Sunbury Growth Corridor

Strategy Modelling for Sunbury South PSP (1074) & Lancefield Road PSP (1075)

Supplementary Modelling Report

Prepared by: GTA Consultants (VIC) Pty Ltd for Victorian Planning Authority

on 09/09/2020

Reference: V198070

Issue #: A

GTAconsultants

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Quality Record

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1. INTRODUCTION

1.1. Overview

Amendment C243 makes changes to the Hume Planning Scheme to incorporate the final Sunbury South and Lancefield Road Infrastructure Contributions Plan (ICP). The Amendment seeks to incorporate a supplementary levy ICP which will be applied to the PSP's. Specifically, the Infrastructure items listed in the PSP include two new bridge crossings of the Jacksons Creek in Sunbury.

In October 2015, GTA Consultants prepared a report titled "Strategic Transport Modelling of the Sunbury and Diggers Rest Growth Corridor (Sunbury South PSP 1074 & Lancefield Road PSP 1075)". That report outlined the impacts of potential new road crossings of Jacksons Creek, with nine potential options for works to improve transport in the area.

Sunbury has been identified as a major growth area, with recent transport investments including the electrification of the Sunbury Rail Line and upgrades of the Calder Freeway and Vineyard Road. Despite this, there is concern about the impacts of future growth on the road network in the area. Of note, the 2015 assessment estimated that at full development of the two PSP's metropolitan Melbourne would have a population in the order of 6.46 million people. Recent forecasts provided from the Department of Planning now estimate Melbourne will reach a population of some eight million people in the same time period. This increase has the potential to impact on travel behaviour in Sunbury and specifically the two bridges.

As part of the preparation for the Amendment, GTA have been instructed to:

> *'Re-run and update the model based on current information and data, and prepare an updated report for release….'* Also noting that *'…you are not required to re-run all of the options that were considered in your original 2015 report. Rather, your updated report should be based upon the road network and PIP contained in the gazetted PSP.'*

1.2. Purpose of report

The purpose of this report and modelling task is to advise relevant stakeholders on the outcomes of the additional growth for the Sunbury Growth Corridor. The report focuses on Option 5 which includes the Creek Crossing in PSP 1074 and the Creek Crossing in PSP 1075 as well as the two new railway stations on the Sunbury line. This report should be read in conjunction with the GTA Report dated 5th October 2015, utilising the same model structure and assumption changes outlined in this report.

1.3. Definitions

DoT – Department of Transport (note that the functions of DoT were previously covered by DEDJTR, DTPLI, VicRoads, and PTV).

2. PROJECT CONTEXT

2.1. Transport Modelling Work Completed to Date

In October 2015, GTA Consultants prepared a report titled "Strategic Transport Modelling of the Sunbury and Diggers Rest Growth Corridor (Sunbury South PSP 1074 & Lancefield Road PSP 1075)". That report outlined the impacts of potential new road crossings of Jacksons Creek, with nine potential options for works to improve transport in the area. These are summarised in Table 2.1.

Table 2.1: Previously Identified Options to Improve Access to Sunbury Growth Corridor

Option	Creek Crossing in Sunbury South (PSP 1074)	Railway Station in PSP 1074 (Jacksons Hill Station)	Creek Crossing in Lancefield Road (PSP 1075)	Railway Station in PSP 1075 (Raes Road Station)	Additional Connection to Calder Highway south of PSP 1074	Outer Metropolitan Ring Road (OMR)
1	✓	✓	✓	✓		Includes OMR
2	✓	✓		✓		Includes OMR
3			✓	✓		Includes OMR
4				✓		Includes OMR
5	✓	✓	✓	✓	✓	Includes OMR
6	✓	✓	✓	✓	✓	No OMR
7	✓	✓		✓	✓	No OMR
8			✓	✓	✓	No OMR
9				✓	✓	No OMR

Note: OMR = Outer Metropolitan Ring Road

The options assessed as part of the 2015 report were undertaken for an interim (2031 @ 75%) and ultimate (2046 @ 100%) development of the PSPs of Lancefield Road, Sunbury South, Sunbury North, Diggers Rest and Sunbury West.

In February 2017, GTA Consultants prepared a report titled "Sunbury Growth Corridor – DCP Modelling Supplementary Report[1]". The purpose of the report and the modelling task was to assess the impact of 25% of the potential future development of PSPs 1074 and 1075 (5000 lots in Sunbury South and Lancefield Road PSPs), and the impact on Sunbury Road and the Sunbury Town Centre for the initial stages of development.

Four options for mitigating works were identified and tested to determine the most effective way to accommodate the initial stages of development, while best maintaining the functionality of the road network.

The report concluded that the introduction of the southern Jacksons Creek crossing provides reductions in peak hour traffic flows through the Sunbury Town Centre, as it is an attractive alternative for traffic accessing the Calder Freeway.

[1] GTA Consultants, Sunbury Growth Corridor DCP Modelling Supplementary Report dated 2 February 2017

2.2. Site Context

The Sunbury South and Lancefield Road Precinct Structure Plans (PSP 1074 & 1075) are located in the Sunbury-Diggers Rest Growth Corridor in Melbourne's northwest. Both Sunbury South and Lancefield Road are located in the City of Hume and will ultimately form part of an expansion of Sunbury, along with the Sunbury North, Sunbury West and Diggers Rest PSPs.

The location of the Sunbury and Diggers Rest Growth Corridor in its local context are illustrated in in Figure 2.1.

Figure 2.1: Sunbury and Diggers Rest Growth Corridor

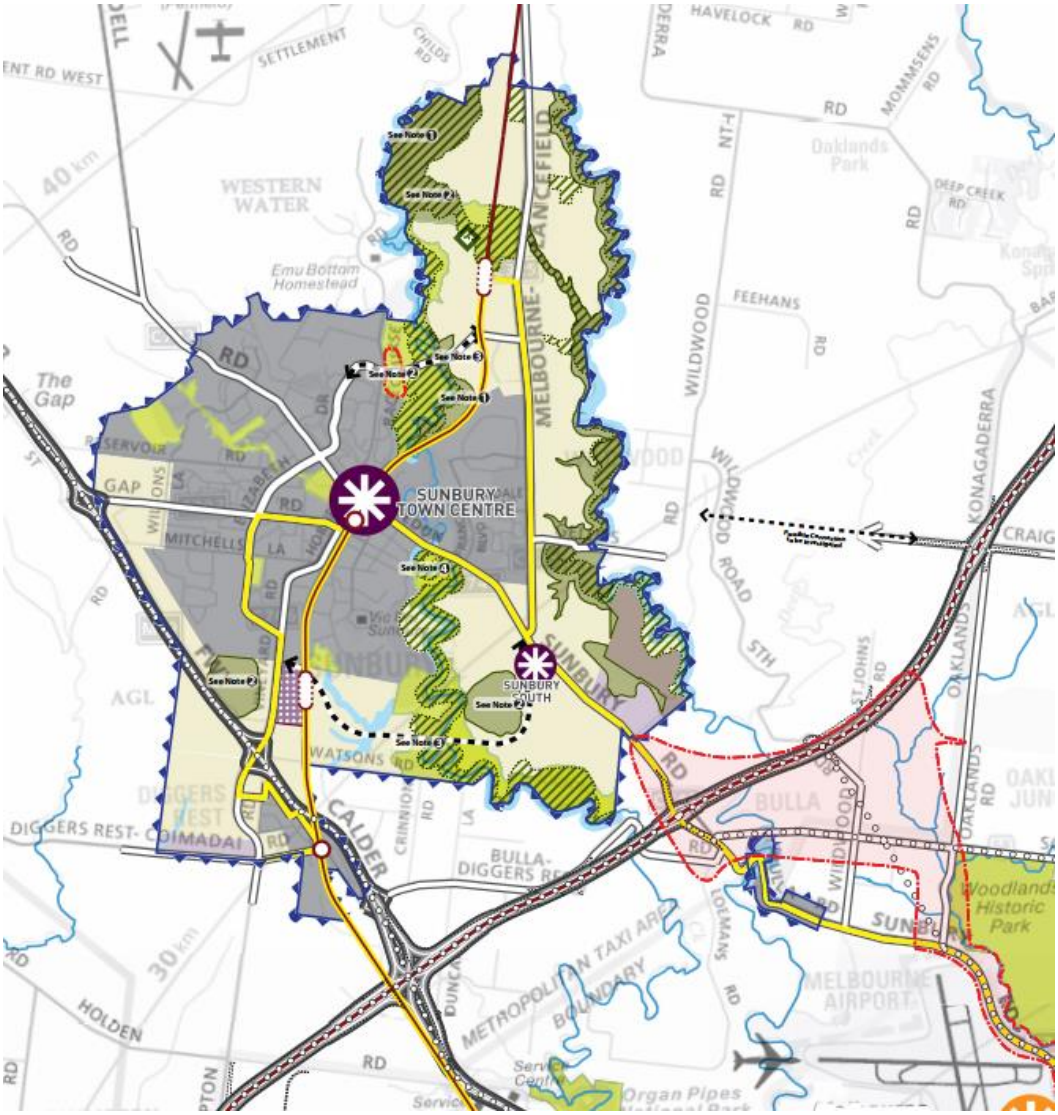
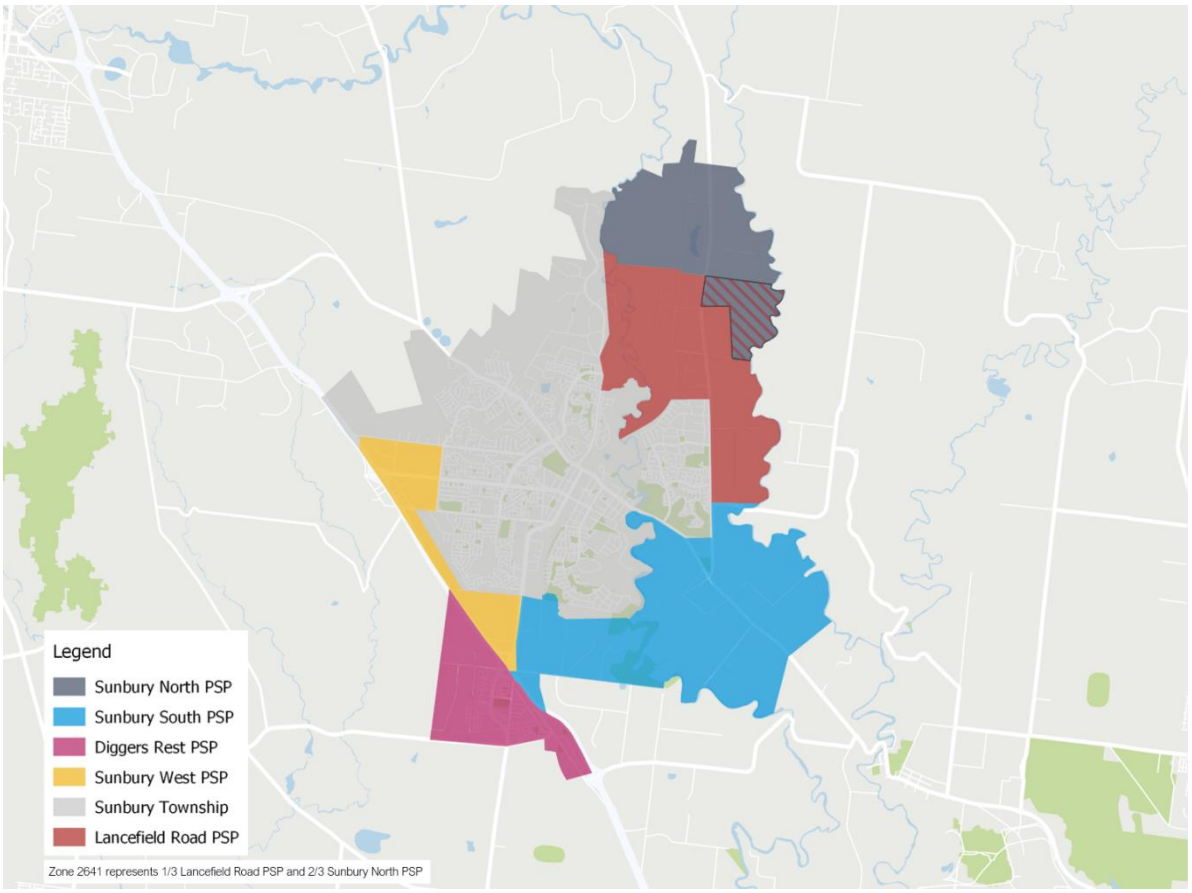


Figure 2.2 on the following page has also been prepared to show the location of the two PSP's in the context of Sunbury, as well as the location of Sunbury West and Sunbury North PSP's which yet to be gazetted.

Figure 2.2: Sunbury Growth Corridor



Jacksons Creek plays an important role within Sunbury not only in a transport sense but the inability to provide connectivity between existing and future communities within the Corridor. Two bridges crossing Jacksons Creek have been gazetted in the Hume Planning Scheme, one in the Sunbury South PSP and one located in the Lancefield Road PSP.

2.3. Transport Modelling - VITM Reference Case

All modelling in the growth area relies upon the information provided in the Victorian Integrated Transport Model (VITM) Reference Case as a starting point for analysis. The VITM Reference Case includes a list of transport projects and policies together with a set of land use for a given year. It is important to note that the inclusion of projects in future year networks in the Reference Case does not imply there is any commitment from the Government or the Department of Transport (DoT) to undertake these projects. DoT advises that the projects within the Reference Case represent a reasonable estimate of investment in the future network for the purposes of modelling demand in the transport system.

The land use (population, employment and enrolment) forecasts within VITM align with the Victoria in Future (VIF) population projections produced by the Department of Environment, Land, Water and Planning (DELWP), both in terms of the level and distribution of growth. While established land use development trends are relied upon in these forecasts, a degree of policy shift is also captured, along with planned land release, renewal sites and infrastructure projects.

The transport modelling completed in 2015 was underpinned by land use projections from DELWP that were prepared in 2012.

The Reference Case is owned and controlled by DoT.

3. MODEL UPDATES

3.1. Introduction

Since the completion of the October 2015 report, the land use projections for Metropolitan Melbourne and Victoria have undertaken significant change. Victoria has grown by a million people between 2011 and 2019 and is expected to grow by a further million by 2026. The increased population forecast for Melbourne will have an impact on the level and the movement of traffic.

In this regard, the modelling work has been updated to understand the impact to traffic demand in Sunbury of these changes. Updating the land use (population and employment forecasts) for the areas outside of the Sunbury Growth Corridor have the potential to impact travel patterns within and through the Sunbury South and Lancefield Road Precinct Structure Plans (PSP 1074 & 1075).

The updated modelling has been undertaken for a design year of 2046 which assumes full development of the two PSP's and the supporting transport networks, with the specific details set out in the following sections.

3.2. Land Use Updates

As stated previously, the design year assessed in the 2015 report was based on a 2011 projection for population growth in Melbourne through to 2046. This estimate assumed that Melbourne's population was to be in the order of 6.42 million people by 2046. The 2018 Victoria in Future (VIF) forecast released by DELWP estimates that the population projections for Melbourne in 2046 will be in the order of 8.01 million people, representing an additional 1.5 million people compared to projections used in the 2015 assessment.

The differences in population, households, employment and enrolments for the Melbourne Statistical Division are presented in Table 3.1.

Table 3.1: Land Use Summary (2046) – Melbourne Statistical Division

Model	Population (People)	Household (Dwelling)	Employment (No. of Jobs)	Enrolment (No. of Students)
Sunbury Model (based on 2011 projections)	6,421,000	2,553,000	3,577,000	1,635,000
VIF 2018	8,009,000	3,106,000	4,281,000	2,188,000
Difference	*+1,588,000*	*+553,000*	*+704,000*	*+553,000*

A review of the data indicates that a high proportion of the growth is situated in the nearby areas of Hume (8%), Melton (7%), Wyndham (10%) and Whittlesea (9%) accounting for a combined 35% of the additional 1.59 million people.

The increased population and employment projections do have the potential to impact on the level of traffic and congestion on the transport network and the scale of change is not clear without undertaking updated modelling.

In terms of the Sunbury Growth Corridor, some of the land use for Sunbury South and Lancefield Road has been included into the 2018 population forecasts, however the total for Sunbury was estimated at just over 88,000 people which is approximately 33,000 less than the figures used in the 2015 report.

In the interests of maintaining consistency with the previous work, the land use estimates for Sunbury have not been updated, which are summarised in Table 3.2.

Table 3.2 Land Use Projections in the Sunbury Area - 2046

Area	Population (People)	Household (Dwelling)	Employment (No. of Jobs)	Enrolment (No. of Students)
Sunbury Township	45,915	17,518	9,939	8,002
Sunbury South PSP	29,370	10,490	4,113	2,853
Lancefield Road PSP	21,580	7,707	1,664	11,502
Sunbury West PSP	7,155	2,650	350	450
Sunbury North PSP	17,373	6,205	552	451
Total	**121,394**	**44,569**	**16,618**	**23,258**

The zone structure for the modelling has also remained unchanged from what has been used and documented in the 2015 report.

3.3. Transport Networks

Similar to the land use forecasts, a number of significant transport projects have been announced across metropolitan Melbourne since the completion of the 2015 report. Amongst the key project announcements that were not included in the previous modelling are the West Gate Tunnel Project.

Notwithstanding the significance of these projects on metropolitan Melbourne, their impact on the travel patterns in Sunbury is not considered to be meaningful. In this regard, the transport networks used a part of the 2015 assessment have been unchanged and the updated modelling will focus only on the impact of the land use changes.

This report documents Option 5 with the modelled networks provided in Appendix A.

4. RESULTS

4.1. Model Outputs

Model outputs for Option 5 have been extracted to assist in the understanding the performance of the network as a result of the two PSP's and the broader increase in metropolitan Melbourne on the transport network. The following outputs are located within Appendices:

1. AM Peak (2-hours), PM Peak (2-hours) and Daily vehicle volume plots (Appendix B)
2. Volume to Capacity Plots (Appendix C)

The 2015 report identified seven key locations across the network to report on traffic volumes. These have been extracted from the updated model and a comparison of the daily 2015 and updated model results are shown in Table 4.1.

Table 4.1: Daily Link Volumes for Option 5 - 2046 (two way combined)

No	Road Name	2015 Reported	Updated Model	Difference	%
1	Sunbury Road between Evans Street and Francis Boulevard	37,900	35,800	-2,100	-6%
2	Jacksons Creek Crossing in Sunbury South PSP	11,100	11,300	200	2%
3	Jacksons Creek Crossing in Lancefield Road PSP	14,300	14,700	400	3%
4	Horne Street between Gap Road and Riddell Road	24,000	24,100	100	0%
5	Sunbury Road north of Bulla-Diggers Road	80,100	76,800	-3,300	-4%
6	Melbourne-Lancefield Road south of Gellies Road	41,000	40,800	-200	0%
7	Vineyard Road north of interchange	52,300	52,200	-100	0%

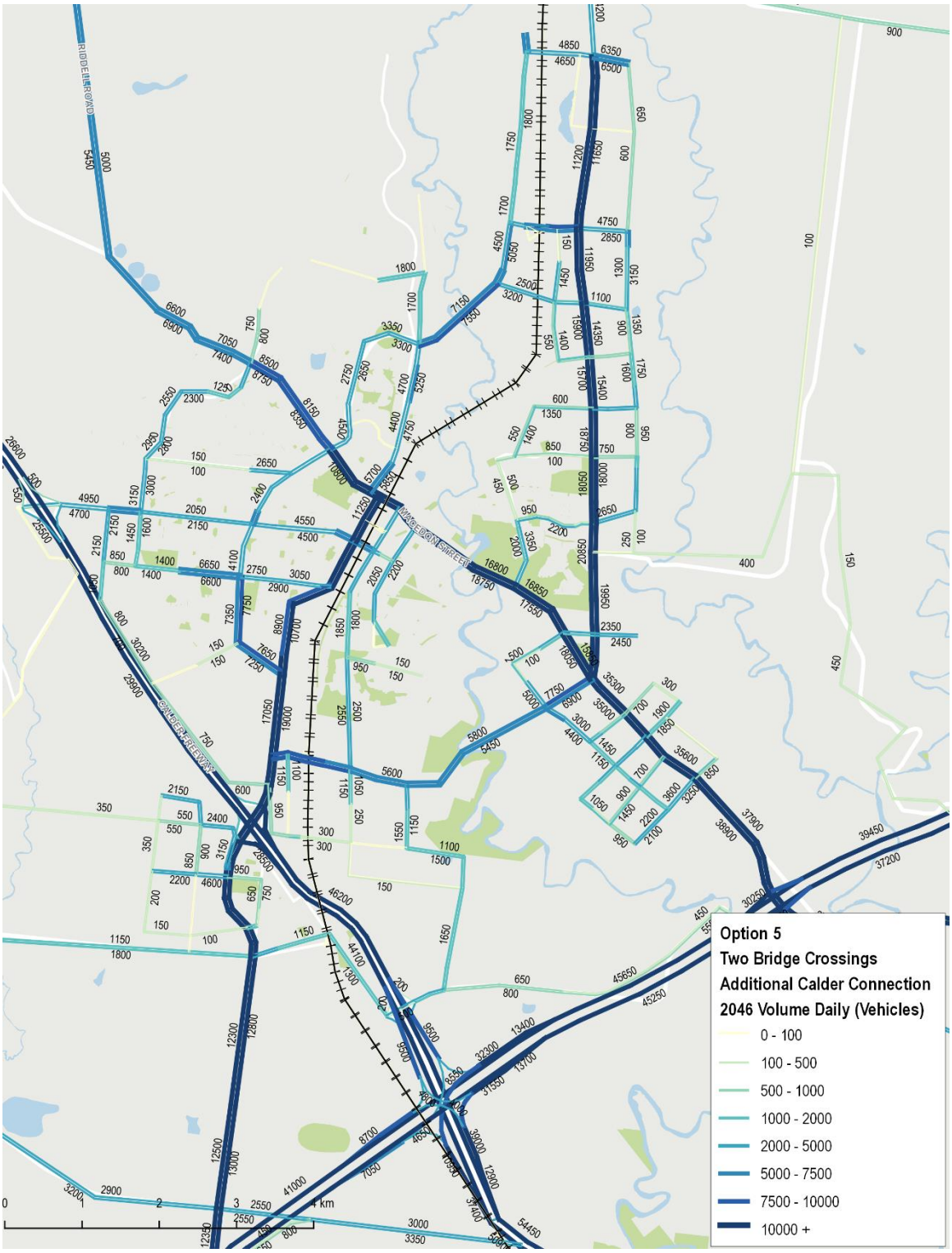
The updated modelling results show that the increase in population of broader metropolitan Melbourne will have a marginal impact on the ultimate traffic volumes in and around Sunbury. This is due to the fact that Sunbury is located on the north western fringe of Melbourne with clear travel routes to employment in Melbourne's north and neighbouring LGA's.

There is a slight reduction in volumes on Sunbury Road when compared to the 2015 assessment across the day which is likely due to the population growth of nearby LGA's being located closer to the employment centres in Melbourne.

4.2. Daily Volume Plot

As stated, there are a number of outputs that are provided in Appendix B however the daily volume plot for the network is reproduced in Figure 4.1.

Figure 4.1: 2046 Daily Volumes



5. SUMMARY

Transport modelling undertaken in 2015 as part of the planning for the Lancefield Road and Sunbury South PSP's estimated that metropolitan Melbourne would have a population in the order of 6.46 million people by 2046, which has since been revised to eight million. This increase has the potential to impact on travel behaviour in Sunbury and specifically the two bridges.

The following comments are provided in relation to the updated modelling presented in this report:

1. The largest increases in population projections for metropolitan Melbourne occurred in the growth areas of Hume, Whittlesea, Melton and Wyndham.
2. In terms of the Sunbury Growth Corridor, the land use estimates assessed as part of the 2015 report are consistent with the previous work. This includes a combined population of 50,950 residents for Lancefield Road and Sunbury South.
3. The impact of transport projects such as the West Gate Tunnel are not anticipated to impact on the travel patterns within and through Sunbury and have not been updated in the modelling.
4. The increase in population of broader metropolitan Melbourne will have a marginal impact on the ultimate traffic volumes in and around Sunbury.
5. The volumes crossing the Jacksons Creek Crossing Bridge in Sunbury South PSP are 11,300 vehicles per day which represent a 2% increase in volumes when compared to the 2015 assessment, and
6. The volumes crossing the Jacksons Creek Crossing Bridge in the Lancefield Road PSP are 14,700 vehicles per day which represent a 3% increase in volumes when compared to the 2015 assessment.

Overall, the changes to the projections for metropolitan Melbourne have a marginal impact on the travel patterns for Sunbury at full development, indicating a robust model that is suitable to inform discussions as part of Infrastructure Contributions.

A. TRANSPORT NETWORKS

A

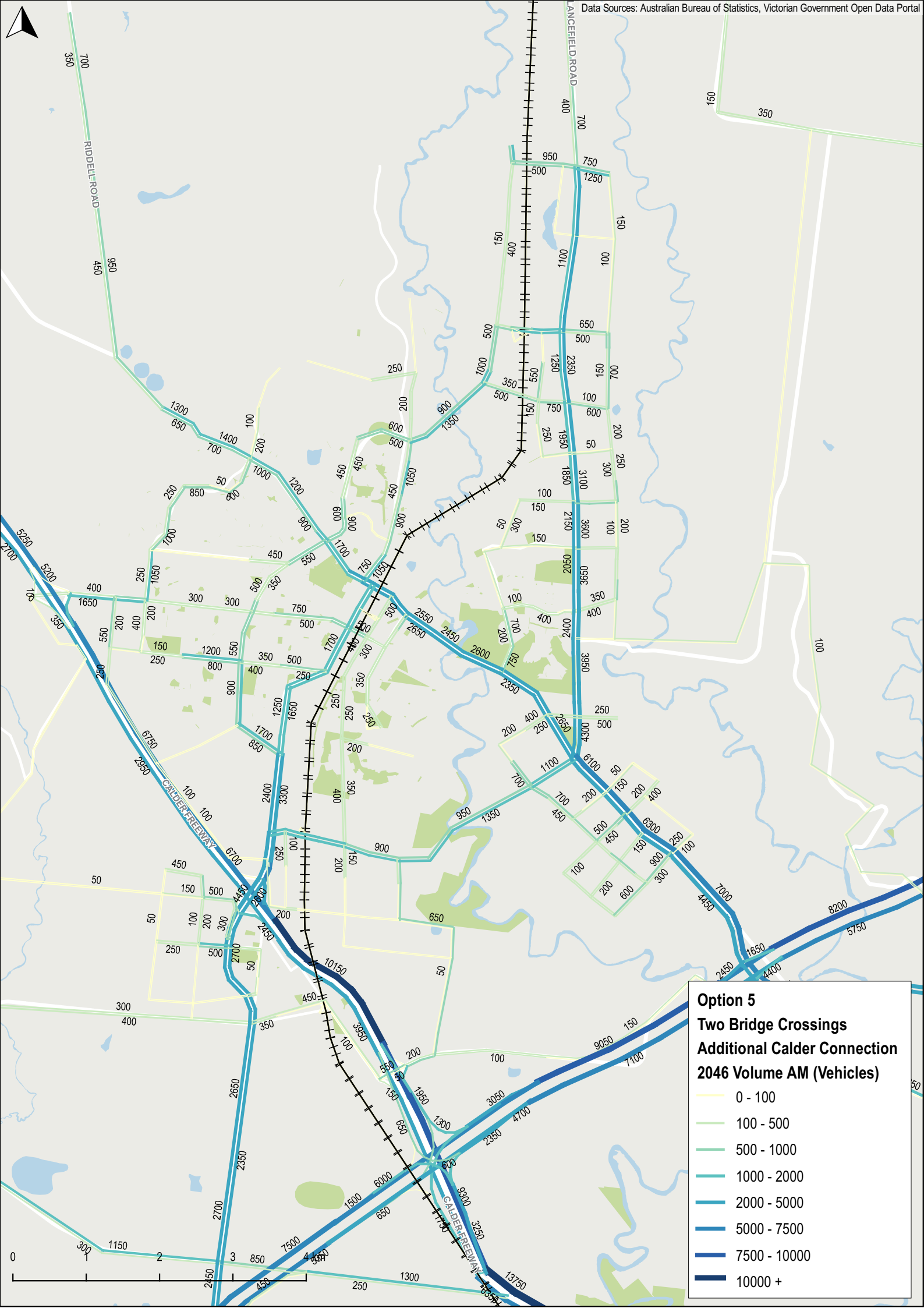

Data Sources: Australian Bureau of Statistics, Victorian Government Open Data Portal
RIDDELL ROAD
LANGFIELD ROAD
MACEDON STREET
SUNBURY ROAD
CALDER FREEWAY
CALDER FREEWAY
SUNBURY ROAD
Option 5
Two Bridge Crossings
Additional Calder Connection
Linkclass
Local/Collector
Secondary
Primary Undivided
Primary Divided
Freeway/Highway
Ramp
Level Crossing
Rural Unsealed
Train
0
1
2
3
4 km

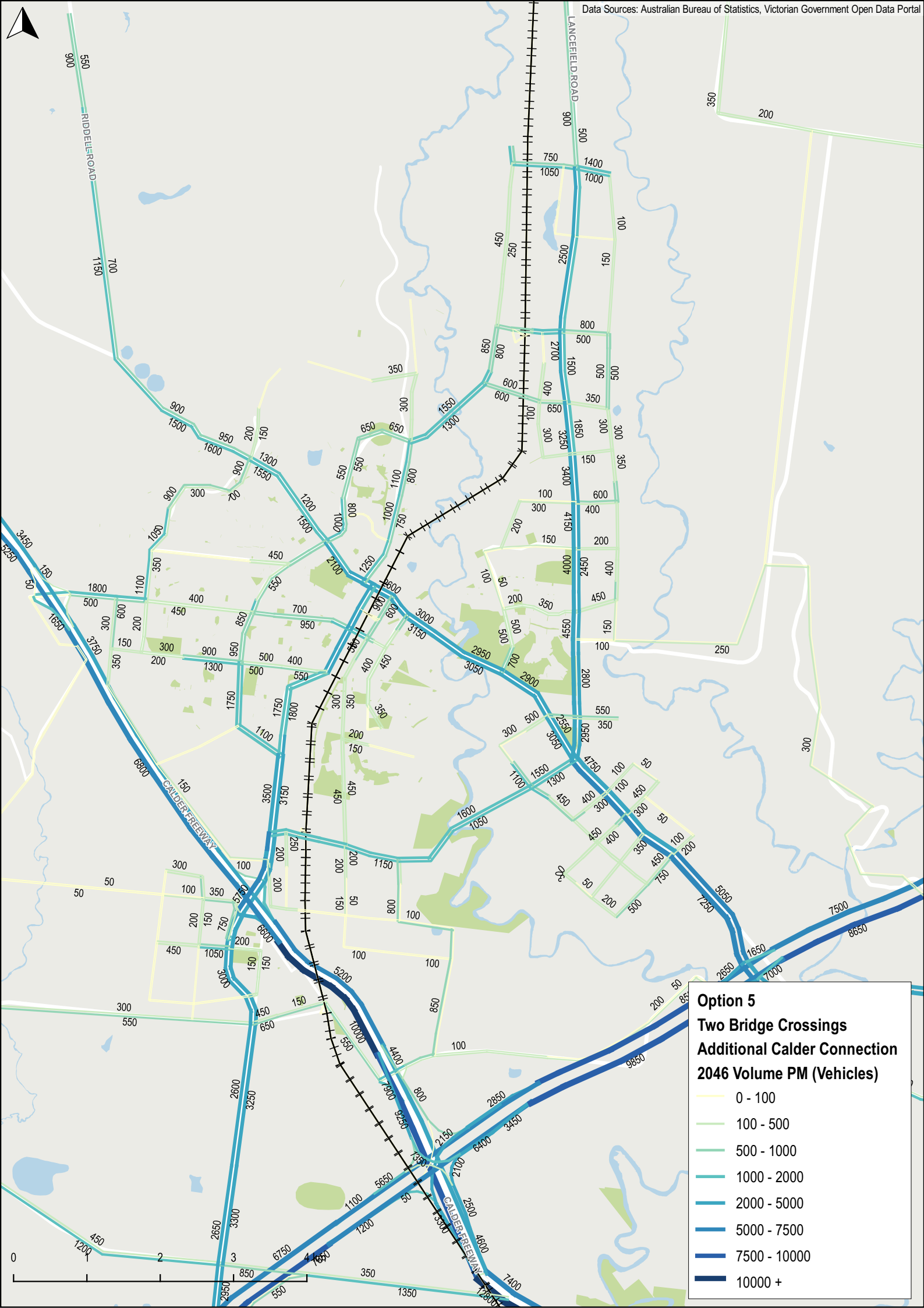

Data Sources: Australian Bureau of Statistics, Victorian Government Open Data Portal
RIDDELL ROAD
LANCEFIELD ROAD
MACEDON STREET
SUNBURY ROAD
CALDER FREEWAY
CALDER FREEWAY
SUNBURY ROAD
Option 5
Two Bridge Crossings
Additional Calder Connection
Number of Lanes
1
2
3
4
5
0
1
2
3
4 km

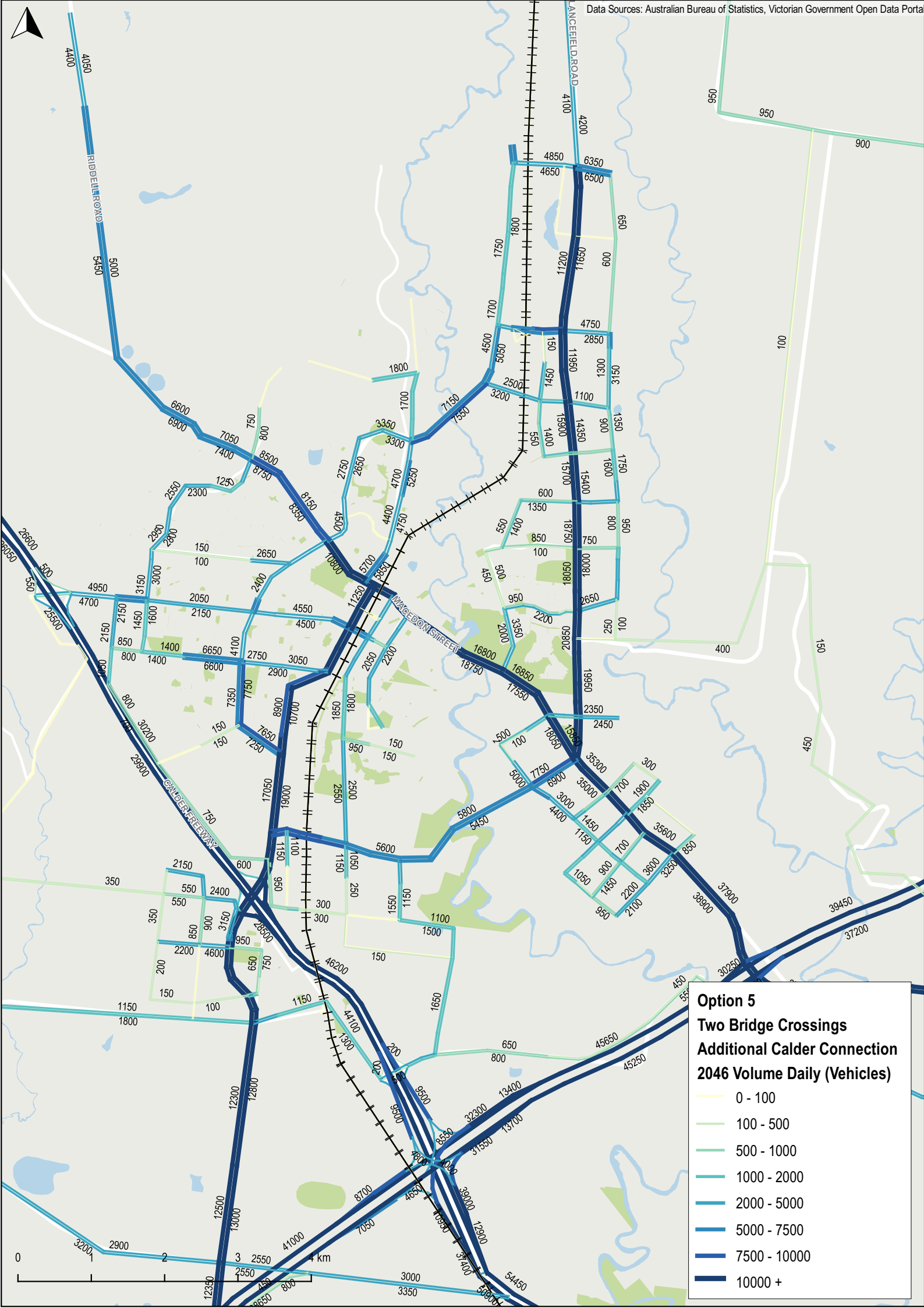

Data Sources: Australian Bureau of Statistics, Victorian Government Open Data Portal
RIDDELL ROAD
LANGFIELD ROAD
MACEDON STREET
SUNBURY ROAD
CALDER FREEWAY
CALDER FREEWAY
SUNBURY ROAD
Option 5
Two Bridge Crossings
Additional Calder Connection
Posted Speed
<40kmh
50kmh
60kmh
70kmh
80kmh
90kmh
100kmh
100kmh+
0
1
2
3
4 km

B.VOLUME PLOTS

B

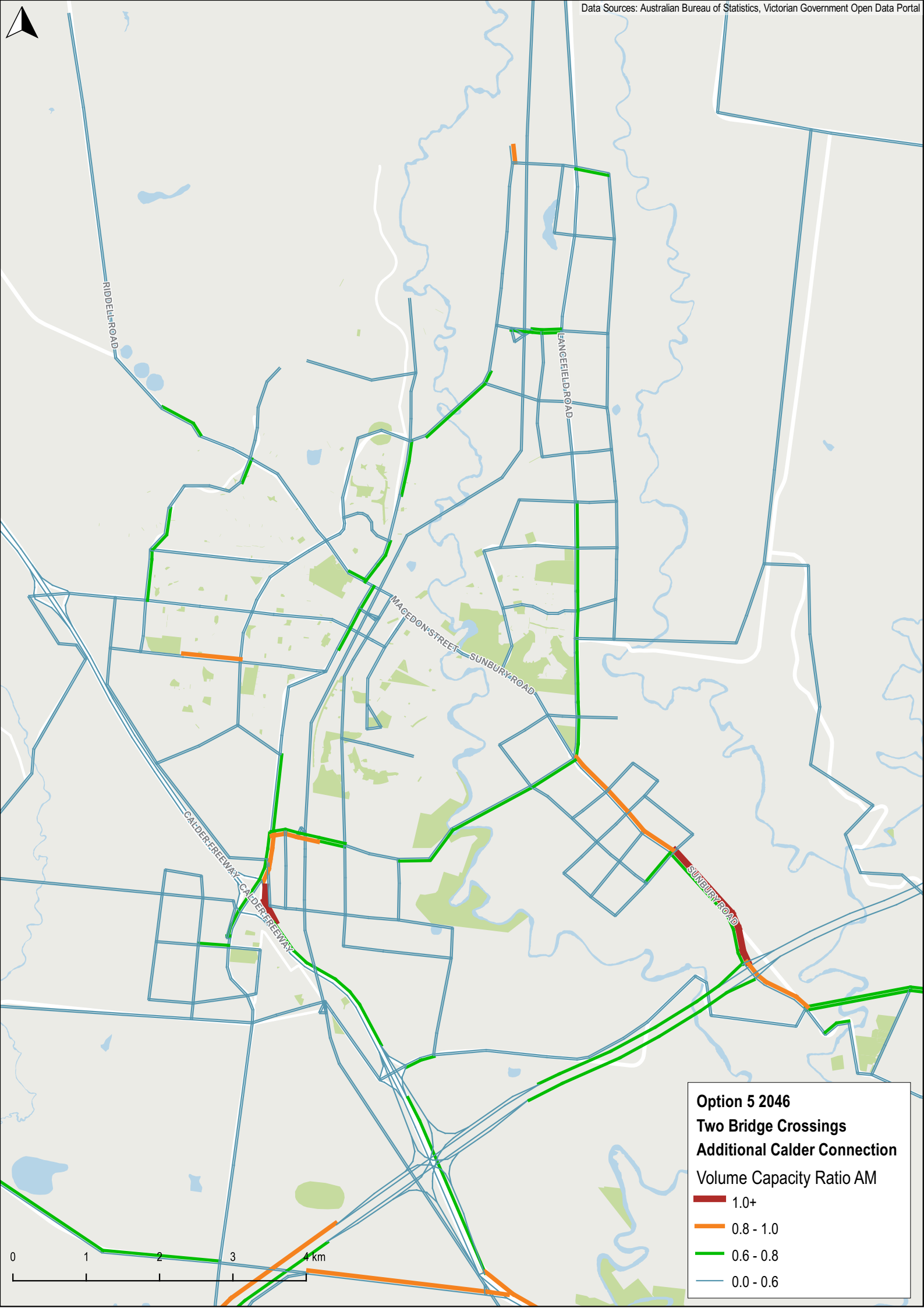

Data Sources: Australian Bureau of Statistics, Victorian Government Open Data Portal
RIDDELL ROAD
LANCEFIELD ROAD
CALDER FREEWAY
CALDER FREEWAY
Option 5
Two Bridge Crossings
Additional Calder Connection
2046 Volume AM (Vehicles)
0 - 100
100 - 500
500 - 1000
1000 - 2000
2000 - 5000
5000 - 7500
7500 - 10000
10000 +
0
1
2
3

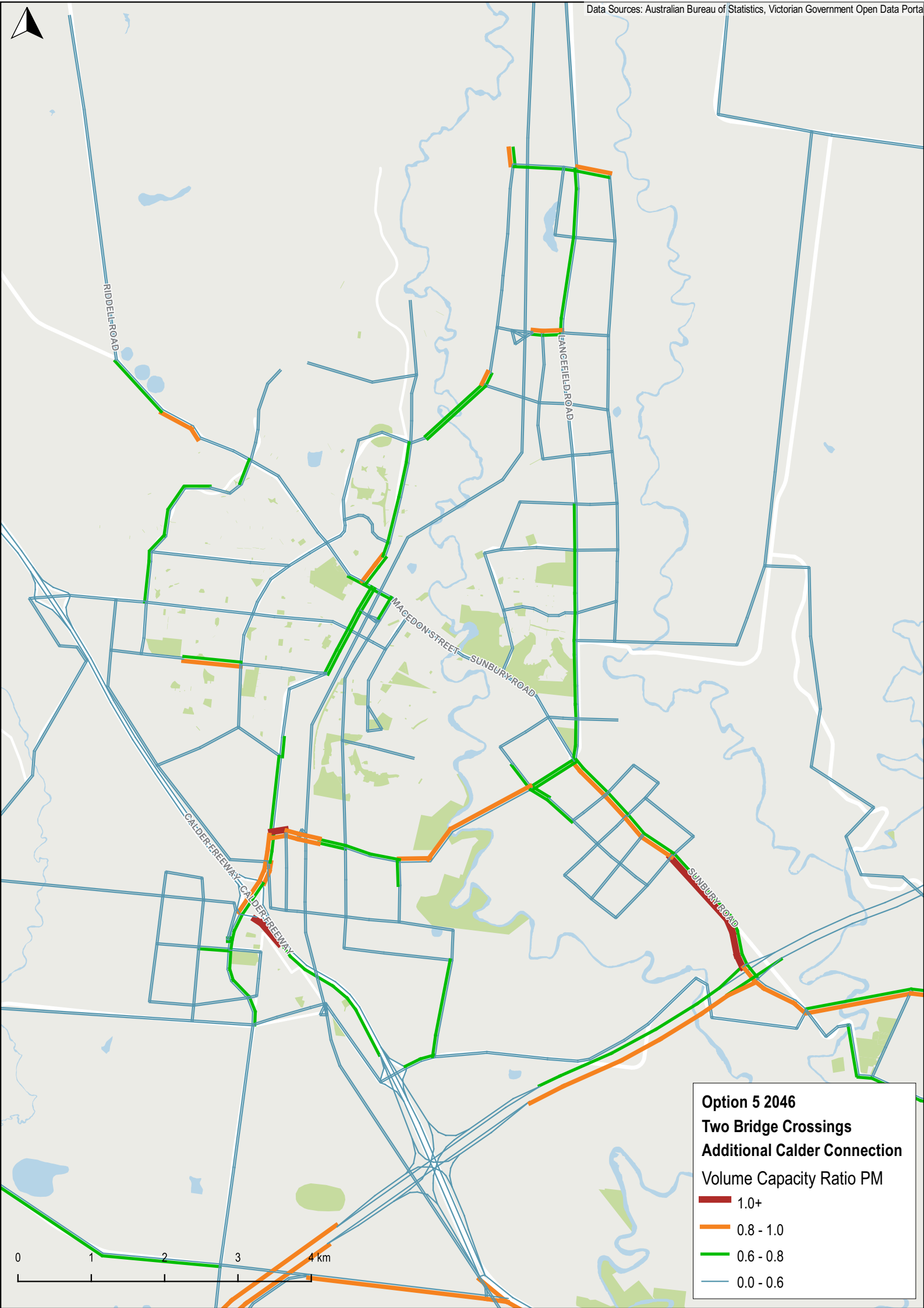

Data Sources: Australian Bureau of Statistics, Victorian Government Open Data Portal
RIDDELL ROAD
LANCEFIELD ROAD
CALDER FREEWAY
CALDER FREEWAY
Option 5
Two Bridge Crossings
Additional Calder Connection
2046 Volume PM (Vehicles)
0 - 100
100 - 500
500 - 1000
1000 - 2000
2000 - 5000
5000 - 7500
7500 - 10000
10000 +
0
1
2
3
4


Data Sources: Australian Bureau of Statistics, Victorian Government Open Data Portal
RIDDELL ROAD
LANCEFIELD ROAD
MACEDON STREET
CALDER FREEWAY
Option 5
Two Bridge Crossings
Additional Calder Connection
2046 Volume Daily (Vehicles)
0 - 100
100 - 500
500 - 1000
1000 - 2000
2000 - 5000
5000 - 7500
7500 - 10000
10000 +
0
1
2
3
4 km

C. VOLUME TO CAPACITY PLOTS

C


Data Sources: Australian Bureau of Statistics, Victorian Government Open Data Portal
RIDDELL ROAD
LANGFIELD ROAD
MACEDON STREET
SUNBURY ROAD
CALDER FREEWAY
CALDER FREEWAY
SUNBURY ROAD
0
1
2
3
4 km
Option 5 2046
Two Bridge Crossings
Additional Calder Connection
Volume Capacity Ratio AM
1.0+
0.8 - 1.0
0.6 - 0.8
0.0 - 0.6


Data Sources: Australian Bureau of Statistics, Victorian Government Open Data Portal
RIDDELL ROAD
LANGFIELD ROAD
MACEDON STREET
SUNBURY ROAD
CALDER FREEWAY
CALDER FREEWAY
SUNBURY ROAD
0
1
2
3
4 km
Option 5 2046
Two Bridge Crossings
Additional Calder Connection
Volume Capacity Ratio PM
1.0+
0.8 - 1.0
0.6 - 0.8
0.0 - 0.6

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