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Strategic Traffic Modelling

CRAIGIEBURN PSP25

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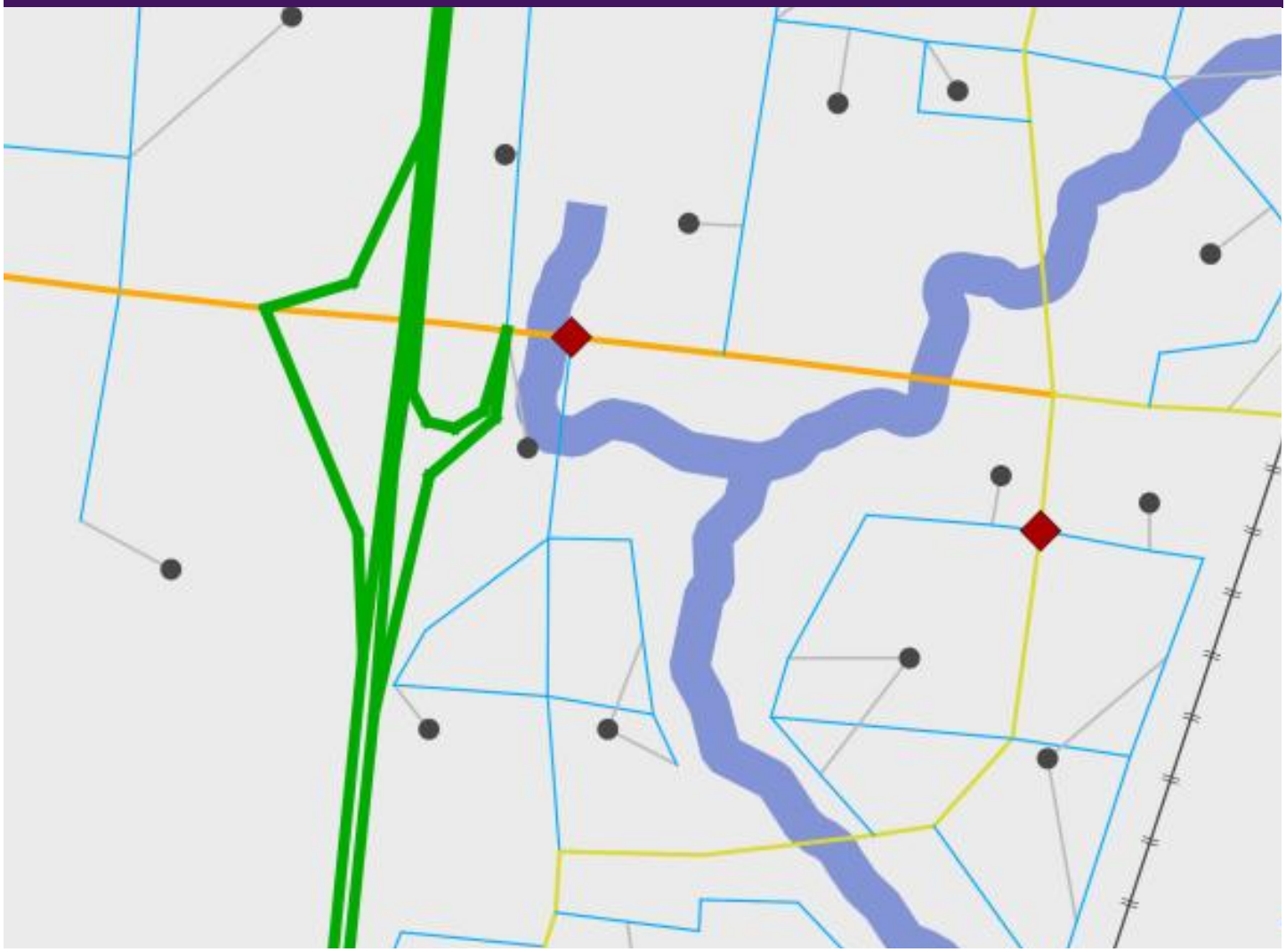

METROPOLITAN PLANNING AUTHORITY

SINCLAIR KNIGHT MERZ SKM

Traffic Modelling PSP25

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Prepared by:	John Richardson
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Sinclair Knight Merz
ABN 37 001 024 095
Level 11, 452 Flinders Street
Melbourne VIC 3000

PO Box 312
Flinders Lane VIC 8009

Tel: +61 3 8668 3000
Fax: +61 8668 3001
Web: www.globalskm.com

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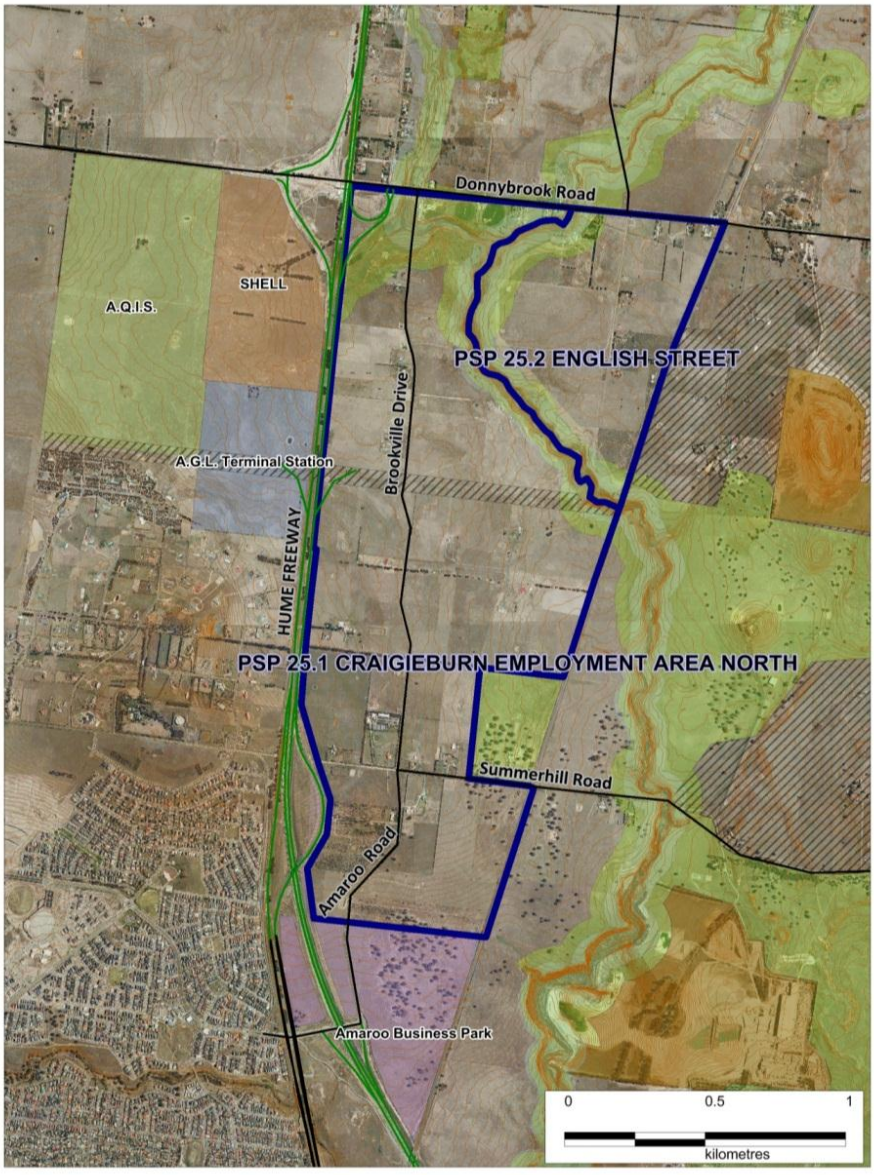
1 Introduction

This report provides an overview of strategic transport modelling to assess road layouts in the proposed Craigieburn Employment Precinct (PSP25). PSP25 comprises the Craigieburn Employment Precinct North and English Street areas (see Figure 1).

The modelling has been undertaken using the Northern Growth Corridor model (NGC) which is based on the Department of Transport, Planning and Local Infrastructure's (DITPLI) Victorian Integrated Transport Model (VITM).

This report presents a summary of traffic volume impacts under several road infrastructure scenarios for 2046 and 2026. Note that the model also produced turning volumes suitable for use with the SIDRA intersection model.

- **Figure 1: PSP25 – traffic modelling study area**



1.1 Limitation Statement

The sole purpose of this report and the associated services performed by Sinclair Knight Merz (SKM) is to provide strategic transport modelling results in connection with PSP25. The services were provided in accordance with the scope of services set out in the contract between SKM and the Growth Areas Authority[1] (the 'Client'). That scope of services, as described in this report, was developed with the Client.

Modelling and forecasting is not a precise science. Forecasts are only an indication of what might happen in the future and they may not be achieved. They rely upon complex sets of input data and assumptions. There is no guarantee that these assumptions will in fact be correct or accurate and there are numerous factors which can influence the actual future traffic volumes of the Project.

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

1.2 Glossary

The following terms and acronyms have been used in this report:

AM Peak: The AM peak represents 7am to 9am

PM Peak: The PM peak represents 3pm to 6pm.

V/C ratios: The ratio of traffic volume at a point on a road to the theoretical capacity of the road. A value close to one indicates the road is heavily congested and the traffic on that road is expected to suffer significant delays. Technically values greater than one should not be permitted, however if no other suitable routes are available VITM will permit V/C ratios greater than one.

Select-link analysis: A method of analysing traffic movements by only showing trips that pass through a nominated link (or links).

vpd: vehicles per day using a particular road link, reported as two-way volumes unless otherwise noted.

Acronyms

- COW – City of Whittlesea
- DTPLI – Department of Transport, Planning and Local Infrastructure
- GAA – Growth Areas Authority (now the Metropolitan Planning Authority)
- HCC – Hume City Council
- NGC – Northern Growth Corridor
- OMR – Outer Metropolitan Ring Road
- PSP – Precinct Structure Plan
- PTV – Public Transport Victoria
- SKM – Sinclair Knight Merz
- VIF – Victoria in Future
- VITM – Victorian Integrated Transport Model

[1] The Growth Areas Authority became the Metropolitan Planning Authority (MPA) in October 2013. All references to the GAA in this report should be considered as referring to the MPA.

2 Modelling Process

In 2012 SKM developed the Northern Growth Corridor model (NGC[2]) on behalf of GAA so that future land use and transport options could be explored in greater detail than was possible with the VITM. The initial creation of the NGC model included only a 2046 reference case.

The requirements of the PSP25 study were to further augment the NGC model around the study area, update the 2046 reference case with new inputs and to develop a 2026 reference case. To achieve this, the following steps were required:

- Update the zone system with a more detailed zone system that reflects the current plans for PSP25 (see Section 3.1)
- Update land use inputs with the latest projections of jobs, households and education (see Section 3.2)
- Update the transport network for the site and surrounding area with the latest available information (see Sections 3.3 and 3.4) and
- Review DTPLI's freight demand forecasts (see Section 3.5)

The model inputs and zone refinements were developed in consultation with Hume City Council, Whittlesea Council, VicRoads and GAA.

Once the 2026 and 2046 reference case models were set up, a range of scenarios were developed to test various road layout options. These are explained in Section 4 along with an overall summary in Section 5.

[2] The model is based on the Department of Transport's Victorian Integrated Transport Model (VITM). Further information on the validation of the model can found in a separate SKM report titled "*Northern Growth Corridor Transport Model Validation – Final Report*" and details of the 2046 model updates and inputs in "*Northern Growth Corridor – 2046 Strategic Transport Model".*

3 Model Updates

This section details the changes made to the original NGC 2046 reference case developed in 2012 and the updates required to develop a 2026 reference case.

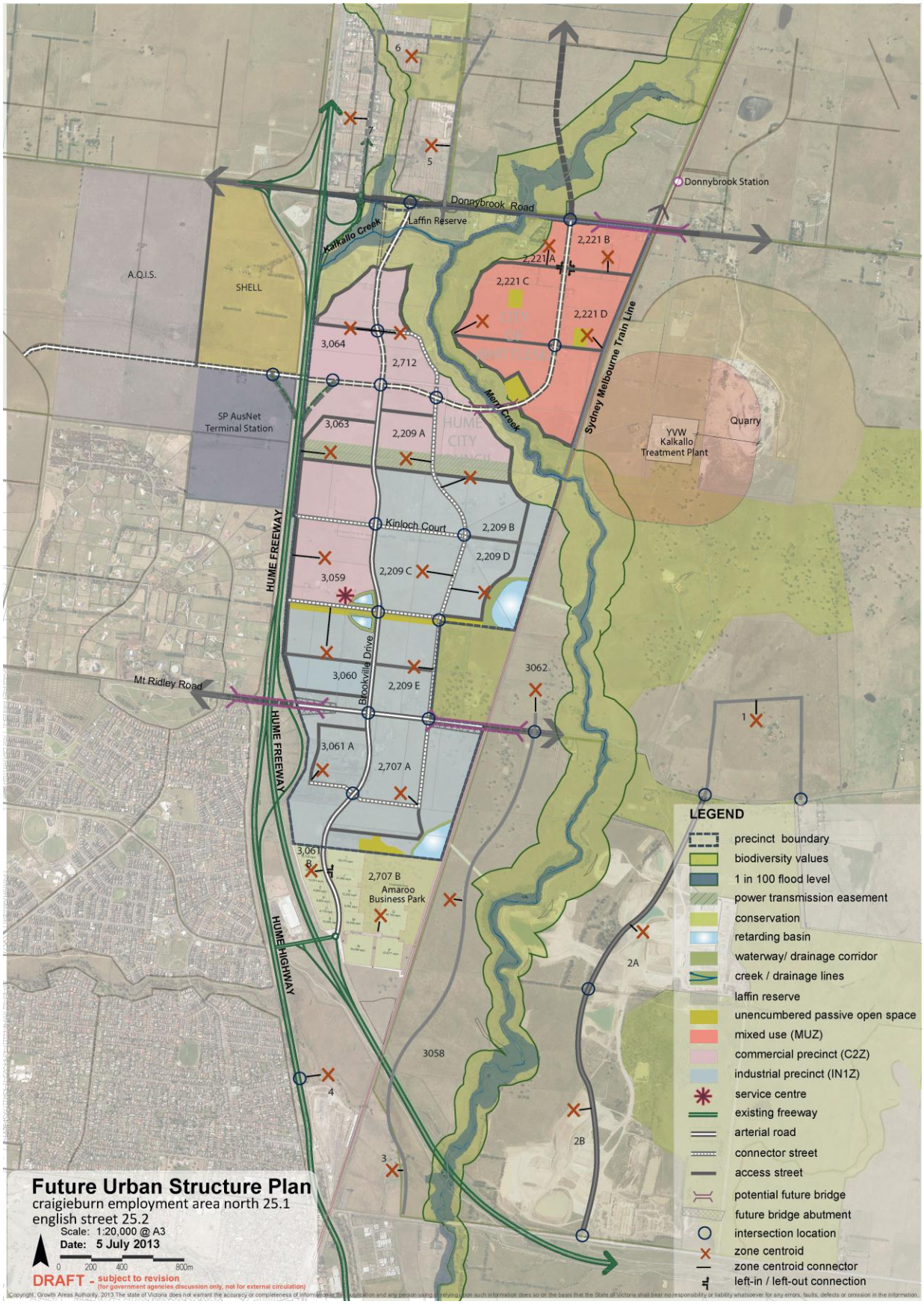
3.1 Zone System

A key requirement of this study was to introduce a more detailed zone system around the PSP area now that more details are known about the likely use of the area. This typically involved the disaggregation of existing large zones into smaller zones. These changes are described below.

3.1.1 Zone Disaggregation

GAA developed a notional zone system (see Figure 2) which was discussed and agreed with stakeholders. SKM then coded this zone system and developed an equivalence table to equate original VITM zones to the new zone system. This became the key tool for transforming the many inputs in VITM to the new zone system. In total an additional 38 zones were added to VITM through this disaggregation process. These new zones are numbered 3185-3222.

- **Figure 2: PSP25 Craigieburn Employment Precinct – proposed traffic zones**



3.2 Land Use

Using the updated zone system described in Section 3.1 GAA developed land use inputs for the 2026 and 2046 reference cases in conjunction with COW and HCC. The following land use attributes were specified by GAA for the zones in the study area:

- Number of households
- Retail employment
- Total employment
- Primary school enrolments
- Secondary school enrolments
- Tertiary enrolments

As VITM uses a more detailed disaggregation of demographic and employment data (such as population by age category and number of dependants by age category) the following set of rules were developed to generate appropriate inputs for the model:

- Persons per household were assumed to be as per VIF projections for each LGA
- Age category splits were assumed to be as per VIF projections for each LGA
- Number of dependants by age category were assumed to be as per VIF projections for each LGA

Outside the study area and immediate surround land use assumptions were taken from the VIF 2026 projections or the 2046 NGC reference case.

A summary of the 2026 and 2046 land use inputs compared with the 2011 inputs (used to validate the model) is shown in Table 1. Maps of the assumed number of households and employment for the study area are shown in Appendix A and a summary is provided in Table 2.

- **Table 1: Land use input summary by LGA, 2011, 2026 and 2046**

	Hume			Whittlesea		
Input	**2011**	**2026**	**2046**	**2011**	**2026**	**2046**
Population	176,687	265,023	416,155	163,172	263,062	359,071
Households	57,137	89,095	145,794	54,660	91,792	133,546
Retail Employment	7,325	11,896	31,751	4,599	9,084	13,195
Total Employment	85,221	107,558	180,521	39,032	74,828	119,223
Primary Enrolments	17,384	23,337	33,016	14,038	18,671	24,243
Secondary Enrolments	11,985	18,294	31,179	9,018	10,995	16,815
Tertiary Enrolments	37,865	40,690	47,970	12,026	13,313	15,653

- **Table 2: Land use summary for PSP area in, 2026 and 2046**

	PSP25	
Input	**2026**	**2046**
Population	1714	2574
Households	600	1020
Retail Employment	0	0
Total Employment	1110	8754
Education Enrolments	0	0

3.3 Public Transport

Only one change was made to the public transport network and that is the inclusion of a new rail station south of Donnybrook on Summerhill Road. Trains have not been coded to use the new station in this study, however the inclusion of the station allows its viability to be tested with this model should the need arise in the future.

Otherwise the public transport networks are identical to the 2046 NGC reference case and DTPLI's 2026 reference case networks. A summary of the public transport services around the PSP area are shown in Table 3.

- **Table 3: Reference case public transport services**

Year - mode	Service description	Frequency
2026 – train	Seymour V/Line service to Southern Cross Station stops at Donnybrook Station	30mins peak 60mins off-peak
2026 – bus	No bus services	
2046 – train	Metropolitan service stopping from Wallan to Flinders Street Station stops at Donnybrook and Lockerbie Stations. The rail line is assumed to have been electrified to Wallan.	10mins peak 10mins off-peak
2046 - bus	The only bus service through the site connects Donnybrook and Craigieburn stations, running via Brookville Drive. Other services run close to the PSP area along corridors such as Donnybrook Road and Aitken Boulevard.	60mins peak 60mins off-peak

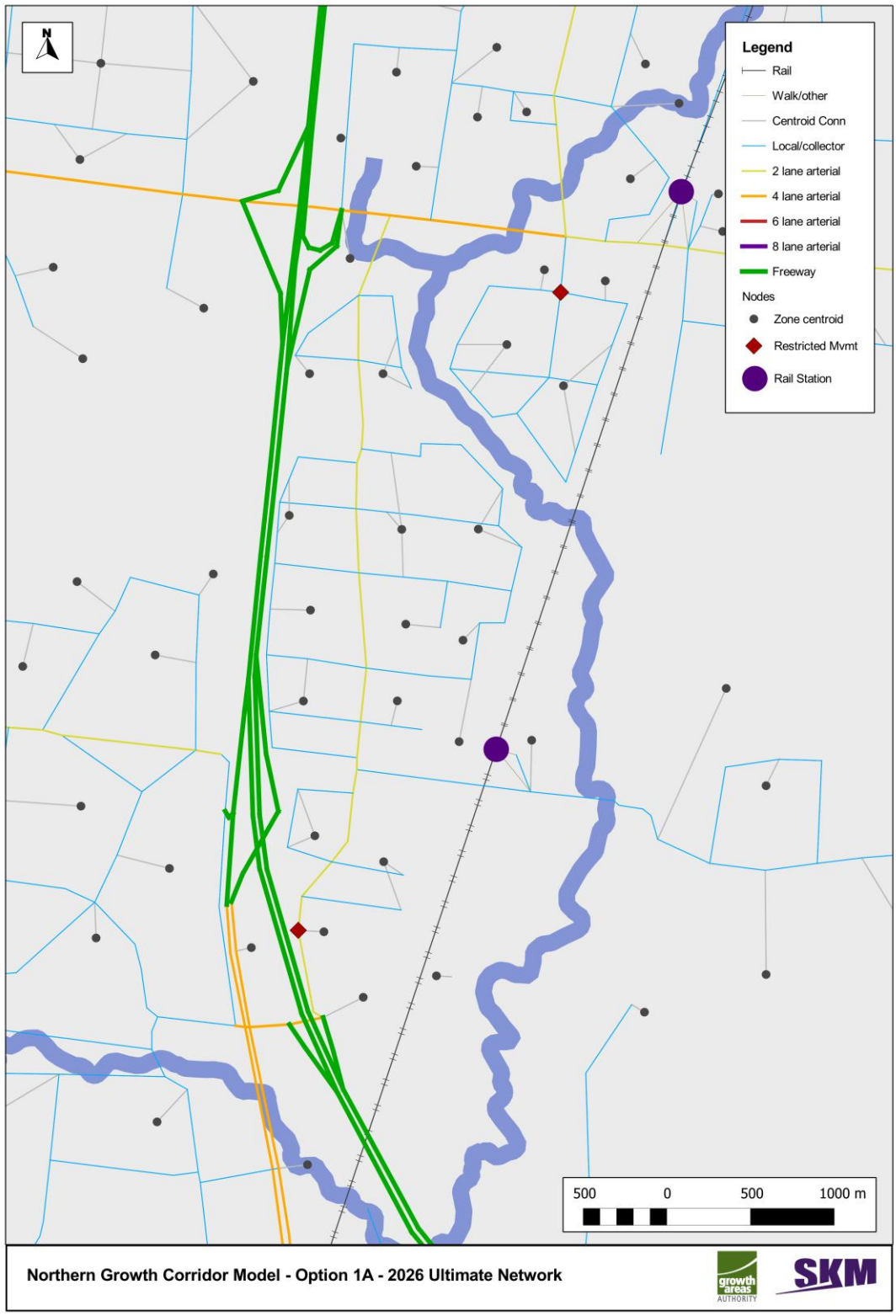
3.4 Road Networks

GAA developed a notional network of arterial roads (2, 4 or 6 lanes) and collector streets (2 lanes) which SKM coded and then circulated amongst the two councils and VicRoads for comments. Some further modifications ensued and the agreed networks to test are shown in Figure 3 to Figure 7.

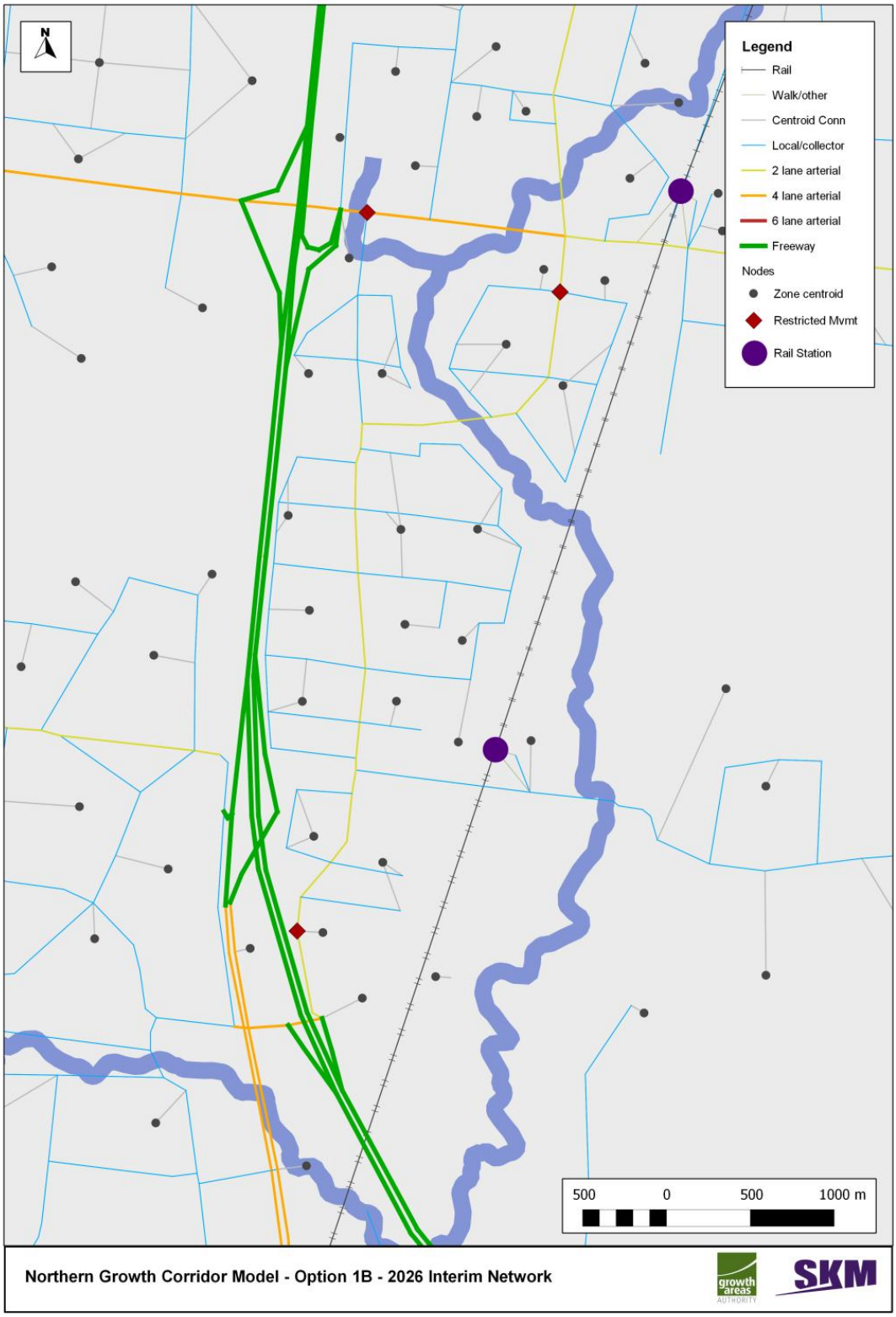
After the networks were agreed, a small number of suggested updates were identified that should be made as part of any future PSP work using the Northern Growth Corridor Model. The changes would not materially affect any of the findings in this report. The suggested updates are as follows:

- Remove U-turn on Hume Freeway south of the Donnybrook Road interchange. This currently exists on the network but would be removed once the full Donnybrook Road interchange is completed.
- Refine the road network around Donnybrook Train Station:
  - Grade separate the level crossing on Donnybrook Road
  - Re-align Springs Road once the overpass is in place
  - Additional station access point from the north-east

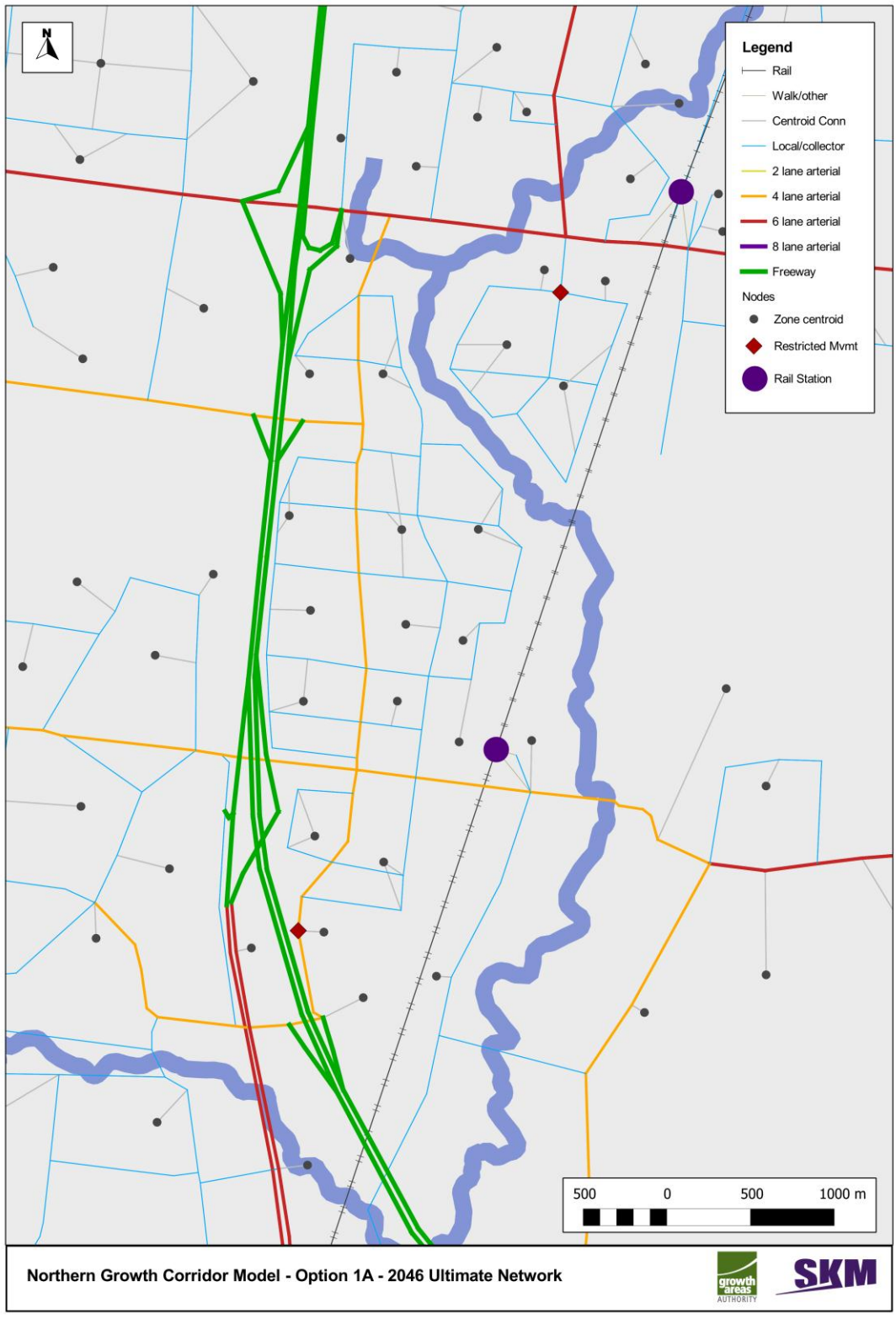
- **Figure 3: 2026 interim road network – option 1A**



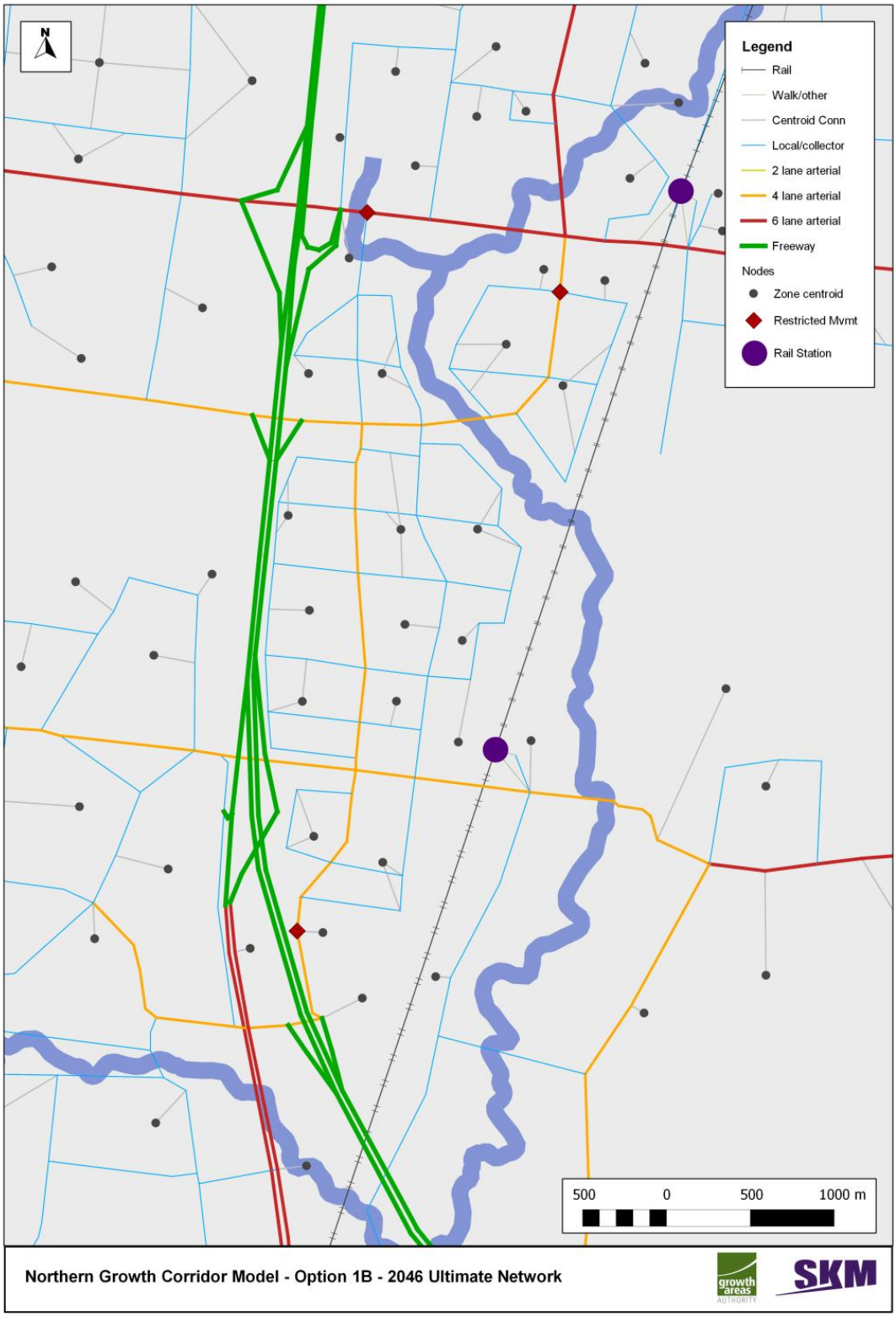
- **Figure 4: 2026 interim road network – option 1B**



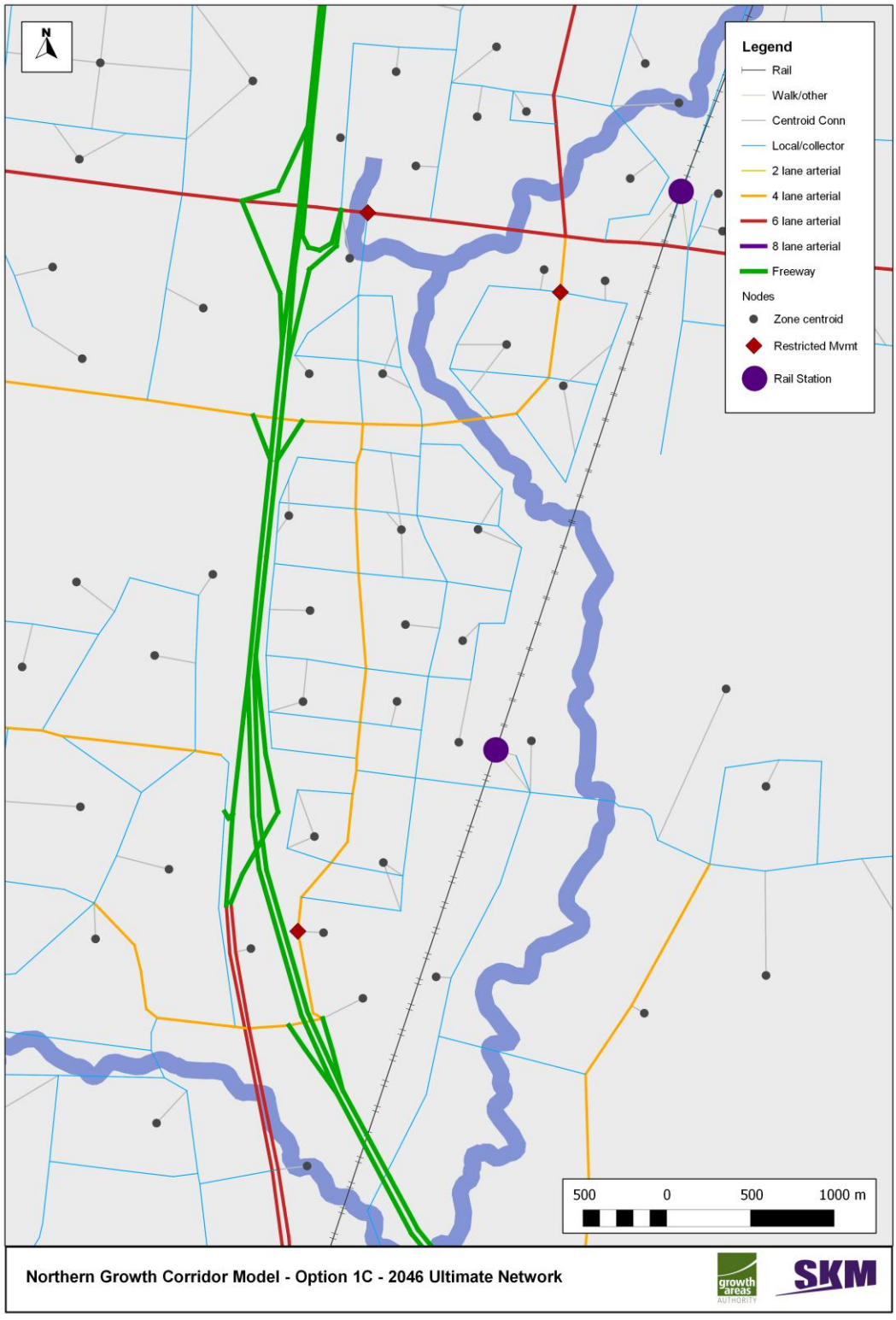
- **Figure 5: 2046 ultimate road network – option 1A**



- **Figure 6: 2046 ultimate road network – option 1B**



- **Figure 7: 2046 ultimate road network – option 1C**



3.5 Freight matrices

Comprehensive modelling of freight vehicle movements in the area would require updates to the Freight Movement Model (FMM), which is a specialised freight forecasting tool used in conjunction with the VITM model. As updates to the FMM are not currently scheduled by DTPLI, it was instead decided to redistribute freight traffic manually in the study area.

The manual redistribution of freight generation involved shifting some demand from the Merrifield development on the north-west side of the Hume Freeway / Donnybrook Road intersection to the south and west edges of the Craigieburn employment precinct. This change was made to reflect the likely future use and floor space of the study area. No changes were made to the overall freight matrix volumes in the area.

3.6 External traffic

Volumes of external traffic entering and leaving the Melbourne metropolitan area for 2046 were developed by the Department of Transport and VicRoads. The 2026 external traffic assumptions were developed by SKM and GAA as part of GAA's concurrent Hume Freeway Strategy Study.

4 Scenario Testing

This section presents the 2026 options first (Section 4.1), beginning with a description of the scenarios and then model outputs. Following this are the 2046 results (Section 4.2).

4.1 Interim Model (2026)

Two scenarios were set up to test the road network options in the interim stages (2026) of the PSP's development. The two scenarios are defined as follows:

Option 1A: Crossing of Merri Creek is provided by a new two-lane arterial road (and associated bridge) which runs immediately to the east of the existing creek crossing.

Option 1B: The existing creek crossing is retained as a minor access track and a new two-lane arterial is constructed to join Brookville Drive to English Street.

The following sections include plots of the traffic volumes, volume-capacity ratios and select-link analyses to explore the origin of the traffic demand in the study area and the occurrence of any through traffic.

4.1.1 Traffic Volumes

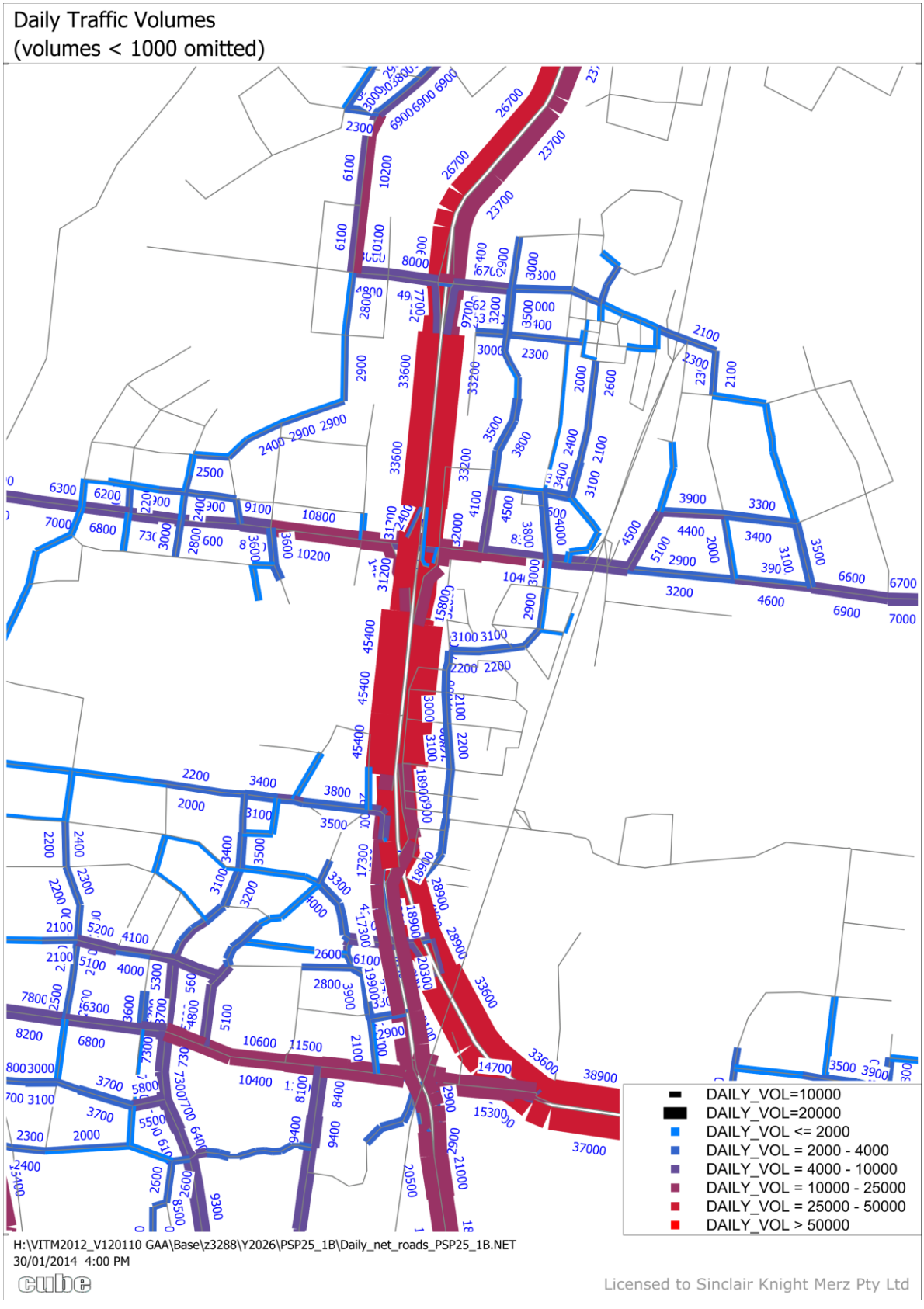
Daily volume bandwidth plots have been produced for the wider northern growth corridor network (Figure 8). Figure 9 and Figure 10 show the same information for Option 1A and Option 1B respectively with the study area magnified. In these plots, thicker lines represent higher traffic volumes. A graduated colour scale from blue (low volumes) to red (high volumes) has been used.

The plot of the wider network shows that the traffic volumes on the Hume Freeway between Donnybrook Road and the Hume Highway / Freeway merge are significant (in the order of 100,000 vehicles per day (vpd), with north and south directions summed). In peak periods (see Section 4.1.2) it is in fact operating above capacity which may cause traffic to divert to alternative routes to avoid congestion. Note that the 2026 reference case network does not include any major new roads to relieve the Hume Freeway.

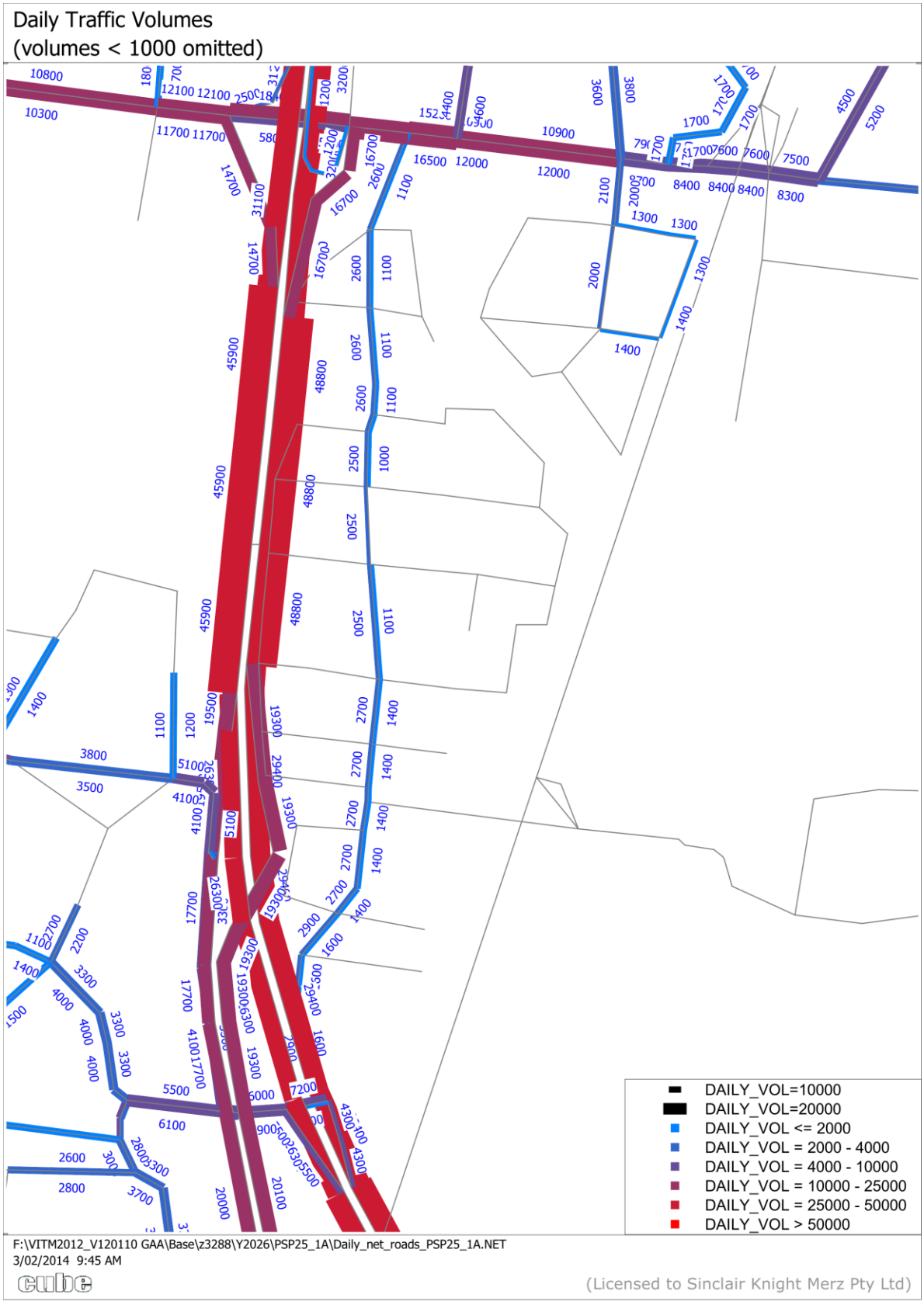
Option 1B (Figure 10) results in approximately 800vpd more on the southern section of Brookville Drive as it provides a convenient link for traffic to/from Lockerbie and English Street to the south of the study area.

Note that the land use inputs to the 2026 scenarios assume that residential development will occur prior to job creation in the area (see Appendix A for land use maps). As a result residents in the study area, Lockerbie and Donnybrook mostly travel south (towards the CBD) for employment. This creates largely southbound flows in the AM peak and northbound in the PM peak.

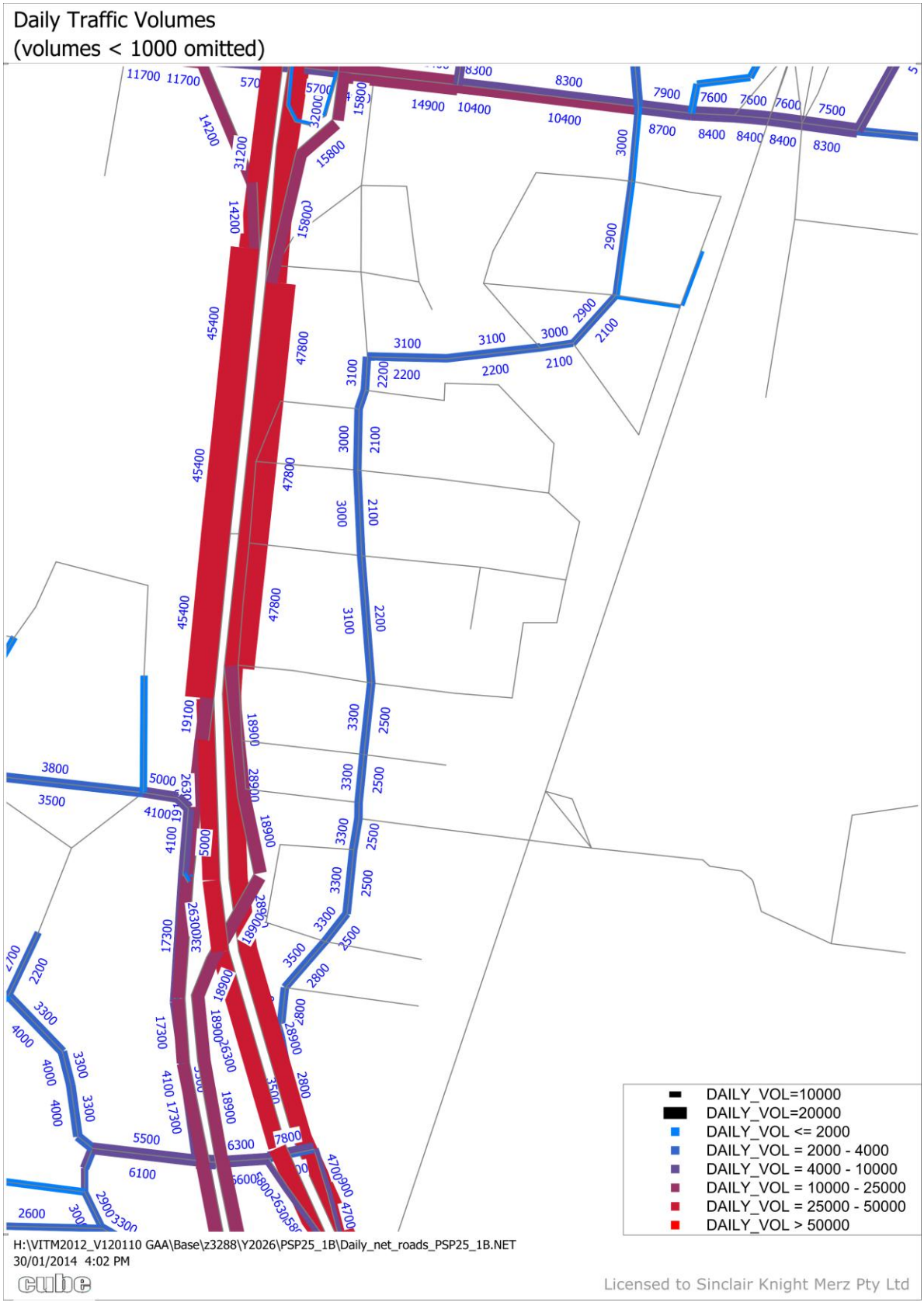
- **Figure 8: Daily modelled volumes , 2026 Option 1B NGC**



- **Figure 9: Daily modelled volumes , 2026 Option 1A Zoom**

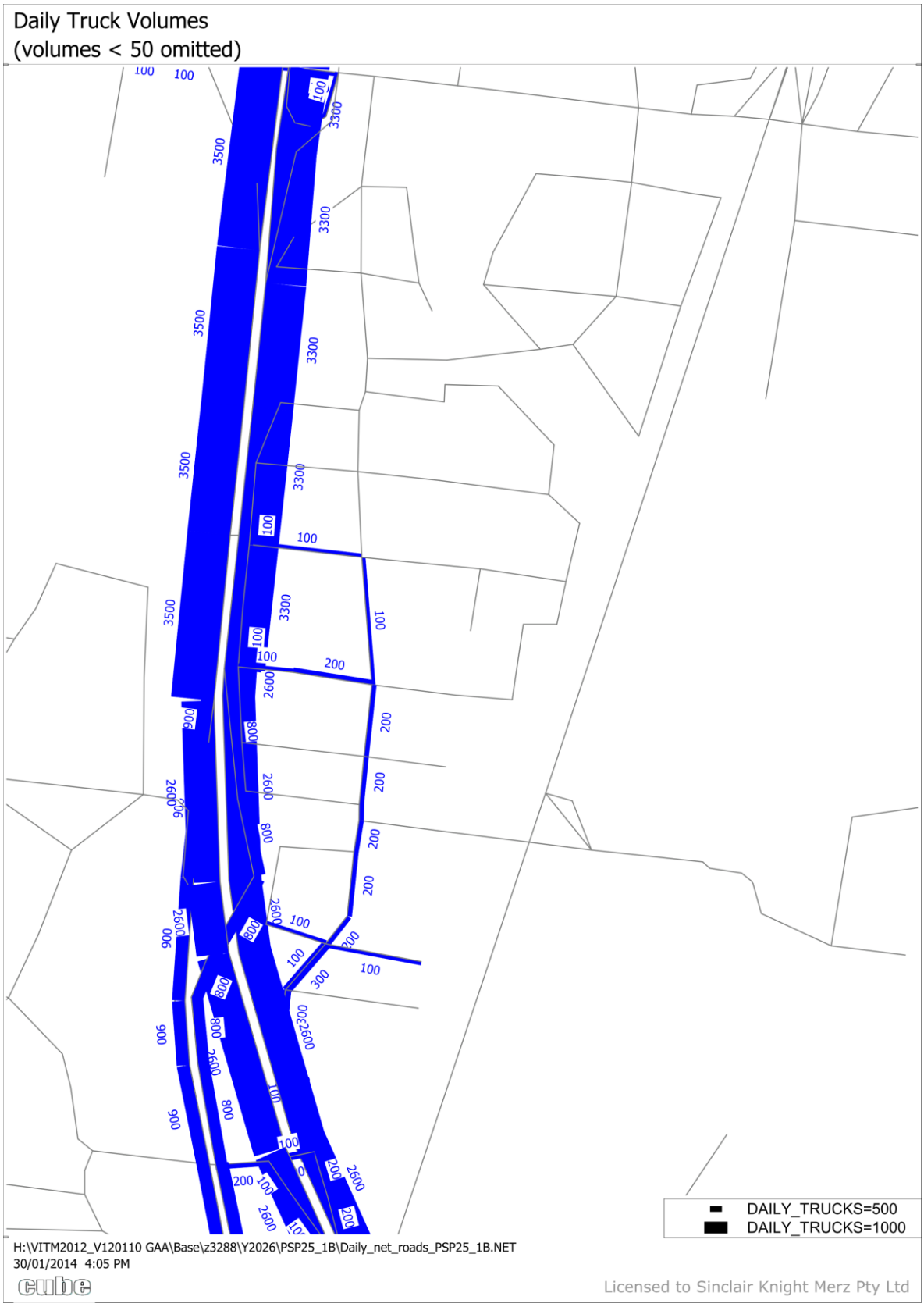


- **Figure 10: Daily modelled volumes , 2026 Option 1B Zoom**



Truck volumes in the study area are very low and generally do not use Brookville Drive as a through route due to limited commercial development in the area (see Figure 11).

- **Figure 11: Total truck volumes, Daily, 2026 Option 1B**



4.1.2 Volume to Capacity Ratios

Volume to capacity (V/C) plots have been produced for the AM and PM peak periods (Figure 12 and Figure 13 relate to Option 1A, Figure 14 and Figure 15 relate to Option 1B). These indicate the main congestion points in the study area. As mentioned previously the Hume Freeway is forecast to be highly congested between Donnybrook Road and the Craigieburn Bypass. This is clearly shown on each of the maps where the V/C ratio is greater than one, indicating that traffic demand exceeds the road capacity.

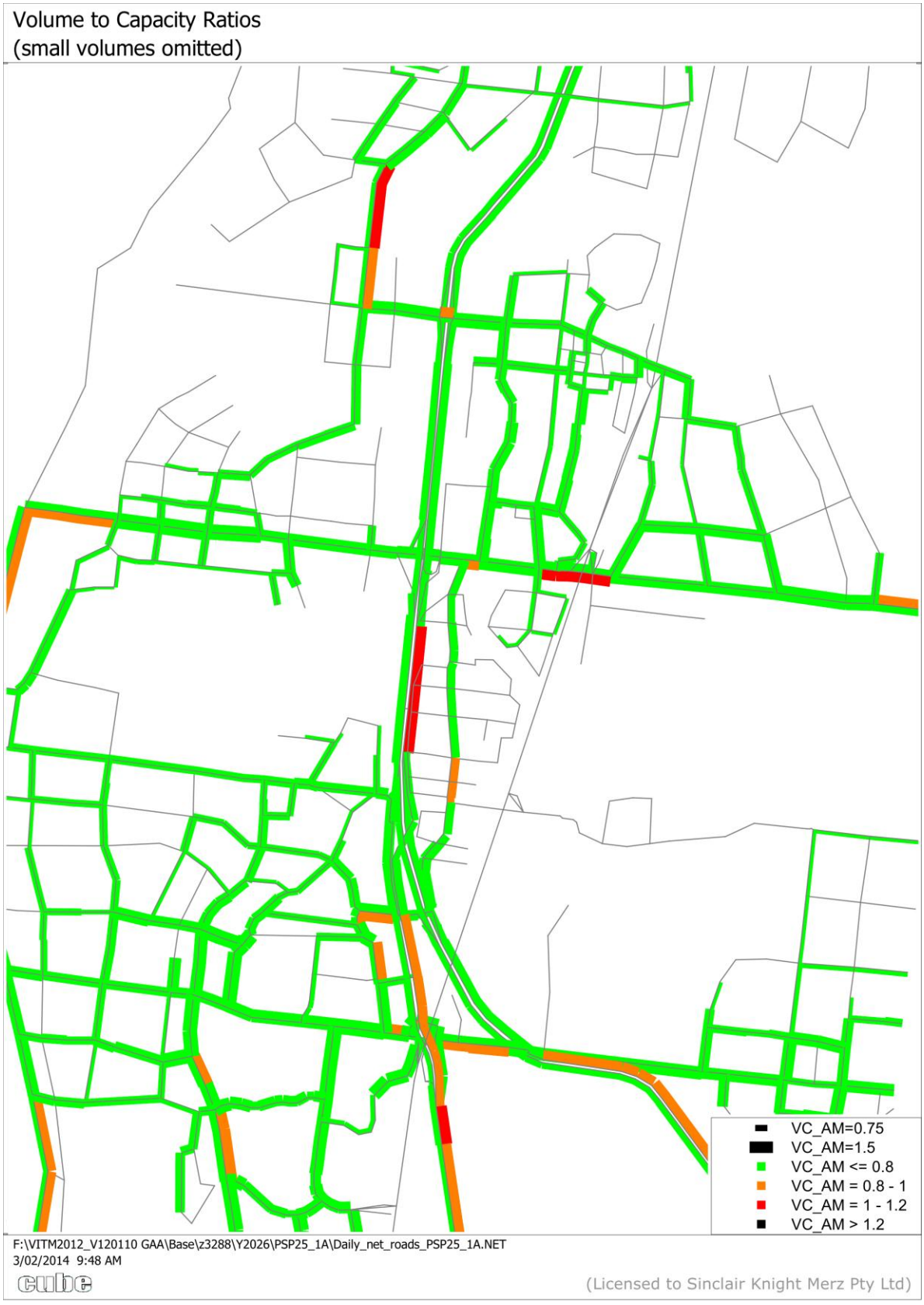
Other congested areas include:

- Brookville Drive
- English Street (Option 1B)
- Donnybrook Road around Donnybrook Station
- Hume Highway
- Craigieburn Bypass

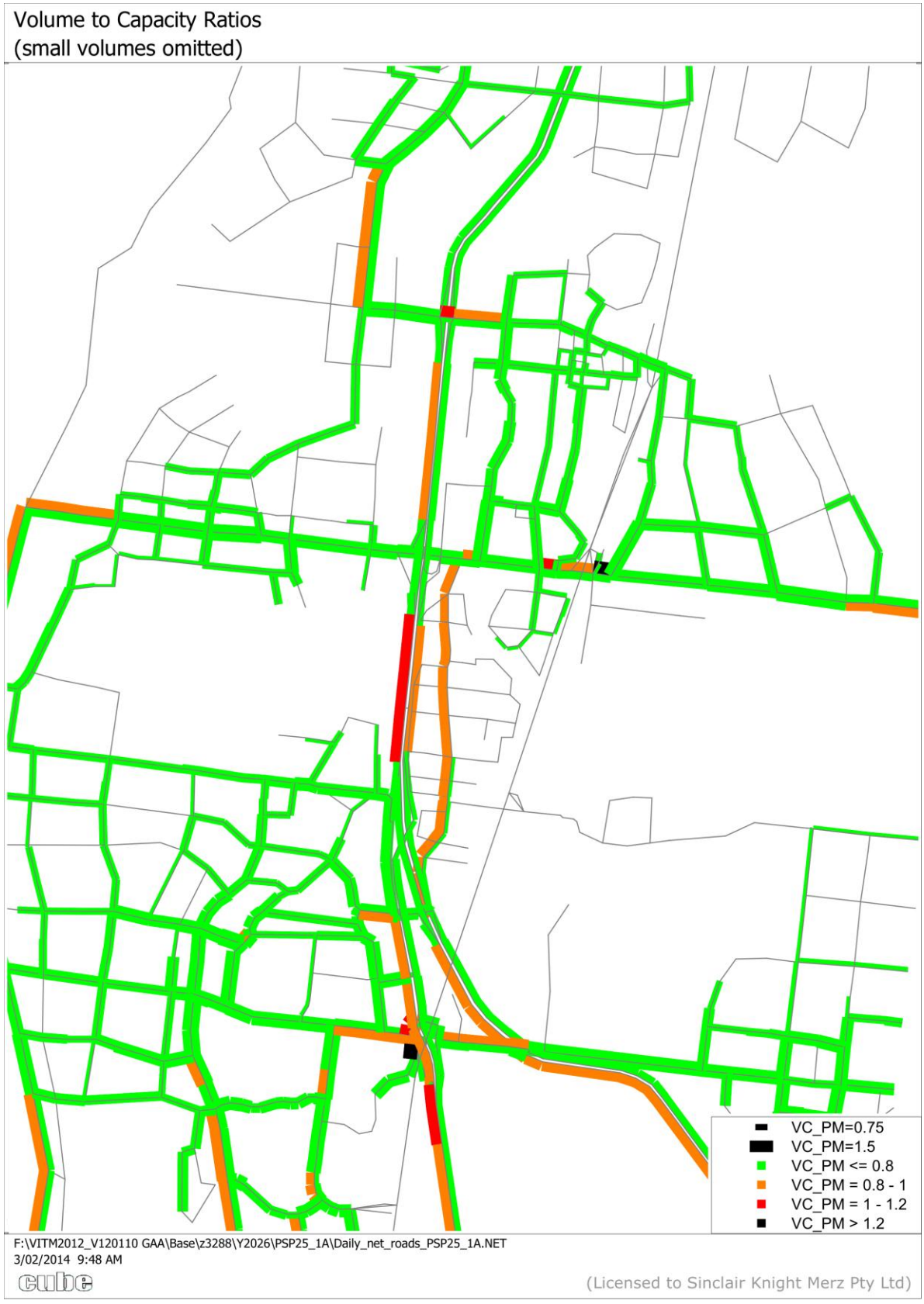
Neither scenario would appear to offer any noticeable relief to congestion in the area. The PM peak is the period with the highest congestion on Brookville Drive and English Street.

The congestion around Donnybrook Station is largely an artefact of the road network that has been coded. Specifically, all cars wishing to access the train station must enter via a single road link that connects to Donnybrook Road on the eastern side of the railway line. GAA will be amending the network in the east in coming months; this is likely to include internal access to the station via connector roads as part of the Donnybrook / Woodstock PSP process. Further refinements of the network around the station will relieve the congestion shown in these model runs on Donnybrook Road near the station.

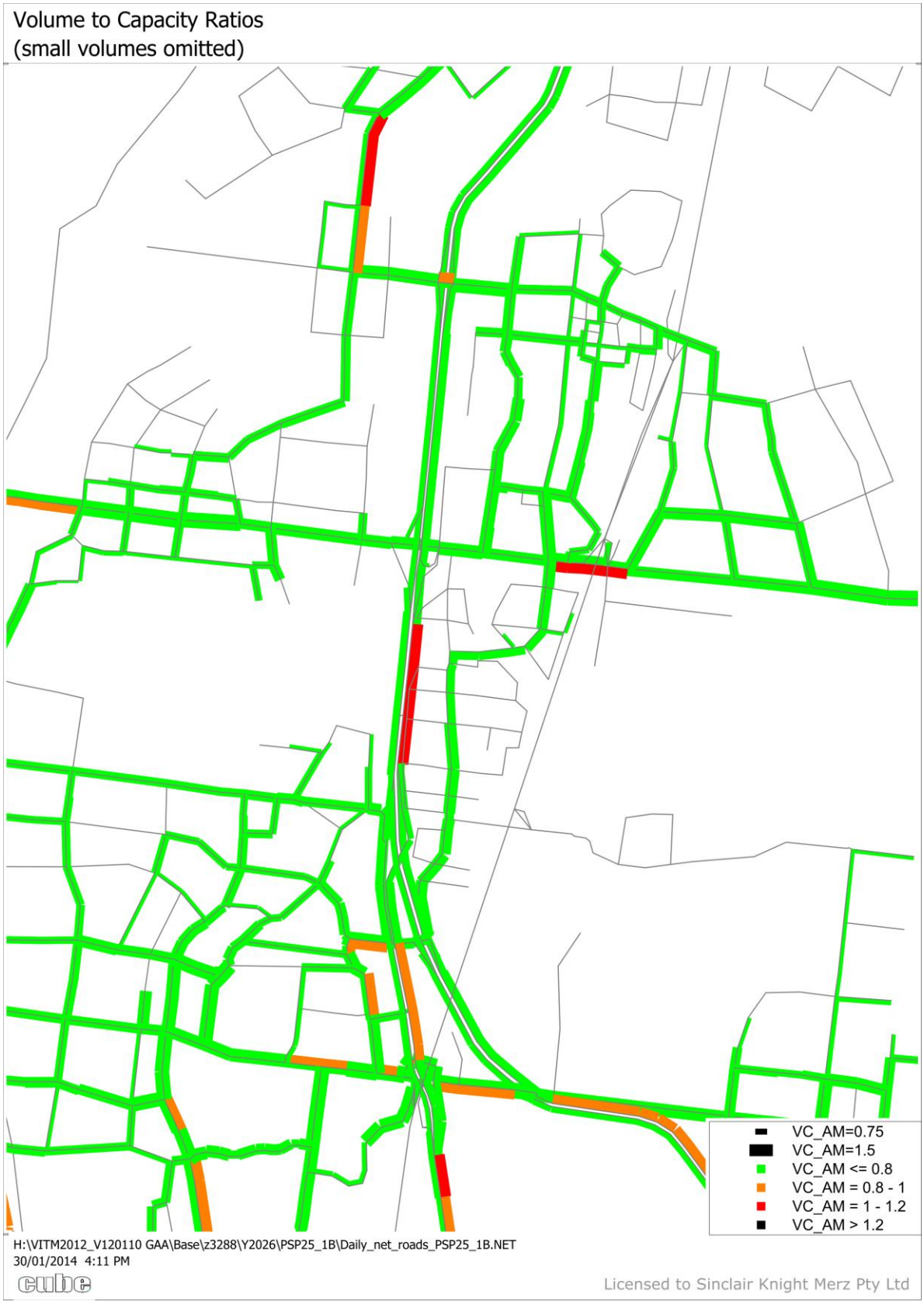
- **Figure 12: AM peak (7-9am) volume to capacity ratios, 2026 Option 1A**



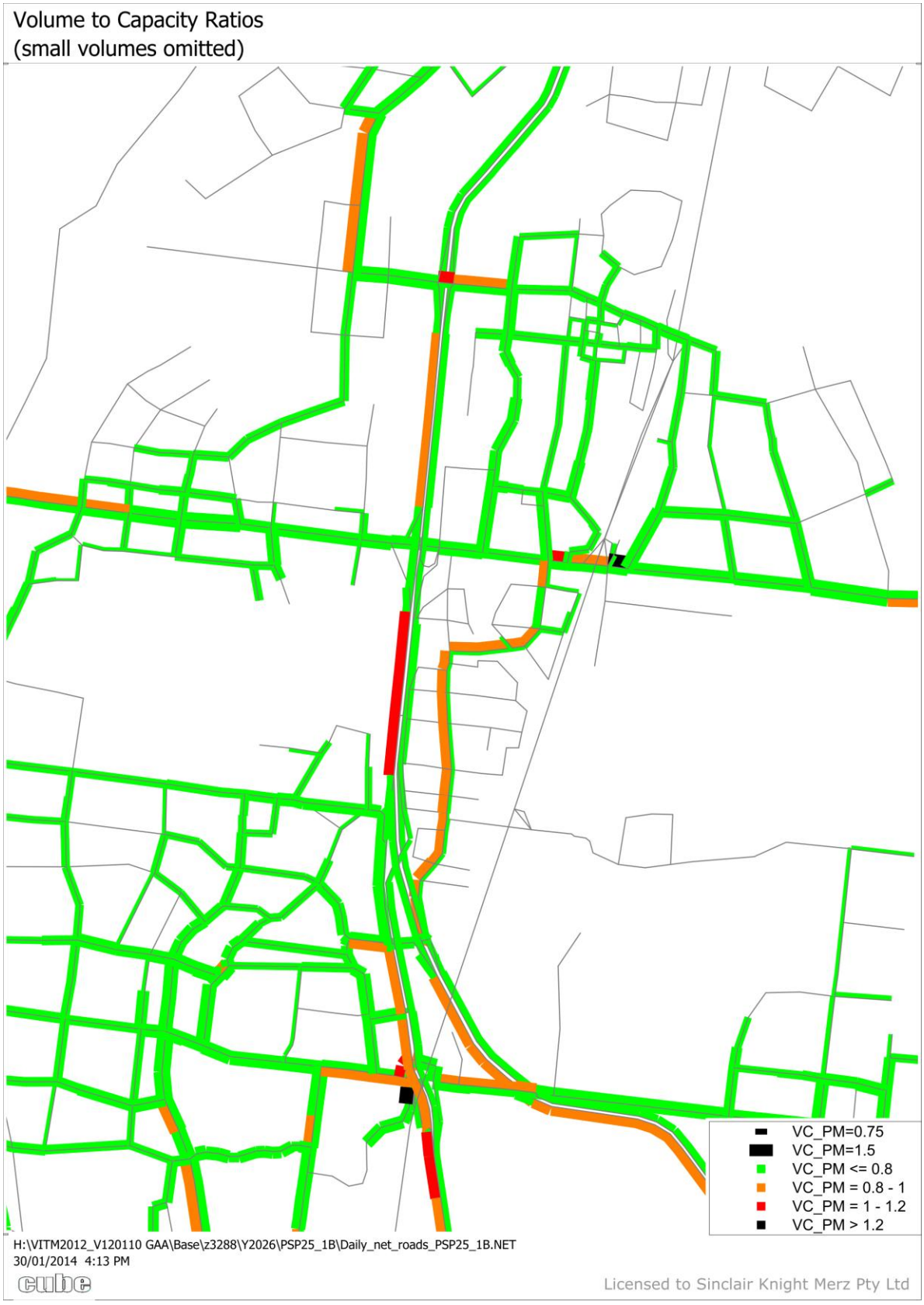
- **Figure 13: PM peak (4-6pm) volume to capacity ratios, 2026 Option 1A**



- **Figure 14: AM peak (7-9am) volume to capacity ratios, 2026 Option 1B**



- **Figure 15: PM peak (4-6pm) volume to capacity ratios, 2026 Option 1B**



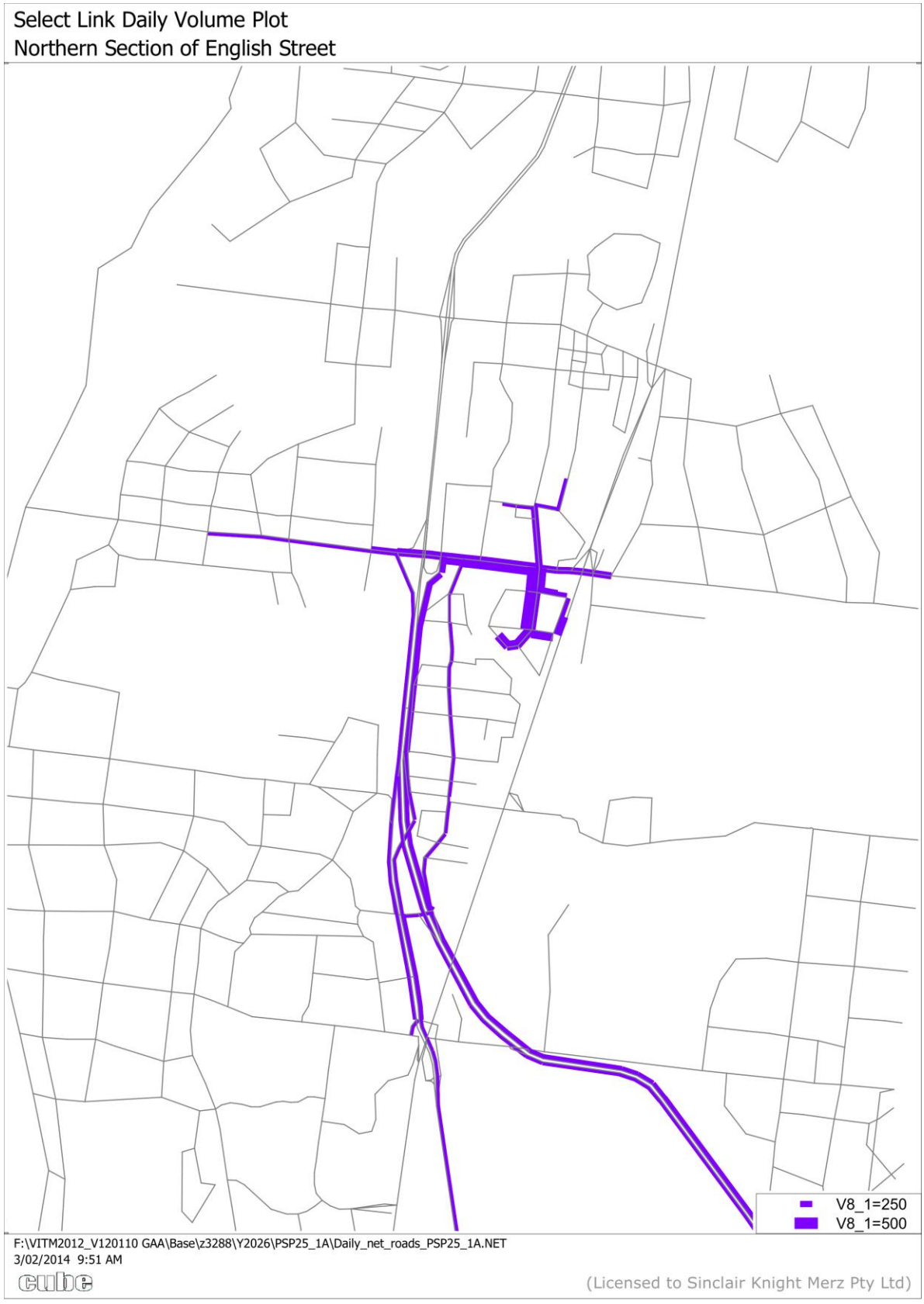
4.1.4 Select-Link Analysis

In order to more closely investigate the movement of traffic to/from and through the PSP area we completed select-link analyses at strategic locations. For clarity we have shown the AM peak only, where the flows tend to be more intense in the southbound direction in 2026. Figure 16 and Figure 17 show the traffic volumes that pass through the northern section of English Street in Option 1A and Option 1B respectively. In the absence of a bridge connecting English Street to Brookville Drive (Figure 16) it is possible to see that the majority of the residents in this area wish to travel south down the Hume Freeway. Not surprisingly, the addition of the bridge (Figure 17) provides a quicker route for these people and also a convenient through route for people from Lockerbie. A very small number of trips are attracted from the Hume Freeway and Donnybrook Road west of the Hume interchange.

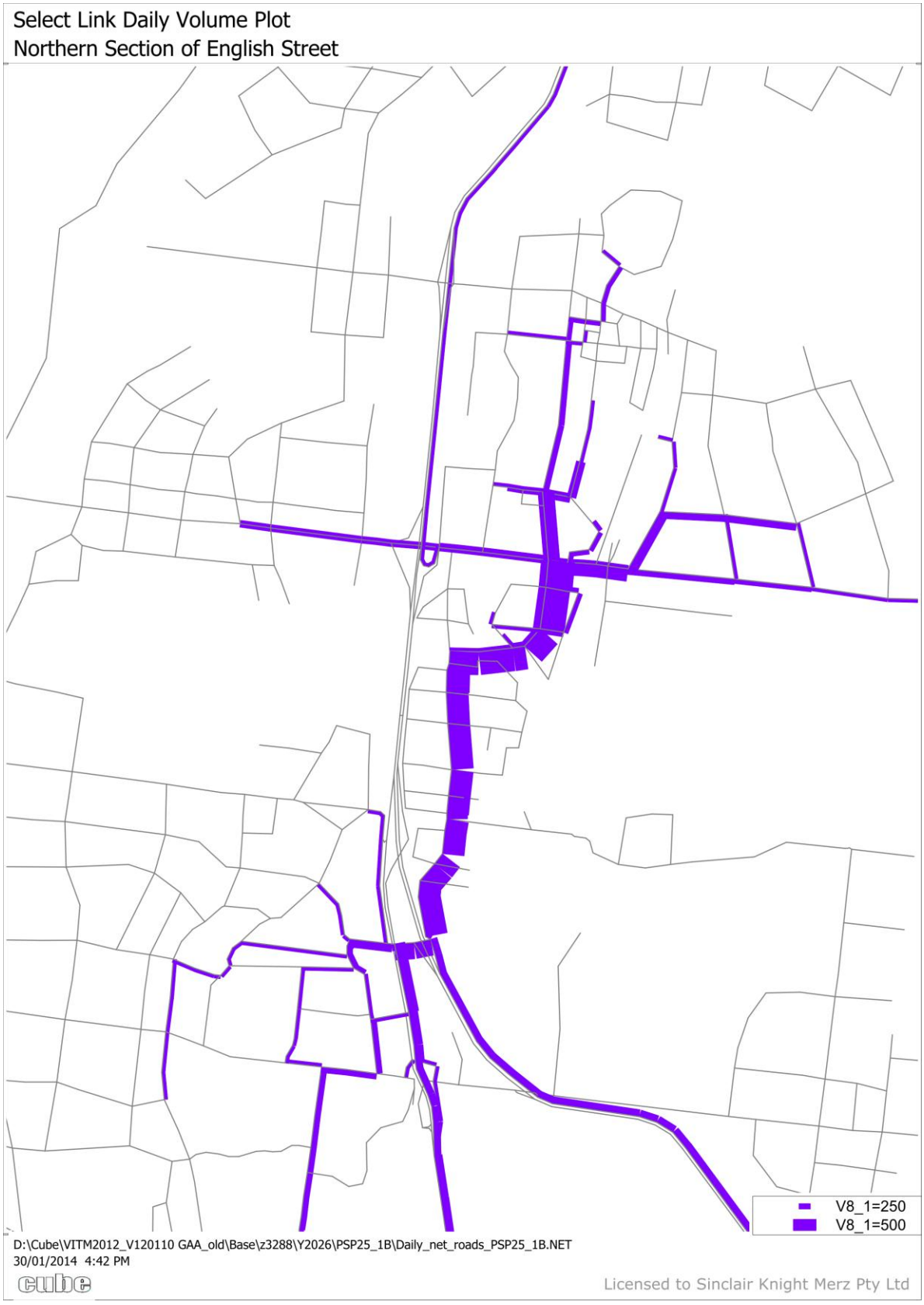
Figure 18 shows the traffic volumes that pass through the northern section of Brookville Drive in Option 1A. With no jobs in the Craigieburn Employment Precinct virtually all traffic using this link passes through the site. However, unlike Option 1B, a significant portion (40%) of the traffic is diverted from the Hume Freeway to use Brookville Drive as a rat run due to avoid congestion on the Hume Freeway.

If the Hume Freeway was not congested in the AM peak this traffic would probably stay on the Hume Freeway and in turn may relieve the congestion identified earlier on Brookville Drive.

- **Figure 16: AM peak (7-9am), all traffic passing through the northern section of English Street, 2026 Option 1A**



- **Figure 17: AM peak (7-9am), all traffic passing through the northern section of English Street, 2026 Option 1B**



- **Figure 18: AM peak (7-9am), all traffic passing through the northern section of Brookville Drive, 2026 Option 1A**

4.1.5 2026 Summary

Traffic generated by the PSP area is relatively low in 2026 with only 1110 jobs on-site and 600 households. A basic two-lane arterial road with suitable local connectors would be sufficient to handle the traffic volumes generated from this amount of development. However the network is affected by congestion on the nearby Hume Freeway which is forecast to have insufficient capacity between Donnybrook Road and the Craigieburn Bypass in 2026. This encourages vehicles to use Brookville Drive as a rat run (particularly Option 1A) to avoid congestion on the Hume Freeway.

In Option 1A the traffic on Brookville Drive is principally through-traffic that would have otherwise used the Hume Freeway. The English Street precinct traffic (mostly residential) flows onto Donnybrook Road to predominantly travel to/from the city. As a result, Brookville Drive is congested in the peak direction during the AM and PM peak periods with some sections of the road operating over capacity during the PM peak.

In Option 1B, English Street traffic doubles compared to Option 1A as it now carries traffic generated from the precinct as well as some through traffic wishing to use the new bridge. The net impact on the southern section of Brookville Drive is a small increase of 800vpd. As a result Brookville Drive and English Street are congested in the peak direction during the AM and PM peak periods with some sections of the road operating over capacity during the PM peak. Approximately 4000vpd are removed from Donnybrook Road between the Hume Freeway and English Street, although as a four-lane arterial in 2026 this section is not congested.

If the Hume Freeway was not congested in the AM or PM peaks the congestion identified on Brookville Drive and English Street would most likely not occur.

Around the site, the Hume Freeway and Craigieburn Bypass are congested in the peak directions with neither road having been widened at this stage. Donnybrook Road, adjacent to Donnybrook Station is only two-lanes and is heavily congested, although this could be relieved if the coding of the road network was revised (see section 3.4). This has been identified as part of further work as part of the Donnybrook / Woodstock PSP.

Truck volumes are not forecast to be high within the PSP area and the roads within the site do not become attractive as a through route for trucks in either option.

4.2 Ultimate Model (2046)

Three scenarios were set up to test the road network options at the ultimate stage (2046) of the PSP's development. The three scenarios are defined as follows:

Option 1A: Crossing of Merri Creek is provided by a four-lane arterial road (and associated bridge) which runs immediately to the east of the existing creek crossing.

Option 1B: The existing creek crossing is retained as a minor access track and a four-lane arterial is constructed to join Brookville Drive to English Street. A new half-diamond Hume Freeway interchange is added at the extension of English Street. An overpass of the Hume Freeway is included at Summerhill - Mount Ridley Road.

Option 1C: As per Option 1B with the removal of the Summerhill - Mount Ridley Road overpass

The following sections include plots of the traffic volumes, volume-capacity ratios and select-link analyses to explore the origin of the traffic demand on site and the occurrence of any through traffic.

4.2.1 Traffic Volumes

Daily volume bandwidth plots have been produced for the wider northern growth corridor network (Figure 19). Figure 20, Figure 21 and Figure 22 show the same information for Option 1A, Option 1B and Option 1C

respectively with the study area magnified. In these plots, thicker lines represent higher traffic volumes. A graduated colour scale from blue (low volumes) to red (high volumes) has been used.

The plot of the wider network shows that the traffic volumes on the Hume Freeway have reduced compared to 2026 (Figure 8) due to the significant improvements to the 2046 road network. There are many new route options (and much higher capacity) for vehicles travelling north-south and this in turn offers relief to the Hume Freeway. The main road improvements are as follows:

- Widening of the Hume Freeway from four lanes to six lanes
- Construction of the Outer Metropolitan Ring Road
- Full construction of the Aitken Boulevard (from Western Ring Road to Donnybrook Road)
- Widening of Epping Road from two lanes to four lanes
- Widening of Donnybrook Road to six lanes for the full length

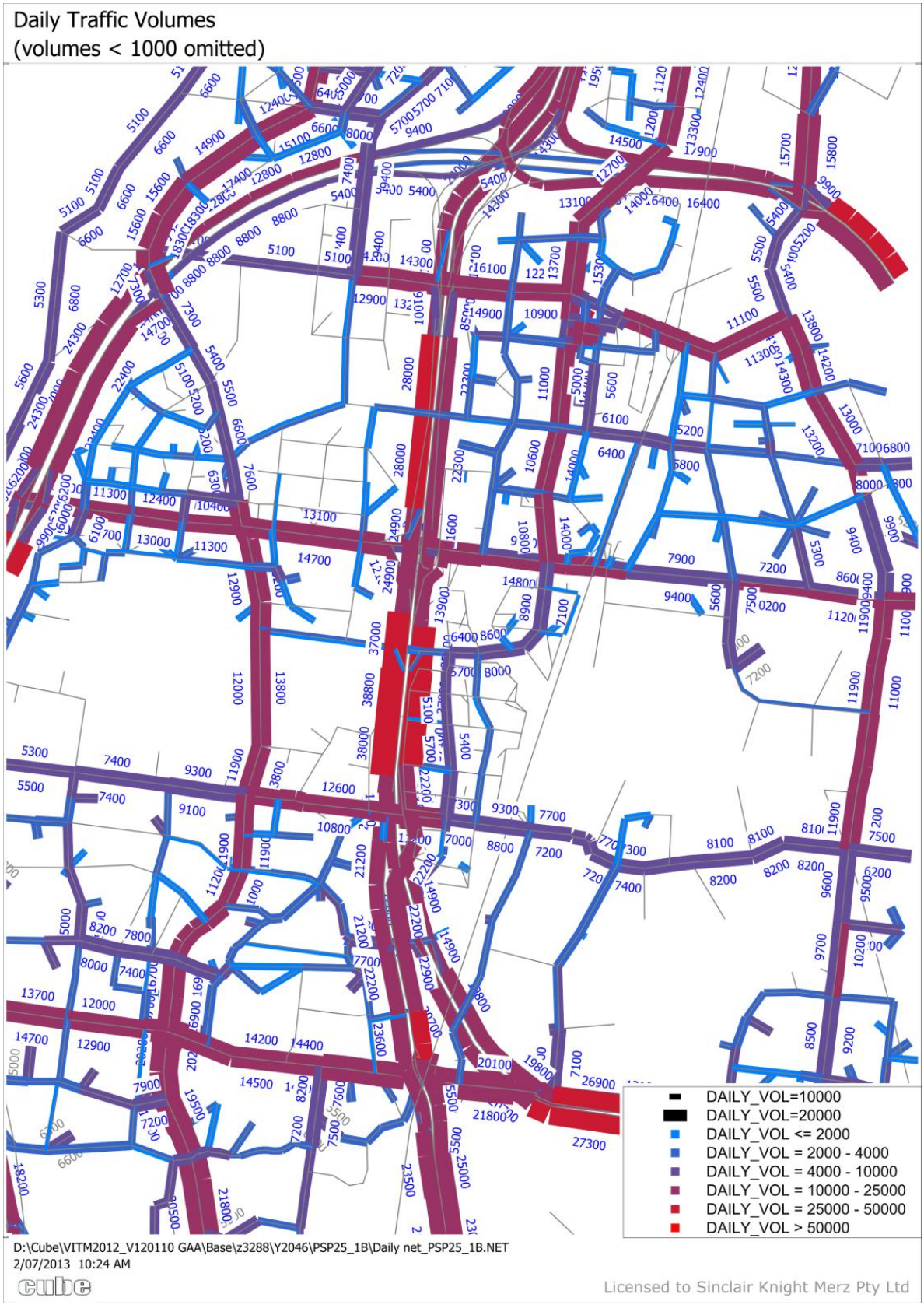
In 2046, the ultimate network performs very well in the northern growth corridor; this is probably, in part, due to excess capacity built into the road network – particularly the predominance of 6 lane arterial roads. It is possible that not all of the improvements listed above will be required in 2046, if judged on congestion alone the projects which could potentially be deferred are the widening of the Hume Freeway and Epping Road.

Compared to Option 1A, Option 1B (Figure 21) results in approximately 2,100 less vehicles per day (vpd) on the southern section of Brookville Drive, however this is mainly due to an increase in traffic (from 1,000 to 4,400vpd) using the parallel local street immediately to the east. If considered in aggregate, traffic increases by 1,300vpd as the new bridge provides a convenient link for traffic between Lockerbie and English Street and the south of the study area.

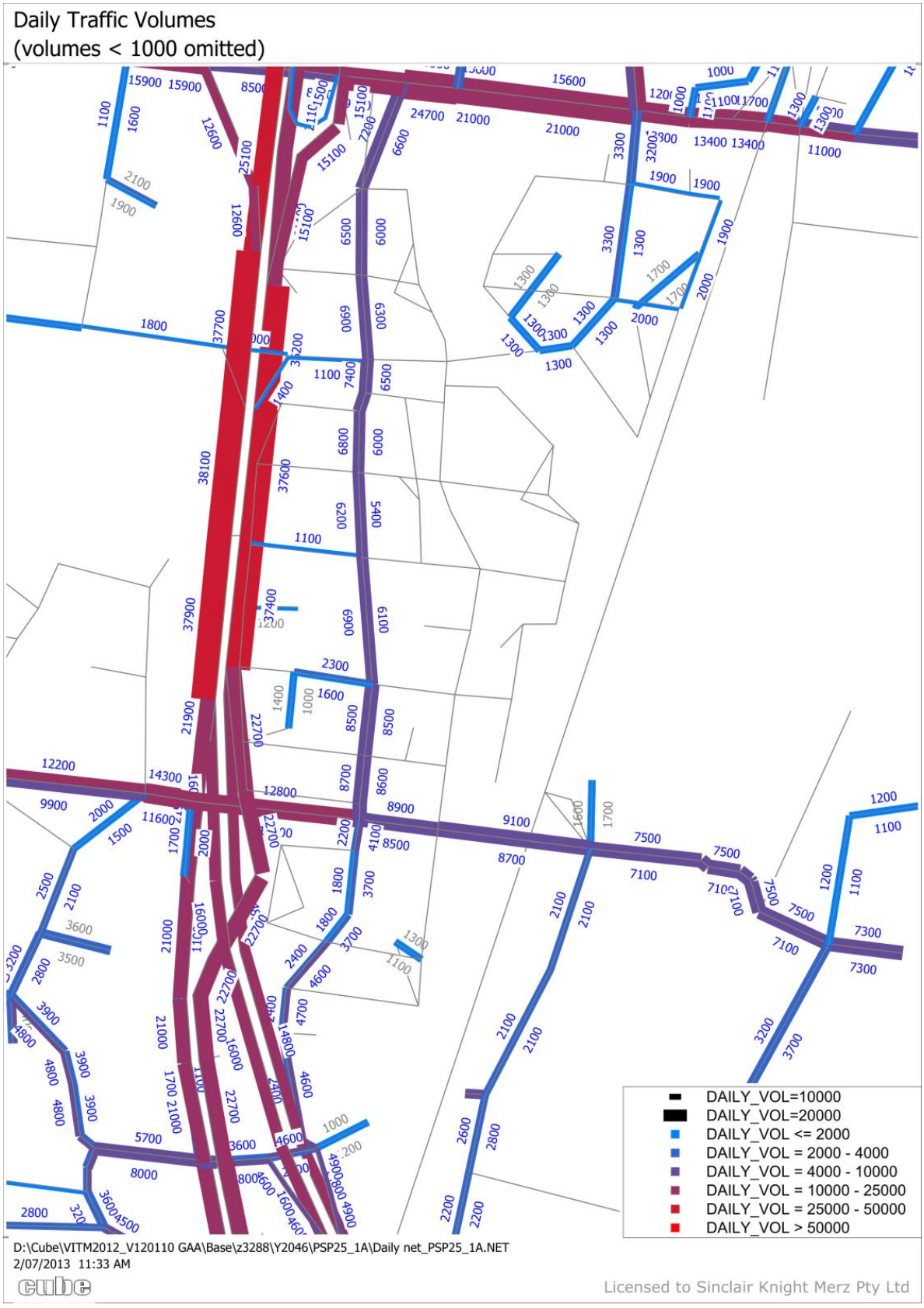
The removal of the Summerhill – Mount Ridley Road overpass in Option 1C (Figure 22) results in a halving of traffic on the southern section of Brookville Drive. Most of this traffic is now continuing along the English Street extension through the Hume Freeway interchange and then to the Aitken Boulevard, removing through traffic off Brookville Drive. Wider network impacts are shown in Figure 23 using a volume difference plot between Option 1C and Option 1B; this shows increases in traffic on Donnybrook Road, Craigieburn Road East, Hume Freeway, Amaroo Road and Scanlon Drive.

In general, the changes in land use since 2026 (the addition of jobs and further residential development) have helped to balance the north-south flow of traffic in the AM and PM peaks, but have resulted in a near doubling in two-way traffic volumes since 2026.

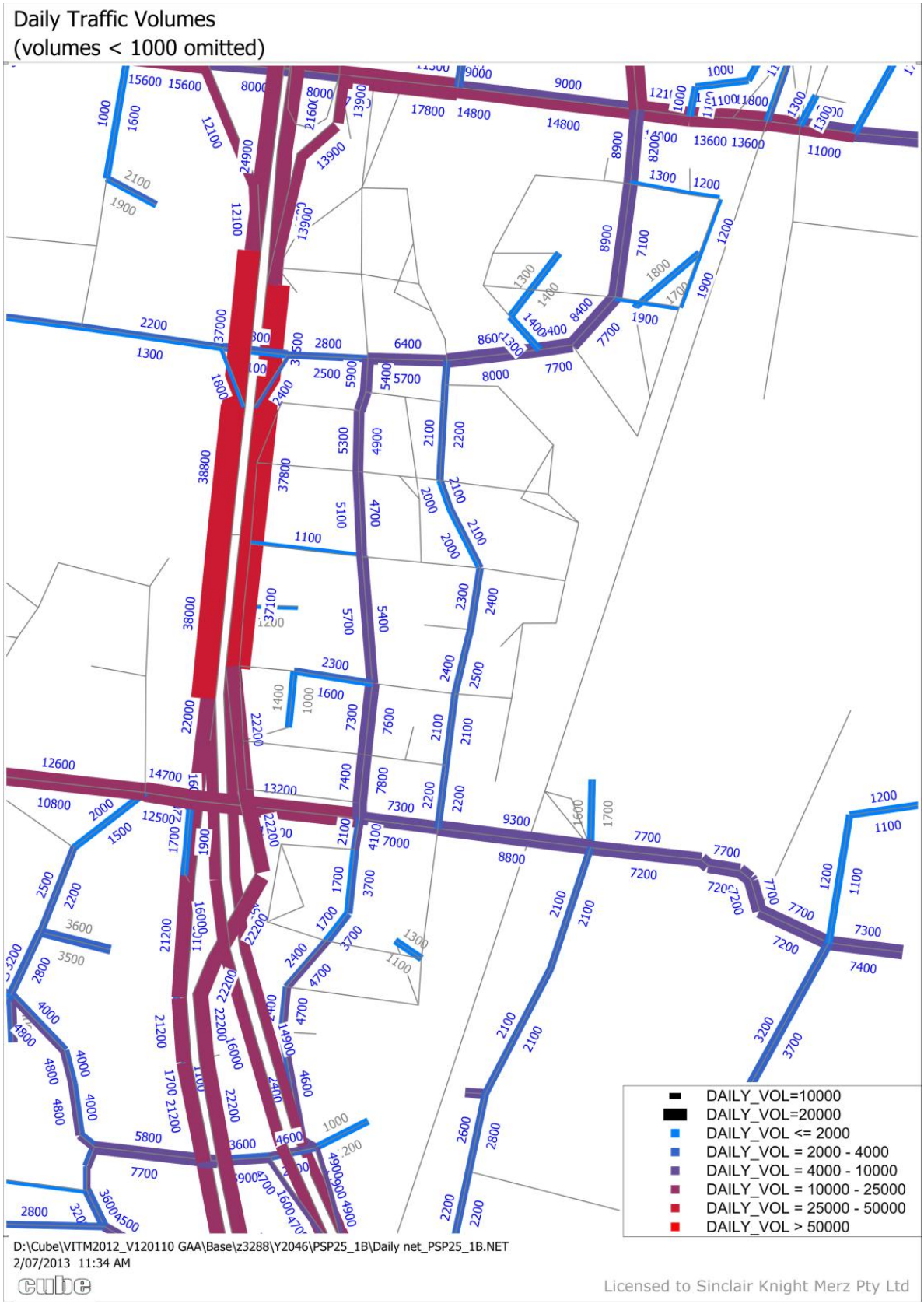
- **Figure 19: Daily modelled volumes , 2046 Option 1B NGC**



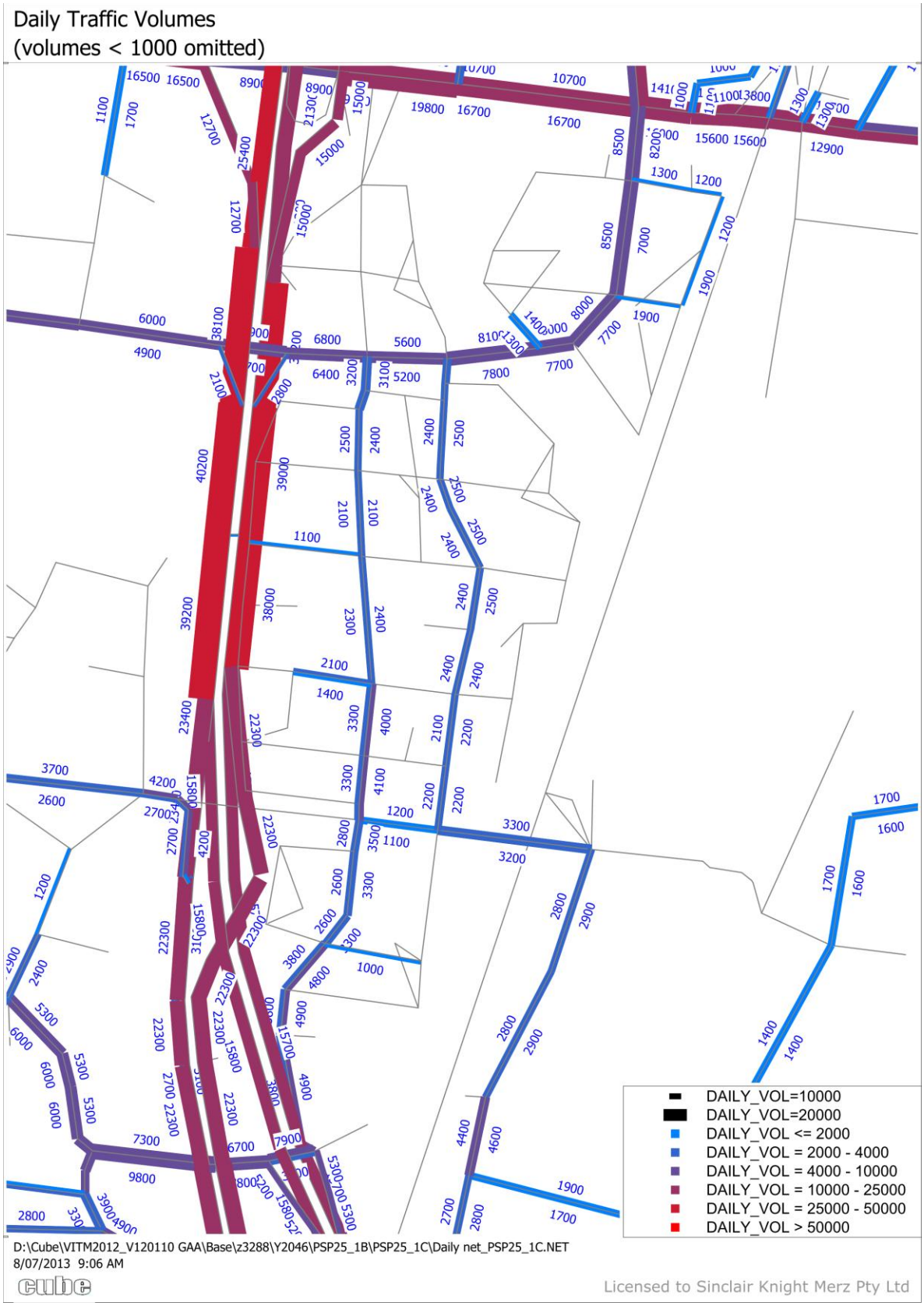
- **Figure 20: Daily modelled volumes , 2046 Option 1A Zoom**



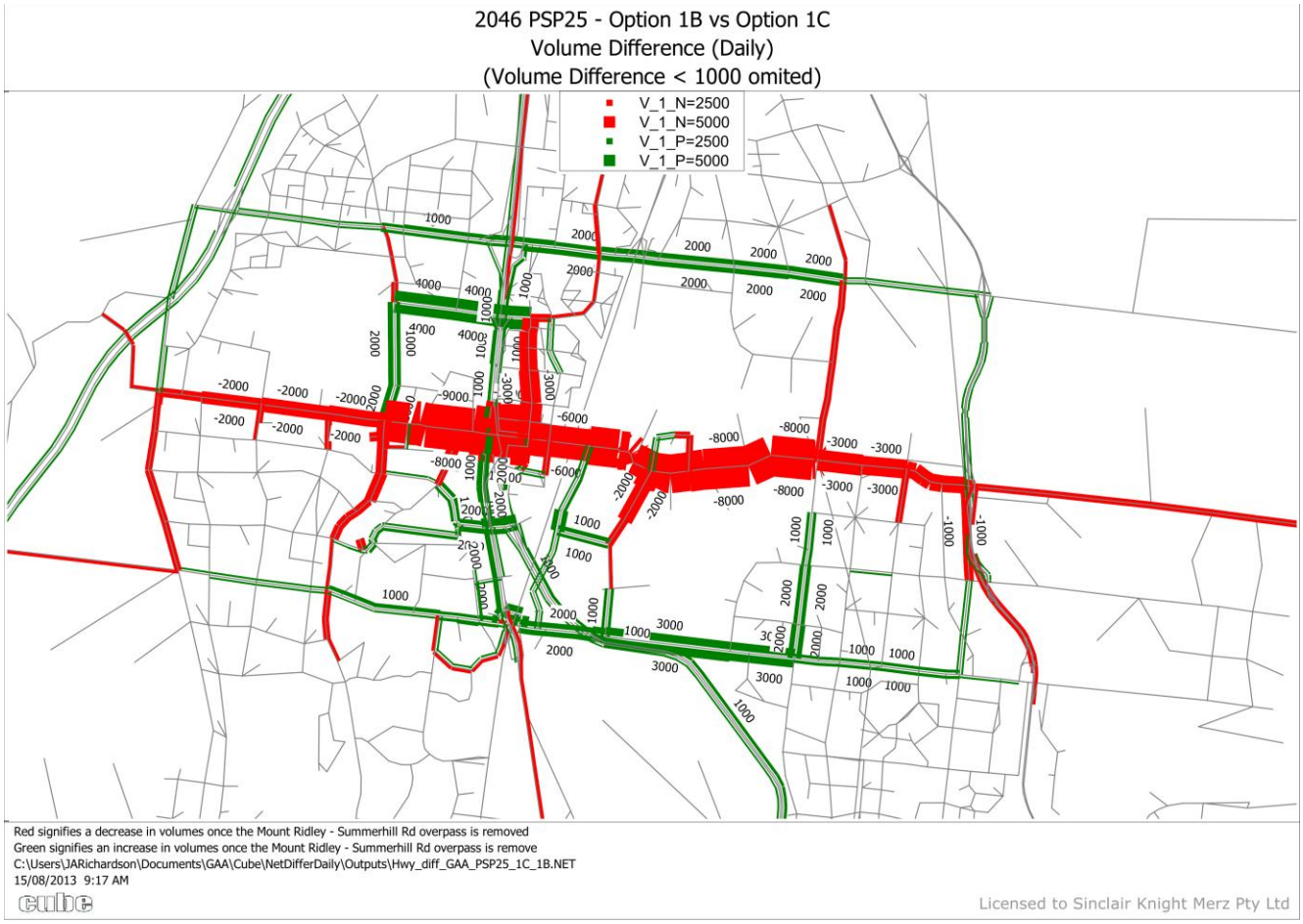
- **Figure 21: Daily modelled volumes , 2046 Option 1B Zoom**



- **Figure 22: Daily modelled volumes , 2046 Option 1C Zoom**

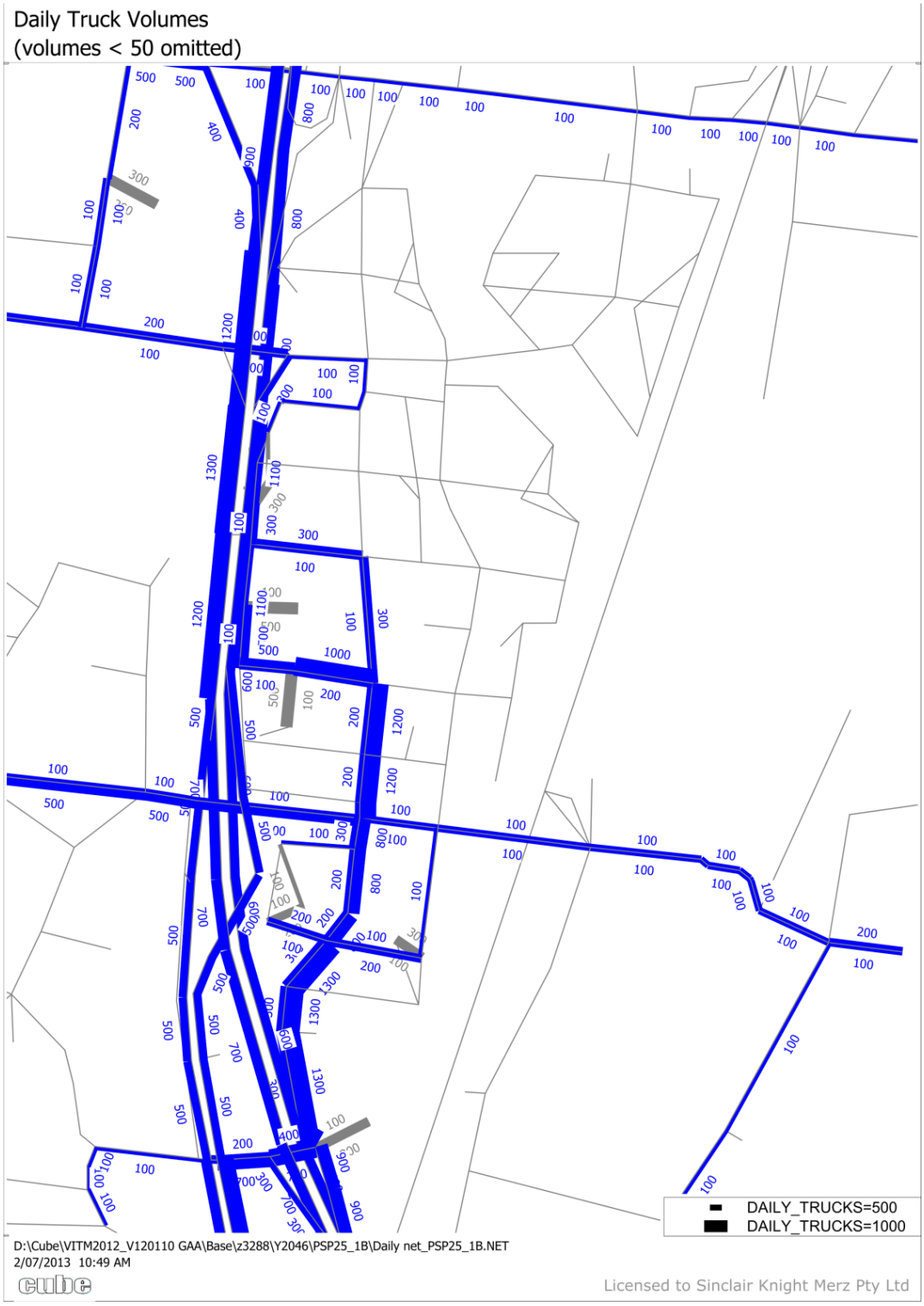


- **Figure 23: Volume difference plot, 2046 Option 1C minus Option 1B, daily traffic**



Truck volumes in the study area have increased since 2026 as the employment precinct is developed, however they are largely contained to the southern section of the site and tend not to use Brookville Drive as a through route (see Figure 24). The truck volumes on the Hume Freeway have significantly reduced since 2026 (see Figure 11) due to the presence of alternative routes such as the OMR.

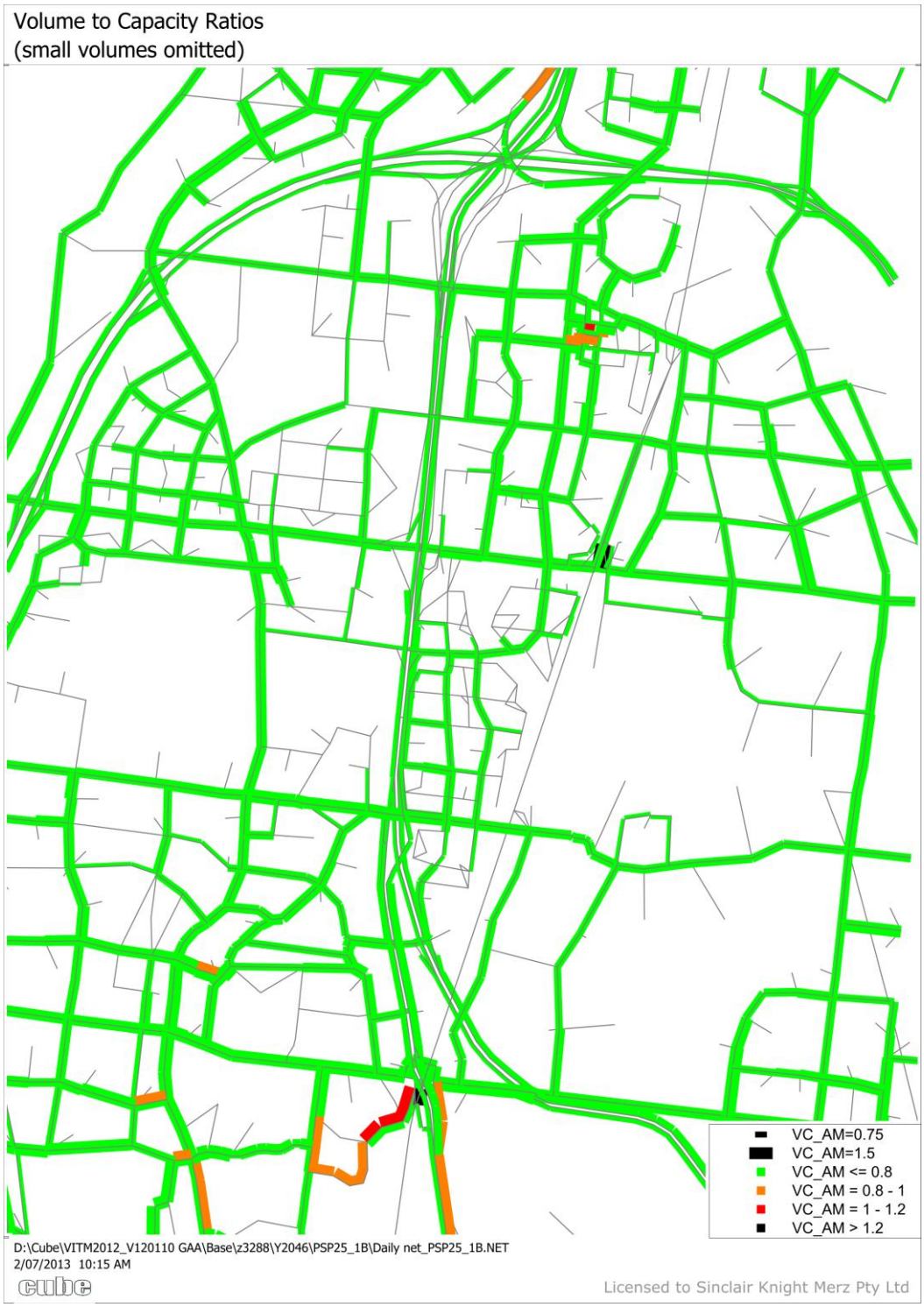
- **Figure 24: Total truck volumes, Daily, 2046 Option 1B**



4.2.2 Volume to Capacity Ratios

As a result of the expanded 2046 road network there is very little congestion forecast in the Northern Growth Corridor, although quite significant congestion is forecast in the inner suburbs. The model suggests that the main points of congestion will be around train stations due to the high volumes of rail users parking at these stations. Figure 25 shows a representative V/C plot for Option 1B in the AM peak.

- **Figure 25: AM peak (7-9am) volume to capacity ratios, 2046 Option 1B**



4.2.3 Select-Link Analysis

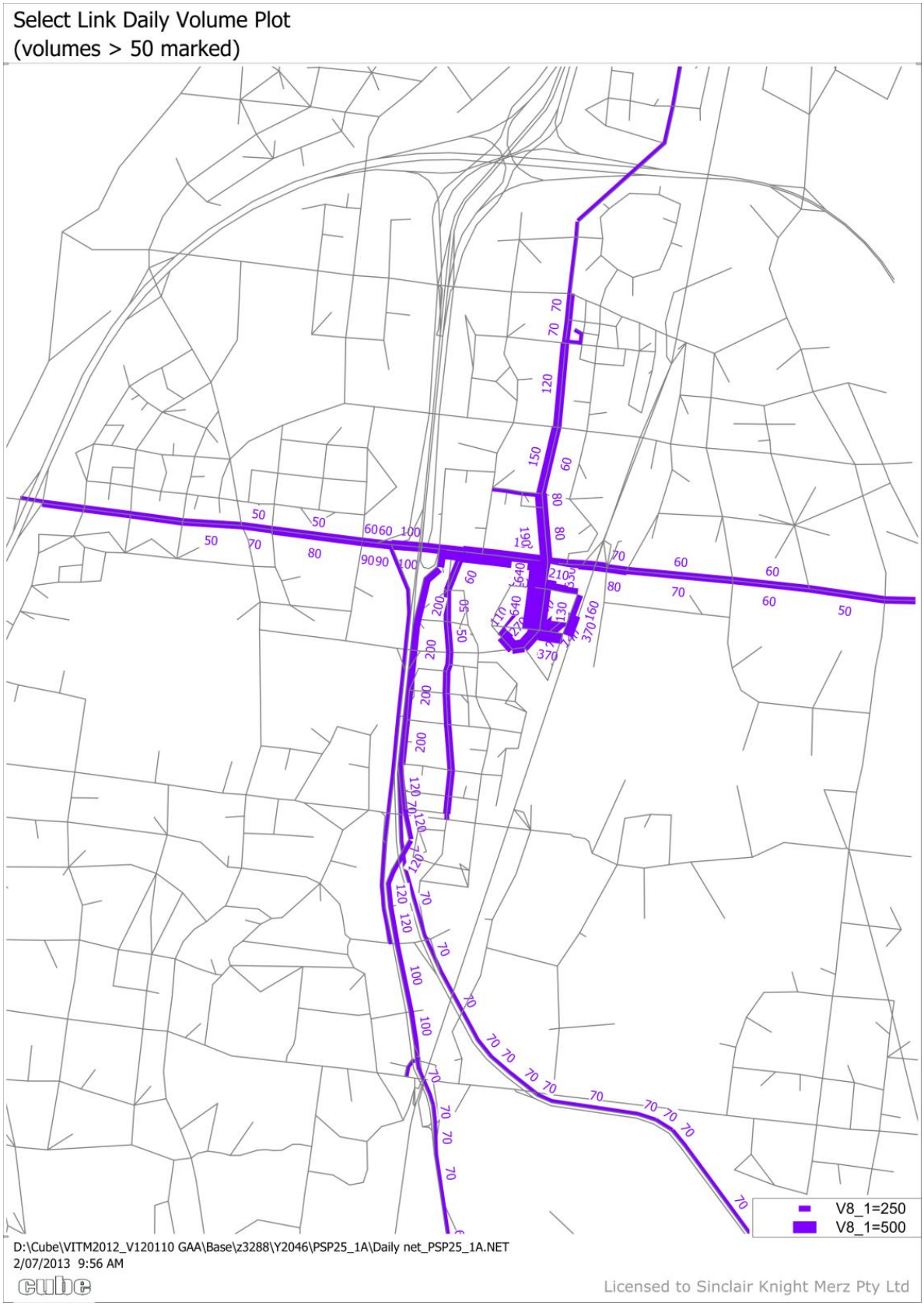
In order to more closely investigate the movement of traffic to/from and through the PSP area we completed select-link analyses at strategic locations. We have shown AM traffic volumes only to be consistent with the 2026 analysis. Figure 26, Figure 27 and Figure 28 show the traffic volumes that pass through the northern section of English Street in Option 1A, 1B and 1C respectively. In the absence of the bridge connecting English Street to Brookville Drive (Figure 26) the results suggest that trips from this area radiate in all directions (not predominantly southbound as in 2026). The addition of the bridge (Figure 27) provides a key link between Lockerbie, English Street and Mount Ridley Road. Virtually no trips are attracted from the Hume Freeway and Donnybrook Road west of the Hume interchange. The removal of the Summerhill – Mount Ridley Road overpass in Option 1C (Figure 28) results in only a marginal drop in traffic along English Street (from 16,500 to 15,900vpd)

Figure 29 shows the traffic volumes that pass through the northern section of Brookville Drive in Option 1A (13,800vpd use the new bridge). With congestion on the Hume Freeway no longer causing traffic to divert down Brookville Drive most the of traffic is either travelling to/from the site or using Brookville Drive as a convenient access point to Mount Ridley Road due to the addition of an overpass of the Hume Freeway.

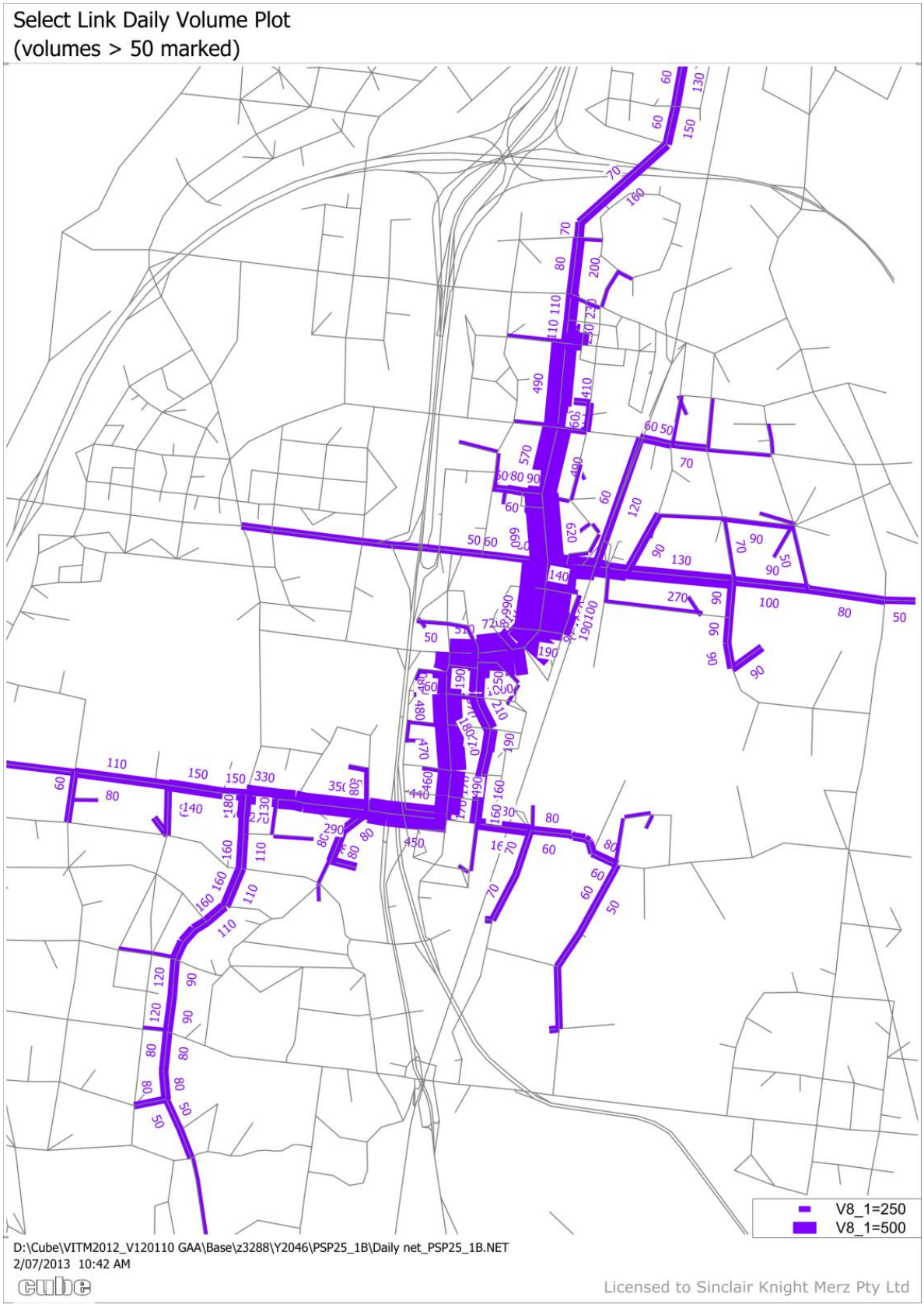
To investigate the last issue further Figure 30 shows a select link plot of traffic passing through the section of Mount Ridley Road immediately to the west of Brookville Drive. 1,400 vehicles turn in/out of Mount Ridley Road onto Brookville Drive with 900 (65%) of these continuing through the PSP site.

The 2046 network (all options) also contains a new interchange onto the Hume Freeway at the extension of English Street. As shown in Option 1B (Figure 31) there is not a high demand for this interchange, although it will offer some relief to the Hume Freeway / Donnybrook Road interchange. However if the Summerhill – Mount Ridley Road overpass is removed, the use of the interchange substantially increases. Vehicles passing straight through increases from 4,900vpd to 12,600vpd, whilst vehicles interchanging on/off the Hume freeway increases more modestly from 4,200 to 4,900vpd.

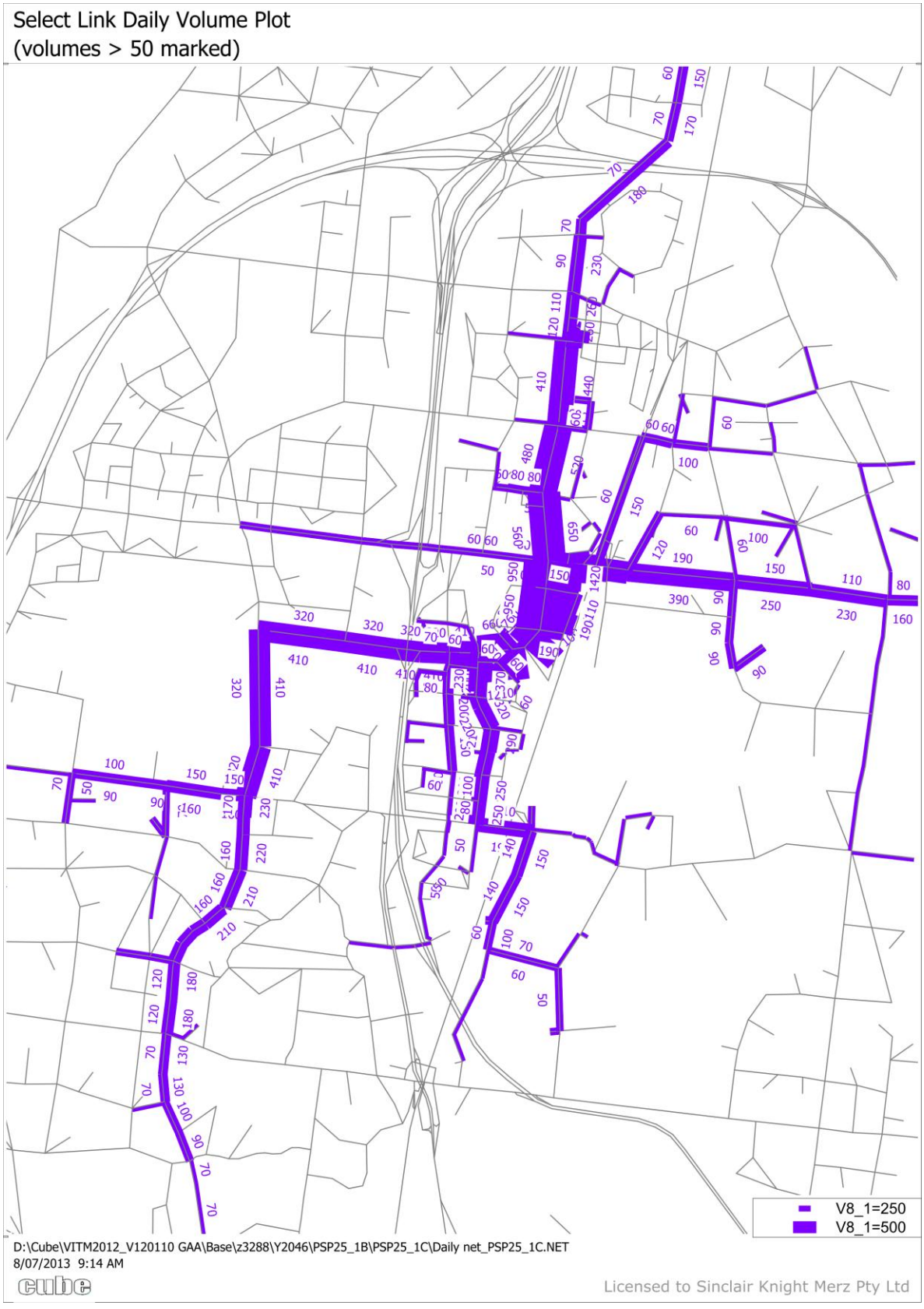
- **Figure 26: AM peak (7-9am), all traffic passing through the northern section of English Street, 2046 Option 1A**



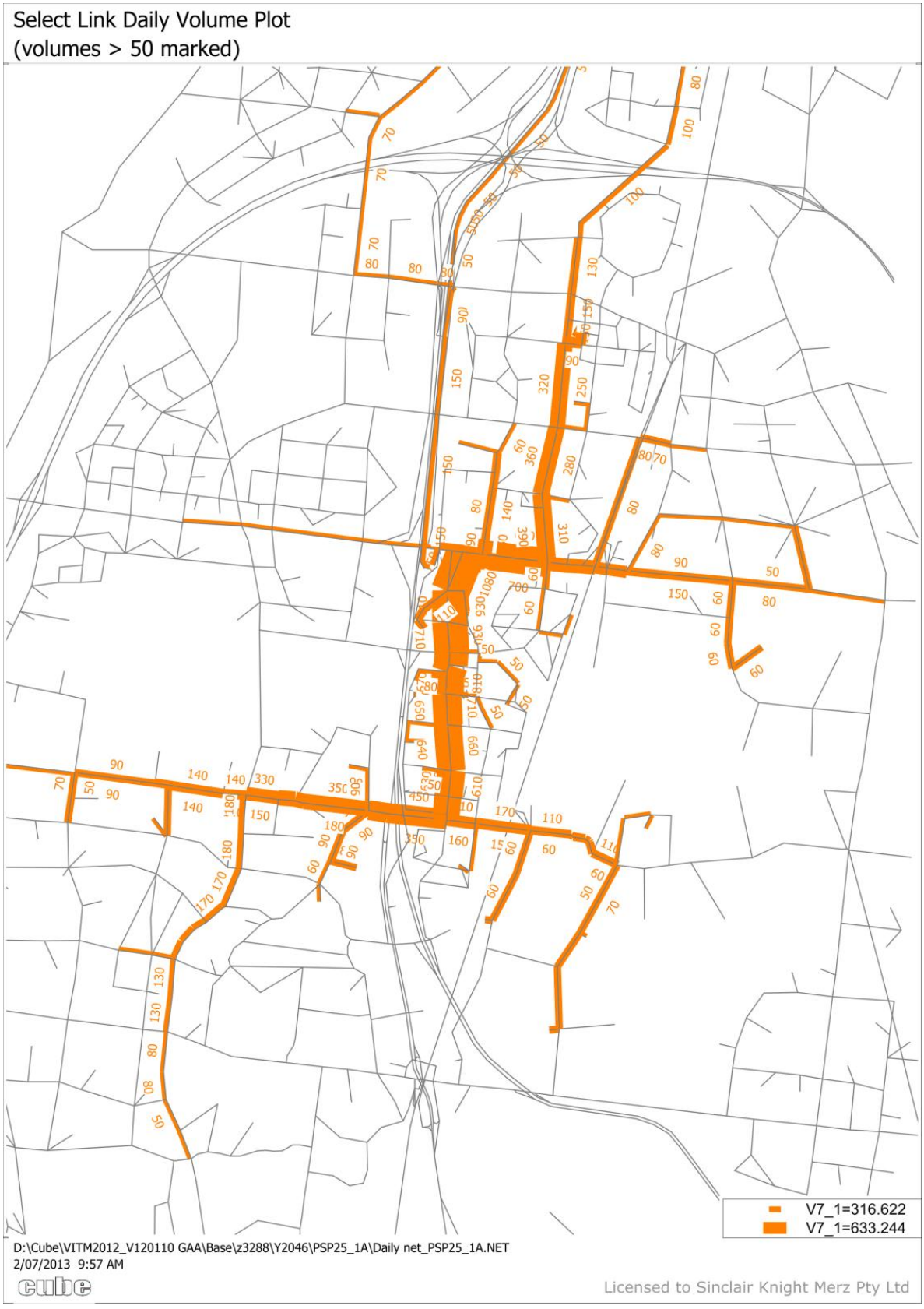
- **Figure 27: AM peak (7-9am), all traffic passing through the northern section of English Street, 2046 Option 1B**



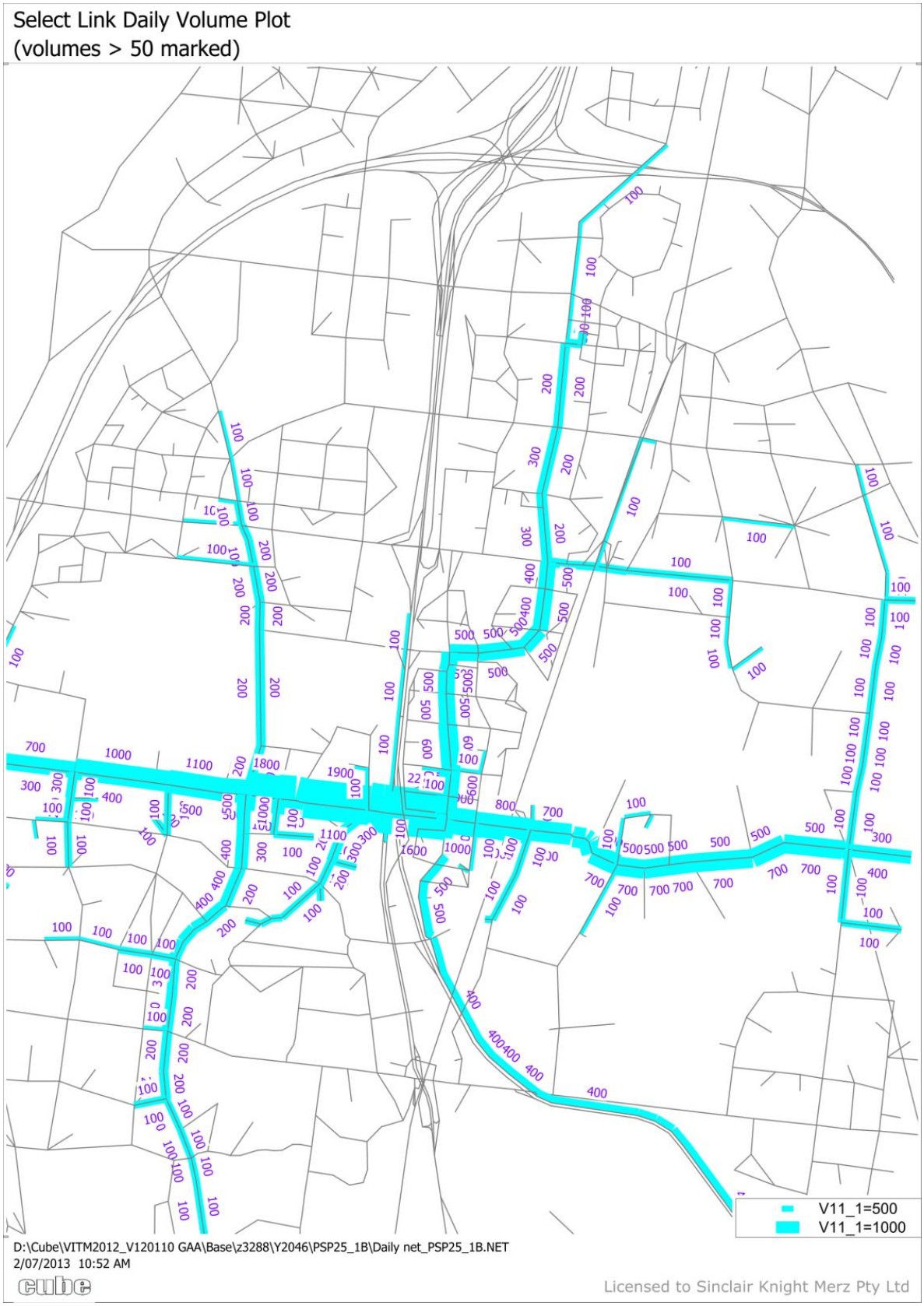
- **Figure 28: AM peak (7-9am), all traffic passing through the northern section of English Street, 2046 Option 1C**



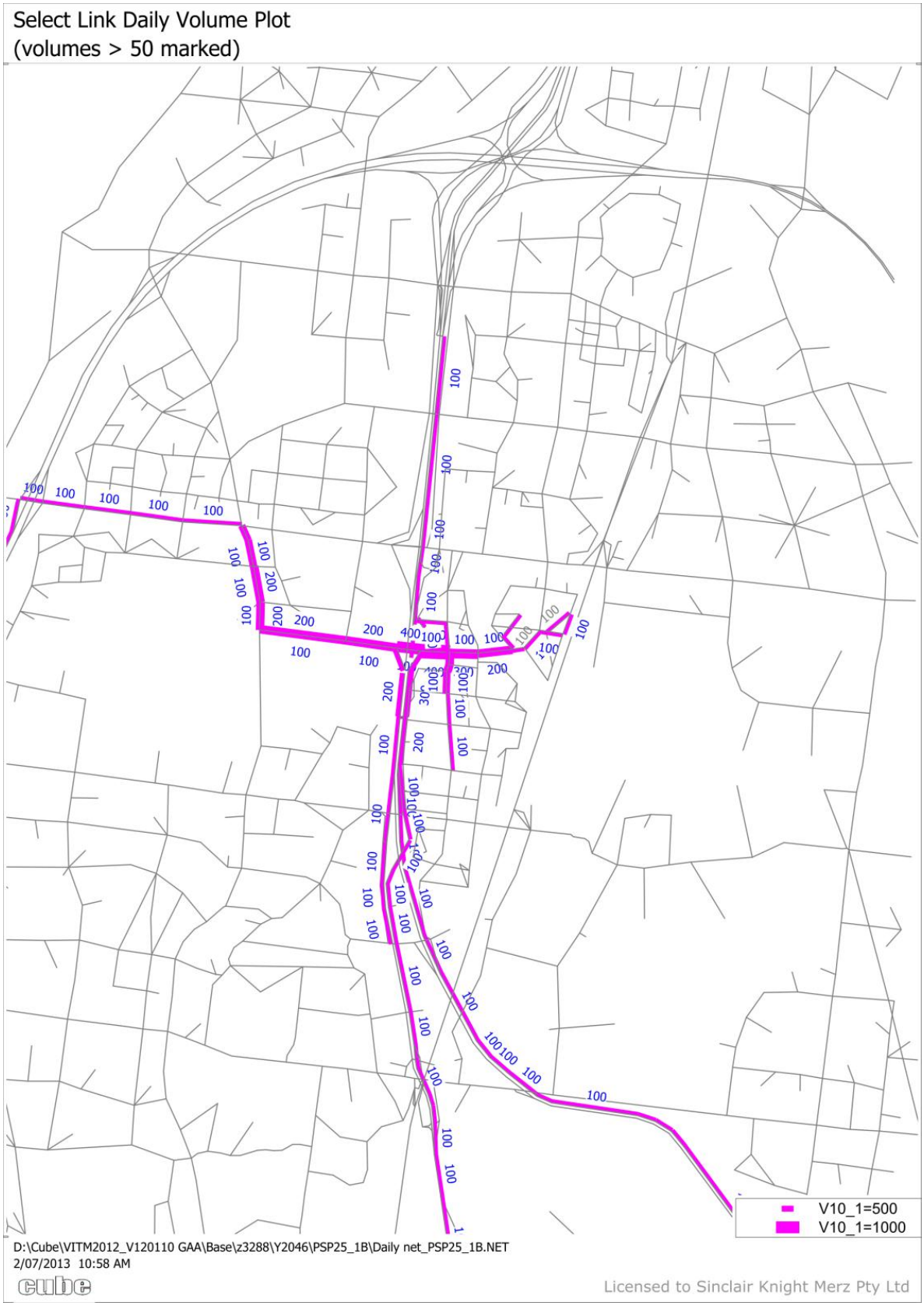
- **Figure 29: AM peak (7-9am), all traffic passing through the northern section of Brookville Drive, 2046 Option 1A**



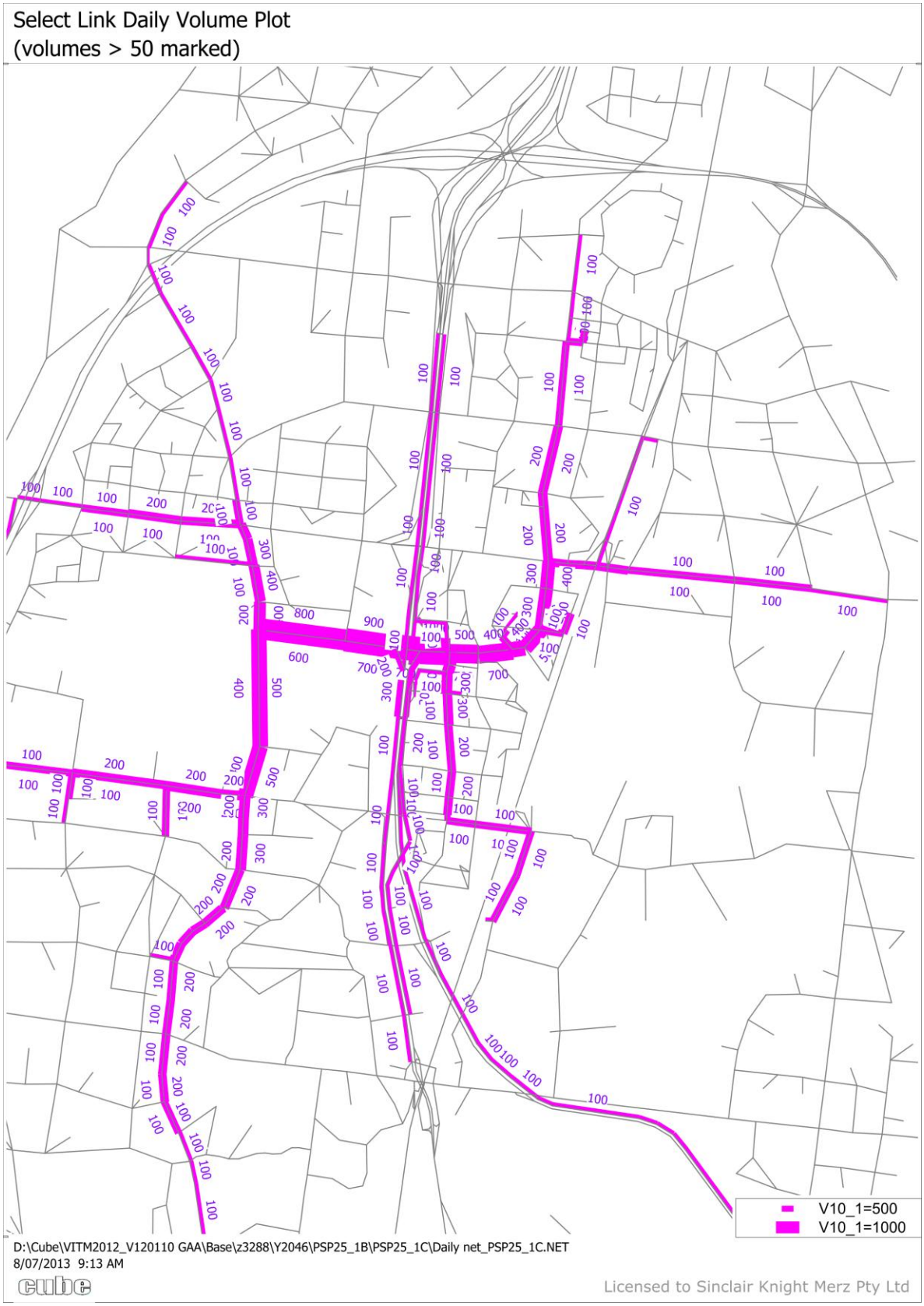
- **Figure 30: AM peak (7-9am), all traffic passing through the section of Mount Ridley Road immediately to the west of Brookville Drive, 2046 Option 1B**



- **Figure 31: AM peak (7-9am), all traffic passing straight through the Hume Freeway / English Street interchange, 2046 Option 1B**



- **Figure 32: AM peak (7-9am), all traffic passing straight through the Hume Freeway / English Street interchange, 2046 Option 1C**



4.2.4 2046 Summary

Traffic generated by the PSP area increases substantially from 2026, with 8750 jobs on-site and 2570 residents. At 2046 the PSP road network is not affected by congestion on the nearby Hume Freeway as it has been widened and, more importantly, there are a number of significant new road projects such as the OMR which remove traffic from the area.

The assumed network for the PSP area includes Brookville Drive and English Street as four-lane arterials and a second north-south road which connects onto Summerhill Road to the east of Brookville Drive. There are no congestion issues in any of the three scenarios within the study area, outside of the study area there is congestion around the Donnybrook and Craigieburn rail stations due to the high demand for parking. Note that park and ride is unconstrained in the model.

In Option 1A the traffic on Brookville Drive comprises of traffic passing through the site from north-east to/from south-west of the site and traffic generated by the site. English Street would only need to be a two-lane arterial in this scenario as it only carries locally generated traffic. Brookville Drive is on the cusp of needing to be a upgraded from a two-lane to a four-lane arterial; however the final decision should be made in consultation between GAA and stakeholders. The half-diamond interchange on the Hume Freeway south of Donnybrook Road is hardly used as other routes are more desirable and not congested.

In Option 1B English Street traffic roughly triples compared to Option 1A as it now carries traffic generated from the precinct as well as through-traffic wishing to use the new bridge and either travel through the PSP area or to access the Craigieburn employment area. Traffic shown on Brookville Drive reduces however this is only due to traffic from English Street using the parallel local collector street running to the east of Brookville Drive. With this road network English Street and Brookville Drive are on the cusp of needing to be a upgraded from two-lane to a four-lane arterials; however the final decision should be made in consultation between GAA and stakeholders. Traffic doubles on the Hume Freeway half-diamond interchange south of Donnybrook Road, but still remains very low.

In Option 1C English Street traffic is largely unchanged compared to Option 1B, however around 8000vpd are removed from Brookville Drive and added to the Hume Freeway half-diamond interchange south of Donnybrook Road. Wider network impacts occur as a result of removing the Mount Ridley – Summerhill Road overpass. The volume difference plot showed that most traffic is diverted onto Donnybrook Road, Amaroo Road, Epping Road, the new Hume Interchange, Aitken Boulevard, Craigieburn Road East, Hume Freeway and Scanlon Drive. With this road network English Street is on the cusp of needing to be upgraded from a two-lane to a four-lane arterial; however the final decision should be made in consultation between GAA and stakeholders. Brookville Drive would only need to be a two-lane arterial should the road parallel to Brookville Drive continue to connect English Street to Summerhill Road. Traffic increases to over 10,000vpd on the Hume Freeway half-diamond interchange south of Donnybrook Road, this may only warrant a two-lane arterial, rather than the four-lanes that have been modelled.

Truck volumes increase in 2046 but are restricted to the southern part of the PSP area, the roads within the site do not become attractive as a through route for trucks in any option.

5 Conclusion

The 2026 and 2046 road networks operate quite differently, as there are significant changes introduced by land use and transport network developments between 2026 and 2046. In 2026 the Hume Freeway is forecast to have insufficient capacity between Donnybrook Road and the Craigieburn Bypass. This encourages vehicles to use Brookville Drive as a rat run (particularly Option 1A) to avoid congestion on the Hume Freeway. In 2046, with the introduction of the OMR, total volumes on the Hume Freeway decrease, despite the Hume being widened from four lanes to six lanes. The reduction in Hume Freeway congestion also reduces the traffic that was previously using roads in PSP25 as a rat-run.

By 2026 it is assumed that residential development will proceed faster than employment is generated, as a result residents in the English Street Precinct will be travelling out of the PSP area for work, schools and other services. Given this, of the two options tested the English Street Bridge (Option 1B) is preferable as it provides these residents with better access to the south of the PSP area where most services will be located. This option also reduces the amount of rat-running that occurs in Option 1A. Both scenarios were however congested, options to remedy this include widening Brookville Drive from two to four-lanes or for road works to relieve the Hume Freeway to occur earlier than planned. Truck volumes are not forecast to be high within the PSP area and the roads within the site do not become attractive as a through route for trucks in either option.

By 2046 the Craigieburn employment precinct is fully developed (8750 jobs) and the number of dwellings has increased to over 1000 in the English Street precinct. A new bridge for Brookville Drive (Option 1A) and an English Street Bridge (Option 1B) were again tested with similar findings to 2026. Option 1B provides better connectivity for the residents in English Street and removes a lot of traffic and turning movements from Donnybrook Road. The modelling undertaken did not highlight congestion or truck volumes as an issue in either scenario.

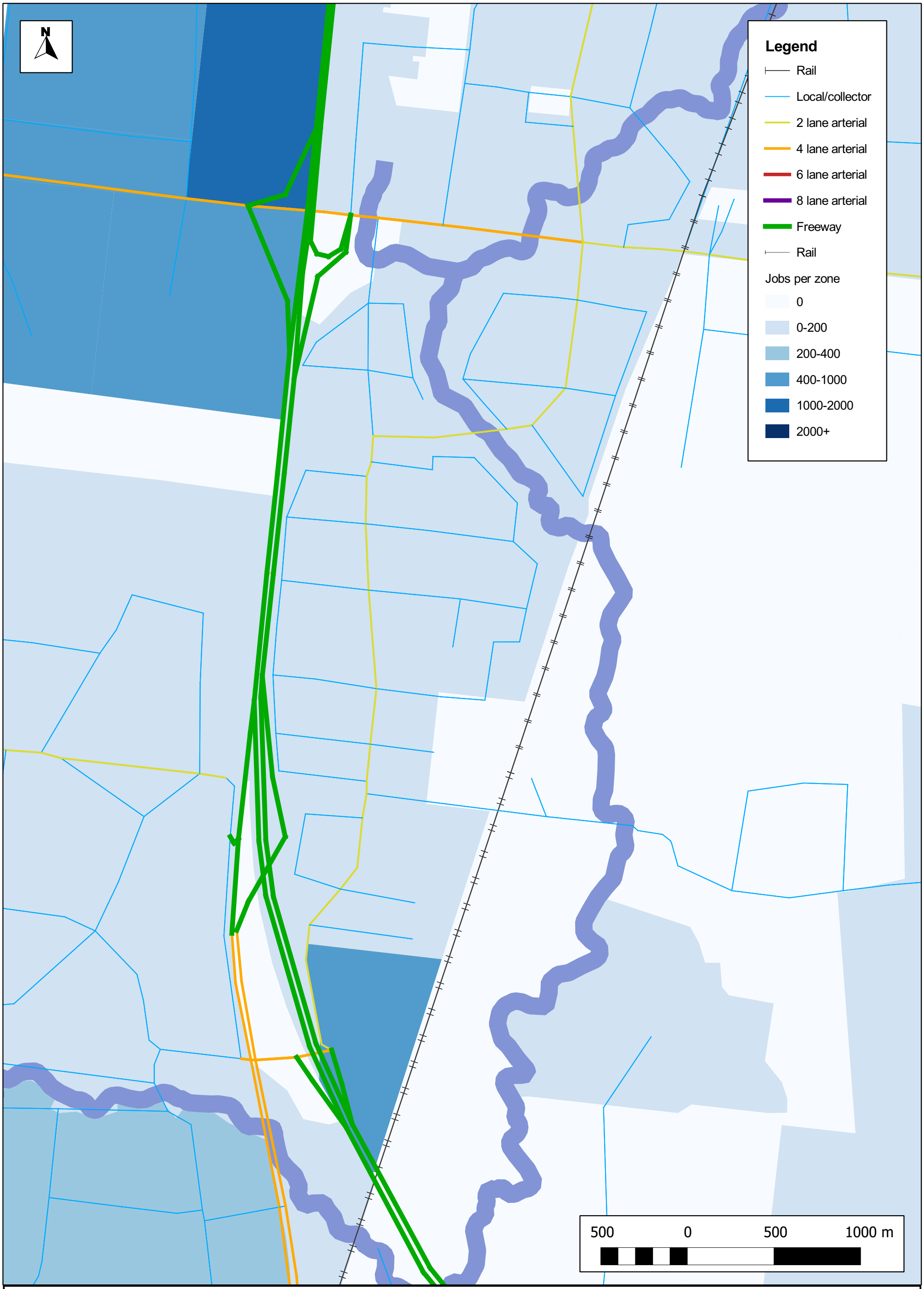
These two scenarios (1A and 1B) both included the Summerhill - Mount Ridley Road overpass, this new road project significantly alters the traffic distribution in the PSP area. It is used by around 26,000 vehicles per day and carries a lot of the traffic that is passing through the site between the Lockerbie / Donnybrook and Craigieburn West / Greenvale areas via Brookville Drive. A further option was tested to see the impact of removing the overpass (Option 1C), this resulted in approximately half of the traffic from Brookville Drive instead diverting along the English Street extension through the Hume Freeway interchange and across to the Aitken Boulevard. Wider network impacts were also found with traffic levels increasing on Donnybrook Road, Craigieburn Road East, Scanlon Drive and the Hume Freeway.

In the presence of the Summerhill - Mount Ridley Road overpass, the new Hume Freeway interchange is underutilised and is unlikely to be required (Option 1A and 1B). However if the overpass is not built (Option 1C) it becomes a key part of the network and reduces traffic on Brookville Drive whilst not inducing further traffic on English Street. Therefore the need for the new Hume Freeway interchange is dependent on whether the Summerhill - Mount Ridley Road overpass is constructed. This would also impact on the preferred number of lanes on Brookville Drive.

Truck volumes are not forecast to be high within the PSP area and the roads within the site do not become attractive as a through route for trucks in either option or year.

Further analysis could be conducted to look at rationalising the wider 2046 road network, in particular whether the widening of the Hume Freeway and Epping Road are required at this time.

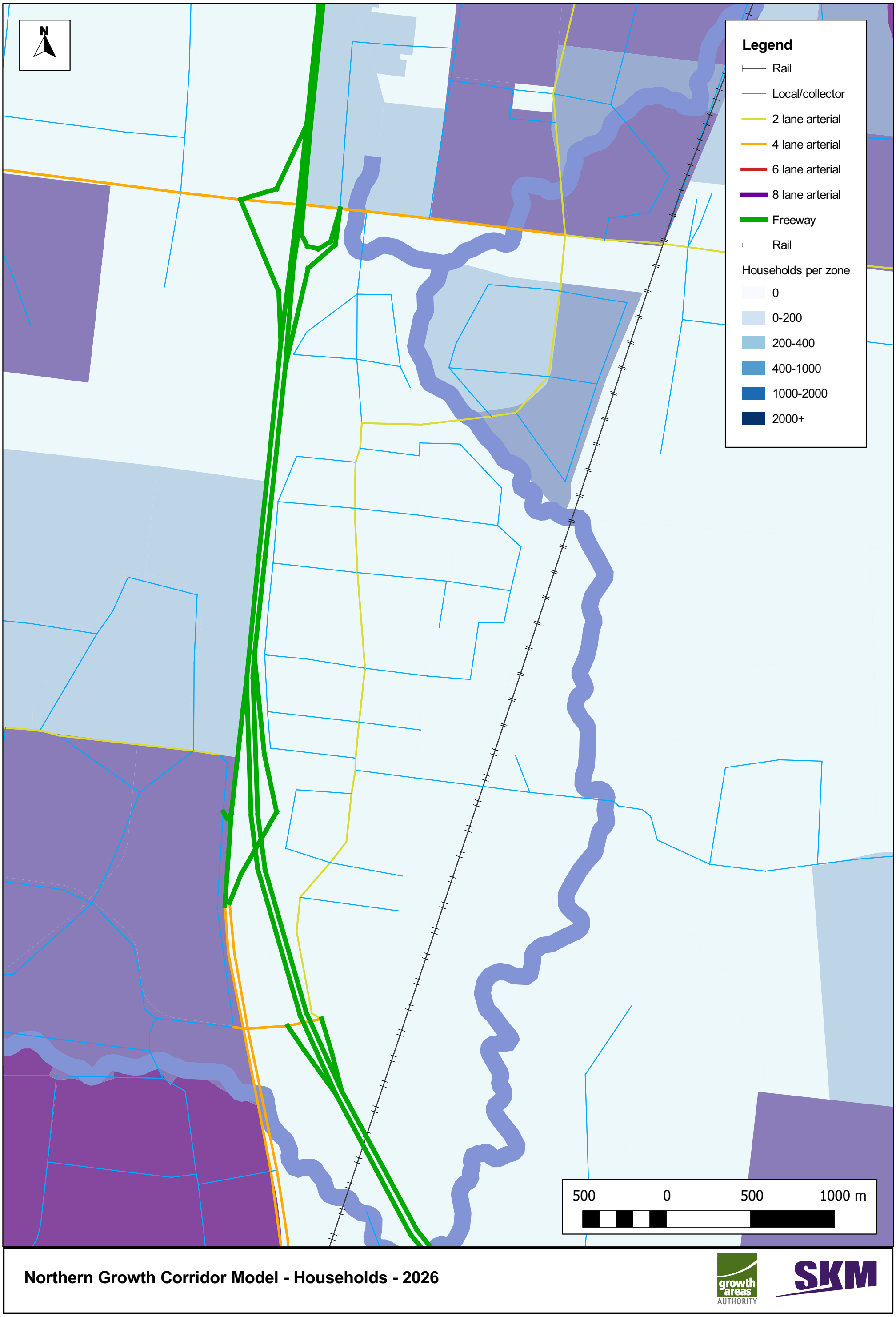
Appendix A. Land Use Inputs



Northern Growth Corridor Model - Employment - 2026

growth areas AUTHORITY

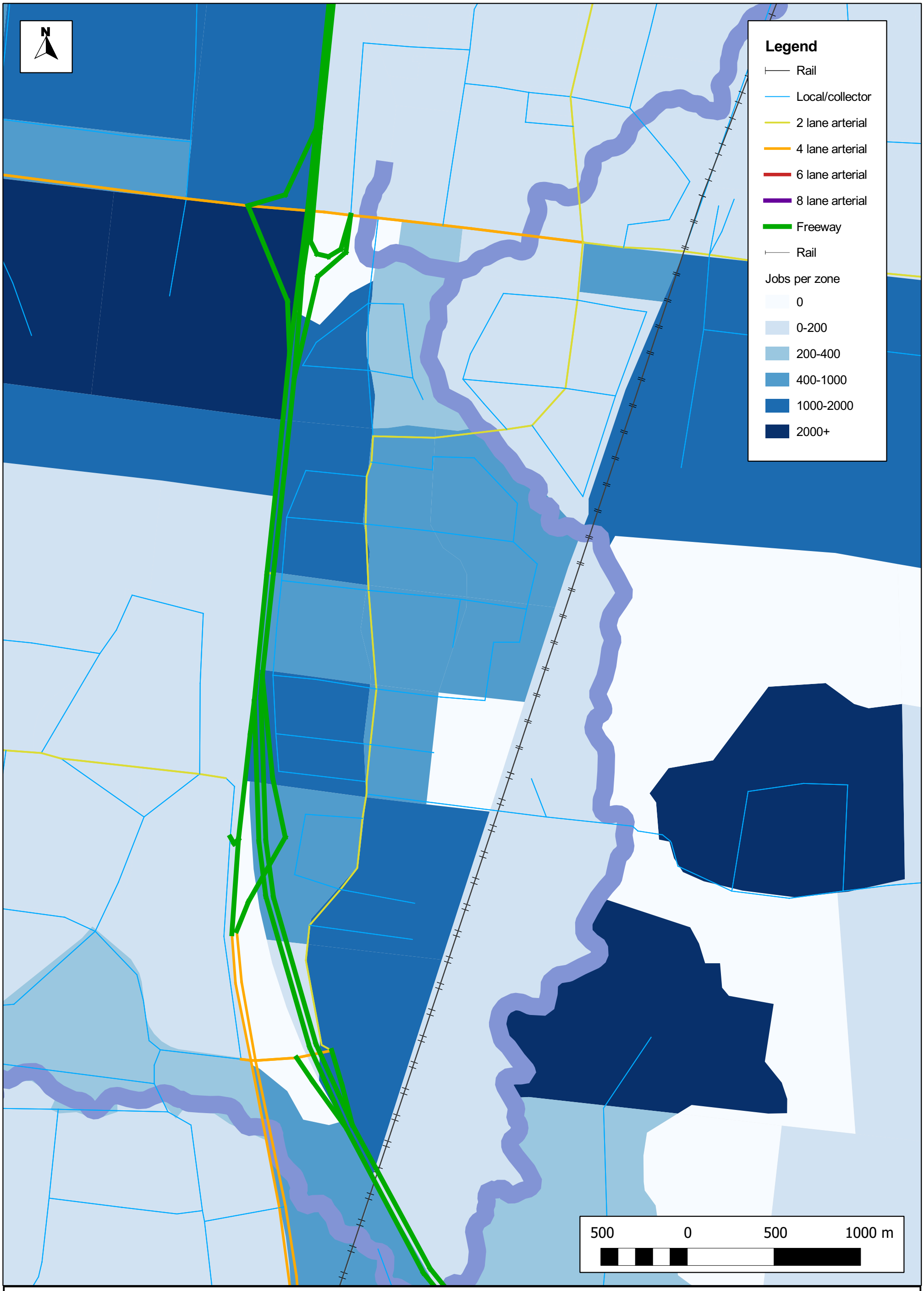
SKM



Northern Growth Corridor Model - Households - 2026

growth areas AUTHORITY

SKM



Northern Growth Corridor Model - Employment - 2046

growth areas AUTHORITY

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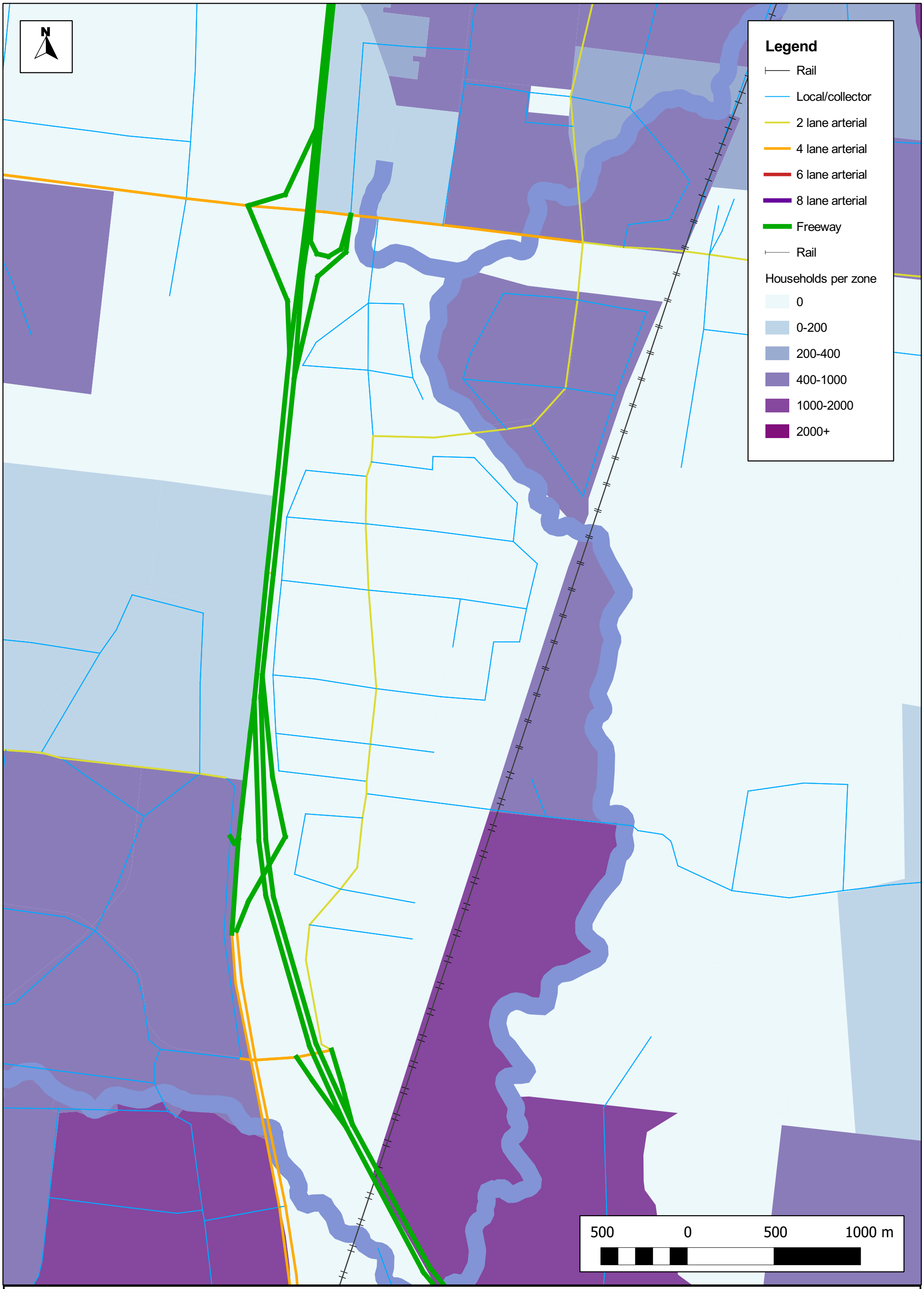

Northern Growth Corridor Model - Households - 2046

growth areas AUTHORITY

SKM