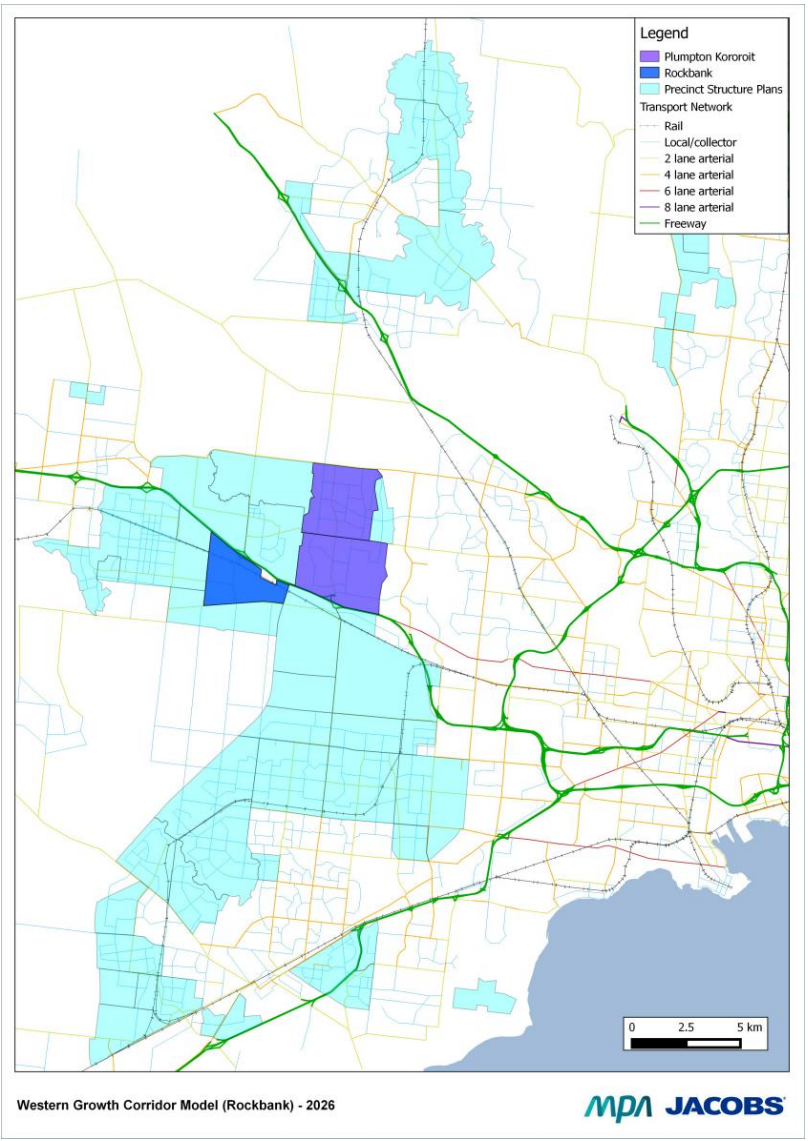


2.2 2026 Base Model

The 2026 Plumpton and Kororoit model was based on version of the 2026 Western Growth Corridor model developed for the Rockbank PSP study.

The 2026 model was updated to provide greater detail in the Plumpton and Kororoit PSP areas. The updates included a revised zoning system, updated land use and refinement of the transport network.

Figure 2.2: Transport network and PSP areas in the 2046 Western Growth Corridor Model



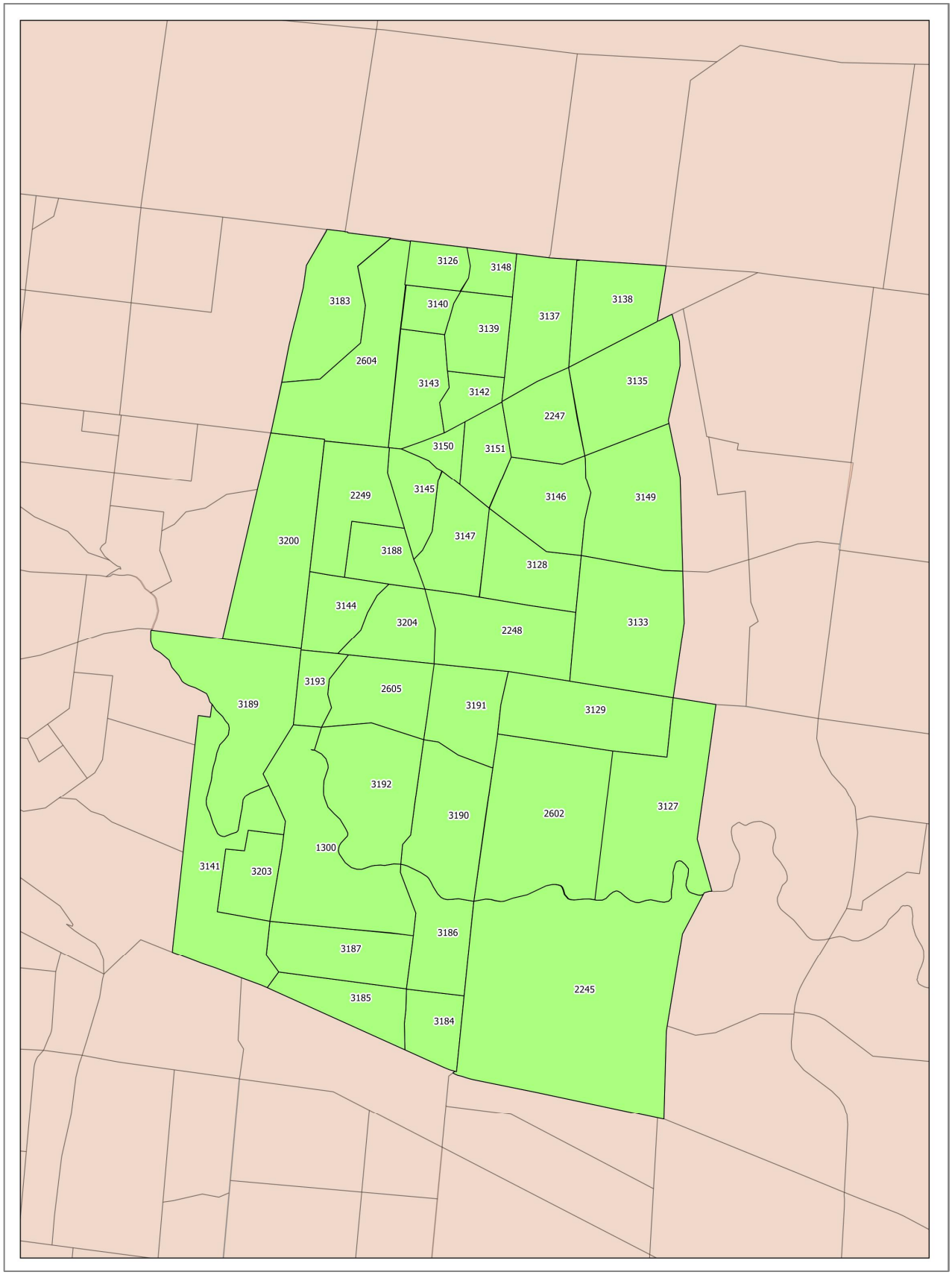
2.3 Revisions to the Zoning System

A requirement of this study was to introduce a more detailed and representative land use zoning system within the Plumpton and Kororoit PSP areas. The zoning system represents the different types of land use and their spatial distribution. In the VITM strategic model, traffic demand is assumed to originate from the centroid of each zone, with links known as centroid connectors feeding traffic to adjacent roads[2]. To provide further detail in an area, the zones are typically disaggregated into smaller areas, providing a more fine-grained representation of land use and transport network access.

The MPA undertook a systematic review of the proposed land uses and road network in the PSP areas and, in collaboration with the modelling team, developed a refined zoning system. The revised zoning system, containing 43 zones, can be seen in Figure 2.3.

[2] Centroid connectors are effectively a simplified representation of the local street network in a zone. More than one centroid connector can be connected to a zone centroid to distribute traffic to multiple points on the surrounding arterial road network.

Figure 2.3 : Revised land use zoning system



2.4 2046 Land Use Variables

2.4.1 Summary of Updates

The land use attributes used by the model include the number of households, population by age group, household structure (number of dependants), employment (number of retail and total jobs) and educational enrolments in each zone. Population, employment and enrolment forecasts for Plumpton and Kororoit were provided by the MPA. These forecasts used in the 2046 model are given in Table 2.1.

Table 2.1 : Land use variables for the 2046 Plumpton and Kororoit model

Zone	Location	Population	Households	Employment		Enrolments		
				Retail	Total	Primary	Secondary	Tertiary
1300	Kororoit	2,553	912	0	46	0	0	0
2245	Kororoit	0	0	0	0	0	0	0
2602	Kororoit	2,398	856	0	43	0	0	0
2605	Kororoit	789	282	183	413	451	0	0
3126	Kororoit	642	229	0	11	0	0	0
3127	Kororoit	2,591	925	0	116	451	0	0
3129	Kororoit	2,462	879	0	53	0	0	0
3141	Kororoit	1,985	709	0	35	0	0	0
3184	Kororoit	585	209	0	10	0	0	0
3185	Kororoit	973	347	0	17	0	0	0
3186	Kororoit	1,000	357	267	489	0	0	0
3187	Kororoit	1,452	518	0	96	451	0	0
3189	Kororoit	2,270	811	0	41	0	0	0
3190	Kororoit	2,267	809	0	40	0	0	0
3191	Kororoit	1,056	377	0	19	0	0	0
3192	Kororoit	1,625	580	0	159	0	1,100	0
3193	Kororoit	576	206	0	10	0	0	0
3203	Kororoit	482	172	0	9	400	0	0
TOTAL KORORROIT		**25,704**	**9,180**	**450**	**1,608**	**1,753**	**1,100**	**0**
2247	Plumpton	789	282	0	84	451	0	0
2248	Plumpton	2,338	835	0	42	0	0	0
2249	Plumpton	1,271	454	0	93	451	0	0
2604	Plumpton	0	0	0	1,000	0	0	0
3128	Plumpton	1,112	397	0	90	451	0	0
3133	Plumpton	1,322	472	0	24	0	0	0
3135	Plumpton	1,581	565	0	28	0	0	0
3137	Plumpton	1,953	698	0	35	0	0	0
3138	Plumpton	1,837	656	0	33	0	0	0
3139	Plumpton	508	181	0	139	400	1,700	0
3140	Plumpton	512	183	0	9	0	0	0
3142	Plumpton	510	182	0	9	0	0	0
3143	Plumpton	1,050	375	2,167	2,842	0	0	0
3144	Plumpton	1,180	421	0	21	0	0	0
3145	Plumpton	931	332	0	17	0	0	0
3146	Plumpton	1,723	615	0	31	0	0	0
3147	Plumpton	1,347	481	0	24	0	0	0
3148	Plumpton	492	176	0	9	0	0	0
3149	Plumpton	1,531	547	0	27	0	0	0
3150	Plumpton	363	129	0	6	0	0	0
3151	Plumpton	416	149	0	97	0	1,100	0
3183	Plumpton	0	0	0	605	0	0	0
3188	Plumpton	835	298	0	55	400	0	0
3200	Plumpton	3,399	1,214	250	498	0	0	0
3204	Plumpton	1,166	416	0	21	0	0	0
TOTAL PLUMPTON		**28,165**	**10,059**	**2,417**	**5,838**	**2,153**	**2,800**	**0**

The total change in population, employment and enrolment forecasts from the original Western Growth Corridor (Rockbank) model are summarised in Table 2.2.

Table 2.2 : Differences between original and revised zone variables

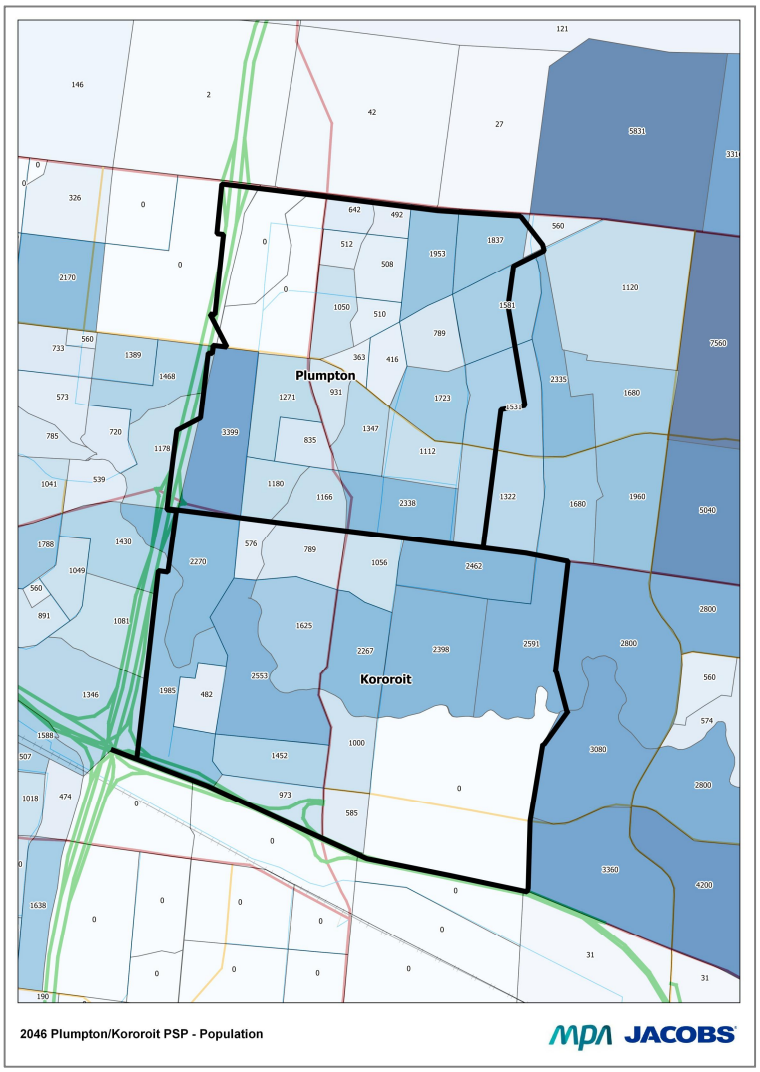
Region	Population	Households	Employment		Enrolment		
			Retail	Total	Primary	Secondary	Tertiary
Plumpton	-9,114	-3,538	+231	+1,455	+853	+200	0
Kororoit	+4,347	+1,390	+117	-26	+453	+1,100	0
Total	**-4,767**	**-2,148**	**+348**	**+1,429**	**+1,306**	**+1,300**	**0**

The following sections describe the changes made to population, household structure and employment in more detail.

2.4.2 Population Distribution

The assumed distribution of population is shown in Figure 2.4. The shading and numerical labels in this figure indicate the assumed residential population in each zone at 2046.

Figure 2.4 : Assumed population distribution in Plumpton Kororoit at 2046 (persons)

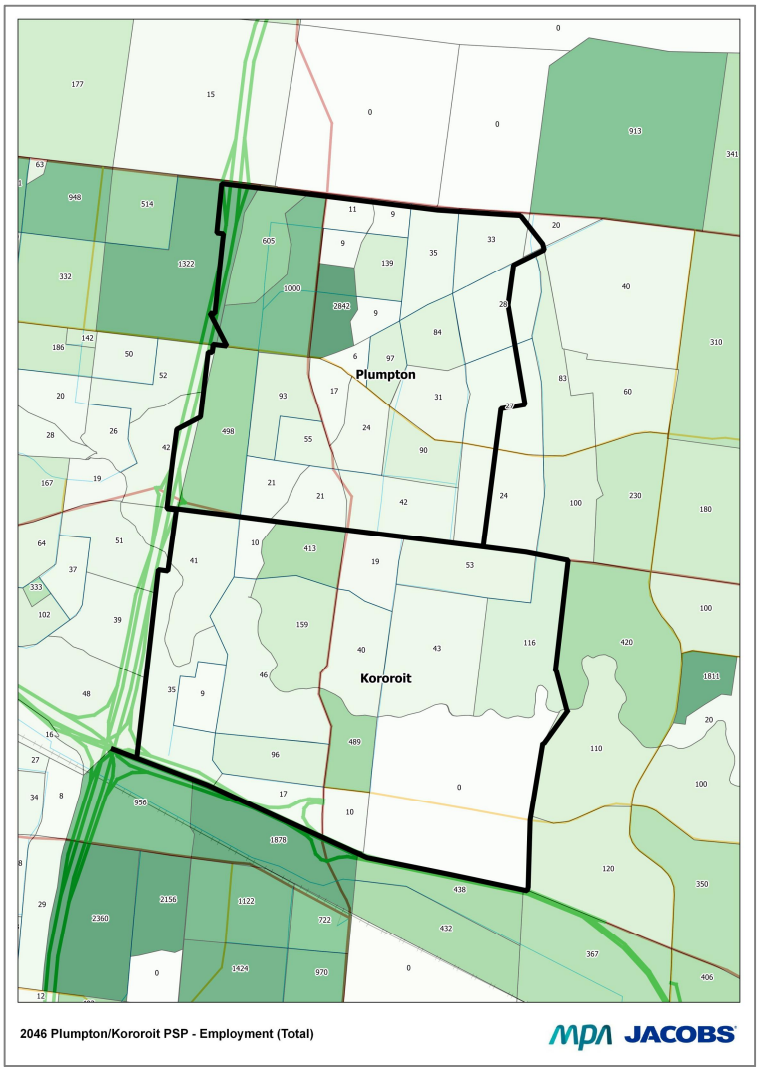


2.4.3 Employment

Employment in Plumpton will be concentrated around the Plumpton town centre and the neighbouring business park to the north-west of Plumpton PSP, as shown in Figure 2.5. An additional local town centre will be located in the south-west corner of Plumpton.

Employment in Kororoit will be concentrated in the two town centres shown by the darker zones in the lower part of Figure 2.5.

Figure 2.5 : Assumed employment distribution in Plumpton and Kororoit for 2046 (total jobs)



2.4.4 Education

The MPA has specified notional locations and sizes of primary and secondary schools in Plumpton and Kororoit. Five primary schools were assumed in Plumpton and four in Kororoit for 2046. Two secondary schools were assumed in Plumpton and one in Kororoit. There are no tertiary educations assumed in both PSPs. Figure 2.6 and Figure 2.7 show the assumed enrolments for 2046 in Plumpton Kororoit for primary and secondary schools respectively.

Figure 2.6 : Assumed primary enrolments in Plumpton and Kororoit (2046)

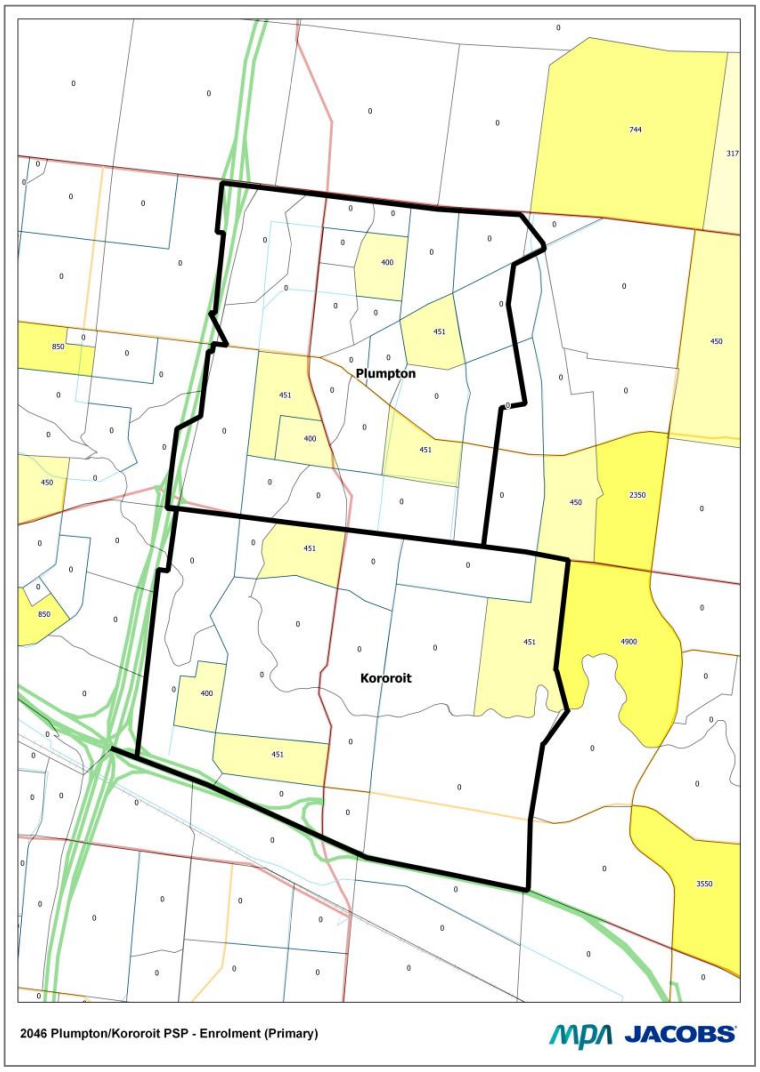
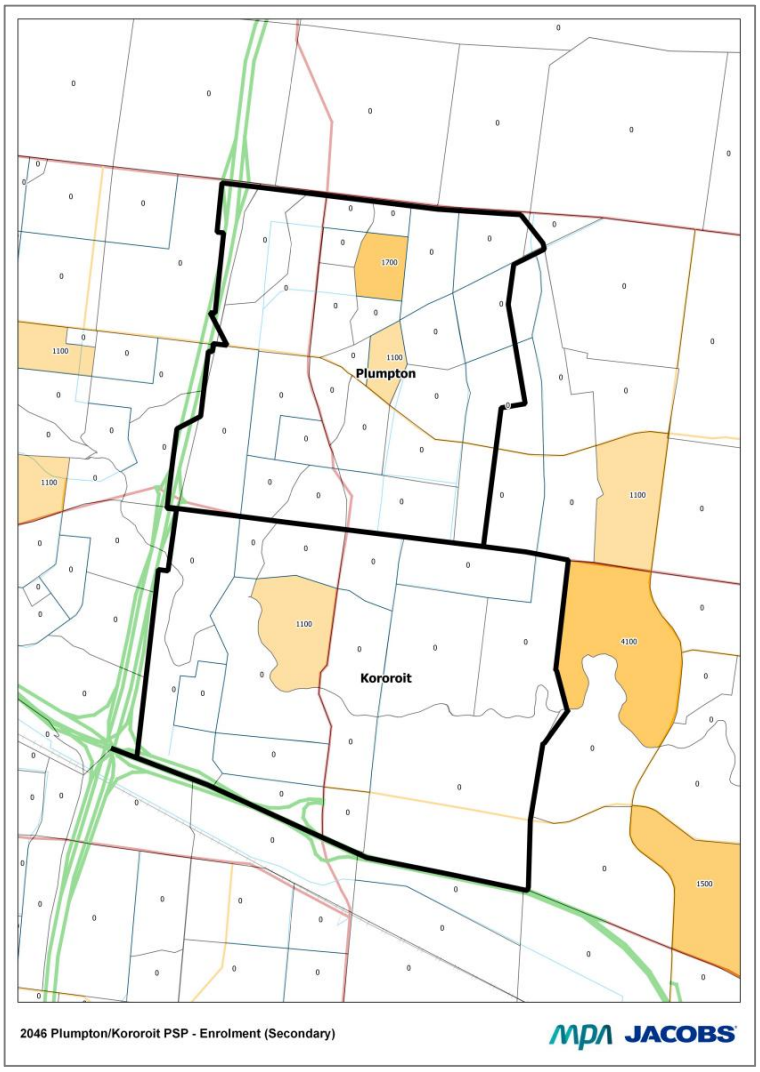


Figure 2.7 : Assumed secondary enrolments in Plumpton and Kororoit (2046)



2.5 2046 Transport Network

2.5.1 Road Network

The road network in the original 2046 WGC model in the Plumpton Kororoit PSP was relatively well-developed, but required some revisions to incorporate the more recent proposed changes in the PSPs. The changes included:

- the realignment of Hopkins Road between Taylors Road and the Western Freeway;
- realignment of Plumpton Road in Kororoit;
- the extension of Beattys Road to Tarleton Road; and
- the disconnection of Plumpton Road at Melton Highway.

A number of additional collector roads were also included to provide better local access and traffic distribution in the model.

Hopkins Road and Taylors Road were assumed to be primary divided arterials with six lanes and a speed limit of 80 km/h. Tarleton Road in Plumpton and Neale Road in Kororoit were assumed to be secondary arterials with four lanes and a 60 km/h speed limit. The Outer Metropolitan Ring Road (OMR) was assumed to be constructed to the immediate west of Plumpton and Kororoit. All other roads were modelled as local collectors and were

assumed to be two lanes with a speed limit of 50 km/h. Local streets are typically not modelled with a strategic model such as VITM, and have not been included in the Plumpton and Kororoit model.

This final modelled 2046 road network is shown in Figure 2.8. A map of assumed speeds is shown in Figure 2.9. Following the modelling of this network, the MPA made further changes to the Future Urban Structure plan (see Figure 1.1), but these changes were not considered sufficiently significant to warrant further modelling of the updated road network.

Figure 2.8 : Assumed 2046 road network

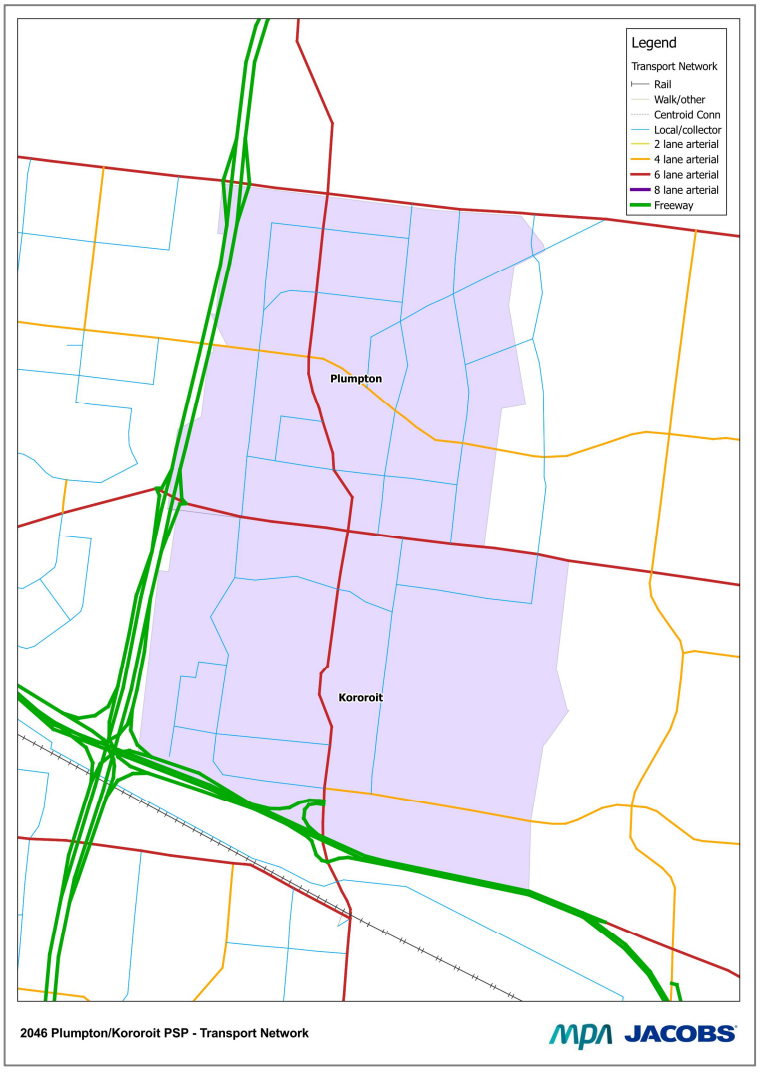
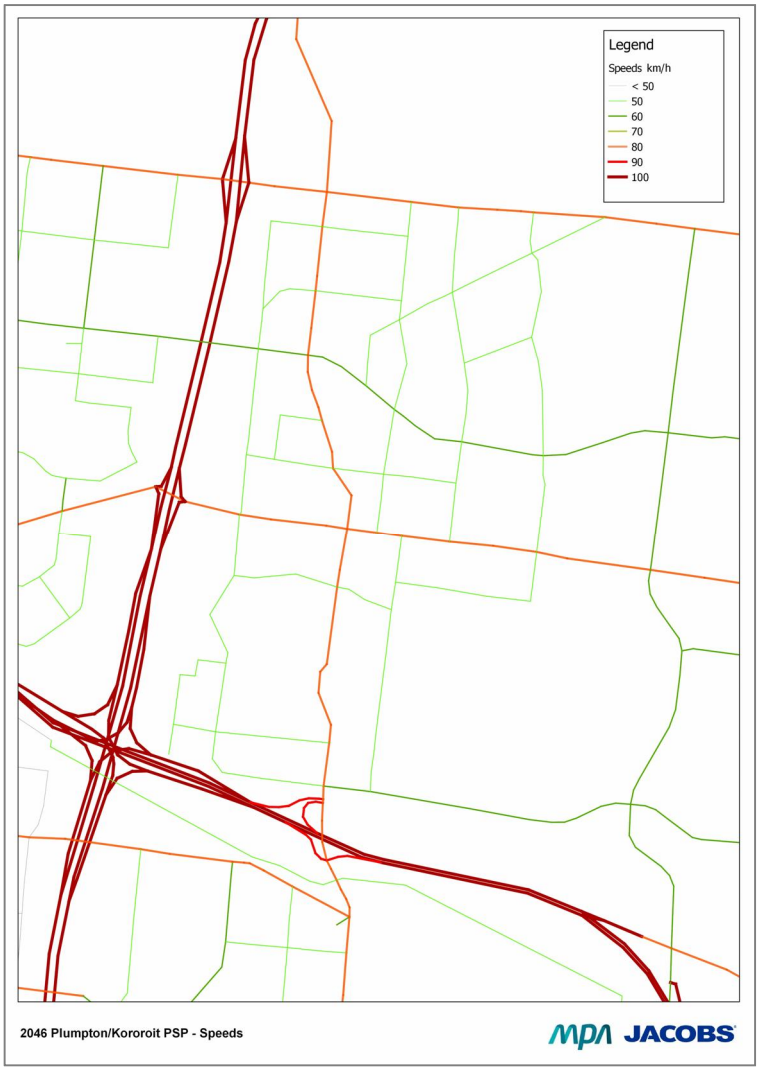


Figure 2.9 : Assumed 2046 road network speeds



2.5.2 Public Transport Routes

The public transport network assumed in the 2046 model is shown in Figure 2.10. Several standard bus and SmartBus routes are assumed to traverse the Plumpton Kororoit precinct, as well as the Melton rail line serving Hopkins Road Station. Stations were assumed at Deer Park, Caroline Springs, Hopkins Road, Rockbank, Toolern East, Toolern Road and Melton.

The public transport routes and frequencies were derived from the original 2046 Western Growth Corridor model. A summary of service frequencies assumed for 2046 is shown in Table 2.3.

Figure 2.10 : Public transport routes in the 2046 model

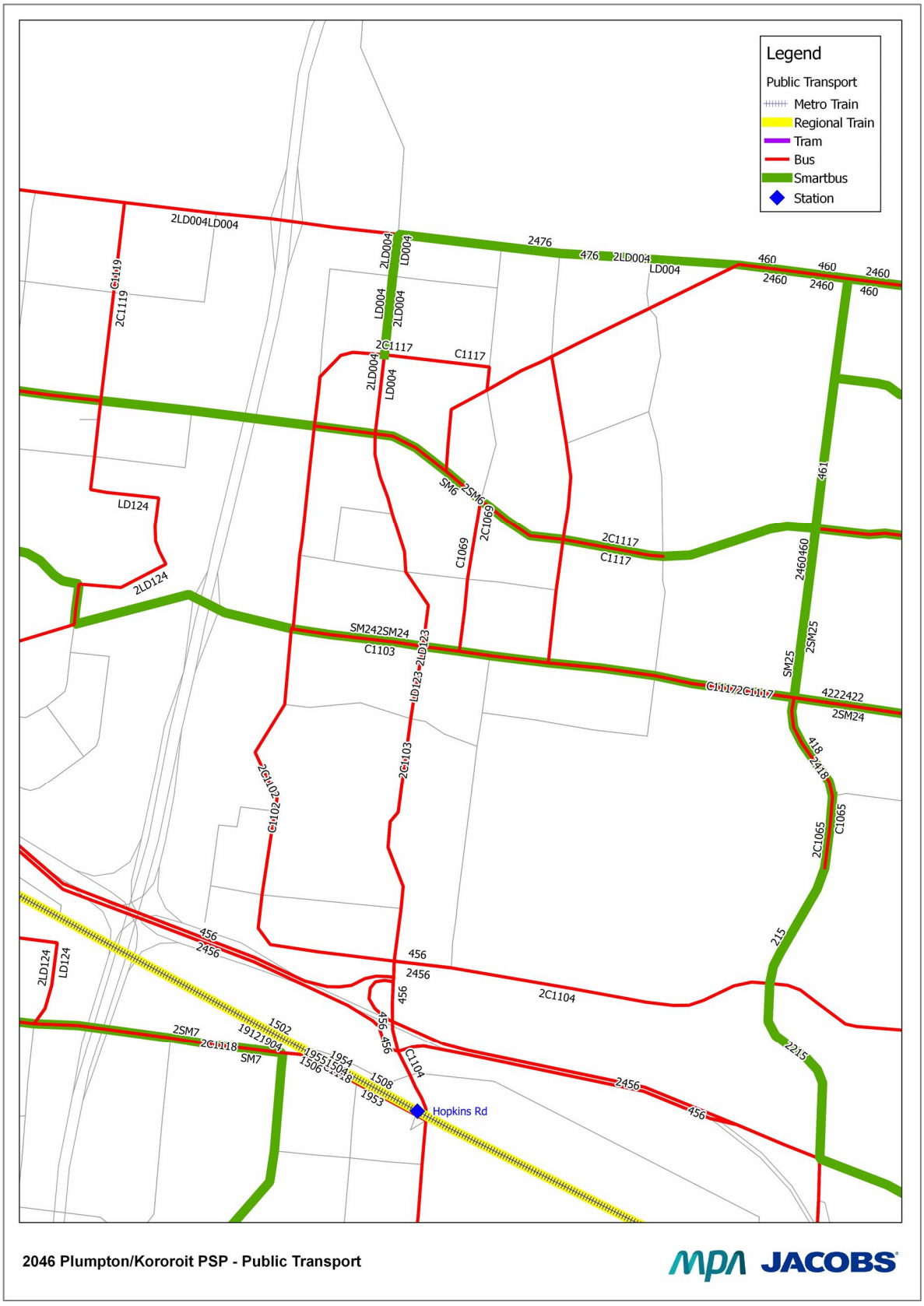


Table 2.3 : Modelled public transport headways (2046)

MODE	NAME	LONGNAME	HEADWAY [minutes]			
			AM Peak	Inter-Peak	PM Peak	Off Peak
Metro Train	1502	MELTON - PAKENHAM EAST (METRO TUNNEL)	7.5	10	7.5	10
	1504	ROCKBANK - PAKENHAM EAST (METRO TUNNEL)	15		15	
	1506	PAKENHAM EAST - MELTON (METRO TUNNEL)	7.5	10	7.5	10
	1508	PAKENHAM EAST - ROCKBANK (METRO TUNNEL)	15		15	0
V/Line Train	1904	BALLARAT - SOUTHERN CROSS (VIA RRL)	15	30	30	30
	1912	SOUTHERN CROSS - BALLARAT (VIA RRL)	30	30	15	30
	1952	ARARAT - SOUTHERN CROSS (VIA RRL)	120	180	120	180
	1953	SOUTHERN CROSS - ARARAT (VIA RRL)	120	180	120	180
	1954	MARYBOROUGH - SOUTHERN CROSS (VIA RRL)	120	180	120	180
	1955	SOUTHERN CROSS - MARYBOROUGH (VIA RRL)	120	180	120	180
Bus	456	SUNSHINE - MELTON	26	26	26	26
	C1069	SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	40	40	40	40
	C1102	CAROLINE SPRINGS TOWN CENTRE - CAROLINE SPRINGS RS	40	40	40	40
	C1103	TARNEIT RS - PLUMPTON	40	40	40	40
	C1104	CAROLINE SPRINGS - TOOLERN RS (VIA ROCKBANK RS)	40	40	40	40
	C1117	SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	40	40	40	40
	LD004	MELTON - SYDENHAM (VIA MELTON HWY)	15	15	15	15
	LD123	SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	15	15	15	15
Smartbus	476	MOONEE PONDS - HILLSIDE	10	10	10	10
	SM24	ST ALBANS - ROCKBANK RS	10	10	10	10
	SM6	SYDENHAM - MELTON (VIA NORTHERN TOOLERN)	10	10	10	10

2.6 2026 Land Use Variables

2.6.1 Summary of Updates

Population, employment and enrolment forecasts for 2026 were provided by the MPA. These forecasts are summarised in Table 2.4. Residential development (i.e. the number of households) at 2026 was generally assumed to be 75% of the ultimate build-out at 2046. In major employment and school zones, the number of jobs and education enrolments were generally assumed to be 50% of the ultimate planned numbers at 2046.

Table 2.4 : Land use variables for the 2026 Plumpton and Kororoit model

Zone	Location	Population	Households	Employment		Enrolment		
				Retail	Total	Primary	Secondary	Tertiary
1300	Kororoit	1,915	684	0	34	0	0	0
2245	Kororoit	0	0	0	0	0	0	0
2602	Kororoit	1,798	642	0	32	0	0	0
2605	Kororoit	592	211	92	210	226	0	0
3126	Kororoit	481	172	0	9	0	0	0
3127	Kororoit	1,943	694	0	70	226	0	0
3129	Kororoit	1,846	659	0	37	0	0	0
3141	Kororoit	1,489	532	0	27	0	0	0
3184	Kororoit	438	157	0	8	0	0	0
3185	Kororoit	729	261	0	13	0	0	0
3186	Kororoit	750	268	133	249	0	0	0
3187	Kororoit	1,089	389	0	54	226	0	0
3189	Kororoit	1,703	608	0	30	0	0	0
3190	Kororoit	1,700	607	0	30	0	0	0
3191	Kororoit	792	283	0	14	0	0	0
3192	Kororoit	1,218	435	0	87	0	550	0
3193	Kororoit	432	154	0	8	0	0	0
3203	Kororoit	361	129	0	6	200	0	0
TOTAL KOROROIT		**19,278**	**6,885**	**225**	**919**	**877**	**550**	**0**
2247	Plumpton	592	211	0	46	226	0	0
2248	Plumpton	1,754	626	0	31	0	0	0
2249	Plumpton	953	340	0	52	226	0	0
2604	Plumpton	0	0	0	500	0	0	0
3128	Plumpton	834	298	0	50	226	0	0
3133	Plumpton	1,322	472	0	24	0	0	0
3135	Plumpton	1,186	423	0	21	0	0	0
3137	Plumpton	1,465	523	0	26	0	0	0
3138	Plumpton	1,378	492	0	25	0	0	0
3139	Plumpton	381	136	0	72	200	850	0
3140	Plumpton	384	137	0	7	0	0	0
3142	Plumpton	382	137	0	7	0	0	0
3143	Plumpton	788	281	1,083	1,426	0	0	0
3144	Plumpton	885	316	0	16	0	0	0

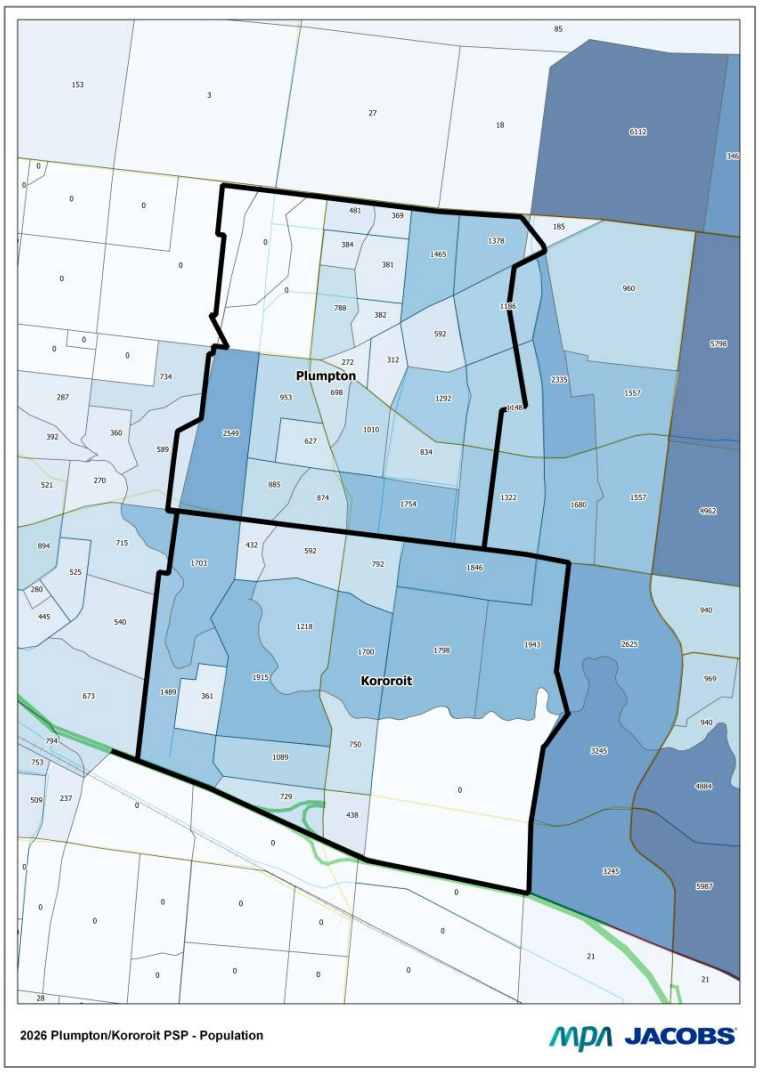
Table 2.4 continued

Zone	Location	Population	Households	Employment		Enrolment		
				Retail	Total	Primary	Secondary	Tertiary
3145	Plumpton	698	249	0	12	0	0	0
3146	Plumpton	1,292	461	0	23	0	0	0
3147	Plumpton	1,010	361	0	18	0	0	0
3148	Plumpton	369	132	0	7	0	0	0
3149	Plumpton	1,148	410	0	20	0	0	0
3150	Plumpton	272	97	0	5	0	0	0
3151	Plumpton	312	111	0	51	0	550	0
3183	Plumpton	0	0	0	303	0	0	0
3188	Plumpton	627	224	0	31	200	0	0
3200	Plumpton	2,549	910	125	264	0	0	0
3204	Plumpton	874	312	0	16	0	0	0
TOTAL PLUMPTON		**21,454**	**7,662**	**1,208**	**3,051**	**1,077**	**1,400**	**0**

2.6.2 Population Distribution

The assumed distribution of population is shown in Figure 2.11. The shading and numerical labels in this figure indicate the assumed residential population in each zone at 2026. Population in 2026 was generally assumed to be 75% of the ultimate population at 2046.

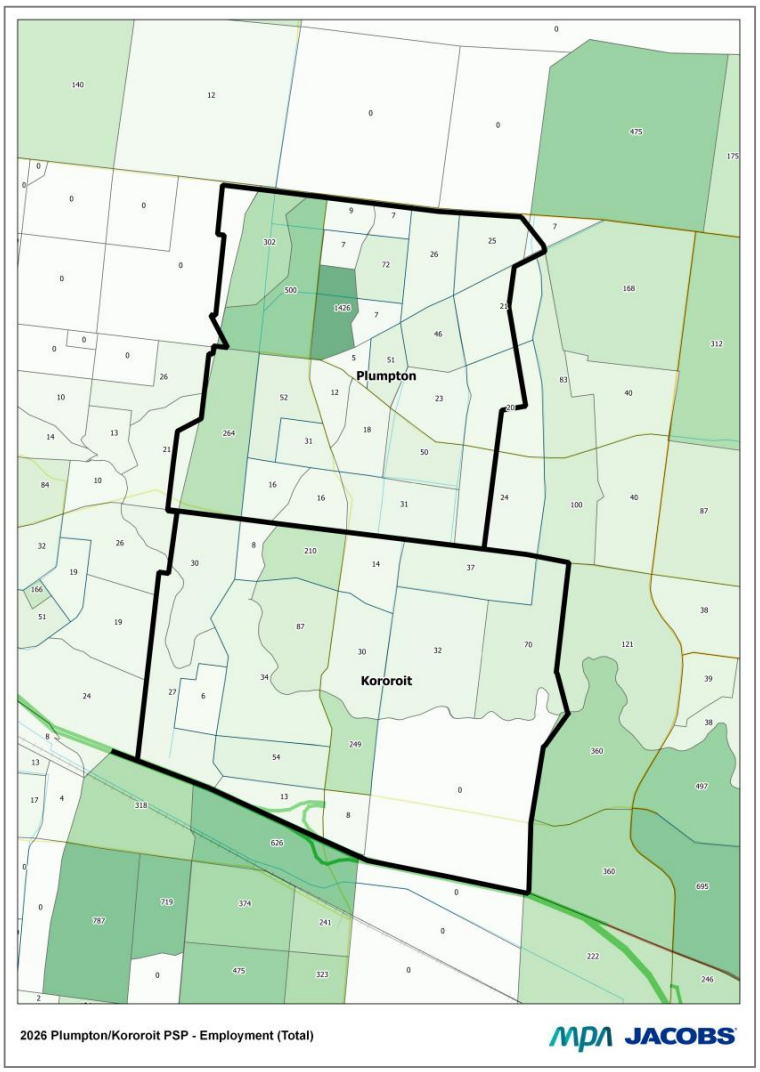
Figure 2.11 : Assumed population distribution in Plumpton Kororoit at 2026 (persons)



2.6.3 Employment

Figure 2.12 shows the assumed employment distribution for Plumpton and Kororoit in 2026. The spatial distribution largely matches that of 2046, with approximately half of the ultimate number of jobs assumed to be present in 2026.

Figure 2.12 : Assumed employment distribution in Plumpton and Kororoit for 2026 (total jobs)



2.6.4 Education

Figure 2.13 and Figure 2.14 show the assumed enrolments for 2026 in Plumpton and Kororoit for primary and secondary schools respectively. At 2026, the number of enrolments in each zone was assumed to be half of enrolments in 2046. The growth in enrolments (50% of ultimate) was assumed to be less than the growth in population (75% of ultimate) to allow for students who are expected to travel outside of the PSP areas until delivery of schools matches population thresholds.

Figure 2.13 : Assumed primary enrolments in Plumpton and Kororoit (2026)

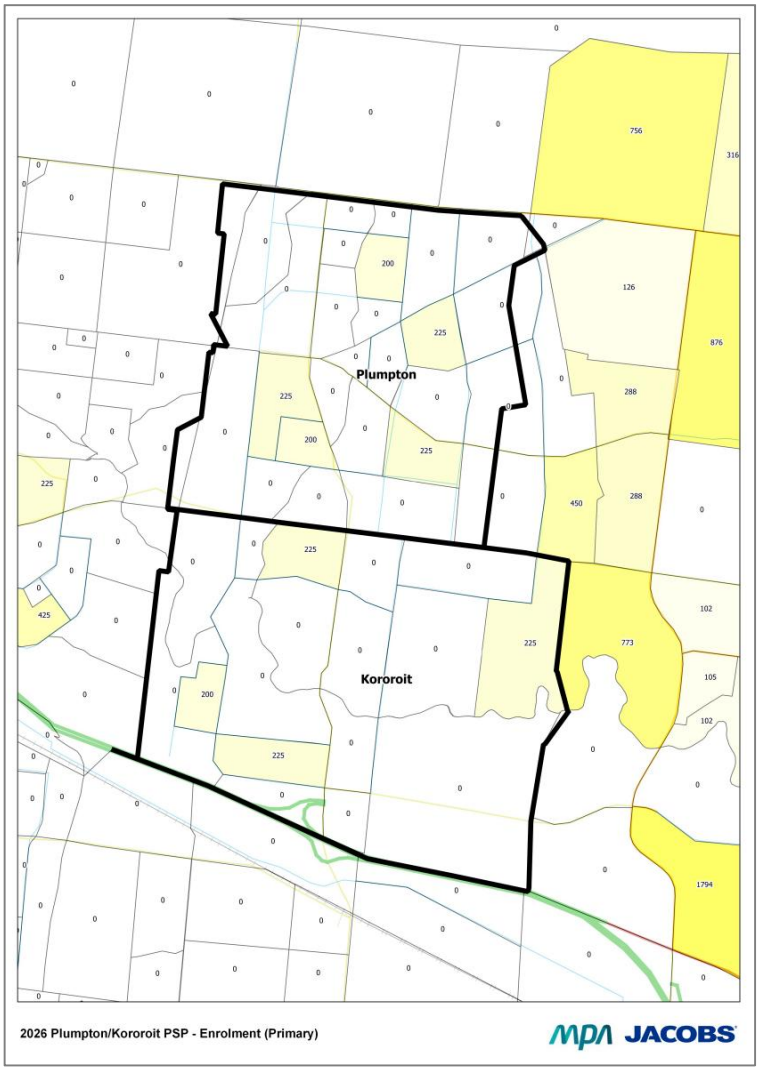
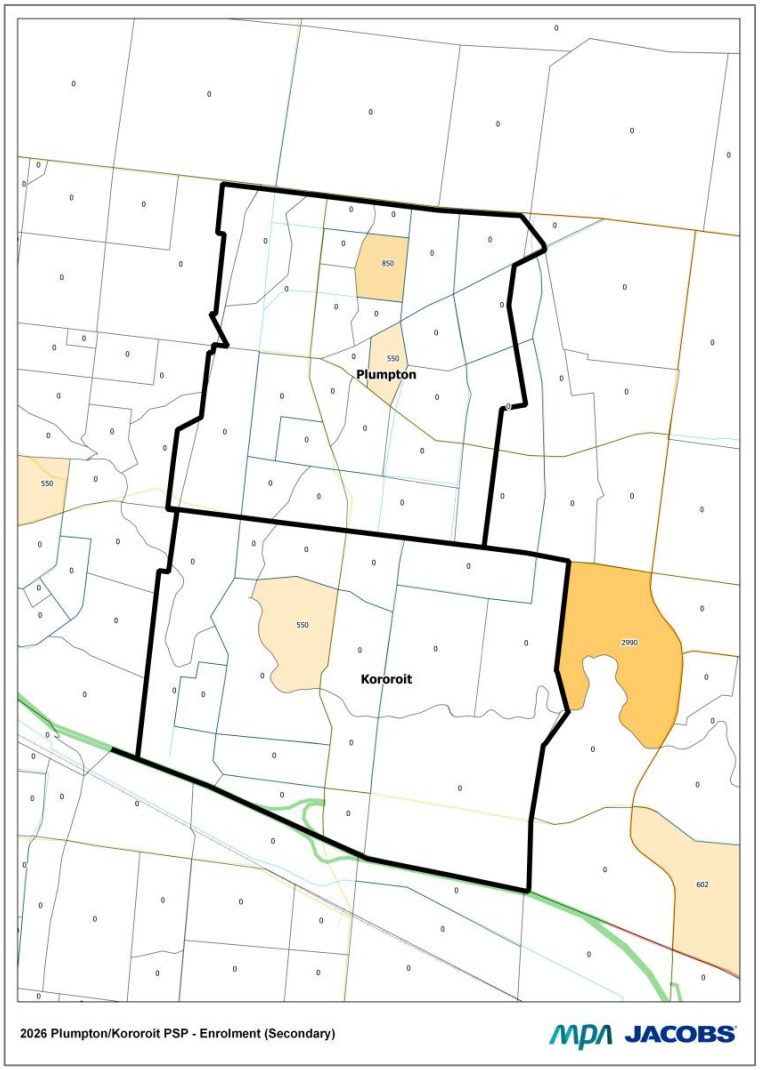


Figure 2.14 : Assumed secondary enrolments in Plumpton and Kororoit (2026)



2.7 2026 Transport Network

2.7.1 Road Network

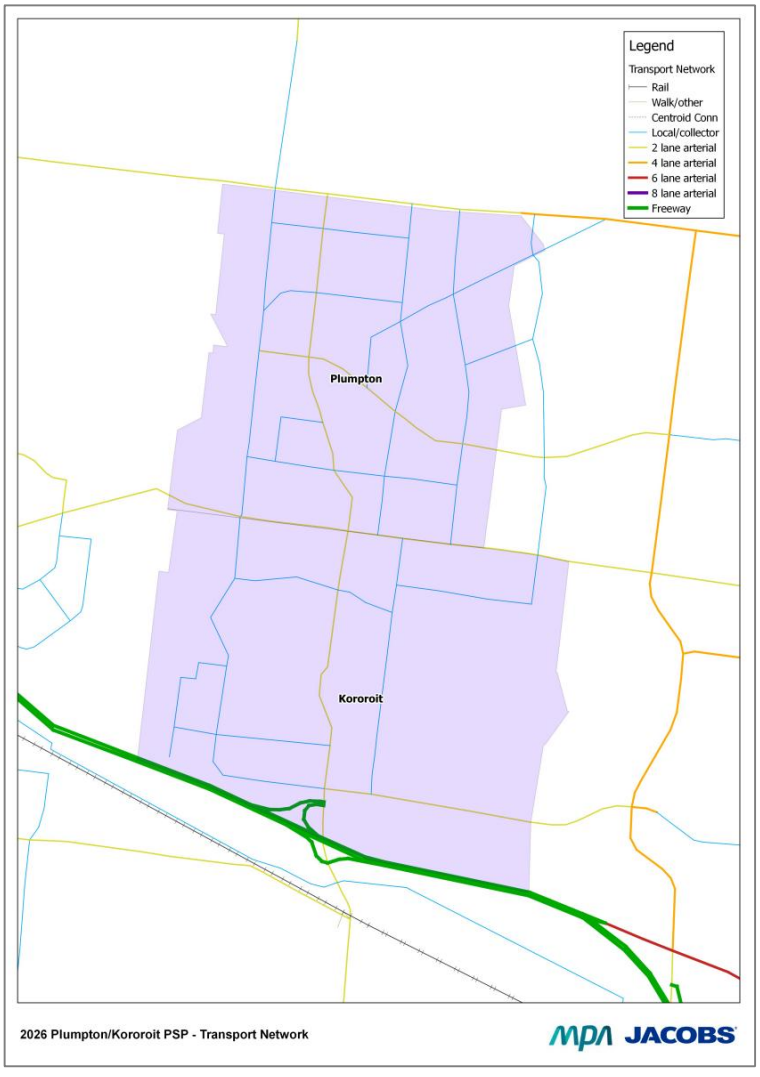
The 2026 road network was assumed to be less developed than the 2046 network, in keeping with the interim residential and commercial development levels at 2026.

Taylors Road, Hopkins Road and the western section of Melton Highway were assumed to be two-lane arterials. All other modelled roads were assumed to be local/collector roads.

Local/collector roads were given a posted speed limit of 50 km/h and a further factor of 0.6 was applied to the posted speed to obtain the practical maximum speed on the road (i.e. a free-flow speed of 0.6 x 50 = 30 km/h). This allowed for delays at intersections, parked vehicles and so on, reflecting the local access nature of these roads.

Following the modelling of this network, the MPA made further changes to the Future Urban Structure plan (see Figure 1.1), but these changes were not considered sufficiently significant to warrant further modelling of the updated road network.

Figure 2.15 : Assumed 2026 road network



2.7.2 Public Transport Routes

The public transport network assumed in 2026 is shown in Figure 2.16. The network of bus routes is less extensive than in 2046, with the bulk of routes serving the Hopkins Road and Taylors Road corridor, and the Plumpton town centre. Stations were assumed at Ardeer, Deer Park, Caroline Springs, Rockbank, Toolern Road and Melton, but not at Hopkins Road.

Figure 2.16 : Public transport routes in the 2026 model

Table 2.5 : Modelled public transport headways (2026)

MODE	NAME	LONGNAME	HEADWAY [minutes]			
			AM Peak	Inter-Peak	PM Peak	Off Peak
Metro Train	1502	MELTON - PAKENHAM EAST (METRO TUNNEL)	8	15	8	15
	1504	ROCKBANK - PAKENHAM EAST (METRO TUNNEL)	15		15	
	1506	PAKENHAM EAST - MELTON (METRO TUNNEL)	8	15	8	15
	1508	PAKENHAM EAST - ROCKBANK (METRO TUNNEL)	15		15	
V/Line Train	1904	BALLARAT - SOUTHERN CROSS (VIA RRL)	20	30	30	30
	1912	SOUTHERN CROSS - BALLARAT (VIA RRL)	30	30	20	30
	1952	ARARAT - SOUTHERN CROSS (VIA RRL)	120	180	120	180
	1953	SOUTHERN CROSS - ARARAT (VIA RRL)	120	180	120	180
	1954	MARYBOROUGH - SOUTHERN CROSS (VIA RRL)	120	180	120	180
	1955	SOUTHERN CROSS - MARYBOROUGH (VIA RRL)	120	180	120	180
Bus	456	SUNSHINE - MELTON	26	26	26	26
	C1069	SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	40	40	40	40
	C1117	SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	40	40	40	40
	LD123	SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	15	15	15	15
Smartbus	460	CAROLINE SPRINGS - WATERGARDENS	20	20	20	20
	476	MOONEE PONDS - HILLSIDE	15	15	15	15
	SM24	ST ALBANS - ROCKBANK RS	10	10	10	10

3. 2046 Reference Case

This chapter provides the modelling outputs from the 2046 reference case model. The following sections summarise traffic volumes, the level of service provided by the proposed road network, and public transport patronage. A full set of outputs for the 2046 reference case can be found in Appendix A.

3.1 Traffic Volumes

Forecast daily traffic volumes in the Plumpton Kororoit area for 2046 are shown in Figure 3.1. The hourly traffic volumes modelled for the AM and PM peaks are given in Appendix A.

East-West Roads

The traffic volume plots show that Taylors Road (six-lane arterial) may carry between 45,000 and 60,000 vehicles per day at 2046, which is comparable to the volumes forecast for Melton Highway. Tarleton Road (four-lane arterial) is expected to play more of a local distributor role, with forecast volumes of between 8,000 and 17,000 vehicles per day.

North-South Roads

Hopkins Road, with a continuous connection to the north of Melton Highway, will act as the central north-south spine for the PSP areas. The model indicates traffic volumes of 40,000 to 45,000 vehicles per day along most of the Hopkins Road route and slightly higher volumes near the Western Highway interchange.

Other north-south roads are expected to have significantly lower volumes, typically in the range of 4,000 to 9,000 vehicles per day.

3.2 Road Network Level of Service

Figure 3.2 and Figure 3.3 show the modelled volume-capacity ratios for the 2046 AM peak and PM peak respectively. Both plots show that modelled congestion levels are generally within acceptable bounds, with most roads operating with a V/C ratio less than 0.8.

There are some localised pockets of higher congestion forecast in and around Taylors Road and the Hopkins Road interchange, but these are not considered to be significantly different to those found in other established areas of Melbourne.

Figure 3.1: 2046 reference case model – daily traffic volumes

Figure 3.2: Volume-capacity ratio plot for 2046 reference case (AM peak)

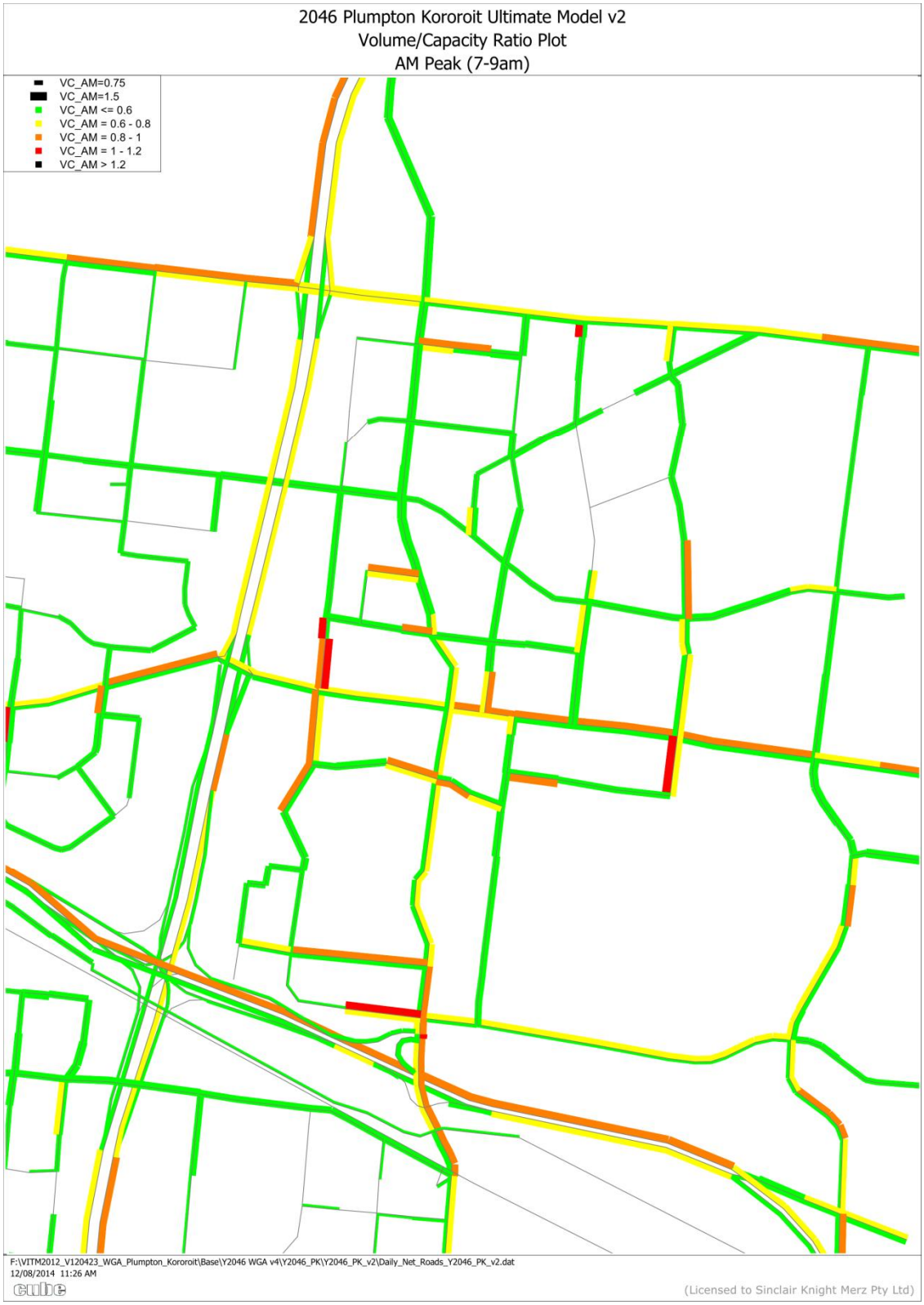


Figure 3.3: Volume-capacity ratio plot for 2046 reference case (PM peak)

3.3 Public Transport

Forecast passenger boardings on bus and train services for the 2046 reference case model are given in Table 3.1. Note that bus boardings are given for entire routes (including the sections outside the PSP areas), which means that longer routes will tend to result in higher numbers of reported boardings.

Table 3.1: 2046 reference case model – public transport boardings by time period and direction

Bus Boardings (per direction) by route

Description	Bus Route	AM	IP	PM	OP	DAILY
SUNSHINE - MELTON	456	30	63	101	44	238
SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	C1069	16	10	32	6	63
CAROLINE SPRINGS TOWN CENTRE - CAROLINE SPRINGS RS	C1102	30	28	35	7	100
TARNEIT RS - PLUMPTON	C1103	33	204	136	67	439
CAROLINE SPRINGS - TOOLERN RS (VIA ROCKBANK RS)	C1104	129	147	186	59	521
SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	C1117	57	67	175	70	369
ROCKBANK RS - ROCKBANK WEST (VIA PLUMPTON)	C1118	69	87	40	36	232
SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	LD123	32	94	348	154	627
SYDENHAM - MELTON (VIA NORTHERN TOOLERN)	SM6	309	362	471	159	1,302
ST ALBANS - ROCKBANK RS	SM24	100	200	254	139	691
	TOTAL	**706**	**1,060**	**1,525**	**601**	**3,892**

Description	Bus Route	AM	IP	PM	OP	DAILY
MELTON - SUNSHINE	2456	65	83	57	31	236
CAROLINE SPRINGS - SYDENHAM RS (VIA TAYLORS HILL WEST)	2C1069	6	6	24	2	38
CAROLINE SPRINGS RS - CAROLINE SPRINGS TOWN CENTRE	2C1102	22	18	43	12	95
PLUMPTON - TARNEIT RS	2C1103	97	221	116	60	494
TOOLERN RS - CAROLINE SPRINGS (VIA ROCKBANK RS)	2C1104	125	114	135	46	421
PLUMPTON - SYDENHAM RS (VIA TAYLORS HILL) (COMPLETE)	2C1117	129	116	79	36	359
ROCKBANK WEST - ROCKBANK RS (VIA PLUMPTON)	2C1118	55	102	111	60	328
CAROLINE SPRINGS RS - SYDENHAM RS (VIA PLUMPTON & EASTERN ROCKBANK)	2LD123	265	231	54	68	617
MELTON - SYDENHAM (VIA NORTHERN TOOLERN)	2SM6	270	289	413	191	1,163
ROCKBANK RS - ST ALBANS	2SM24	178	296	204	98	775
	TOTAL	**1,034**	**1,179**	**1,032**	**505**	**3,750**

Bus Boardings (2 way volumes)

Description	Bus Route	AM	IP	PM	OP	DAILY
SUNSHINE - MELTON	456	95	147	158	75	475
SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	C1069	22	15	56	8	101
CAROLINE SPRINGS TOWN CENTRE - CAROLINE SPRINGS RS	C1102	52	45	78	19	195
TARNEIT RS - PLUMPTON	C1103	129	424	253	127	933
CAROLINE SPRINGS - TOOLERN RS (VIA ROCKBANK RS)	C1104	255	261	321	105	942
SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	C1117	185	183	254	106	728
ROCKBANK RS - ROCKBANK WEST (VIA PLUMPTON)	C1118	124	189	151	95	560
SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	LD123	297	324	401	222	1,244
SYDENHAM - MELTON (VIA NORTHERN TOOLERN)	SM6	579	651	884	350	2,465
ST ALBANS - ROCKBANK RS	SM24	278	495	457	236	1,466
	TOTAL	**1,739**	**2,239**	**2,557**	**1,107**	**7,643**

Train Boardings

Train Line	Station	AM	IP	PM	OP	DAILY
Melton Line	Sunshine	5,989	8,049	3,768	2,510	20,317
	Ardeer	206	317	89	86	698
	Deer Park	3,526	3,968	994	1,210	9,698
	Caroline Springs	1,169	789	76	163	2,198
	Hopkins Road	1,036	840	218	229	2,323
	Rockbank	2,308	2,052	251	488	5,099
	Toolern Road	1,956	1,759	321	464	4,501
	Melton	14,732	7,157	818	1,890	24,597
	TOTAL	**30,922**	**24,932**	**6,535**	**7,042**	**69,431**

4. 2026 Reference Case

This chapter provides the outputs from the modelling of the 2026 reference case. The following sections present traffic volumes, volume-capacity ratios and public transport patronage. A full set of outputs for the 2026 reference case can be found in Appendix B.

4.1 Traffic Volumes

Forecast daily traffic volumes in the Plumpton Kororoit area for 2026 are shown in Figure 4.1. The hourly traffic volumes modelled for the AM and PM peaks are given in Appendix B.

East-West Roads

The traffic volume plots show that Taylors Road (two-lane arterial) may carry between 24,000 and 27,000 vehicles per day at 2026, which is around half of the volume forecast for 2046. Much of this is expected to be generated from development to the west, such as Rockbank North. Scenario 2, described in chapter 7, was developed to help quantify the traffic contribution from development areas to the west.

Taylors Road is forecast to carry more daily traffic than Melton Highway, even though both have been assumed to be two-lane roads. Tarleton Road (four-lane arterial) has forecast volumes of between 6,000 and 12,000 vehicles per day.

North-South Roads

Hopkins Road has been assumed to terminate at a T-intersection with Melton Highway in 2026, but will still function as the major north-south spine for the PSPs in 2026. The model indicates traffic volumes of about 18,000 to 20,000 vehicles per day in the northern (Plumpton) section and about 25,000 in the southern (Kororoit) section near the Western Highway interchange.

The model indicates that the section of Melton Highway between Plumpton Road and Hopkins Road may attract locally heavy flows (around 22,000 vehicles per day). This will largely be caused by the lack of a continuous connection from Hopkins Road to the north, forcing vehicles to use this short section of Melton Highway.

4.2 Road Network Level of Service

Figure 4.2 and Figure 4.3 show the modelled volume-capacity ratios for the 2026 AM peak and PM peak respectively. Both plots show that modelled congestion levels are generally within acceptable bounds, but with some roads (notably Hopkins Road and Taylors Road) operating with V/C ratios close to 1.0.

Citybound sections of the Western Highway are shown to be highly congested in the AM peak and outbound sections similarly congested in the PM peak. This may make alternative east-west routes, such as Taylors Road and Melton Highway more attractive for through traffic.

Figure 4.1: 2026 reference case model – daily traffic volumes

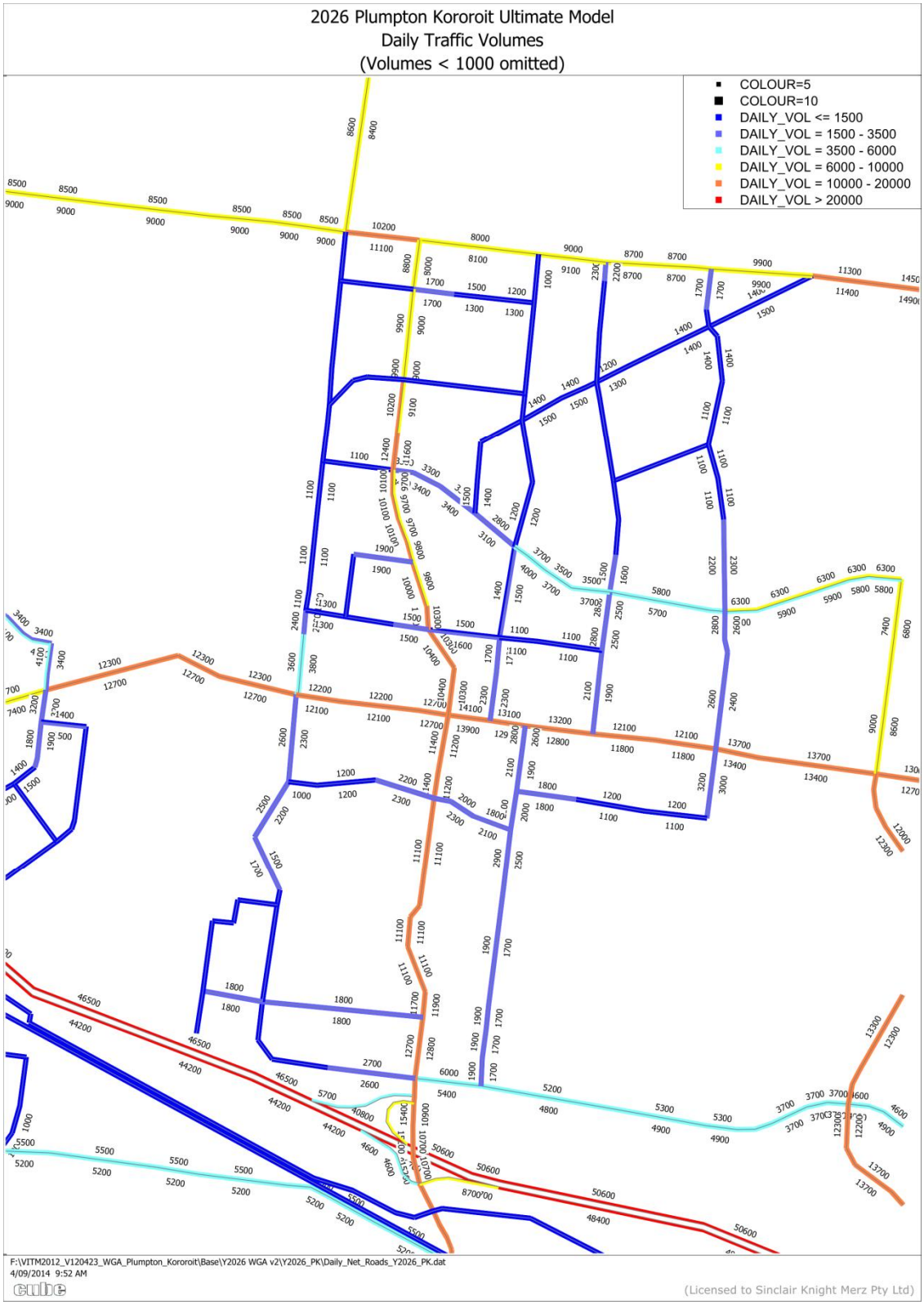


Figure 4.2 : Volume-capacity ratio plot for 2026 reference case (AM peak)

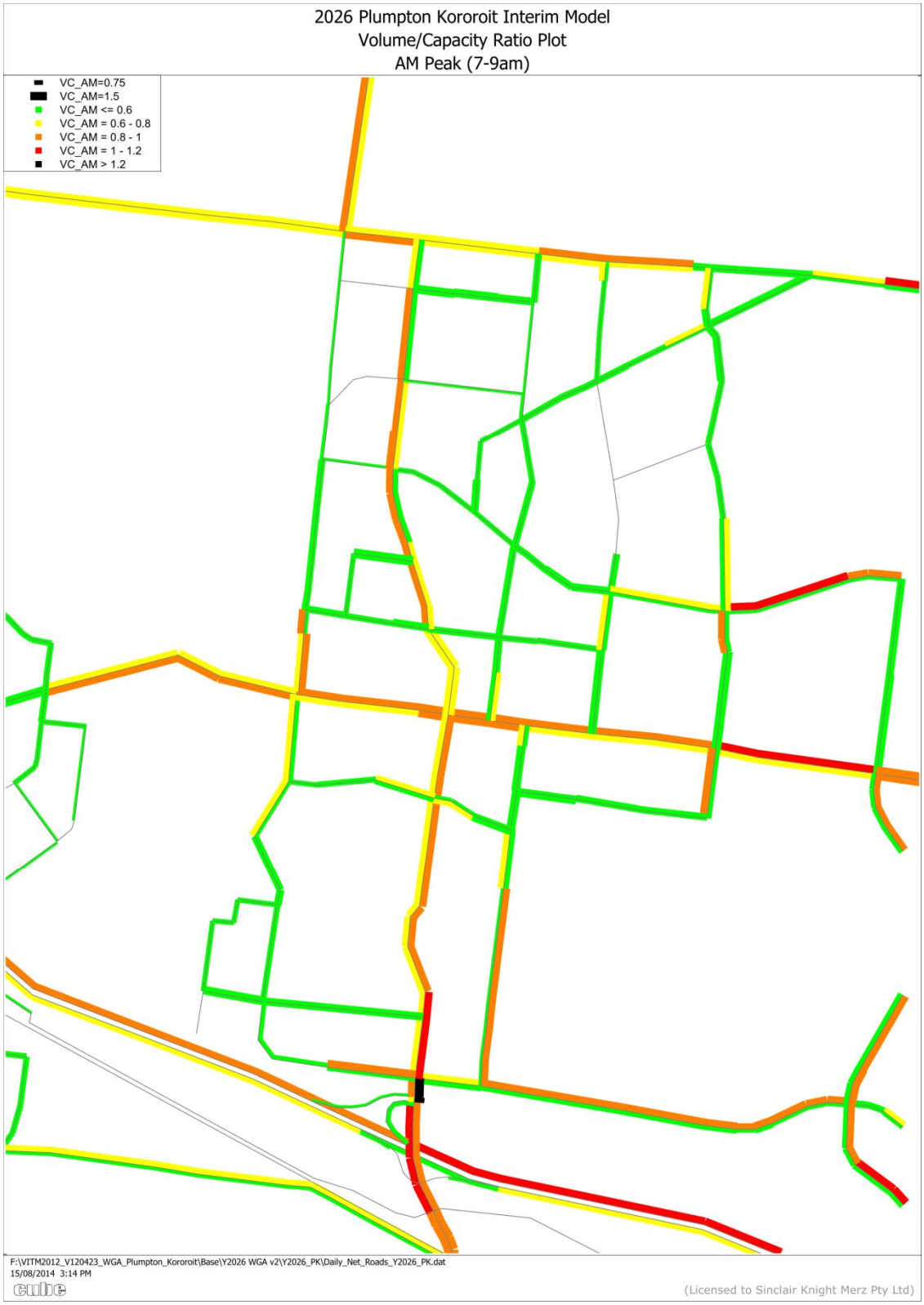
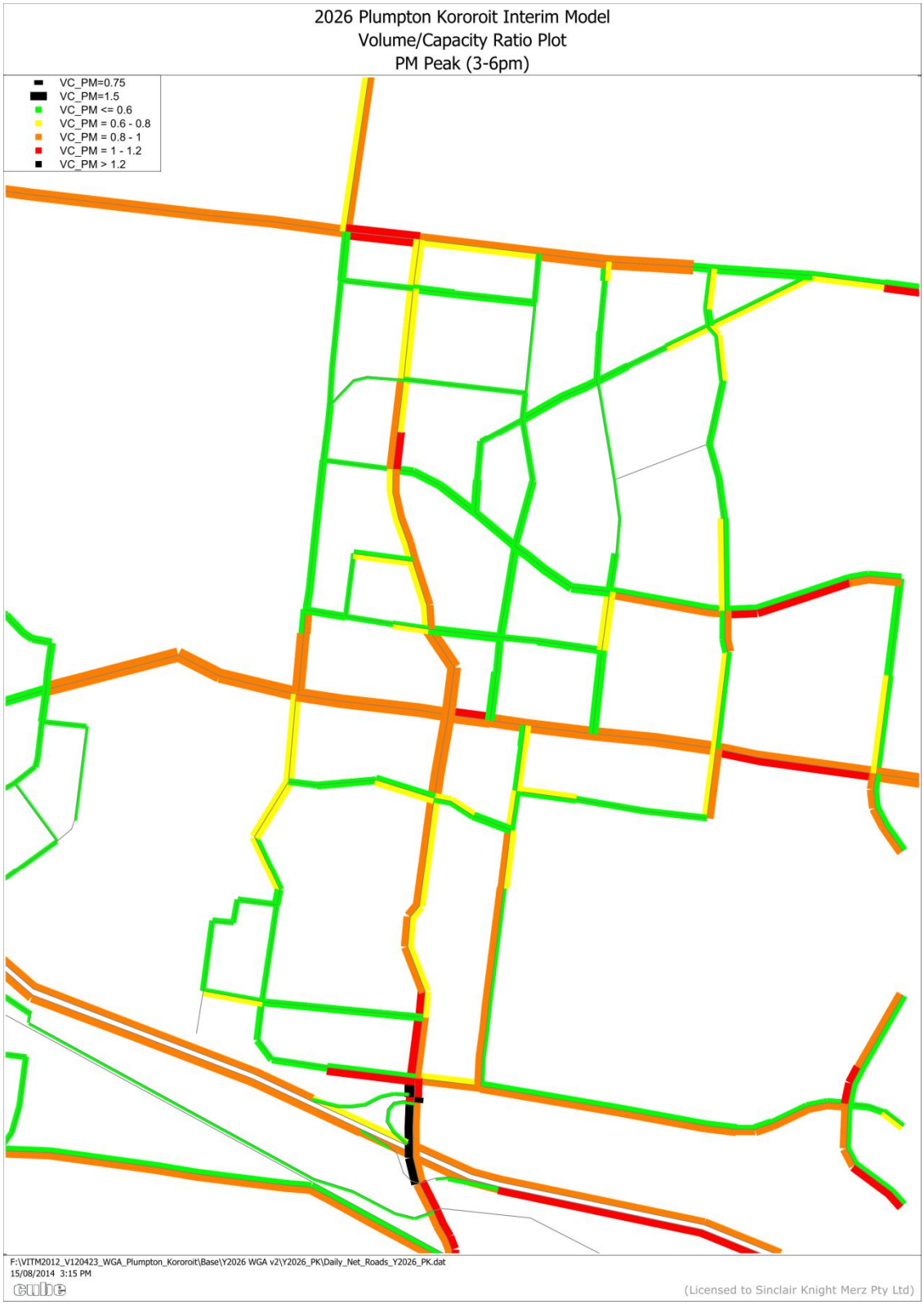


Figure 4.3 : Volume-capacity ratio plot for 2026 reference case (PM peak)



4.3 Public Transport

Forecast passenger boardings on bus and train services for the 2026 reference case model are given in Table 4.1. Because bus services have less coverage than the 2046 reference case, the number of bus boardings is significantly lower in 2026.

Table 4.1: 2026 reference case model – public transport boardings by time period and direction

Bus Boardings (per direction) by route

Description	Bus Route	AM	IP	PM	OP	DAILY
SUNSHINE - MELTON	456	58	89	126	71	344
SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	C1069	18	11	81	3	113
CAROLINE SPRINGS TOWN CENTRE - CAROLINE SPRINGS RS	C1102	-	-	-	-	-
TARNEIT RS - PLUMPTON	C1103	-	-	-	-	-
CAROLINE SPRINGS - TOOLERN RS (VIA ROCKBANK RS)	C1104	-	-	-	-	-
SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	C1117	34	69	291	65	459
ROCKBANK RS - ROCKBANK WEST (VIA PLUMPTON)	C1118	-	-	-	-	-
SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	LD123	52	134	407	155	748
SYDENHAM - MELTON (VIA NORTHERN TOOLERN)	SM6	-	-	-	-	-
ST ALBANS - ROCKBANK RS	SM24	155	186	216	153	710
	TOTAL	**162**	**303**	**905**	**294**	**1,665**

Description	Bus Route	AM	IP	PM	OP	DAILY
MELTON - SUNSHINE	2456	74	141	78	43	335
CAROLINE SPRINGS - SYDENHAM RS (VIA TAYLORS HILL WEST)	2C1069	9	8	24	2	43
CAROLINE SPRINGS RS - CAROLINE SPRINGS TOWN CENTRE	2C1102	-	-	-	-	-
PLUMPTON - TARNEIT RS	2C1103	-	-	-	-	-
TOOLERN RS - CAROLINE SPRINGS (VIA ROCKBANK RS)	2C1104	-	-	-	-	-
PLUMPTON - SYDENHAM RS (VIA TAYLORS HILL) (COMPLETE)	2C1117	198	132	52	31	414
ROCKBANK WEST - ROCKBANK RS (VIA PLUMPTON)	2C1118	-	-	-	-	-
CAROLINE SPRINGS RS - SYDENHAM RS (VIA PLUMPTON & EASTERN ROCKBANK)	2LD123	299	261	68	89	717
MELTON - SYDENHAM (VIA NORTHERN TOOLERN)	2SM6	-	-	-	-	-
ROCKBANK RS - ST ALBANS	2SM24	110	276	174	70	630
	TOTAL	**580**	**542**	**222**	**165**	**1,509**

Bus Boardings (2 way volumes)

Description	Bus Route	AM	IP	PM	OP	DAILY
SUNSHINE - MELTON	456	132	230	204	113	679
SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	C1069	27	19	105	5	156
CAROLINE SPRINGS TOWN CENTRE - CAROLINE SPRINGS RS	C1102	-	-	-	-	-
TARNEIT RS - PLUMPTON	C1103	-	-	-	-	-
CAROLINE SPRINGS - TOOLERN RS (VIA ROCKBANK RS)	C1104	-	-	-	-	-
SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	C1117	233	201	344	96	874
ROCKBANK RS - ROCKBANK WEST (VIA PLUMPTON)	C1118	-	-	-	-	-
SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	LD123	351	395	475	244	1,465
SYDENHAM - MELTON (VIA NORTHERN TOOLERN)	SM6	-	-	-	-	-
ST ALBANS - ROCKBANK RS	SM24	265	462	390	223	1,340
	TOTAL	**742**	**846**	**1,127**	**459**	**3,174**

Train Boardings

Train Line	Station	AM	IP	PM	OP	DAILY
Melton Line	Sunshine	3,695	3,793	2,359	1,280	11,127
	Ardeer	167	233	66	60	526
	Deer Park	2,668	2,479	438	595	6,180
	Caroline Springs	1,724	1,142	91	275	3,231
	Hopkins Road	-	-	-	-	-
	Rockbank	827	713	113	171	1,823
	Toolern Road	736	627	150	162	1,675
	Melton	7,876	6,575	683	1,675	16,810
	TOTAL	**17,693**	**15,562**	**3,901**	**4,217**	**41,373**

5. Scenario Specifications

In addition to the reference case models for 2026 and 2046, four scenarios were modelled to test various network and land use assumptions for 2026. This chapter provides a description of the scenarios and the associated transport network changes. Results from the scenario tests are presented in later chapters.

Table 5.1 summarises each scenario test, including the key differences between the scenario and 2026 reference case. More detailed descriptions of each scenario, including maps of road network changes, are presented in the following chapter.

Table 5.1: Summary of scenarios

Scenario	Year	Highway Network	Public Transport	Land Use
Scenario 1: Improved base network (Chapter 6)	2026	Improved base network, including • duplication of Melton Highway • extension of Sinclairs Road north of Taylors Road • other minor changes to network connectivity	No change from 2026 reference case	No change from 2026 reference case
Scenario 2: Taylors Road and bridge connections (Chapter 7)	2026	Same as Scenario 1, but with the following disconnections in the network: • Taylors Road west of Plumpton and Kororoit • bridge connections on Plumpton Road and Hopkins Road at Kororoit Creek	Minor realignment of bus routes LD123 and SM24 to accommodate changed road network	No change from 2026 reference case
Scenario 3: Plumpton Road as main north-south route (Chapter 8)	2026	Same as Scenario 1, but with the following changes: • upgrade of Plumpton Road to 60 km/h arterial • downgrade of Hopkins Road north of Taylors Road to a local access route	Minor realignment of bus route 476 to accommodate changed road network	No change from 2026 reference case
Scenario 4: Taylors Road connection and changes to local access (Chapter 9)	2026	Same as Scenario 1, but with the following changes: • Taylors Road disconnected west of Plumpton and Kororoit (as in Scenario 2) • disconnection of bridge connection on Plumpton Road at Kororoit Creek (as in Scenario 2) • local access route improvements	Minor realignment of bus routes SM24, C1069, C1117 and LD123 to accommodate changed road network	No change from 2026 reference case

6. Scenario 1: Improved Base Network (2026)

The purpose of Scenario 1 was to provide an enhanced base case for comparison with Scenarios 2, 3 and 4. Scenario 1 includes capacity improvements to Melton Highway and changes to local road network connectivity in Plumpton and Kororoit, and reflects the MPA's development of the draft Future Urban Structure as the transport modelling process progressed.

6.1 Description

Scenario 1 included the following changes to the road network in and around Plumpton and Kororoit:

1) **Duplication of Melton Highway**
   a) Upgrade from two to four lanes
   b) Changed classification from a primary undivided arterial to a primary divided arterial
2) **Changes in Plumpton**
   a) Extension of Sinclairs Road north of Taylors Road to the next east-west connector
   b) Removal of north-south connector in southern part of Plumpton (see Figure 6.1)
3) **Changes in Kororoit**
   a) Additional east-west connector between Hopkins and Sinclairs Road
   b) Removal of east-west connector in the western part of Kororoit (see Figure 6.1)

These changes are highlighted in Figure 6.1, with labels indicating the reference from the list above. Figure 6.2 shows the assumed speeds on each link in Scenario 1, which also generally apply to the other tested scenarios.

6.2 Traffic Volumes

Figure 6.3 shows the difference in modelled traffic volumes between Scenario 1 and the 2026 reference case. In this plot, the green bands indicate an increase in traffic and the red bands indicate a decrease in traffic in the modelled scenario.

The results show that the duplication of Melton Highway would attract an additional 5,000 vehicles per day west of Plumpton Road, and an additional 6,000 to 7,000 vehicles per day east of Plumpton Road. This will help to reduce volumes on other east-west routes such as Taylors Road and Western Freeway, with a small congestion-reduction benefit on these routes.

The changes to network connectivity in Kororoit will cause some localised traffic diversion. Trips bound for the south west corner of Kororoit will tend to divert to Plumpton Road from Hopkins Road, as the accessibility from Hopkins Road is reduced.

A full set of traffic volume plots is presented in Appendix C.

6.3 Road Network Level of Service

The volume-capacity plots in Figure 6.4 and Figure 6.5 show relatively little change from the 2026 reference case. There is some congestion relief forecast for Melton Highway, despite the higher traffic volumes, due to the increased capacity assumption. There is some reduction in congestion forecast for parts of Taylors Road, but most of the Taylors Road route is expected to operate with a V/C ratio greater than 0.8.

The plots show that Hopkins Road may experience heavy congestion around the Western Freeway interchange in both peak periods, with V/C ratios exceeding 1.0, similar to the 2026 reference case. There may be reduced congestion on Sinclairs Road and Neale Road in the AM and PM peaks.

With modest improvements in road network performance, Scenario 1 is therefore preferable to the 2026 reference case, and has been used as the basis of comparison for the other scenarios.

Figure 6.1: Differences between Scenario 1 road network and 2026 reference case network

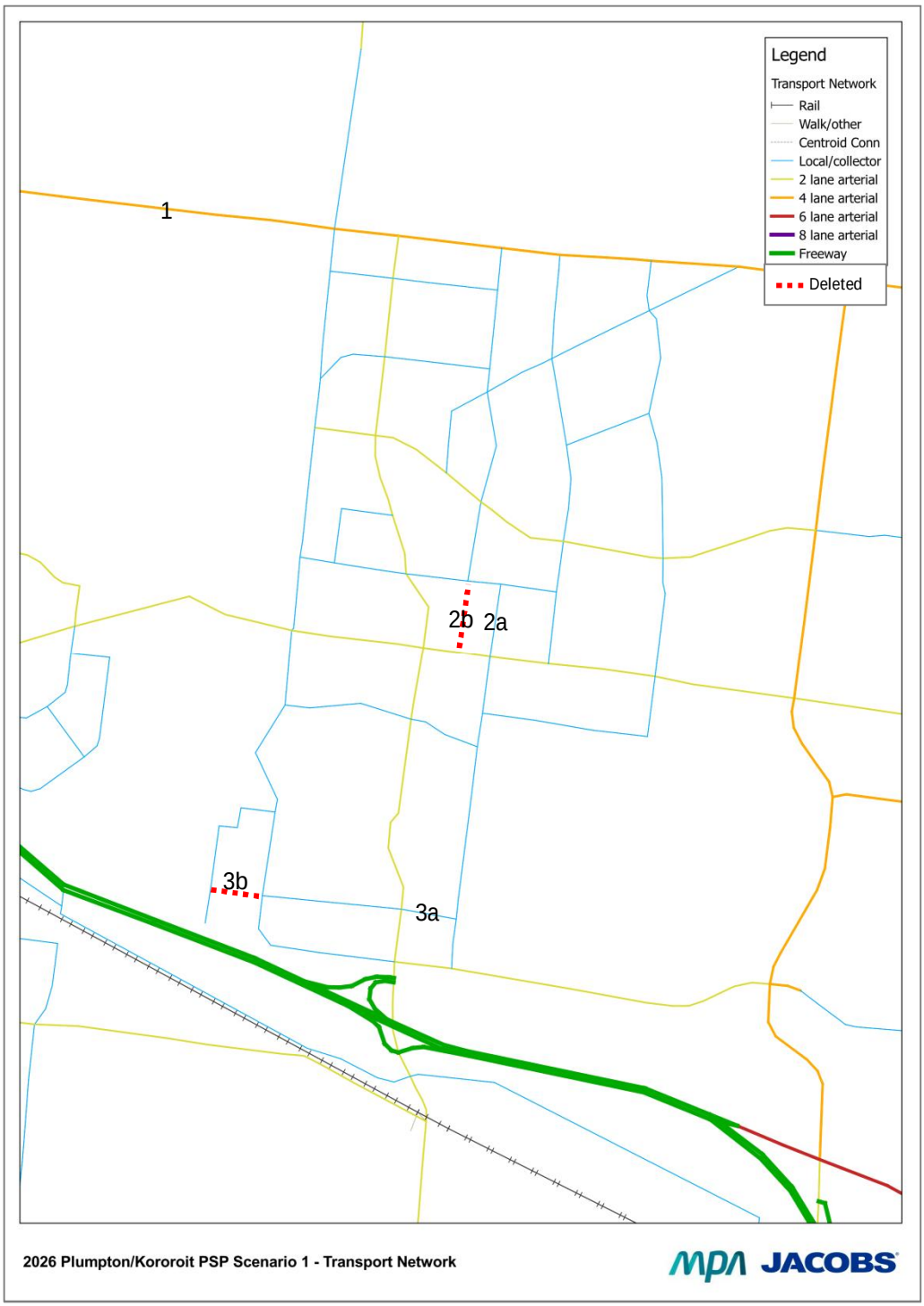


Figure 6.2: Assumed road network speeds for Scenario 1

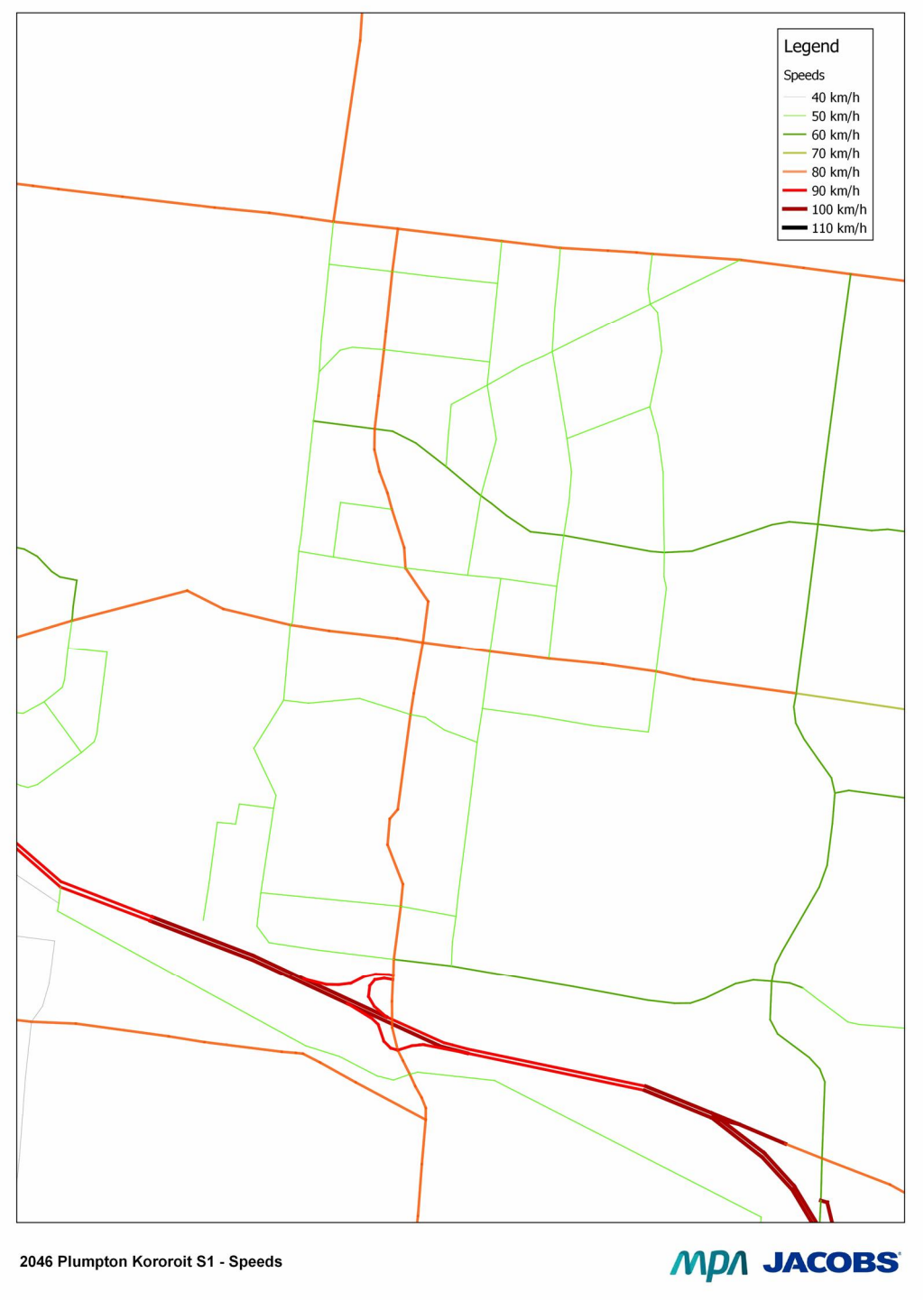


Figure 6.3: Comparison of Scenario 1 and 2026 reference case daily traffic volumes

Figure 6.4: Volume-capacity ratio plot for Scenario 1 (AM peak)

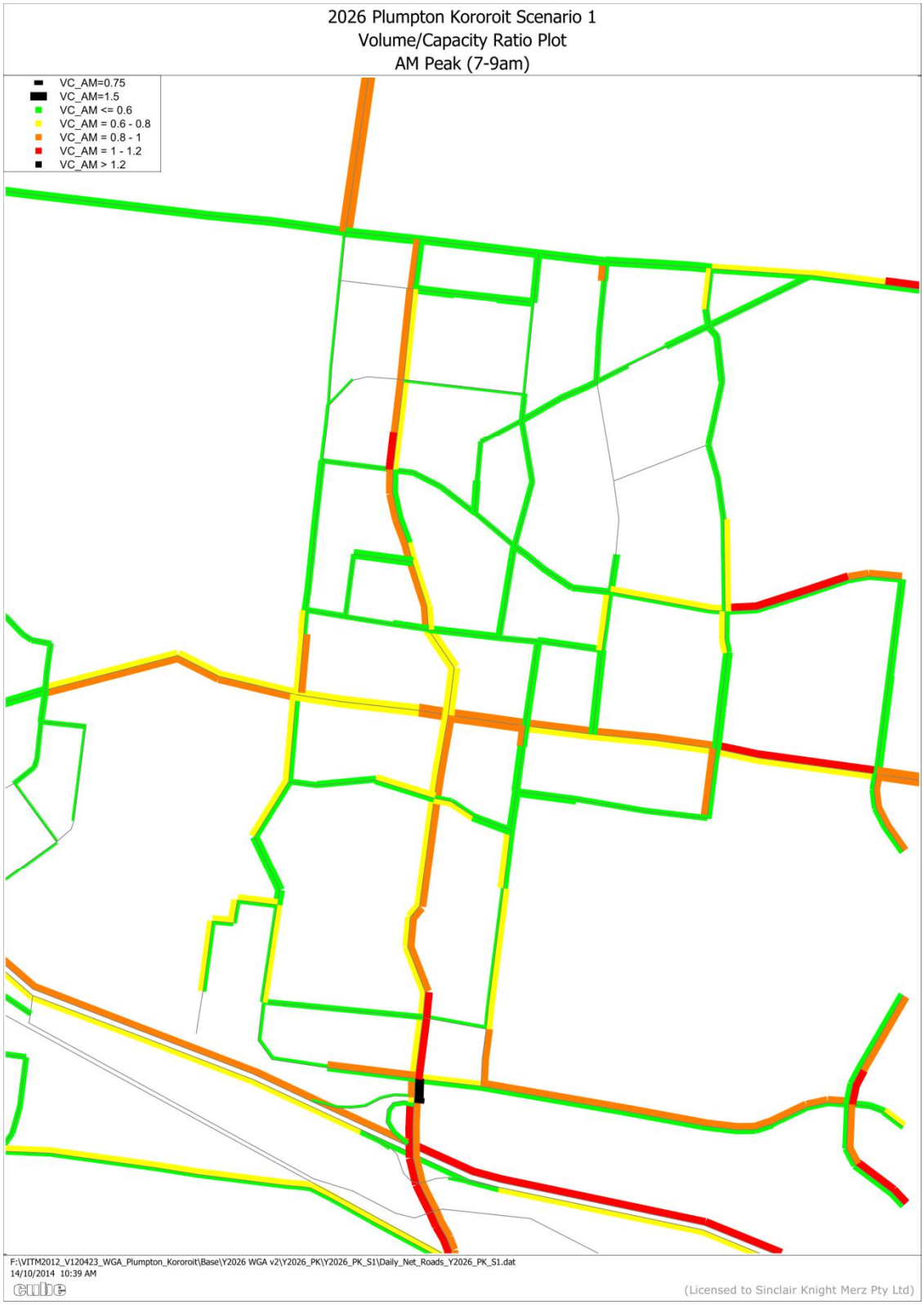
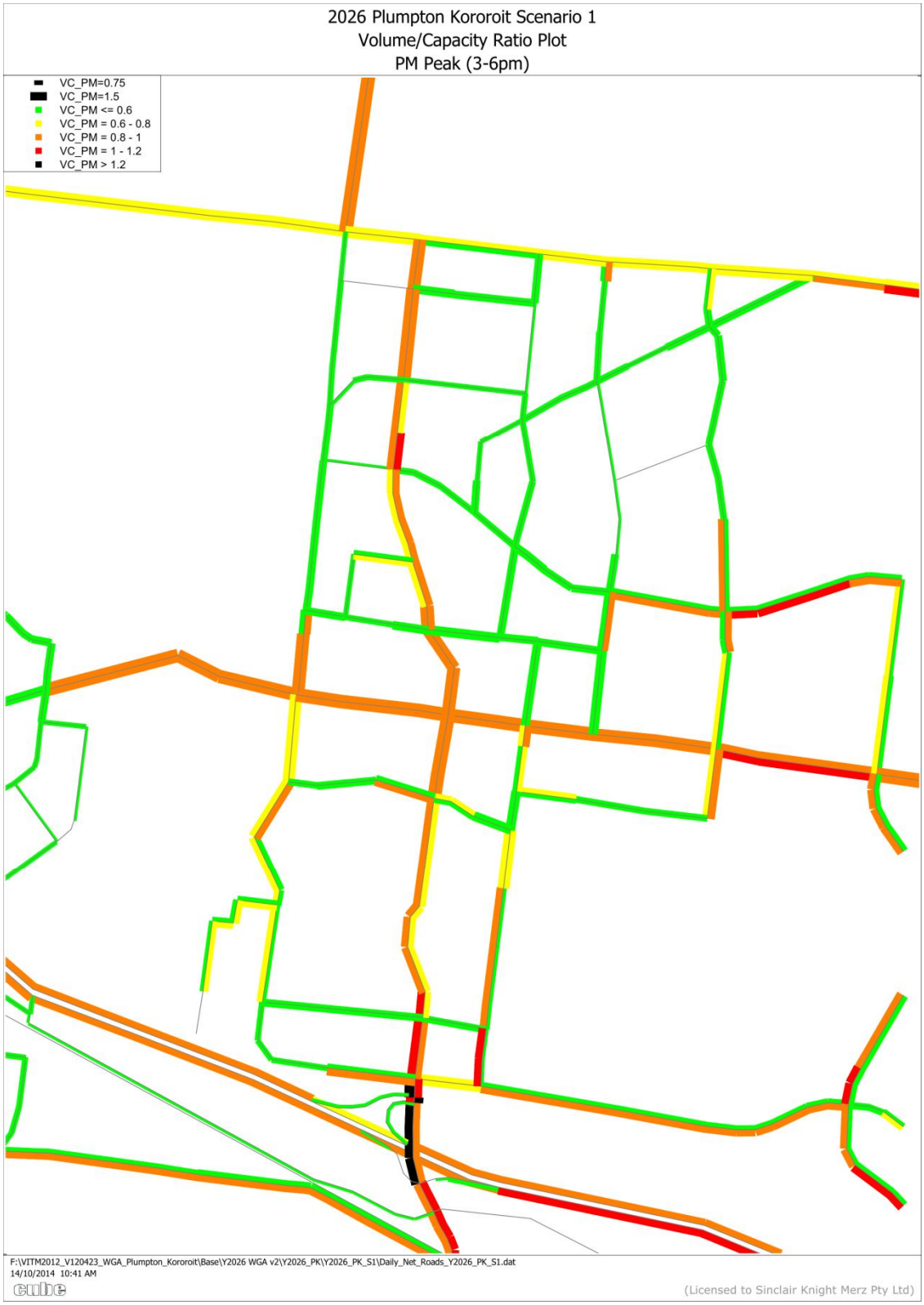


Figure 6.5: Volume-capacity ratio plot for Scenario 1 (PM peak)



6.4 Public Transport

Table 6.1 summarises the modelled boardings for train and bus routes serving the Plumpton and Kororoit areas. These show very little difference from 2026 reference case, as there were no changes to public transport services in Scenario 1.

Table 6.1: Train and bus boardings for Scenario 1

Bus Boardings (per direction) by route

Description	Bus Route	AM	IP	PM	OP	DAILY
SUNSHINE - MELTON	456	59	87	125	66	337
SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	C1069	25	15	78	14	131
CAROLINE SPRINGS TOWN CENTRE - CAROLINE SPRINGS RS	C1102	-	-	-	-	-
TARNEIT RS - PLUMPTON	C1103	-	-	-	-	-
CAROLINE SPRINGS - TOOLERN RS (VIA ROCKBANK RS)	C1104	-	-	-	-	-
SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	C1117	34	68	270	64	436
ROCKBANK RS - ROCKBANK WEST (VIA PLUMPTON)	C1118	-	-	-	-	-
SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	LD123	54	136	381	146	717
SYDENHAM - MELTON (VIA NORTHERN TOOLERN)	SM6	-	-	-	-	-
ST ALBANS - ROCKBANK RS	SM24	128	176	179	138	621
	TOTAL	**172**	**306**	**855**	**289**	**1,621**

Description	Bus Route	AM	IP	PM	OP	DAILY
MELTON - SUNSHINE	2456	74	140	82	42	337
CAROLINE SPRINGS - SYDENHAM RS (VIA TAYLORS HILL WEST)	2C1069	25	19	31	4	79
CAROLINE SPRINGS RS - CAROLINE SPRINGS TOWN CENTRE	2C1102	-	-	-	-	-
PLUMPTON - TARNEIT RS	2C1103	-	-	-	-	-
TOOLERN RS - CAROLINE SPRINGS (VIA ROCKBANK RS)	2C1104	-	-	-	-	-
PLUMPTON - SYDENHAM RS (VIA TAYLORS HILL) (COMPLETE)	2C1117	193	129	52	31	404
ROCKBANK WEST - ROCKBANK RS (VIA PLUMPTON)	2C1118	-	-	-	-	-
CAROLINE SPRINGS RS - SYDENHAM RS (VIA PLUMPTON & EASTERN ROCKBANK)	2LD123	353	255	87	88	783
MELTON - SYDENHAM (VIA NORTHERN TOOLERN)	2SM6	-	-	-	-	-
ROCKBANK RS - ST ALBANS	2SM24	108	245	188	71	612
	TOTAL	**645**	**543**	**251**	**164**	**1,603**

Bus Boardings (2 way volumes)

Description	Bus Route	AM	IP	PM	OP	DAILY
SUNSHINE - MELTON	456	133	227	207	108	674
SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	C1069	50	35	109	17	211
CAROLINE SPRINGS TOWN CENTRE - CAROLINE SPRINGS RS	C1102	-	-	-	-	-
TARNEIT RS - PLUMPTON	C1103	-	-	-	-	-
CAROLINE SPRINGS - TOOLERN RS (VIA ROCKBANK RS)	C1104	-	-	-	-	-
SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	C1117	228	197	321	94	840
ROCKBANK RS - ROCKBANK WEST (VIA PLUMPTON)	C1118	-	-	-	-	-
SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	LD123	407	391	468	234	1,500
SYDENHAM - MELTON (VIA NORTHERN TOOLERN)	SM6	-	-	-	-	-
ST ALBANS - ROCKBANK RS	SM24	236	420	367	209	1,233
	TOTAL	**817**	**849**	**1,106**	**453**	**3,225**

Train Boardings

Train Line	Station	AM	IP	PM	OP	DAILY
Melton Line	Sunshine	3,762	3,805	2,362	1,271	11,200
	Ardeer	167	233	66	59	526
	Deer Park	2,553	2,483	436	593	6,065
	Caroline Springs	1,840	1,145	90	272	3,348
	Hopkins Road	-	-	-	-	-
	Rockbank	794	699	109	167	1,769
	Toolern Road	731	618	143	159	1,651
	Melton	7,835	6,506	666	1,650	16,657
	TOTAL	**17,682**	**15,491**	**3,873**	**4,172**	**41,217**

7. Scenario 2: Taylors Road and Bridge Connections (2026)

7.1 Description

The purpose of Scenario 2 was twofold:

- to test the impact of traffic from Rockbank North and Melton on the Plumpton and Kororoit road network; and
- to test the need for bridge crossings of Kororoit Creek in the western part of Kororoit.

In addition to the network updates in Scenario 1, Scenario 2 incorporated the following changes to the road network in and around Plumpton and Kororoit:

1) Removal of Taylors Road connection
   a) Disconnection of Taylors Road to west of Plumpton and Kororoit and consequent realignment of bus route SM24. The purpose of this disconnection was to assess the traffic contribution from Rockbank North and other areas to the west of Plumpton and Kororoit.

2) Removal of bridge connections
   a) Disconnection of Plumpton Road over Kororoit Creek
   b) Disconnection of Hopkins Road over Kororoit Creek and realignment of bus route LD123.

All of the road network changes adopted in Scenario 2 relative to Scenario 1 are highlighted in Figure 7.1, with labels indicating the reference from the above list.

The removal of the Taylors Road connection forced modelled traffic between Plumpton/Kororoit and Rockbank to divert to other routes. By calculating the difference between Scenario 2 traffic volumes and Scenario 1 volumes, an estimate of the incremental impact of traffic from Rockbank North could be determined.

In a similar way, modelling the removal of the bridge connections on Plumpton Road and Hopkins Road allows planners to determine how critical these connections are by measuring the modelled traffic congestion caused by their removal.

7.2 Traffic Volumes

Figure 7.2 shows the incremental change in traffic volumes between Scenario 1 and Scenario 2. In this plot, green bands represent an increase in traffic and red bands indicate a decrease. The combined impact of disconnecting Taylors Road and the two bridges results in a modelled reductions of:

- 24,000 vehicles per day on Taylors Road;
- 21,000 vehicles per day on Hopkins Road at Kororoit Creek;
- 5,000 vehicles per day on Plumpton Road at Kororoit Creek.

This suggests that Rockbank West and other areas west of Plumpton may contribute up to 24,000 vehicle trips per day to Plumpton and Kororoit in the case where Taylors Road is connected[3].

The bridge crossings play a crucial access role for the Plumpton and Kororoit PSPs. With the disconnection of Hopkins Road and Plumpton Road at Kororoit Creek, traffic will divert to other routes, notably Sinclairs Road and Caroline Springs Boulevard. However, even with these diversions, the model suggests that the combined impact of the network disconnections would be to reduce the total volume of traffic moving north-south across Kororoit by 12,000 vehicles per day.

[3] There may be some interactions between the disconnection of Taylors Road, the Hopkins Road bridge and Plumpton Road bridge. This may mean that the total traffic contribution from Rockbank West would be less than 24,000 vehicle trips per day. Further modelling could establish this more accurately, but the volumes presented here in Scenario 2 should provide a reasonable approximation.

Figure 7.1: Differences between Scenario 2 road network and Scenario 1 road network

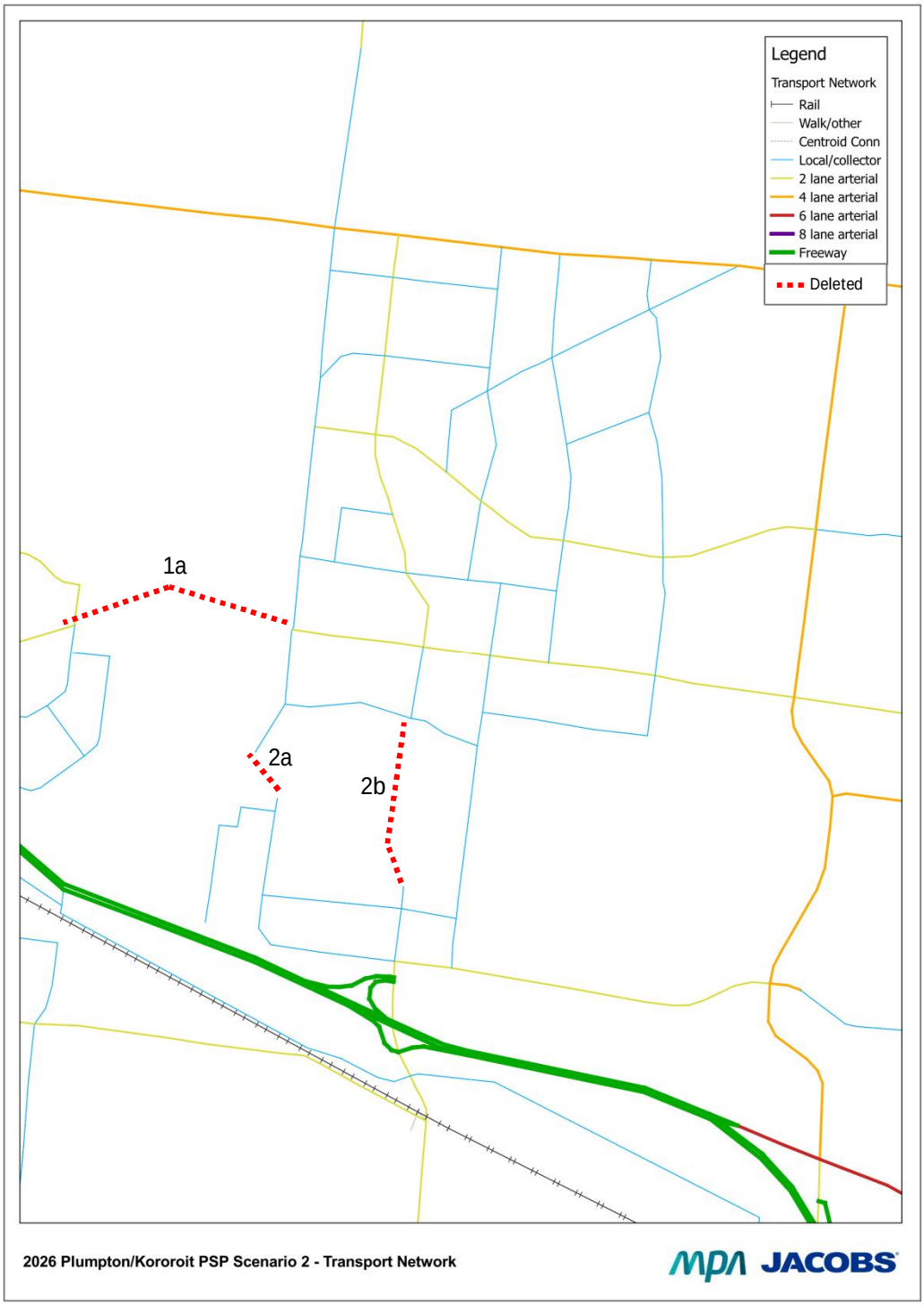


Figure 7.2: Comparison of Scenario 2 and Scenario 1 – daily traffic volume difference

7.3 Road Network Level of Service

Figure 7.3 shows the modelled volume-capacity ratios for the Scenario 2 network in the PM peak. The distinctive features of the plot are the high congestion areas on Sinclairs Road and Caroline Springs Boulevard – the routes that attract much of the diverted traffic from Hopkins Road and Plumpton Road. The V/C plot for the AM peak (see Appendix D) shows a similar outcome.

It also shows increased congestion on Greigs Road to the south of the Western Freeway as traffic diverts from Hopkins Road.

This confirms the earlier observation that the river crossings provide essential access routes and capacity for north-south traffic movements.

7.4 Public Transport

Table 7.1 summarises the modelled boardings for train and bus routes serving the Plumpton and Kororoit areas. These show slight differences from Scenario 1; generally a small reduction in train and bus usage corresponding to the realignment of bus routes. Service LD123 from Caroline Springs Railway Station to Sydenham (originally via Hopkins Road) appeared to be most affected, with a general reduction in patronage on the route, with a consequent small decrease in passengers using Caroline Springs Railway Station[4].

[4] There is a small anomaly in the modelling which shows an increase in PM peak patronage on route LD123. This may be due to road congestion in the PM peak causing greater use of this service.

Figure 7.3: Volume-capacity ratio plot for Scenario 2 (PM peak)

Table 7.1: Train and bus boardings for Scenario 2

Bus Boardings (per direction) by route

Description	Bus Route	AM	IP	PM	OP	DAILY
SUNSHINE - MELTON	456	58	90	136	64	348
SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	C1069	18	17	49	13	97
CAROLINE SPRINGS TOWN CENTRE - CAROLINE SPRINGS RS	C1102	-	-	-	-	-
TARNEIT RS - PLUMPTON	C1103	-	-	-	-	-
CAROLINE SPRINGS - TOOLERN RS (VIA ROCKBANK RS)	C1104	-	-	-	-	-
SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	C1117	33	68	279	64	445
ROCKBANK RS - ROCKBANK WEST (VIA PLUMPTON)	C1118	-	-	-	-	-
SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	LD123	78	130	529	153	890
SYDENHAM - MELTON (VIA NORTHERN TOOLERN)	SM6	-	-	-	-	-
ST ALBANS - ROCKBANK RS	SM24	91	163	196	110	561
	TOTAL	**188**	**305**	**992**	**294**	**1,779**

Description	Bus Route	AM	IP	PM	OP	DAILY
MELTON - SUNSHINE	2456	77	150	87	44	358
CAROLINE SPRINGS - SYDENHAM RS (VIA TAYLORS HILL WEST)	2C1069	28	19	27	4	78
CAROLINE SPRINGS RS - CAROLINE SPRINGS TOWN CENTRE	2C1102	-	-	-	-	-
PLUMPTON - TARNEIT RS	2C1103	-	-	-	-	-
TOOLERN RS - CAROLINE SPRINGS (VIA ROCKBANK RS)	2C1104	-	-	-	-	-
PLUMPTON - SYDENHAM RS (VIA TAYLORS HILL) (COMPLETE)	2C1117	196	130	53	31	409
ROCKBANK WEST - ROCKBANK RS (VIA PLUMPTON)	2C1118	-	-	-	-	-
CAROLINE SPRINGS RS - SYDENHAM RS (VIA PLUMPTON & EASTERN ROCKBANK)	2LD123	302	267	102	91	763
MELTON - SYDENHAM (VIA NORTHERN TOOLERN)	2SM6	-	-	-	-	-
ROCKBANK RS - ST ALBANS	2SM24	113	231	136	61	541
	TOTAL	**603**	**566**	**269**	**170**	**1,608**

Bus Boardings (2 way volumes)

Description	Bus Route	AM	IP	PM	OP	DAILY
SUNSHINE - MELTON	456	135	240	222	108	706
SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	C1069	46	36	76	17	175
CAROLINE SPRINGS TOWN CENTRE - CAROLINE SPRINGS RS	C1102	-	-	-	-	-
TARNEIT RS - PLUMPTON	C1103	-	-	-	-	-
CAROLINE SPRINGS - TOOLERN RS (VIA ROCKBANK RS)	C1104	-	-	-	-	-
SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	C1117	229	198	332	95	854
ROCKBANK RS - ROCKBANK WEST (VIA PLUMPTON)	C1118	-	-	-	-	-
SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	LD123	380	397	631	245	1,653
SYDENHAM - MELTON (VIA NORTHERN TOOLERN)	SM6	-	-	-	-	-
ST ALBANS - ROCKBANK RS	SM24	204	394	332	171	1,101
	TOTAL	**791**	**871**	**1,261**	**464**	**3,387**

Train Boardings

Train Line	Station	AM	IP	PM	OP	DAILY
Melton Line	Sunshine	3,765	3,785	2,362	1,275	11,187
	Ardeer	167	234	71	60	531
	Deer Park	2,574	2,540	425	594	6,134
	Caroline Springs	1,698	1,042	91	270	3,101
	Hopkins Road	-	-	-	-	-
	Rockbank	770	714	119	173	1,775
	Toolern Road	729	620	143	160	1,652
	Melton	7,727	6,530	673	1,659	16,590
	TOTAL	**17,430**	**15,464**	**3,884**	**4,190**	**40,968**

8. Scenario 3: Plumpton Road as Main North-South Route

8.1 Description

The purpose of Scenario 3 was to test Plumpton Road as the main north-south route as an alternative to Hopkins Road.

In addition to the network updates in Scenario 1, Scenario 3 incorporated the following changes to the road network in and around Plumpton and Kororoit:

1) **Changes to Plumpton Road**
   Speed limit altered from 50 km/h to 60 km/h, and classed as a rural standard arterial (as it is currently).
2) **Changes to Hopkins Road**
   a) Hopkins Road changed from an 80 km/h arterial road to 60km/h connector road;
   b) Hopkins Road disconnected at Melton Highway and bus route 476 realigned accordingly.

All of the road network changes adopted in Scenario 3 relative to Scenario 1 are highlighted in Figure 8.1, with labels indicating the reference from the above list.

8.2 Traffic Volumes

Figure 8.2 shows the incremental change in traffic volumes between Scenario 1 and Scenario 3. In this plot, green bands represent an increase in traffic and red bands indicate a decrease. With the reduced connectivity of Hopkins Road, the plot shows the diversion of most traffic to Plumpton Road as expected.

The plot shows some additional side effects of the change:

- Melton Highway volumes may reduce slightly, probably due to the reduced network connectivity at Hopkins Road.
- The “dog leg” route between Plumpton Road (north of Melton Highway) and Hopkins Road (south of Melton Highway) is eliminated. This further reduces the locally heavy volumes using the section of Melton Highway between Plumpton Road and Hopkins Road.
- Volumes on other east-west connectors tend to increase slightly to compensate for the reduction on Melton Highway. The model indicates that Tarleton Road may attract an additional 1,000 vehicles per day at 2026.
- The western extension of Neale Road between Plumpton Road and Hopkins Road in Kororoit may attract more than 3,500 additional vehicles per day. This road link provides access between the upgraded Plumpton Road and the Hopkins Road interchange with the Western Freeway.

8.3 Road Network Level of Service

Figure 8.3 shows the volume-capacity ratio plot for the Scenario 3 AM peak. The plots show that all roads in the PSPs will operate within their capacities, apart from some congestion on Taylors Road and around the Hopkins Road interchange.

The reduction in modelled traffic on Melton Highway will result in some improvements in level of service on this route. Likewise, the reduction of traffic on Hopkins Road north of Taylors Road will cause a reduction in congestion along much of the length of this section. The shift of north-south traffic to Plumpton Road will also reduce traffic passing the Plumpton Major Town Centre.

Figure 8.1: Differences between Scenario 3 road network and Scenario 1 road network

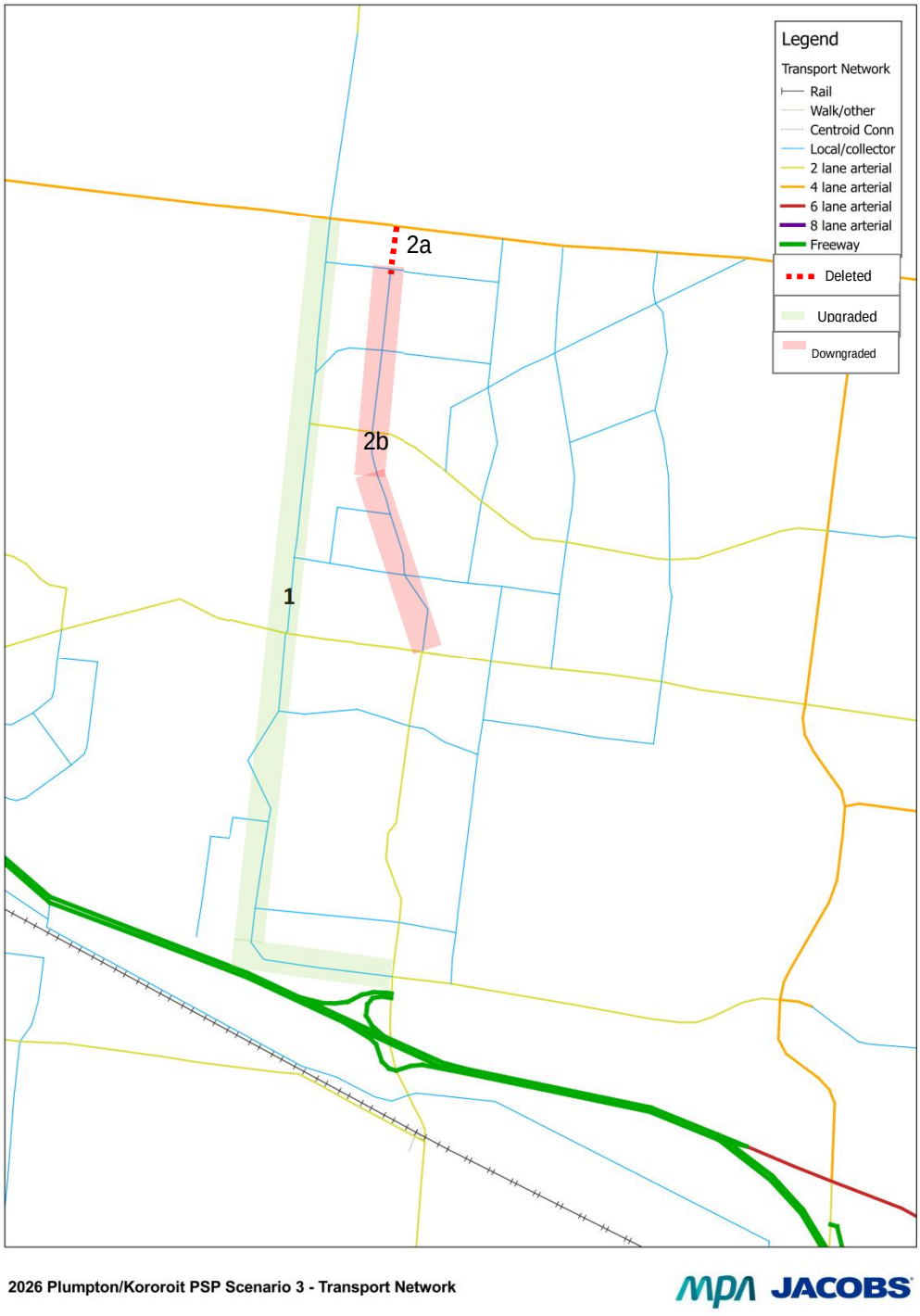
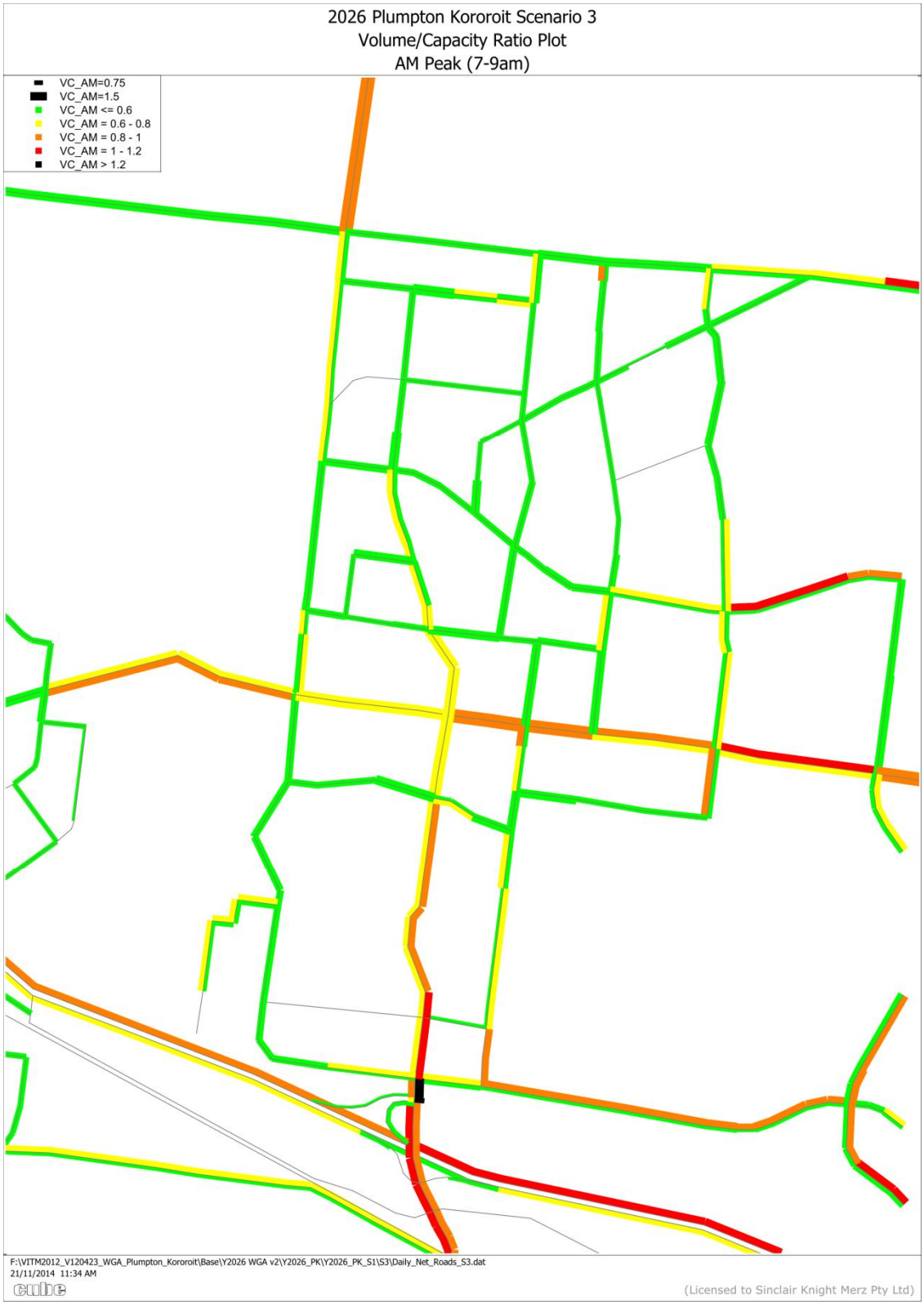


Figure 8.2: Comparison of Scenario 3 and Scenario 1 – daily traffic volume difference

Figure 8.3: Volume-capacity ratio plot for Scenario 3 (AM peak)



8.4 Public Transport

Table 8.1 summarises the modelled boardings for train and bus routes serving the Plumpton and Kororoit areas in Scenario 3. These show very little difference from Scenario 1, as there were no significant changes to public transport services in Scenario 3.

Table 8.1 : Train and bus boardings for Scenario 3

Bus Boardings (per direction) by route

Description	Bus Route	AM	IP	PM	OP	DAILY
SUNSHINE - MELTON	456	59	83	127	70	340
SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	C1069	24	17	45	14	100
CAROLINE SPRINGS TOWN CENTRE - CAROLINE SPRINGS RS	C1102	-	-	-	-	-
TARNEIT RS - PLUMPTON	C1103	-	-	-	-	-
CAROLINE SPRINGS - TOOLERN RS (VIA ROCKBANK RS)	C1104	-	-	-	-	-
SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	C1117	34	68	302	64	467
ROCKBANK RS - ROCKBANK WEST (VIA PLUMPTON)	C1118	-	-	-	-	-
SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	LD123	66	132	372	147	717
SYDENHAM - MELTON (VIA NORTHERN TOOLERN)	SM6	-	-	-	-	-
ST ALBANS - ROCKBANK RS	SM24	127	175	195	137	634
	TOTAL	**182**	**300**	**846**	**295**	**1,623**

Description	Bus Route	AM	IP	PM	OP	DAILY
MELTON - SUNSHINE	2456	74	140	80	42	335
CAROLINE SPRINGS - SYDENHAM RS (VIA TAYLORS HILL WEST)	2C1069	25	19	31	4	80
CAROLINE SPRINGS RS - CAROLINE SPRINGS TOWN CENTRE	2C1102	-	-	-	-	-
PLUMPTON - TARNEIT RS	2C1103	-	-	-	-	-
TOOLERN RS - CAROLINE SPRINGS (VIA ROCKBANK RS)	2C1104	-	-	-	-	-
PLUMPTON - SYDENHAM RS (VIA TAYLORS HILL) (COMPLETE)	2C1117	198	130	52	31	410
ROCKBANK WEST - ROCKBANK RS (VIA PLUMPTON)	2C1118	-	-	-	-	-
CAROLINE SPRINGS RS - SYDENHAM RS (VIA PLUMPTON & EASTERN ROCKBANK)	2LD123	277	256	91	88	711
MELTON - SYDENHAM (VIA NORTHERN TOOLERN)	2SM6	-	-	-	-	-
ROCKBANK RS - ST ALBANS	2SM24	118	253	201	71	643
	TOTAL	**574**	**545**	**254**	**164**	**1,537**

Bus Boardings (2 way volumes)

Description	Bus Route	AM	IP	PM	OP	DAILY
SUNSHINE - MELTON	456	133	223	207	113	675
SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	C1069	49	37	76	18	179
CAROLINE SPRINGS TOWN CENTRE - CAROLINE SPRINGS RS	C1102	-	-	-	-	-
TARNEIT RS - PLUMPTON	C1103	-	-	-	-	-
CAROLINE SPRINGS - TOOLERN RS (VIA ROCKBANK RS)	C1104	-	-	-	-	-
SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	C1117	231	198	354	95	878
ROCKBANK RS - ROCKBANK WEST (VIA PLUMPTON)	C1118	-	-	-	-	-
SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	LD123	343	388	463	234	1,428
SYDENHAM - MELTON (VIA NORTHERN TOOLERN)	SM6	-	-	-	-	-
ST ALBANS - ROCKBANK RS	SM24	246	428	395	209	1,277
	TOTAL	**756**	**846**	**1,100**	**459**	**3,160**

Train Boardings

Train Line	Station	AM	IP	PM	OP	DAILY
Melton Line	Sunshine	3,703	3,787	2,379	1,276	11,144
	Ardeer	167	234	70	60	531
	Deer Park	2,581	2,477	423	592	6,073
	Caroline Springs	1,860	1,142	91	271	3,364
	Hopkins Road	-	-	-	-	-
	Rockbank	790	699	109	167	1,765
	Toolern Road	732	619	145	159	1,655
	Melton	7,827	6,499	665	1,647	16,639
	TOTAL	**17,661**	**15,456**	**3,882**	**4,171**	**41,171**

9. Scenario 4: Taylors Road Connection and Changes to Local Access (2026)

9.1 Description

The purpose of Scenario 4 was to retest Scenario 2 while incorporating several changes to the Plumpton and Kororoit road networks proposed in a later variant of the Future Urban Structure plan. This was to ensure that these changes did not create any adverse effects on the operation of the network.

Scenario 4 incorporated the following changes to the road network in and around Plumpton and Kororoit:

1) **Removal of Taylors Road connection**
   a) Disconnection of Taylors Road to the west of Plumpton and Kororoit as in Scenario 2
2) **Changes in Plumpton**
   a) Localised collector road changes to reflect the future urban structure plan (see Figure 9.1)
3) **Changes in Kororoit**
   a) Disconnection of Plumpton Road over the Kororoit Creek as in Scenario 2
   b) Localised collector road changes to reflect the future urban structure plan (see Figure 9.1)

Note that the bridge crossing of Kororoit Creek at Hopkins Road was not removed in Scenario 4 (as had been done in Scenario 2) so that the model could test the impacts of having only one reduced bridge crossing. There were changes to the alignment of bus routes SM24, C1069, C1117 and LD123 to accommodate the changed road network.

All of the changes adopted in Scenario 4 relative to Scenario 1 are highlighted in Figure 9.1, with labels indicating the reference from the above list.

9.2 Traffic Volumes

Figure 9.1 shows the incremental change in traffic volumes between Scenario 1 and Scenario 4. Because Scenario 4 is based on Scenario 2, Figure 9.2 shows a similar comparison between Scenarios 2 and 4. In these plots, green bands represent an increase in traffic and red bands indicate a decrease.

As might be expected, the results show that the disconnection of Taylors Road west of Plumpton Road causes a significant reduction in east-west traffic through the PSPs. The equivalent contribution of traffic from Rockbank West is identical to Scenario 2 – approximately 24,000 vehicle trips per day.

The most notable change between Scenarios 2 and 4 is in north-south traffic across Kororoit Creek. The opening of the Hopkins Road bridge crossing in Scenario 4 attracts significant volumes back to Hopkins Road (approximately 25,000 vehicles per day). In turn, this causes a diversion of traffic away from Sinclairs Road and Caroline Springs Boulevard.

The Plumpton Road bridge crossing, which remains disconnected in this scenario, has an identical modelled impact to Scenario 2: approximately 5,000 vehicles per day forced to find other routes to access local destinations in the south west corner of Kororoit.

The modelling also shows re-routing around the Plumpton town centre in response to local network changes.

9.3 Road Network Level of Service

Figure 9.4 shows the modelled volume-capacity ratios for the Scenario 4 network in the PM peak. The plot shows that many of the congestion issues identified in Scenario 2 are resolved in Scenario 4. Although Sinclairs Road and Caroline Springs Boulevard remain moderately congested, the modelled congestion levels are less than those for Scenario 2. Hopkins Road becomes more heavily used as a result of the improved connectivity,

leading to moderate congestion levels, although similar to what might be expected in other parts of the Melbourne metropolitan area. The V/C plot for the AM peak (see Appendix F) shows a similar outcome.

The removal of the bridge on Plumpton Road results in reduced accessibility for residents in the south-western part of the Kororoit PSP area.

Figure 9.1: Differences between Scenario 4 road network and Scenario 1 road network

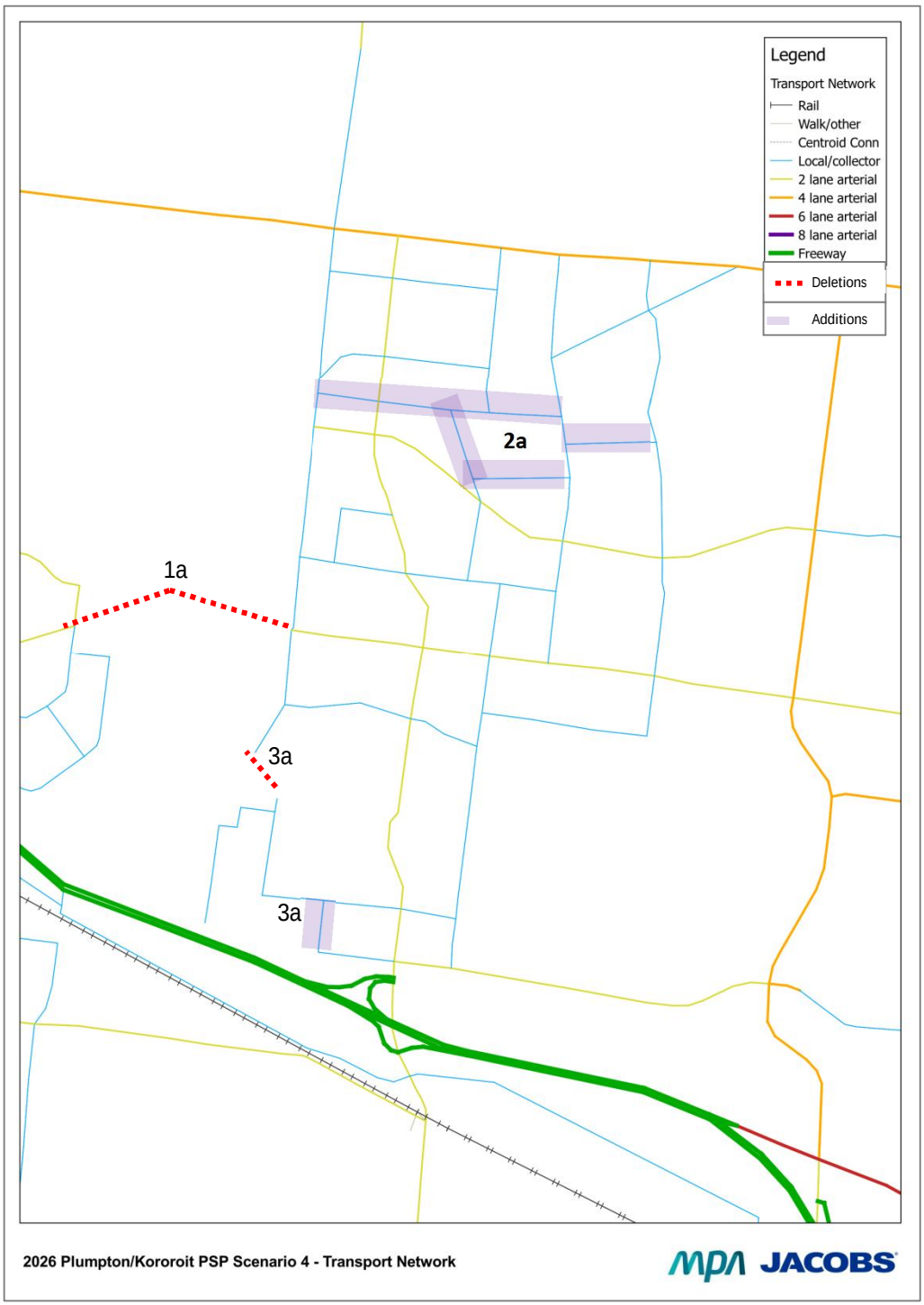


Figure 9.2: Comparison of Scenario 4 and Scenario 1 – daily traffic volume difference

Figure 37: Comparison of Scenario 4 and Scenario 2 – daily traffic volume difference

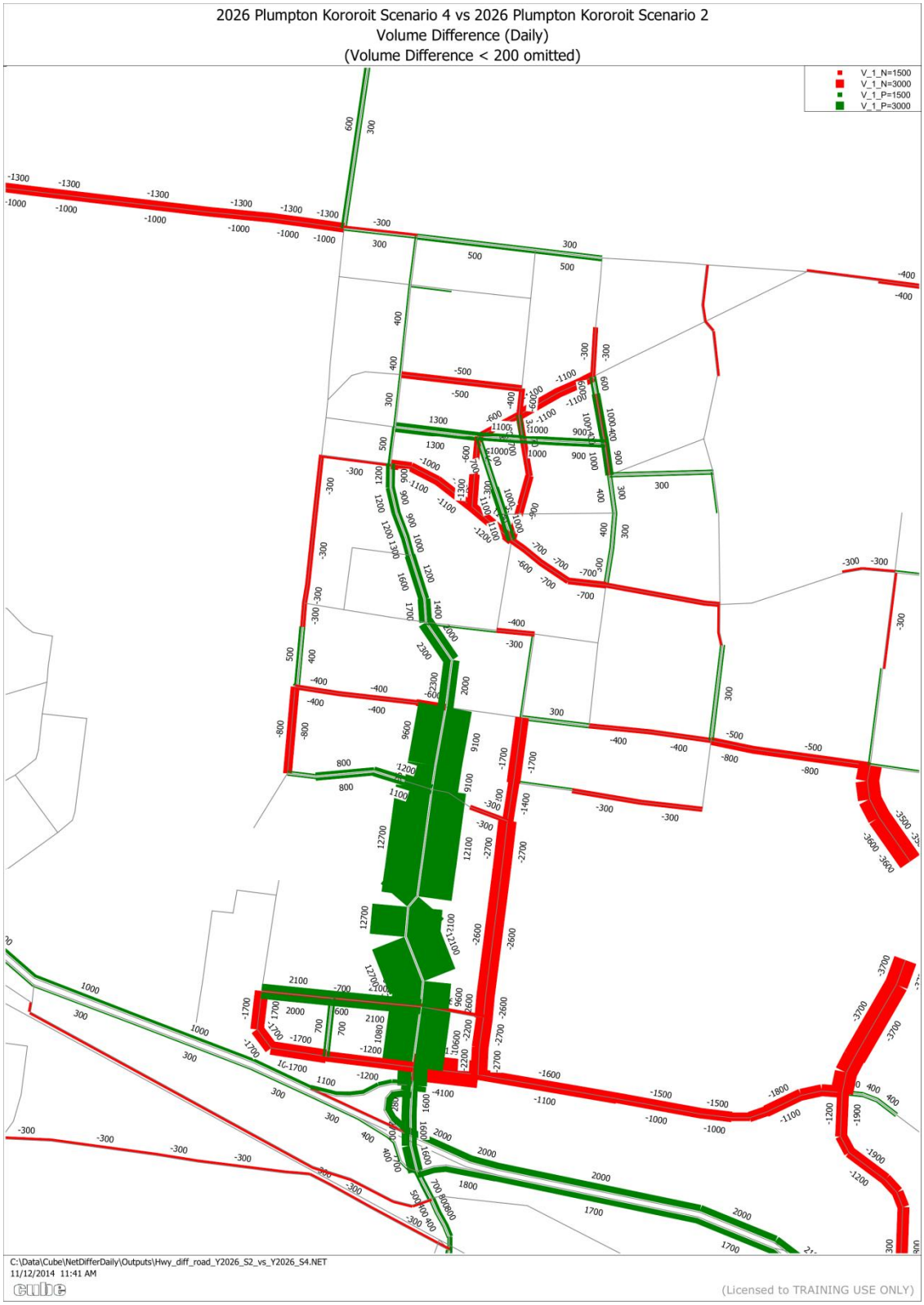


Figure 9.4: Volume-capacity ratio plot for Scenario 4 (PM peak)

9.4 Public Transport

Table 9.1 summarises the modelled boardings for train and bus routes serving the Plumpton and Kororoit areas. These show similar total boardings to Scenario 2; generally a small reduction in train and bus usage corresponding to the realignment of bus routes.

Table 9.1: Train and bus boardings for Scenario 4

Bus Boardings (per direction) by route

Description	Bus Route	AM	IP	PM	OP	DAILY
SUNSHINE - MELTON	456	57	84	129	65	335
SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	C1069	22	19	81	13	135
CAROLINE SPRINGS TOWN CENTRE - CAROLINE SPRINGS RS	C1102	-	-	-	-	-
TARNEIT RS - PLUMPTON	C1103	-	-	-	-	-
CAROLINE SPRINGS - TOOLERN RS (VIA ROCKBANK RS)	C1104	-	-	-	-	-
SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	C1117	36	68	276	64	443
ROCKBANK RS - ROCKBANK WEST (VIA PLUMPTON)	C1118	-	-	-	-	-
SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	LD123	74	127	398	150	748
SYDENHAM - MELTON (VIA NORTHERN TOOLERN)	SM6	-	-	-	-	-
ST ALBANS - ROCKBANK RS	SM24	97	158	189	108	554
	TOTAL	**188**	**299**	**884**	**291**	**1,661**

Description	Bus Route	AM	IP	PM	OP	DAILY
MELTON - SUNSHINE	2456	74	139	79	42	334
CAROLINE SPRINGS - SYDENHAM RS (VIA TAYLORS HILL WEST)	2C1069	26	16	32	4	78
CAROLINE SPRINGS RS - CAROLINE SPRINGS TOWN CENTRE	2C1102	-	-	-	-	-
PLUMPTON - TARNEIT RS	2C1103	-	-	-	-	-
TOOLERN RS - CAROLINE SPRINGS (VIA ROCKBANK RS)	2C1104	-	-	-	-	-
PLUMPTON - SYDENHAM RS (VIA TAYLORS HILL) (COMPLETE)	2C1117	197	130	52	31	410
ROCKBANK WEST - ROCKBANK RS (VIA PLUMPTON)	2C1118	-	-	-	-	-
CAROLINE SPRINGS RS - SYDENHAM RS (VIA PLUMPTON & EASTERN ROCKBANK)	2LD123	355	257	92	85	789
MELTON - SYDENHAM (VIA NORTHERN TOOLERN)	2SM6	-	-	-	-	-
ROCKBANK RS - ST ALBANS	2SM24	124	246	142	66	577
	TOTAL	**651**	**543**	**254**	**162**	**1,611**

Bus Boardings (2 way volumes)

Description	Bus Route	AM	IP	PM	OP	DAILY
SUNSHINE - MELTON	456	131	224	208	107	669
SYDENHAM RS - CAROLINE SPRINGS (VIA TAYLORS HILL WEST)	C1069	48	36	113	16	213
CAROLINE SPRINGS TOWN CENTRE - CAROLINE SPRINGS RS	C1102	-	-	-	-	-
TARNEIT RS - PLUMPTON	C1103	-	-	-	-	-
CAROLINE SPRINGS - TOOLERN RS (VIA ROCKBANK RS)	C1104	-	-	-	-	-
SYDENHAM RS - PLUMPTON (VIA TAYLORS HILL) (COMPLETE)	C1117	232	198	327	94	852
ROCKBANK RS - ROCKBANK WEST (VIA PLUMPTON)	C1118	-	-	-	-	-
SYDENHAM RS - CAROLINE SPRINGS RS (VIA PLUMPTON & EASTERN ROCKBANK)	LD123	429	384	489	235	1,537
SYDENHAM - MELTON (VIA NORTHERN TOOLERN)	SM6	-	-	-	-	-
ST ALBANS - ROCKBANK RS	SM24	221	404	331	174	1,131
	TOTAL	**839**	**842**	**1,138**	**453**	**3,272**

Train Boardings

Train Line	Station	AM	IP	PM	OP	DAILY
Melton Line	Sunshine	3,691	3,805	2,355	1,270	11,122
	Ardeer	167	234	70	59	531
	Deer Park	2,566	2,474	423	608	6,071
	Caroline Springs	1,851	1,134	90	272	3,347
	Hopkins Road	-	-	-	-	-
	Rockbank	773	718	118	173	1,782
	Toolern Road	730	622	147	160	1,659
	Melton	7,723	6,532	674	1,660	16,590
	TOTAL	**17,501**	**15,519**	**3,878**	**4,203**	**41,101**

10. Conclusions and Recommendations

The proposed road networks for the Plumpton and Kororoit PSP areas generally have sufficient capacity to support forecast traffic volumes without oversupply of road space. Table 10.1 summarises the road configurations recommended from the modelled scenarios.

Table 10.1: Summary of recommended road configurations

	Number of lanes		
Road	**2026**	**2046**	**Comments**
Hopkins Road north of Taylors Road	2	6	At 2026, this section of Hopkins Road is expected to carry up to 1,000 vehicles per hour in each direction. A two-lane road should be sufficient (with appropriate turning lanes at intersections). At 2046, the northern section of Hopkins Road is expected to carry up to 2,100 vehicles per hour in each direction. This is close to the threshold of a four-lane/six-lane road, and provision for a six-lane arterial is therefore recommended.
Hopkins Road south of Taylors Road	2	6	The southern section of Hopkins Road is expected to carry similar volumes than the section north of Taylors Road. The same lane configurations as in the northern section are therefore recommended. Around the Western Freeway interchange, more capacity is likely to be needed (see comments on next page).
Plumpton Road	2	2	Plumpton Road is expected to carry up to 400 vehicles per hour in each direction during 2026 and 2046. A two-lane road is sufficient to accommodate these volumes, and is in keeping with the proposed local access function of the road.
Sinclairs Road	2	2	Sinclairs Road is expected to carry up to 300 vehicles per hour in each direction during 2026 and 2046. A two-lane road is sufficient to accommodate these volumes, and is in keeping with the proposed local access function of the road.
Taylors Road	2	6	At 2026, Taylors Road is expected to carry up to 1,000 vehicles per hour in each direction. A two-lane road should be sufficient (with appropriate turning lanes at intersections). At 2046, with a connection to the west, Taylors Road is expected to carry up to 2,800 vehicles per hour in each direction. A six-lane arterial would be needed to accommodate these volumes.
Melton Highway	4	6	At 2026, Melton Highway is expected to carry up to 1,800 vehicles per hour in each direction. This should be accommodated by a four-lane arterial. At 2046, volumes are expected to increase to about 2,600 vehicles per hour in each direction. A six-lane arterial is sufficient to carry these volumes.
Tarleton Road	2	4	At 2026, the eastern section of Tarleton Road is expected to carry up to 900 vehicles per hour, for which a two-lane arterial should be sufficient (with appropriate turning lanes at intersections). At 2046, volumes are expected to increase to about 1,200 vehicles per hour in each direction once the connection to the west is in place. This is likely to require a four-lane arterial.

Hopkins Road Interchange

The Hopkins Road interchange with the Western Freeway is likely to become heavily congested before 2046, and by 2026, four lanes may be needed for Hopkins Road in the vicinity of the interchange.

External Traffic Impacts

The contribution of traffic from the neighbouring Rockbank North PSP was modelled in a sensitivity test and found to be in the order of 24,000 vehicle trips per day on Taylors Road at 2026 [5]. Development in the Plumpton and Kororoit PSPs would not normally be required to deliver road capacity for this external through traffic. If external traffic were to be excluded, volumes generated by the Plumpton and Kororoit PSPs would only be expected to warrant a two-lane, two-way arterial at 2026.

Bridge Crossings

The bridge crossings of Kororoit Creek are crucial for car, commercial and public transport accessibility and to provide sufficient north-south road capacity in the PSP areas. It is recommended that both the Hopkins Road and Plumpton Road bridges be constructed by 2026.

Preferred 2026 Scenario

On the basis of the model runs conducted in this study, Scenario 1 is the preferred arterial network configuration for 2026. As well as including the duplication of Melton Highway and improvements to local access routes, it provides bridge connections across Kororoit Creek and maintains Hopkins Road as the primary north-south arterial serving both PSPs.

Local road modifications proposed through the refinement of the Future Urban Structure plan around Beatty's Rd (changes marked as "2a" in Figure 9.1 on page 56) provide suitable capacity to serve local vehicular traffic and bus routes in Plumpton.

[5] It should be noted that the connection of Taylors Road to the west across the OMR public acquisition overlay may not be built by 2026.