GTAconsultants

East Village
Bentleigh East
Access and Movement Report

Client // Victorian Planning Authority
Office // VIC
Reference // V136080
Date // 19/10/18

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Executive Summary

The Victorian Planning Authority (VPA) is working with the Glen Eira City Council (GECC) to prepare a Structure Plan for the mixed-use strategic site named East Village, located in Bentleigh East. Planning for the Structure Plan includes the development of an Access and Movement Report.

The Access and Movement Report has been prepared by undertaking the following:

i A **policy review** of relevant transport documents affecting how the area is proposed to develop into the future, and what the desired transport network should look like.
ii A review of the **existing transport conditions** in the area to provide a baseline of conditions to use when assessing the likely impact of the proposal.
iii A **traffic impact assessment** of the future conditions of the existing and proposed intersections to identify the performance and any required road network arrangements.
iv Development of an **integrated transport response** for the site to suitably support all modes of transport with the aim to reduce the sites reliance on private car use
v Identification of the **mitigating and/or supporting transport works** that will be required to suitably support the development of East Village and its integration with the surrounding transport network.

It is anticipated that the analysis and findings from this Access and Movement Report will be used to inform the design and management of the required transport infrastructure to support the proposed development of East Village and be used to proportion the cost and responsibility of their implementation.

Policy Review

Encouraging the use of public transport, walking and cycling as modes of transport, and reducing the reliance on private car use to access employment opportunities and services, is central to achieving the aims of the various policy documents for the area. Given that East Village is located in the southeast of metropolitan Melbourne, it has strong linkages to various employment and service areas, which provides a prime opportunity to achieve the core policy directives.

In achieving more sustainable outcomes, planning for the site requires a shift in thinking away from providing unbounded capacity for private motor vehicle use, towards facilities that help encourage the use of alternative transport modes. This is in part due to the constrained nature of the network that East Village is located in, but also given the expected continued population and employment growth in the southeast that won't be able to be purely serviced through building additional road capacity.

Existing Transport Conditions

The majority of the surrounding land use is standalone residential dwellings, except for the site itself, which consists of light industrial and commercial uses, meaning that there is very tidal travel demand in the morning and afternoon peak periods. Car ownership levels are generally consistent with the metropolitan Melbourne average in Glen Eira, with in the order of 1.6 cars per dwelling. However, in Bentleigh East the average car ownership is 1.8 cars per dwelling, highlighting a higher reliance on car travel. There is considered to be opportunity to achieve a shift towards alternative transport modes.

The site has limited alternative transport services directly connecting with it, except for two local bus routes that operate along North Road and Crosbie Road / Marlborough Street. There are

pedestrian foot paths on both sides of most roads and controlled crossings on most approaches to signalised intersections in the sites vicinity. Only limited priority (in terms of movement and operational focus) has been given to pedestrians. Bicycle facilities are limited, except for some on-road facilities along some of the arterial roads. The Kew to Highett Strategic Cycling Corridor (SCC) is proposed along Murrumbeena Road and East Boundary Road past the site.

Traffic Impact Assessment & Mitigating Road Work

A traffic assessment has been undertaken to understand how the road network used to access East Village currently operates and is expected to in the future. This included collecting existing conditions traffic data of the key intersections and analysis using network SIDRA models. Future year analysis assessed the traffic conditions at the key intersections to confirm that the site access points will be able to operate satisfactorily (noting that the broader road network is the responsibility of VicRoads).

The analysis concluded that the anticipated traffic generated by the proposed rezoning and development of East Village can be accommodated by the surrounding road network following full development of the site, subject to the following mitigating road work:

- At the North Road / East Boundary Road / Murrumbeena Road signalised intersection:
  - Double right on the west approach
  - Continuation of the two departure lanes on the north approach
  - Continuation of the three departure lanes on the east and west approaches
  - Increase the right turn lane lengths on the south and east approaches
- At the Murrumbeena Road / Leila Road / Crosbie Road intersection:
  - Convert to a signalised intersection
  - Extend the right turn lane on the north approach

It will be necessary to install traffic signals at three key site access intersections on North Road and East Boundary Road. The required signalised intersection layouts are broadly outlined as follows:

- North Road / Cobar Street / Crosbie Road intersection:
  - Left turn lane and a through / right turn lane on the south approach
  - Left turn only lane on the north approach to minimise use of Cobar Street
  - Provide a left turn lane on the east approach
  - Extent the right turn lane on the west approach

East Boundary Road / North Drive / George Street intersection:

  - Right turn lane on the south approach
  - Double right turns on the east approach
  - Left turn slip lane on the north and east approaches
  - Additional short through lanes on the north approach
  - Additional through lanes on the south approach
  - George Street (west approach) restricted to left-in / left out movements
- East Boundary Road / South Drive intersection:
  - Double right turn lanes on the south and east approaches
  - Left-turn slip lanes on the east and north approaches
  - Additional through lanes in each direction on the north approach
  - Additional short through lanes on the south approach

There are two existing give-way controlled intersections to and along the North Road frontage of the subject site, which will require left turn lanes into them on North Road to be implemented and the eastern one (Carey Street) have the right turn in from North Road removed.

The internal site connector street network will consist of a continuous road between the Cobar Street and South Drive access points. Specific crossing facilities will be required to support pedestrian paths, and the separated bicycle path along the western and southern sides of the connector streets where they intersect other lower order roads, such as North Drive.

The overall staging of the above works is expected to occur as the subject site is developed, which is generally from the south to the north (i.e. North Road site related works to occur last). However, the mitigating road works will need to occur as follows:

- North Road / East Boundary Road / Murrumbeena Road signalised intersection once the subject site achieves a net increase in traffic volumes to what it currently generates
- Murrumbeena Road / Leila Road / Crosbie Road intersection once the North Road / Cobar Street / Crosbie Road intersection is signalised.

Integrated Transport Response & Supporting Facilities

People's behaviour will always be influenced by individual circumstances and preferences. As such, a range of alternatives to private car use need to be provided to achieve a meaningful shift in travel choice away from the existing private car use that currently occur in the area.

In higher density mixed-use developments like East Village, increased opportunities for walking, cycling and public transport tend to occur, to an extent, naturally when compared to lower density developments such as those in the proximate area. Moreover, high quality facilities such as this should provide facilities to support local 20-minute travel time catchments by all viable alternative transport modes (i.e. walking, cycling and bus).

The local 20-minute alternative transport mode catchments are generally the responsibility of the local and state transport authorities and would provide viable opportunities for a significant proportion of East Village residents and visitors. Advocacy for these facilities is expected as part of the planning process, with the following facilities expected at a minimum:

- The proposed SCC along Murrumbeena Road and East Boundary Road past the site
- East-west local 'shimmy' routes through the adjacent local road networks for cyclists
- Increases to the existing adjacent bus service frequencies and connection with stations
- The proposed bus route along Murrumbeena Road and East Boundary Road
- Location of bus stops that are highly accessible to the site by pedestrians.

East Village will be accommodating an entirely new population of people which provides an opportunity to develop new travel behaviours when the site is first developed. This in part requires the provision of transport infrastructure and services that are considered viable by all potential users, but these can be further supported through soft measures including Travel Demand Management (TDM) measures.

Tailored TDM strategies should be developed that achieve at a minimum the following:

- Identification of the critical times that major congestion is likely to occur on the network and what proposed land uses will mainly contribute to them
- Identify targeted interventions to suitably manage the transport demand being generated by the development proposal, and
- A targeted implementation plan that outlines when and by who the measures to influence demand will be implemented

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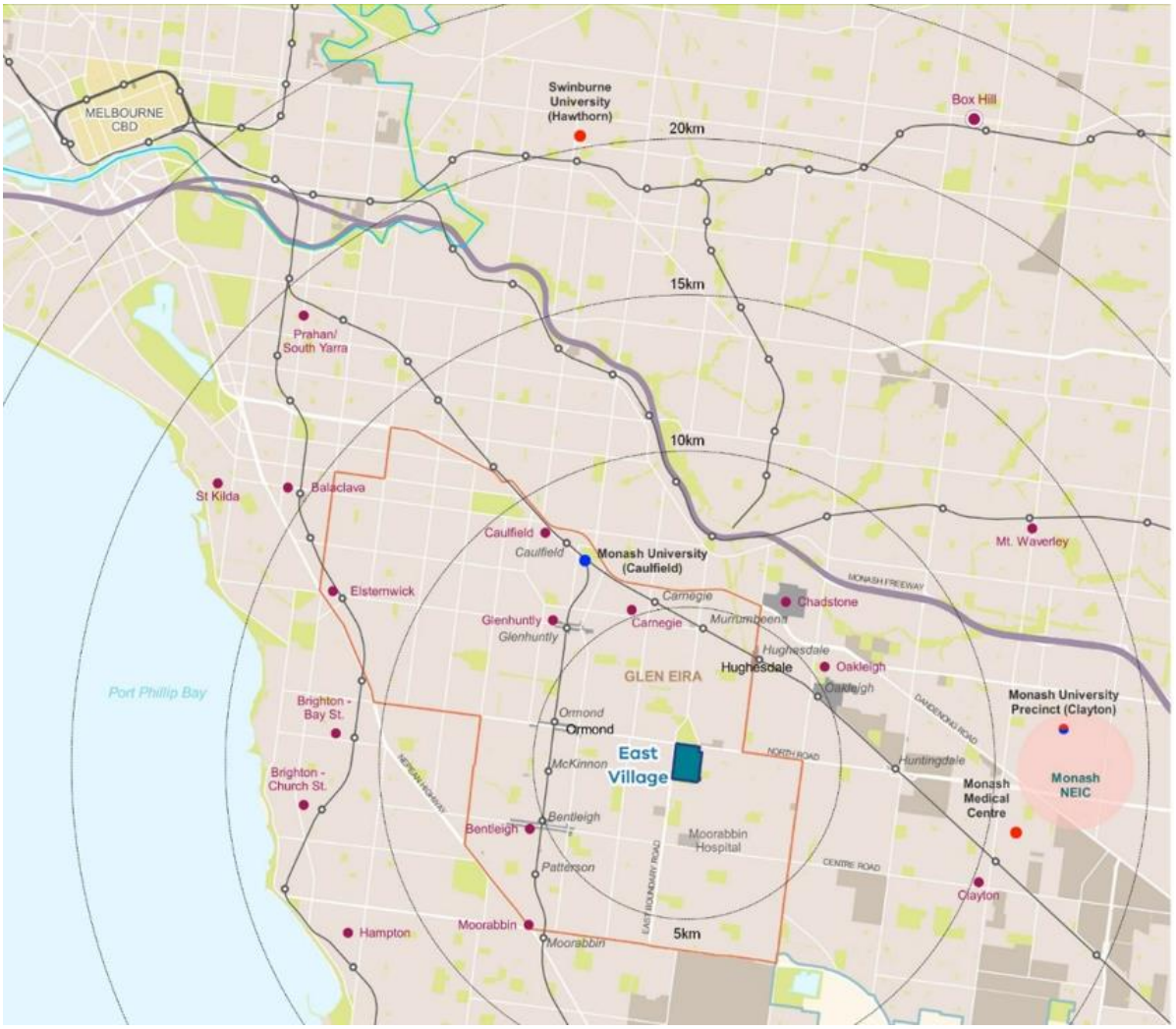
1. Introduction

1.1 Background

The Victorian Planning Authority (VPA) is working with Glen Eira City Council (GECC) to prepare a Comprehensive Development Plan (CDP) for a mixed use precinct named East Village.

The proposed East Village precinct is located 12km south-east of Melbourne's CBD in Bentleigh East, as shown in Figure 1.1. The site comprises of 24 hectares, and currently accommodates a variety of industrial and business service uses, with North Road forming the northern boundary and East Boundary Road forming the western boundary of the site.

Figure 1.1: East Village Regional Context



(Source: East Village, Integrated Transport Assessment Briefing Material, VPA)

GTA Consultants (GTA) has been commissioned by VPA to undertake an integrated transport assessment to help guide the development of the proposed East Village precinct from a transport planning perspective.

1.2 Structure Plan Purpose

Based on information provided by VPA, the aim of the East Village CDP is a long-term plan for the redevelopment and renewal of the precinct area. The CDP will describe how land is expected to be developed and how land uses may change over time to create an employment and residential hub. It also includes where and how additional services, utilities and transport infrastructure are planned to support future development.

In order to achieve this, the CDP is intended to be implemented into the Glen Eira Planning Scheme to provide customised land use development controls.

The proposal consists of a mix of residential, commercial, business, retail and recreational uses, as shown in Figure 1.2.

Figure 1.2: Bentleigh East Village Precinct Future Urban Structure

Reproduced from Victorian Planning Authority

1.3 Purpose of this Report

This report sets out the access and movement arrangements to be implemented to support the proposed development of the East Village precinct. More specifically, this report includes the following:

- transport policies influencing the project and land use in the area
- demographics and land use data associated with the proximate area
- existing transport network conditions surrounding the site
- existing and future public transport facilities and provisions
- existing and future bicycle and walking facilities and provisions
- proposed access approach with the surrounding transport network
- impact of the development proposal on the surrounding transport network, including the need for mitigating road works and appropriate vehicular access.

It should be noted that as the site abuts a Road Zone 1, so future planning permit applications will require referral to VicRoads under Clause 52.29 and Clause 66.03 of the Planning Scheme.

1.4 References

In preparing this report, reference has been made to the following:

- plans for the precinct prepared by VPA
- Glen Eira Planning Scheme
- various policy, strategy and technical data as referenced in this report
- traffic and car parking surveys undertaken by GTA Consultants as referenced in the context of this report
- an inspection of the site and its surrounds
- other documents as nominated.

2. Planning Context

2.1 Policy Review

There are a number of key State and Local Government policy documents applicable to the subject site, which provide guidance on appropriate land use and development, as well as the transport facilities that are proposed to support development and what the desired transport network will look like in the future.

In this regard, a policy review of the following local and state documents has been undertaken:

- Transport Integration Act
- Plan Melbourne
- VicRoads SmartRoads
- Glen Eira City Council's Integrated Transport Strategy 2018-2031 (May 2018)
- Glen Eira's Activity Centre, Housing and Local Economy Strategy (July 2017)
- Glen Eira Draft Quality Design Standards (October 2017)
- Glen Eira Towards a Walking Community Strategy (2014-2017)
- Glen Eira Towards Sustainable Transport Strategy (2011-2014)
- Glen Eira Road Safety Strategy (2007-2012)
- Glen Eira Bicycle Strategy (2010)
- Glen Eira Traffic Management Plans (November 2009)
- Glen Eira Parking Restrictions (August 2002)

A number of key themes have emerged through the review of these policies which are summarised in Table 2.1.

Table 2.1: Transport Policy Review: Summary of Themes

Theme	Application to the East Village Transport Network
Land Integration	Transport infrastructure and movement networks should align with existing and respond to future land use, to efficiently connect activity centres and help achieve the community's desired lifestyle. This requires a collaborative approach across a wide range of public and private stakeholders, as enshrined through the Transport Integration Act (2010).
Transport Choice	As highlighted in the Glen Eira Walking, Bicycle and Sustainable Transport Strategies, transport choice is desired from network efficiency, sustainability, social interaction and amenity perspectives. However, it means that there are viable and attractive alternative transport options beyond private car use for a range of trip types and destinations. Transport choice is also intrinsically linked to urban form, in what facilities, services and mode types are able to be accommodated and most suited to the area.
Road User Hierarchy	A modal hierarchy is essential to help inform the decision framework for future transport priority and funding, in particular where there are competing demands on the same transport corridor. It is common practice to set the highest modal priority to the most vulnerable transport modes of walking and cycling, with the motorised transport modes prioritised based on their relative space efficiency in moving people (i.e. mass transport modes to single occupant private car use). This approach has been adopted as part of the SmartRoads framework, which applies to the sites fronting roads.
Travel Behaviour	The comparative performance (perceived and/or actual) and level of access of each transport choice available to users for their given transport trips dictates their travel behaviour. This is emphasised in the Glen Eira Bicycle Strategy, which outlines the importance of providing a cycle network suitable for all abilities.
Road Space Management	Within most urban environments there is only a limited amount of road space. The management of this space aims to move people in the most efficient and safe manner possible, while providing local access and desired levels of amenity and place to the community. The approach to managing road space should be dependent on the function of the road and the proximate site conditions. However, with increased population, development and the resulting number of trips expected, more space efficient modes of transport will be required to move more people within the same road space.

Theme	Application to the East Village Transport Network
Sustainability	As outlined in the Glen Eira Sustainable Transport Strategy, private vehicle travel is a significant contributor to greenhouse gas emissions and other environmentally detrimental emissions. This provides an impetus for advocating and promoting for more sustainable travel modes, such as active and public transport in the preparation of the East Village Structure Plan.
Road User Safety	With any transport system there is the potential for conflict between users, as reflected by the 'Safe System' approach to road safety, which has been adopted in the Australian National Road Safety Strategy 2011-2020 and VicRoads Road Safety Strategy 2016-2020. The 'Safe System' approach accepts that people using the road network will make mistakes but that it is not acceptable that they pay for these mistakes with their lives or serious injuries. As such, the whole system needs to be forgiving enough that when a user makes a mistake it doesn't result in serious or fatal injuries.
Access Equity, Diversity and Social Inclusion	The transport network must be accessible to, and service the needs of a diverse range of users, from young children to the elderly ('8-80' planning), the mobility and sensory impaired, and for all socio-economic groups. Certain user groups are prone to transport disadvantage particularly if not provided access to transport services that suit their needs and abilities (both monetary and physically). As such, a lack of transport choice and access can contribute toward social exclusion and be a barrier to employment opportunities.
Health and Wellbeing	There is a strong link between active transport use and positive physical and mental health. Places where people walk, cycle and use public transport (typically have to walk to and from stops) are likely to perform better on a range of social indicators. The Glen Eira Walking Strategy outlines the importance of facilitating these lifestyle options by providing pedestrian infrastructure suitable for all abilities.

Specifically, GTA notes that GECC has prepared an Integrated Transport Strategy (ITS). The associated vision is reproduced below.

"VISION - GLEN EIRA 2031: Glen Eira will be a City of child friendly neighbourhoods that are connected to a network of vibrant and well-designed walkable activity centres. The community will have a range of travel options to service their daily needs, with a reduction to 50 per cent of trips made by car."

3. Existing Conditions

3.1 Study Area and Land Uses

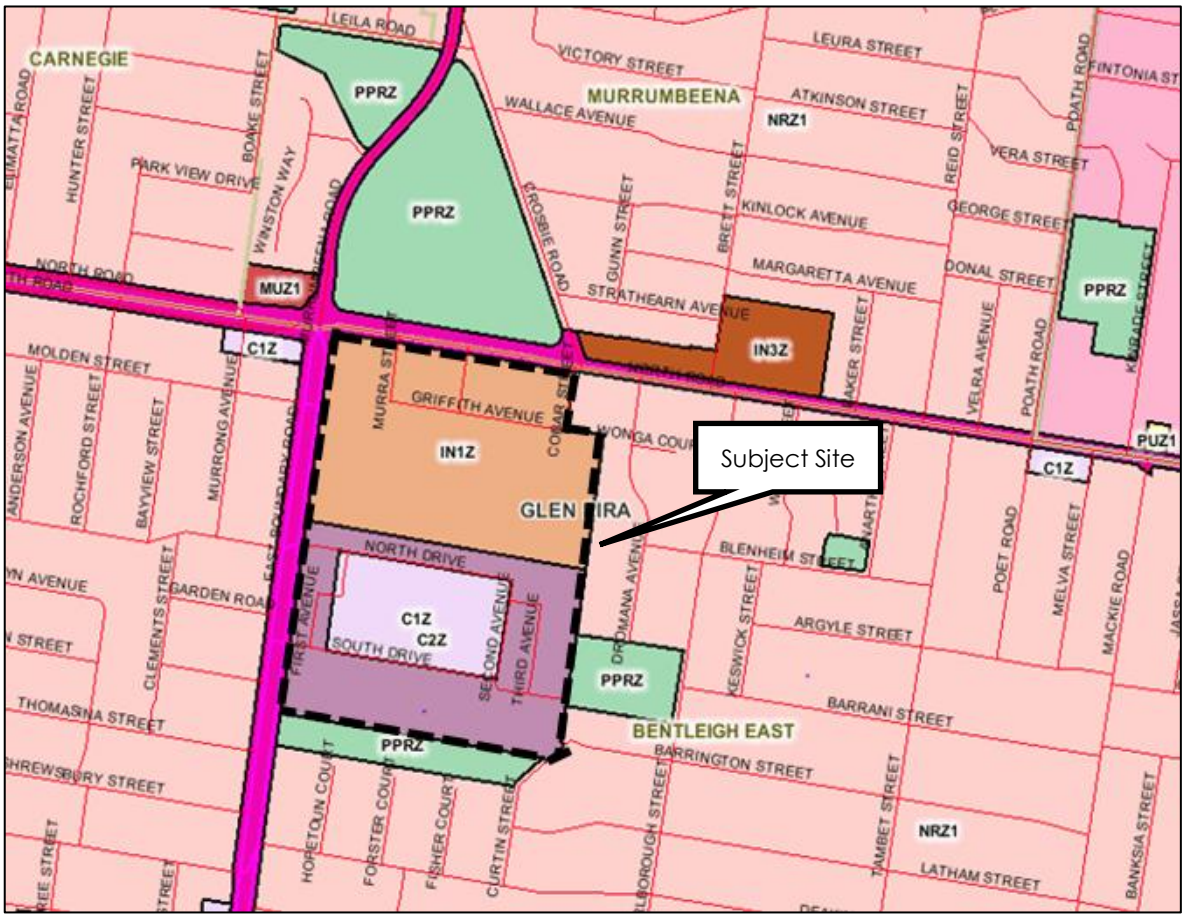
The area constituting the East Village precinct is located on the southeast corner of the intersection between North Road and East Boundary Road, as illustrated in Figure 3.1.

Figure 3.1: Site Location Map

Reproduced from Nearmap

The site comprises some 24 hectares and is currently a mix of Industrial 1 Zone over the northern half, and Commercial 1 and 2 Zones over the southern half of the site. The zoning of the site and surrounding area is displayed in Figure 3.2.

Figure 3.2: Land Zoning Map within and surrounding the Study Area



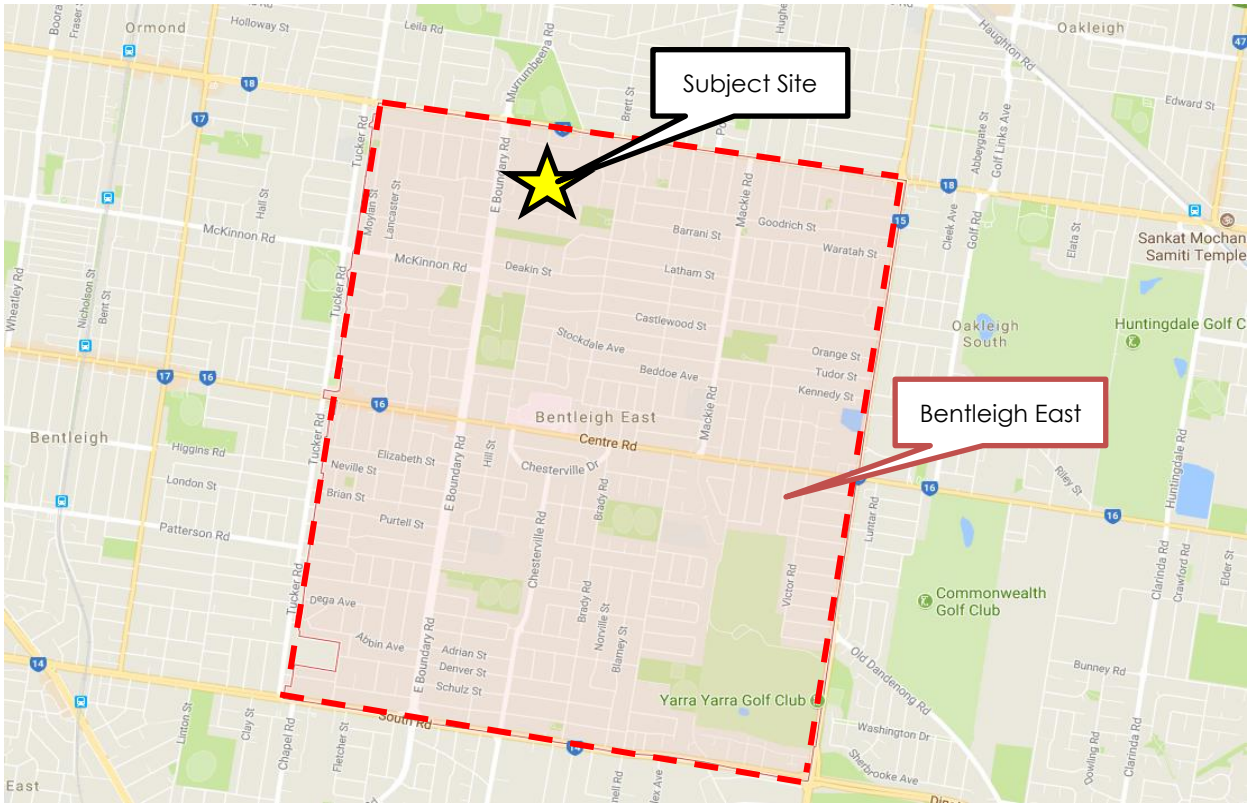
(Reproduced from Land Channel web site)

3.2 Population, Dwelling Mix and Car Ownership

The area surrounding the East Village precinct in Bentleigh East is predominantly residential (Neighbourhood Residential Zone). Details of the current residential population, dwelling mix and car ownership rates in Bentleigh East have been obtained from the ABS data from 2011 and 2016.

The associated area the ABS data has been collected for is highlighted in Figure 3.3, with the population and dwelling numbers provided in Table 3.1, and car ownership rates in Table 3.2.

Figure 3.3: Bentleigh East, ABS Data Collection Extent



(Reproduced from Google Maps)

3.2.1 Population and Dwelling Numbers

Table 3.1: 2011 & 2016 Population and Dwelling Numbers for Bentleigh East

Data Type	2011	2016	Difference
Population	25,431	27,464	+2,033 (8%)
Dwellings	10,105	10,896	+791 (7.8%)

Source: ABS Census Data 2011 and 2016.

Based on the 2016 ABS data there are in the order of 27,500 residents accommodated within 10,900 dwellings in Bentleigh East. Between 2011 and 2016, the population increased in the order of 8% and the number of dwellings increased by 7.8%, so the number of people in each dwelling is generally being maintained.

3.2.2 Car Ownership Rates

The ABS 2016 Census indicates that Bentleigh East has an existing rate of car ownership of approximately 1.8 vehicles per dwelling, whilst the wider area of Glen Eira has a car ownership rate of 1.6 vehicles per dwelling, and metropolitan Melbourne has an average car ownership rate of 1.64 vehicles per dwelling. This indicates that Bentleigh East has an overall higher car ownership rate compared to Glen Eira and the wider metropolitan Melbourne area.

3.3 Existing Travel Behaviour

3.3.1 Mode Splits

Bentleigh East

Guidance on the existing travel characteristics of Bentleigh East residents has been sought from the 2006 and 2011 ABS Method of Travel to Work data. It should be noted that the associated mode splits are work commuter related trips only, so do not include other types, such as education, retail, recreation, etc. related trips.

On this basis, Table 3.2 has been prepared to summarise the 2006 and 2011 mode splits for those that reside in Bentleigh East.

Table 3.2: 2006 & 2011 ABS Method of Travel to Work Data for Residents Residing in Bentleigh East

Mode	2006	2011
Car / Truck Driver	7313 (65.2%)	7867 (64.1 %)
Car Passenger	470 (4.2%)	385 (3.1%)
Public Transport	1300 (11.5%)	1664 (13.6%)
Bicycle	130 (1.2%)	109 (0.9%)
Walk	202 (1.8%)	190 (1.6%)
Worked from home	403 (3.6%)	508 (4.1%)
Did not go to work	1100 (9.8%)	1,219 (9.9%)
Other	302 (2.7%)	305 (2.7%)
Total	**11,220 (100%)**	**12,247 (100%)**

Table 3.3 indicates that between 2006 and 2011 there was an increase in the number of total trips and a slight shift away from private car use when travelling to work by those that reside in Bentleigh East. The shift away from private car use related to an increase in public transport use, which for those that reside in Bentleigh East is predominantly by train.

By way of comparison, Table 3.3 provides a summary of the 2011 ABS Method of Travel to Work data for residents living in Bentleigh East against City of Glen Eira and Metropolitan Melbourne.

Table 3.3: Average Household Mode Splits by area size (2011)

Mode	Bentleigh East	City of Glen Eira	Metropolitan Melbourne
Car/ Truck Driver	64.1%	56.2%	61.3%
Car Passenger	3.1%	3.2%	4.3%
Public Transport	13.6%	21.6%	13.8%
Bicycle	0.9%	1.4%	1.3%
Walk	1.6%	2.2%	2.9%
Worked from home	4.1%	4.5%	3.7%
Did not go to work	9.9%	9.3%	9.4%
Other	2.7%	1.6%	3.6%

Table 3.3 indicates that the Bentleigh East area has a higher car user mode split than the City of Glen Eira and Metropolitan Melbourne.

3.4 Road Network

3.4.1 Connecting Roads

North Road

North Road functions as a secondary arterial road and is located within a Road Zone (Category 1) in the Victorian Planning Scheme. It is a two-way road aligned in an east – west direction along the northern frontage of the subject site, and is configured with a 4-lane, 12 metre wide carriageway set within a 30 metre wide road reserve (approx.).

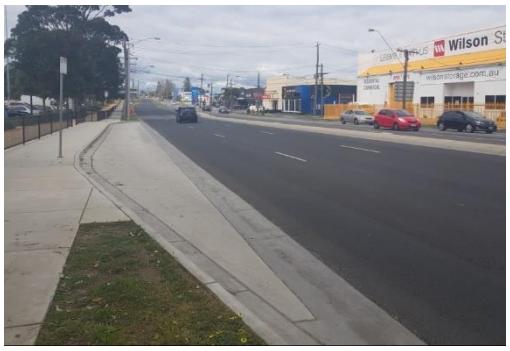
Kerbside parking is permitted on both sides of the road outside of clearway times. The sign-posted speed limit on North Road is 70km/hr in the vicinity of the site.

North Road (between East Boundary Road and Crosbie Rad) carries approximately 17,000 vehicles per day[1].

Photos of North Road taken while on site are provided in Figure 3.4 and Figure 3.5.

Figure 3.4: North Road (looking south west)

Figure 3.5: North Road (looking east)



East Boundary Road

East Boundary Road functions as a secondary arterial road and is located within a Road Zone (Category 1) in the Victorian Planning Scheme. It is a two-way road aligned in a north - south direction along the western frontage of the site, and is configured with a 4-traffic lane, 2-bicycle lane, 10 metre wide carriageway set within a 40 metre wide road reserve (approx.).

Kerbside parallel parking is provided on both sides of the road, clear of the through traffic and bicycle lanes, and angled and parallel parking is provided within the central median strip between Molden Street and George Street. The sign-posted speed limit on East Boundary Road is 70km/hr.

East Boundary Road (between North Road and Centre Road) carries approximately 11,000 vehicles per day[1].

Photos of East Boundary Road taken while on site are provided in Figure 3.6 and Figure 3.7.

[1] Based on VicRoads Traffic Profiles

Figure 3.6: East Boundary Road (facing north)

Figure 3.7: East Boundary Road (facing south)

Other Roads

In addition to the above two fronting arterial roads, there are the following local roads that exist within the subject site:

- Murra Street
- Carey Street
- Cobar Street
- Griffith Avenue
- North Drive
- South Drive

3.4.2 Surrounding Intersections

Key intersections providing access to and in the vicinity of the site are labelled and described in Figure 3.8.

Figure 3.8: Surrounding Intersections of the Site

Reproduced from Nearmap

3.5 Accident Statistics

A review of the reported casualty accident history for the roads and intersections adjoining and connecting the subject site to the surrounding arterial road network has been sourced from VicRoads CrashStats accident database. This database records all accidents causing injury that have occurred in Victoria since 1987 (as recorded by Victoria Police).

A summary of the proximate reported accidents causing injury for the last available five-year period (1 January 2012 to January 2017) is presented in Figure 3.9 and Table 3.4.

Figure 3.9: Accident Statistics, VicRoads

Reproduced from Crash Stats

Table 3.4: Casualty Accident History for Area Proximate to Site

Location	Accident No.		
	Fatality	Serious Injury	Other Injury
North Road / East Boundary Road Intersection	0	1	0
North Road	0	13	0
East Boundary Road (continuing north to Murrumbeena Road)	0	6	0

Source: VicRoads

As can be seen in Figure 3.9 and Table 3.4, they indicate that there is a moderate history of reported accidents causing serious injury in the vicinity of the subject site. A total of 20 serious accidents occurred within the last five-year period within the boundary considered proximate to the subject site, most of which occurred at the various intersections along North Road.

3.6 Car Parking Inventory Survey Data

Car parking (subject to various time and clearway restrictions) is generally provided on each side of the roads in the vicinity of East Village.

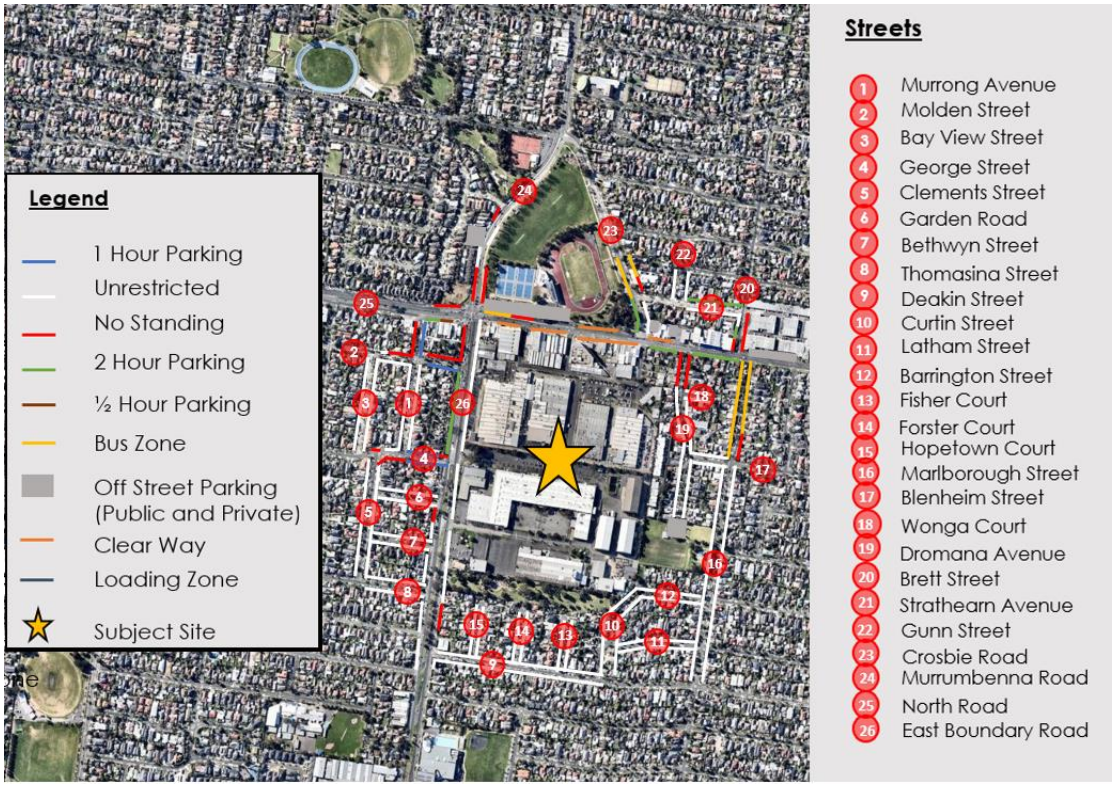
GTA Consultants compiled an inventory of publicly available on-street car parking along the frontages and proximate roads to the subject site. The inventory identified a total of 1,142 on-street spaces, including 1,001 spaces that are unrestricted during business hours.

On-site observations indicate that current on-street car parking demands along the frontages of the subject site and proximate roads to the subject site are moderate, and decrease as you

move further away from the site. However, it is noted that Duncan Mackinnon Reserve attracts significant parking demands on the weekend.

The parking restrictions on the fronting and surrounding streets are presented below in Figure 3.10.

Figure 3.10: Car Parking Restrictions Within the Surrounding Streets of The Site



Reproduced with Nearmap and survey data

3.7 Active Transport

3.7.1 Pedestrian Infrastructure

Pedestrian paths are located along both sides of North Road and East Boundary Road, and signalised pedestrian crossings on all four approaches of their intersection, with zebra crossings at the slip lanes.

The closest pedestrian crossing from the study area on North Road is located at the intersection of North Road / Poath Road approximately 700metres east of the site.

Furthermore, a pedestrian operated signal (POS) is located on East Boundary Road approximately 650metres south of the site. Another POS is located on Murrumbeena Road approximately 580metres north of the site.

3.7.2 Principal Bicycle Network

The Principal Bicycle Network (PBN) is a network of on and off-road cycling corridors that have been identified to support cycling for transport and access major destinations in metropolitan Melbourne. The PBN was reviewed and updated in 2012 by VicRoads and all local Councils.

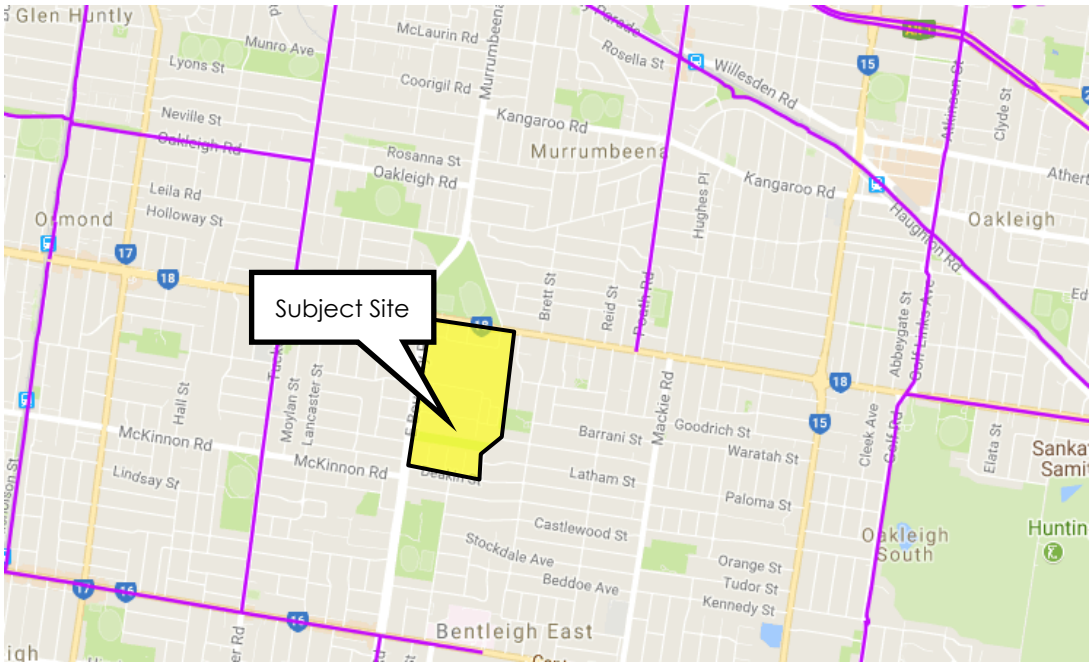
The PBN is also a 'bicycle infrastructure planning tool' that help guide State investment in the planning and development of the future metropolitan Melbourne bicycle network. In this regard,

a subset of the PBN has been identified and elevated to a higher level of priority, mainly based on potential for separation from motorised traffic, making these routes more attractive to less experienced bike riders. These cycling corridors are referred to as Bicycle Priority Routes (BPRs) and form part of the modal priorities for the road network set out in the VicRoads SmartRoads framework.

It is noted that the type of bicycle facility (i.e. on or off-road and separated or shared) has not been indicated as part of the PBN and BPRs. Rather, the PBN and BPRs show the proposed cycling network. The associated facilities should be delivered in accordance with the relevant standards and guidelines, such as the Australian Standards, Austroads Guides and VicRoads' Cycle Notes.

The PBN and BPRs in the vicinity of the study area are shown in Figure 3.11.

Figure 3.11: VicRoads Principal Bicycle Network and Bicycle Priority Routes (Purple Lines)



Source (www.maps.vic.gov.au/TransMaps/)

As indicated in Figure 3.11 the following PBN and BPRs exist within the vicinity of the site:

- Tucker Road
- Poath Road
- Centre Road
- East Boundary Road (south of Centre Road)

As shown in Figure 3.12, there are no PBN or BPR's directly along the subject site. There are cycle lanes on both sides of East Boundary Road (south of North Road) and cycle lanes on both sides of Murrumbeena Road (North of North Road). However, due to the speed and quantity of traffic along these roads, the cycle lanes would only be expected to be used by confident cyclists.

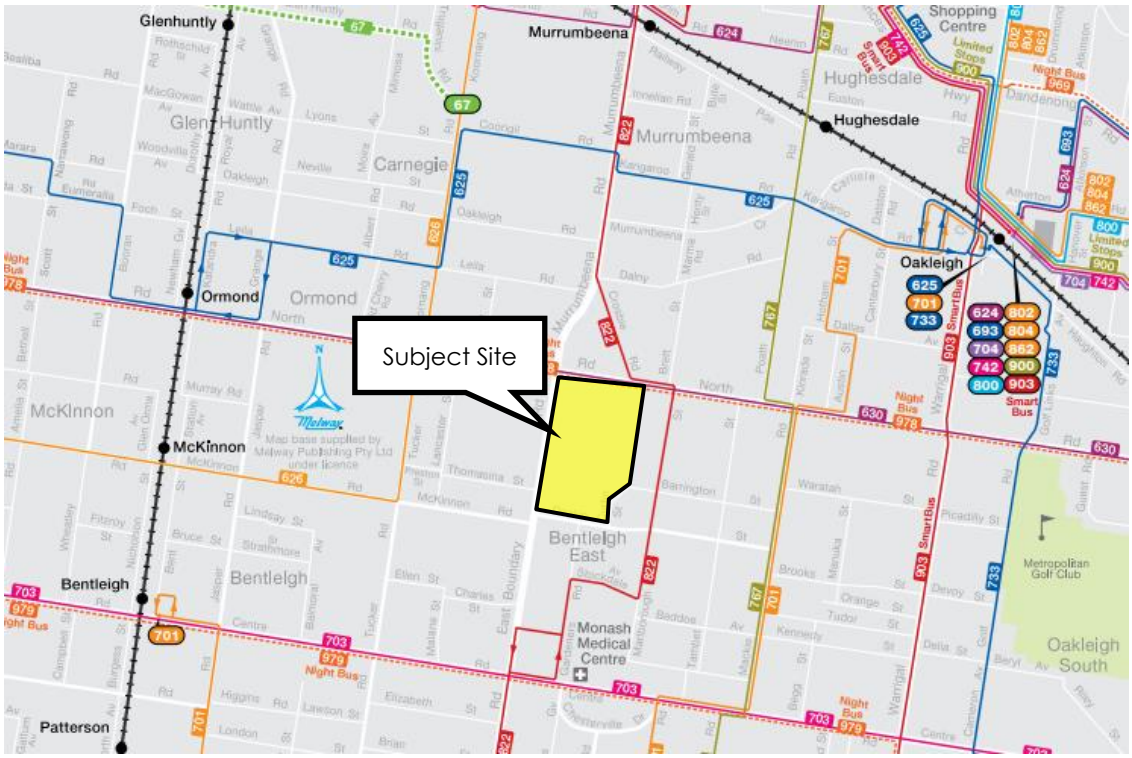
Strategic Cycle Corridors (SCC) form another subset of the PBN, and represent an initiative outlined in Plan Melbourne to support walking and cycling across Melbourne. SCCs are intended to be corridors designed to provide high quality bicycle infrastructure to, and around, major activity areas in metropolitan Melbourne.

GTA has previously undertaken feasibility work for a proposed SCC along the western border of East Village (from Murrumbeena Road to East Boundary Road). However, the status and potential treatments for this proposed SCC has not been progressed from a feasibility assessment stage.

3.8 Public Transport

Figure 3.12 shows the subject site in relation to existing public transport routes within its vicinity, whilst Table 3.5 summarises routes and major destinations that can be reached using these services.

Figure 3.12: Public Transport Map



Reproduced from Public Transport Victoria

Table 3.5: Public Transport Provision

Service	Route Nos	Route Description	Distance to Nearest Stop (m)	Significant Destinations on Route	Frequency On/Off Peak
Bus	822	Chadstone – Sandringham	500	Chadstone	30 min/60 min
Bus	630	Elwood – Monash University	200	Monash University (Clayton)	12 min/ 30 min
Bus	978	Elsternwick – Dandenong (Night Rider)	1,100	Monash University (Clayton)	60 min
Tram	67	Carnegie – Melbourne University	2,500	Melbourne University	6 min / 15 min
Train	-	Ormond Station	2,600	South Yarra Station	10 min/ 20 min
Train	-	Oakleigh Station	3,900	Melbourne CBD	8 min/ 20 min

It is noted that as part of the State Budget 2017/18 the government proposes a series of route extensions, upgrades, and new services were proposed to improve bus network coverage in the

southeast[2], including a new bus route from Chadstone to Bentleigh, via Mackinnon Road and East Boundary Road.

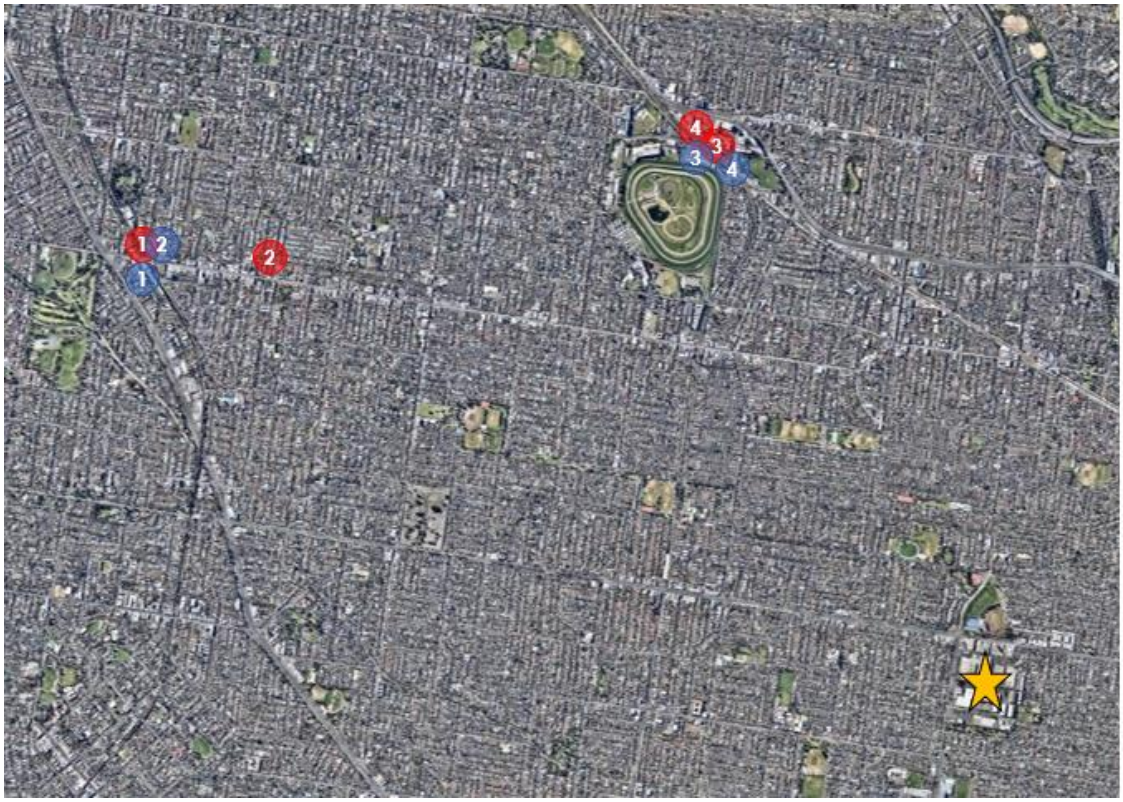
It is also noted that in the State Budget 18/19 it is proposed that there will be bus improvements in Bentleigh East.

3.9 Local Car Sharing Services

There are currently no local car sharing services available within the vicinity of the subject site. However, Glen Eira is conducting a trial car share scheme within Elsternwick (7km west of the site) and Caulfield (3km west of the site), which if successful would be expanded to be expanded to other activity centres and major development sites, such as East Village.

The locations of the nearby car sharing pods are displayed below in figure 3.13.

Figure 3.13: Local Car Sharing Services in Glen Eira



Flexicar:

1. Glen Huntly Road (near Ripon Grove), Elsternwick
2. Glen Huntly Road (near Orrong Road), Elsternwick
3. Sir John Monash Drive (opposite the Caulfield Railway Station), Caulfield
4. Derby Road (just north of Sir John Monash Drive), Caulfield

Goget:

1. Horne Street, Elsternwick
2. Gordon Street, Elsternwick
3. Normandy Road (near the Caulfield Railway Station), Caulfield
4. Sir John Monash Drive (just south of Derby Road), Caulfield

Subject Site

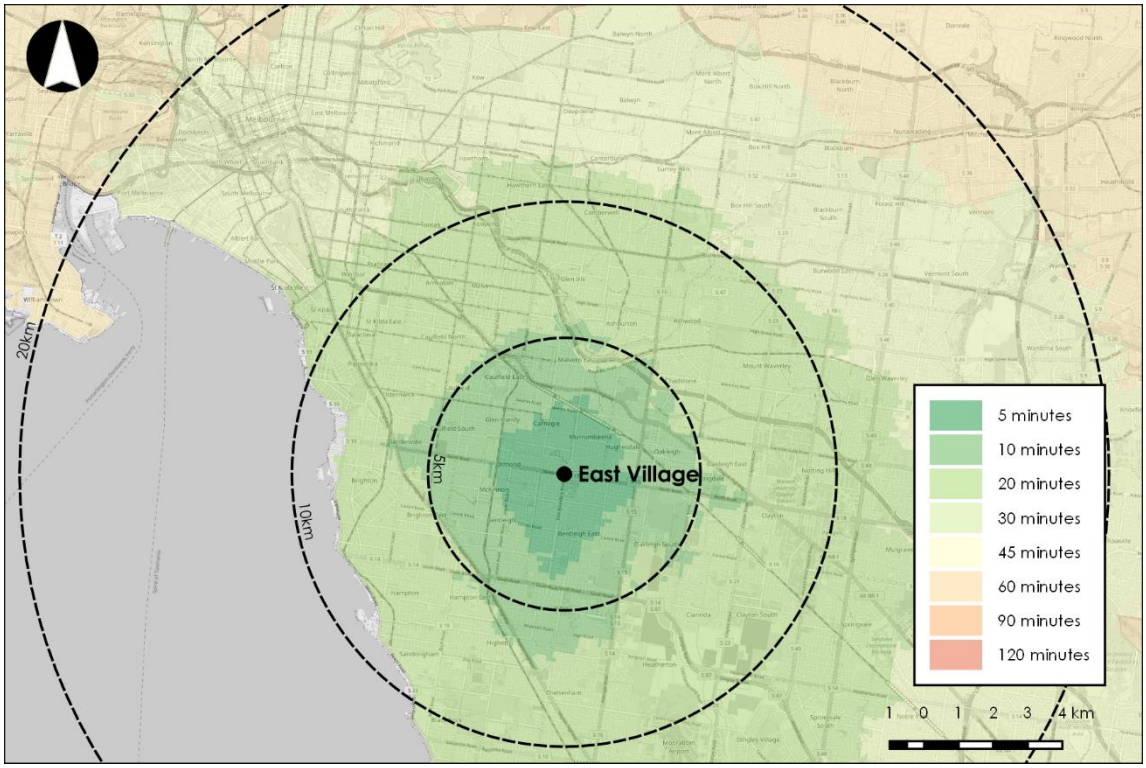
[2] Source: Victorian Budget 17/18 Overview

3.10 Accessibility

3.10.1 Road

Due to the site's proximity to major roads and the M1, the study area has a high level of road based accessibility. This is displayed in Figure 3.14, which indicates that most suburbs located in the south-eastern suburbs can be accessed within 30 minutes by road.

Figure 3.14: Road travel time from East Village



The Caulfield to Dandenong Level Crossing Removal Project consists of the removal of nine level crossings. The most notable in relation to Bentleigh East are at the following locations broadly north of the subject site:

- Grange Road
- Koornang Road
- Murrumbeena Road
- Poath Road
- Clayton Road
- Centre Road

The level crossing removal projects will increase road capacity at these mid-block locations, and decrease the average travel times for all vehicles along these sections of the roads. These level crossings, especially when adjacent to and needing to be integrated into the operation of signalised intersections, would at times have been the main corridor constraint. With their removal, the main corrdior constraints will be expected to be the up and down stream intersections.

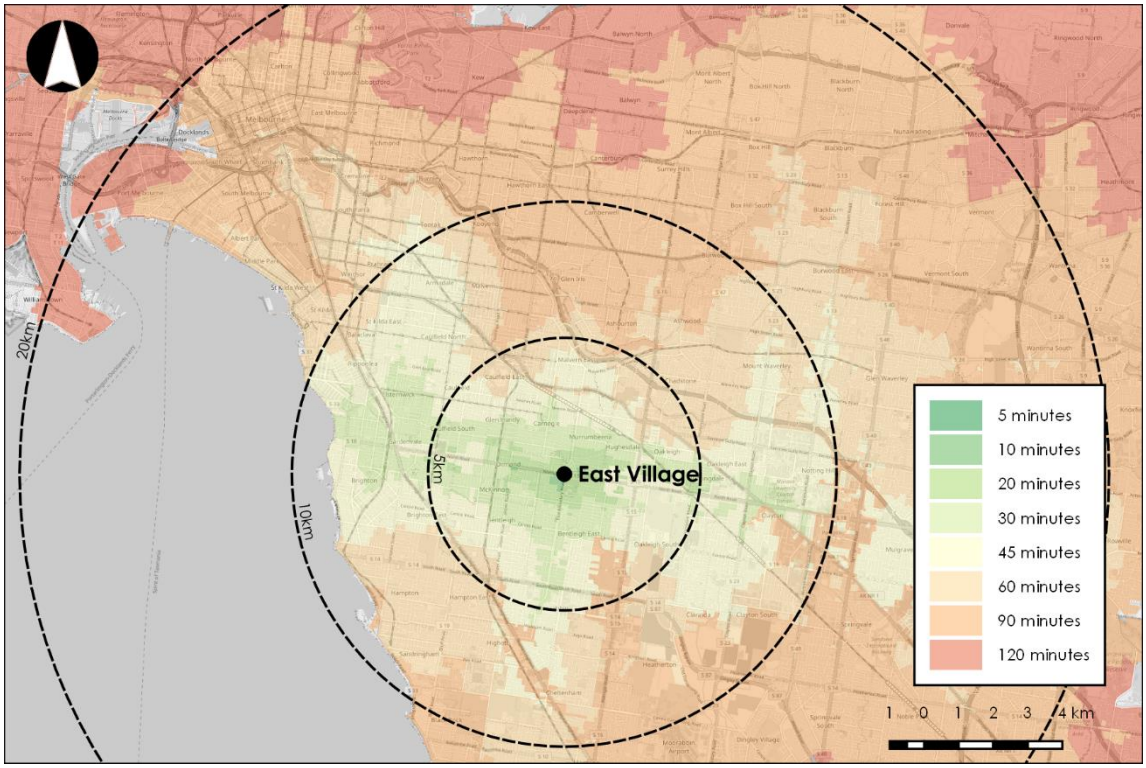
As such, their removal will likely attract additional traffic volumes to those specific road links and change travel patterns in the area, with more trying to access Princes Highway from the south, but only by the amount able to be facilitated by the up and down stream intersections.

In terms of potential changes to traffic volumes and movement patterns proximate to the subject site, there is only limited ability for additional traffic volumes to go through the North Road / East Boundary Road intersection, as it already operates at capacity (limited abilty to accommodate additional traffic volumes). However, higher proportions of what traffic currently uses the intersection may try and travel north-south in accessing Princes Highway, which is able to be more efficiently accommodated by the intersection (through movements are able to be more efficiently accommodated when compared to turning movements), but dependent on the capacity on the other intersections to the north.

3.10.2 Public Transport

Accessibility from the study area is currently more limited by public transport, as depicted in Figure 3.15. Suburbs located east-west can be access within 45 minutes. However, suburbs located north and south receive less accessibility and take over 60 minutes to be accessed from the site.

Figure 3.15: Public transport travel time from East Village



As mentioned, the Caulfield to Dandenong Level Crossing Removal Project consists of the removal of nine level crossings, with six of these being located broadly to the north of the subject site.

These level crossing removal projects provide an opportunity to reduce travel times for road based public transport along these road links, as long as they are not just allowed to fill up with additonal private traffic volumes, through such measures as bus prioity and jump lanes along their lengths, and at the up and down stream intersections.

Such measures would help increase the accessiblity of the area by public transport, including connectivity and interchange with the adjacent train stations, which provide access to the Melbourne CBD and metropolitan rail network.

4. Development Proposal

4.1 Land Use

The CDP for the East Village Precinct anticipates that the site's rezoning will support a mixed use precinct that includes commercial, retail, residential and community uses. The anticipated development schedule is presented in Table 4.1 and the draft plan is shown in Figure 4.1.

Table 4.1: Indicative Development Schedule

Use	Size
Commercial	80,000m² of commercial office space
Retail	12,000m² of retail floor space (likely mix of supermarket, speciality, and food and beverage)
Residential	3,000 dwellings in a mixture of densities
School	800 secondary school students (approx.)

Source: VPA

Figure 4.1: Draft Plan

Reproduced from Victorian Planning Authority

4.2 Vehicle Access & Internal Circulation

4.2.1 Vehicle Access Principles

The subject site is located on the southeast corner of an existing signalised intersection between two arterial roads that is operating at or near its capacity. As such, vehicle access to the site aims to ideally minimise the need to use, but at least make turns at the existing signalised intersection (i.e. only travel straight through) to minimise the impact on them and the need to provide more traffic capacity than required in the area.

This requires highly attractive and generally full turning movement access intersections on the two fronting arterial roads into the site. As the subject site has a rectangular shape, two full turning movement access intersections are proposed on the longer site frontage of East Boundary Road, and only one proposed on the shorter frontage of North Road.

Internal to the site, and to be consistent with the above site access approach, the precinct has proposed to establish north-south and east-west connector roads, the placement of which aligns with the proposed primary site access intersections. A lower order local street is also proposed to connect with North Drive, but consistent with the signalised intersection layout on East Boundary Road, it is of a lower order to the connector roads connecting with the other signalised site accesses.

No direct vehicular access to the local road network on the east and south sides of the subject site is proposed, to help protect the existing local residential neighbourhood from potential traffic intrusion.

4.2.2 Site Access Points

The precinct is bounded on two sides by existing arterial roads, and it is anticipated that access will be obtained via a number of intersections with these two roads to allow the new development to have highly attractive access that minimises the potential for local residential neighbourhood traffic intrusion.

Specifically, the development proposal envisages access to the precinct from:

i A new four-way signalised intersection on North Road at the intersection with Cobar Street and Crosbie Road. However, southbound movements on Crosbie Road have been restricted to minimise the level of impact on the existing residential area on the eastern side of Crosbie Road.

ii Two left-in / left-out only give-way controlled intersections on North Road relatively evenly spaced between Cobar Street and East Boundary Road

iii Two new signalised intersections on East Boundary Road at the following locations:

- X- intersection with North Drive and George Street
- T-intersection with South Drive, south of Garden Road.

It is noted that George Street will be restricted to left-in / left-out only as part of the above site access intersection to restrict the potential of traffic intrusion into the existing residential area.

Further details of these works and others required to support the development are provided in Section 5 of this report.

4.2.3 Internal Road Network

The proposed layout of the internal road network broadly consists of a road hierarchy with connector streets and access streets within the subject site. These will connect with the abutting road network and access the proposed internal land uses. Of particular note, there is a continuous connector street through the site that extends south from the North Road / Cobar Street / Crosbie Road intersection, and extends east from the East Boundary Road / South Drive intersection.

This connector street will provide efficient access to the abutting road network, and internal lower order road network and land uses.

Further details of the internal road network are provided in Section 8.

4.3 Active Transport Facilities

The Structure Plan anticipates a number of pedestrian and bicycle links through and connecting the site, broadly consisting of the following:

- Footpaths along all internal and abutting streets
- Dedicated bicycle paths along the internal connector street
- Maintain the existing setback along the East Boundary Road frontage to accommodate an active transport path (specific facility type to be determined as part of the proposed SCC)
- Shared paths through the internal and connecting open space areas.

These paths are also proposed to be connected to the surrounding local bicycle network through the following facilities:

- Pedestrian crossing facilities on most approaches to the three proposed signalised intersections along North Road and East Boundary Road
- Bicycle lanterns to be included on the appropriate approaches of the signalised intersections to support the SCC and dedicated bicycle paths
- Shared path connection through Marlborough Street Reserve
- Shared path connection(s) to the existing path network within Virginia Park.

Further details on the suitability of the active transport facilities and how they will be used by those accessing East Village are provided in Section 6 of this report.

4.4 Public Transport Services

The planning, operation and management of the public transport services in the area is outside of the control of any one development. However, there is an understanding that there is the potential in the future for improvements to the existing bus services in the area, such as east-west along North Road, north-south along Murrumbeena Road and a potential local bus route along East Boundary Road.

The specific arrangements of these routes are not known at this time, but it is expected that they will provide access to Ormond, Murrumbeena and Huntingdale Stations.

With this understanding, allowances exist to provide new bus stop pairs proximate to the proposed signalised site access intersections to both North Road and East Boundary Road.

Further details on the suitability of the public transport facilities and how they will be used by those accessing East Village are provided in Section 6 of this report.

5. Traffic Impact Assessment

5.1 Approach / Methodology

A traffic impact assessment of the primary road network that will be used to access East Village has been undertaken to understand how it currently operates and is expected to in the future. The primary road network that has been considered as part of the traffic impact assessment broadly includes the following extents:

- North Road between and including Tucker Road and Poath Road
- Murrumbeena Road and East Boundary Road between and including Leila Road and Ardena Court.

In order to consider the operation of the above road network today and in the future, the following key activities have been undertaken:

- Collected existing conditions traffic data of the key intersections used to access the subject site
- Prepared existing AM and PM peak hour network SIDRA Models for the key intersections
- Identified the anticipated level of additional traffic the site will generate given its level of development and applied them to the key intersections
- Assessed the post development peak hour traffic conditions at the key intersections through the network SIDRA Models to identify the mitigating works required to support the proposed development of East Village
- Identify the future background traffic growth on the arterial road network and applied them to the key intersections
- Assessed the future peak hour traffic conditions at the key intersections through the network SIDRA Models to confirm that the site access points will be able to operate satisfactorily (maintaining the broader road network is the responsibility of VicRoads).

A summary of the results of the above activities is set out in this section of the report, with more detail in the relevant Appendices as indicated.

5.2 Existing Conditions

5.2.1 Overview of Activities

The approach used to model the existing road network conditions along the abutting roads within close proximity of the subject site is broadly set out as follows:

- Obtain existing traffic movement data through SCATS data for signalised intersections and camera based surveys of unsignalised intersections (camera based surveys were completed for a couple of the signalised intersections for validation purposes).
- Obtain SCATS Intersection Diagnostic Monitor (IDM) data and off-set data for the survey day for the signalised intersections to identify the existing phasing and coordination arrangements.
- Determine how representative the survey day is to typical peak road network conditions (i.e. 85th percentile design day).
- Build existing network SIDRA Intersection models for the abutting and proximate intersections associated with the primary road network.

- Calibrate the existing network SIDRA Intersection models based on site observations of queues, SCATS IDM phasing data and gap capacities from the camera based surveys to identify the baseline modelling conditions.

Outcomes of the existing conditions modelling is presented hereafter, with more detail associated with the above activities set out in Appendix A of this report.

5.2.2 Existing Traffic Volumes

GTA Consultants obtained traffic movement data for all existing site access points and the key intersections that make up the primary road network on Thursday 14 September, except for the Murrumbeena Road / Leila Road / Crosbie Road intersection, which was collected on Thursday 21 September 2017.

The resulting AM and PM peak hour traffic volumes are shown in Figure 5.1 and Figure 5.2, respectively.

Figure 5.1: Existing AM Peak Hour Traffic Volumes

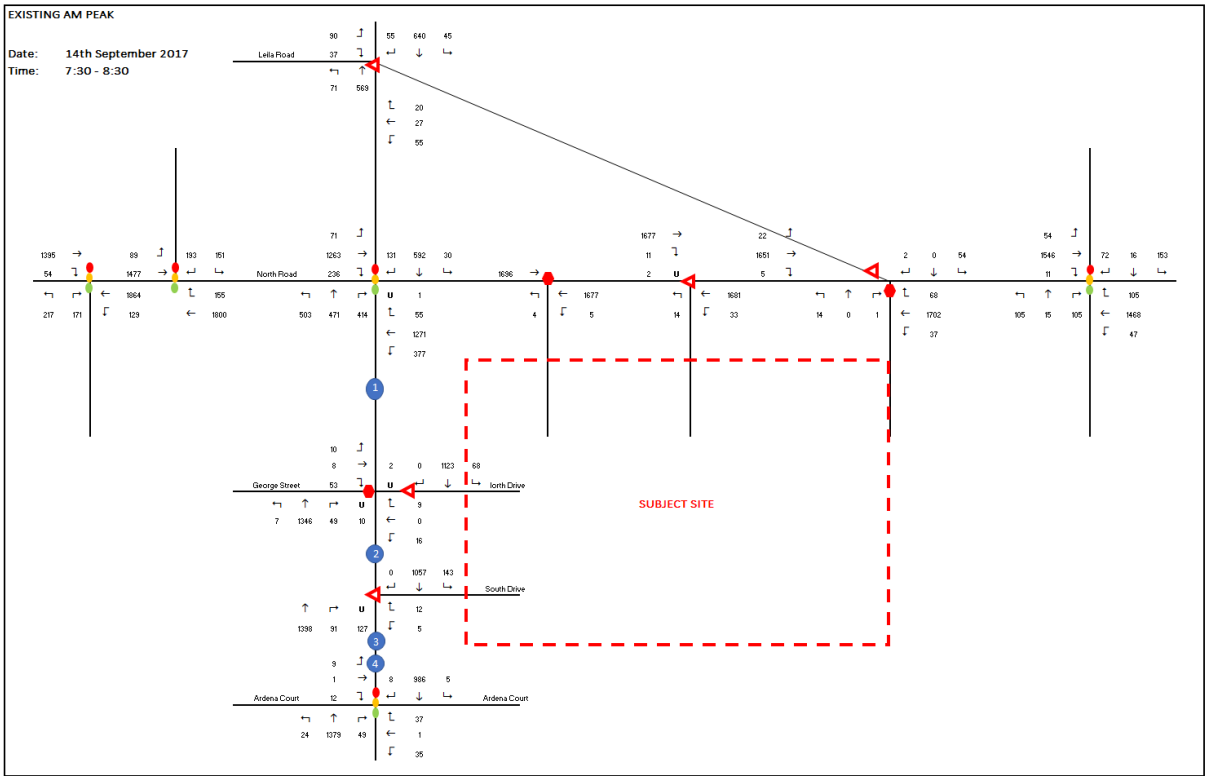
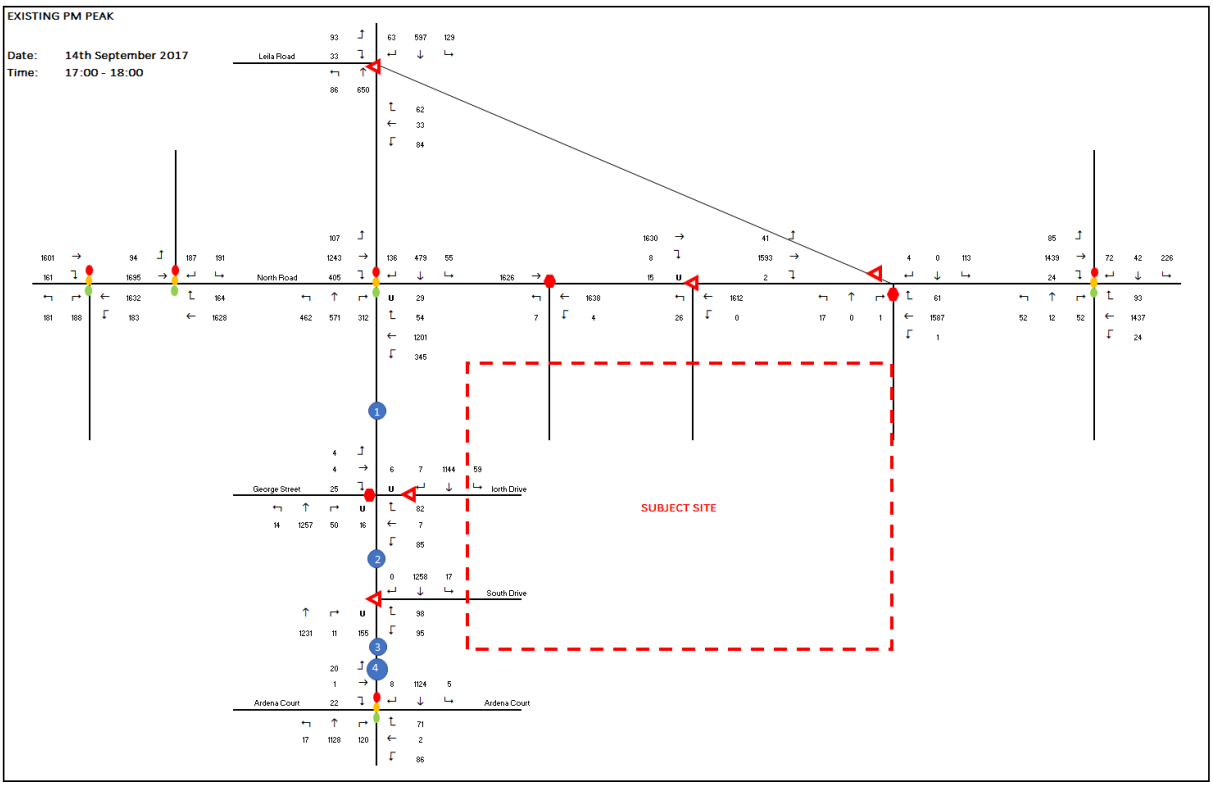


Figure 5.2: Existing PM Peak Hour Traffic Volumes



It is noted in Figure 5.1 and Figure 5.2 that the following existing traffic volumes currently access the site via the existing access roads:

AM Peak Hour:

- Ingress = 450 vehicle movements
- Egress = 75 vehicle movements
- Total = 525 vehicle movements

PM Peak Hour:

- Ingress = 156 vehicle movements
- Egress = 418 vehicle movements
- Total = 574 vehicle movements

The above existing traffic volumes are not expected to be generated in the future following full development of the subject site, and thus will be deducted under the post-development traffic impact assessment.

It should also be noted that the associated traffic volumes are considered to be conservative on the low side for what the site currently generates, as it doesn't include any car parking accessed directly from the fronting arterial roads, or the abutting publicly available car parking facilities.

Most notable of the abutting public car parking are those within the median along East Boundary Road, which have been provided as part of a Section 173 agreement with one of the current on-site developments. There are also other car parks that are directly accessed from North Road and East Boundary Road. This provides an opportunity with the development proposal to remove these car spaces and reinstate the median with an alternative treatment, such as landscaping to help improve the amenity and sustainability of the area.

5.2.3 Existing Conditions Modelling Results

The commonly used measure of intersection performance is referred to as the Degree of Saturation (DOS). The DOS represents the flow-to-flow capacity ratio for the most critical movement on each leg of the intersection.

For signalised intersections, a DOS of around 0.95 has been typically considered the 'ideal' limit, beyond which queues and delays increase disproportionately, whilst for an unsignalised intersection a DOS of 0.90 is considered the 'ideal' limit[3].

Table 5.1 and Table 5.2 presents a summary of the existing operation of the modelled intersections in the AM and PM peak periods, respectively. Full details of the associated SIDRA Intersection modelling are provided in Appendix B.

Table 5.1: Existing Operating Conditions in AM Peak

Intersection	DOS	Average Delay (sec)	95th Percentile Queue (m)
North Rd / East Boundary Rd / Murrumbeena Rd	***#1.00***	62 sec	206 m
North Rd / Koornang Rd / Tucker Rd	0.83	27 sec	252 m
North Rd / Poath Rd	0.80	24 sec	326 m
East Boundary Rd / Ardena Ct	0.61	16 sec	180 m
East Boundary Rd / North Dr	0.39	3 sec	11 m
Leila Rd / Murrumbeena Rd	0.56	5 sec	15m
East Boundary Rd / South Dr	0.76	7 sec	30 m
North Rd / Crosbie Rd / Cobar Rd	***1.00***	13 sec	27 m

DOS – Degree of Saturation, # - Highest Network Intersection DOS

Table 5.2: Existing Operating Conditions in PM Peak

Intersection	DOS	Average Delay (sec)	95th Percentile Queue (m)
North Rd / East Boundary Rd / Murrumbeena Rd	***0.99***	60 sec	243 m
North Rd / Koornang Rd / Tucker Rd	0.79	27 sec	228 m
North Rd / Poath Rd	0.76	21 sec	278 m
East Boundary Rd / Ardena Ct	0.57	20 sec	153 m
East Boundary Rd / North Dr	0.33	2 sec	6 m
Leila Rd / Murrumbeena Rd	***1.00***	14 sec	71 m
East Boundary Rd / South Dr	***1.00***	13 sec	18 m
North Rd / Crosbie Rd / Cobar Rd	**#1.00**	5 sec	19 m

DOS – Degree of Saturation, # - Highest Network Intersection DOS

Table 5.1 and Table 5.2 indicates that the majority of the intersections operate within an acceptable DOS. However, there are a number that are operating above, as outlined below and the key movements that are not performing well:

[3] SIDRA INTERSECTION adopts the following criteria for Level of Service assessment:

Level of Service		Intersection Degree of Saturation (DOS)		
		Unsignalised Intersection	Signalised Intersection	Roundabout
A	Excellent	<=0.60	<=0.60	<=0.60
B	Very Good	0.60-0.70	0.60-0.70	0.60-0.70
C	Good	0.70-0.80	0.70-0.90	0.70-0.85
D	Acceptable	0.80-0.90	0.90-0.95	0.85-0.95
E	Poor	0.90-1.00	0.95-1.00	0.95-1.00
F	Very Poor	>=1.0	>=1.0	>=1.0

- **North Road / East Boundary Road / Murrumbeena Road intersection:** Each approach is at or near capacity, so to support additional traffic volumes additional intersection capacity will be required.
- **Leila Road / Murrumbeena Road intersection:** Predominately the right turn movements from the side roads struggle in the PM peak period given they are under give way control to the reasonably high through movements along Murrumbeena Road.
- **East Boundary Road / South Drive intersection:** Predominately the right turn movement in the PM peak period out of South Drive struggles given it is under give way control and they need to cross a number of highly trafficked lanes on East Boundary Road.
- **North Road / Crosbie Road / Cobar Road intersection:** Predominately the right turn movements from the side roads struggle given they are under give way control and they need to cross a number of highly trafficked lanes on North Road.

5.2.4 Do Nothing Scenario

The above identified DOS's in a fully built up urban area are not uncommon, and while they may indicate that there is limited ability to accommodate additional traffic volumes, additional development in the area and traffic volumes through the above intersections will occur even if we do nothing with the subject site because metropolitan Melbourne is growing.

Moreover, when these additional traffic volumes occur those intersections operating with a DOS of around 1.0 do not break down and stop working. Rather, the intersections won't be able to process all of the approaching traffic volumes within each signal cycle, and vehicles will have to wait at times for more than one signal cycle to get through (i.e. they will not get through on each green phase supporting their desired movement).

In reality what happens if additional traffic is being generated in the area and no additional road capacity is provided, is that some people will change their travel behaviour, through one or a combination of the following:

- Change when they travel
- Change the route they take
- Change transport mode

At a macro level, this has been shown through the October 2018 Grattan Institute Report titled Remarkedly Adaptive: Australian Cities in a Time of Growth[4], where people's average commuting times are not increasing, at least not anywhere near the level of population and network congestion growth that is occurring across Australia's capital cities.

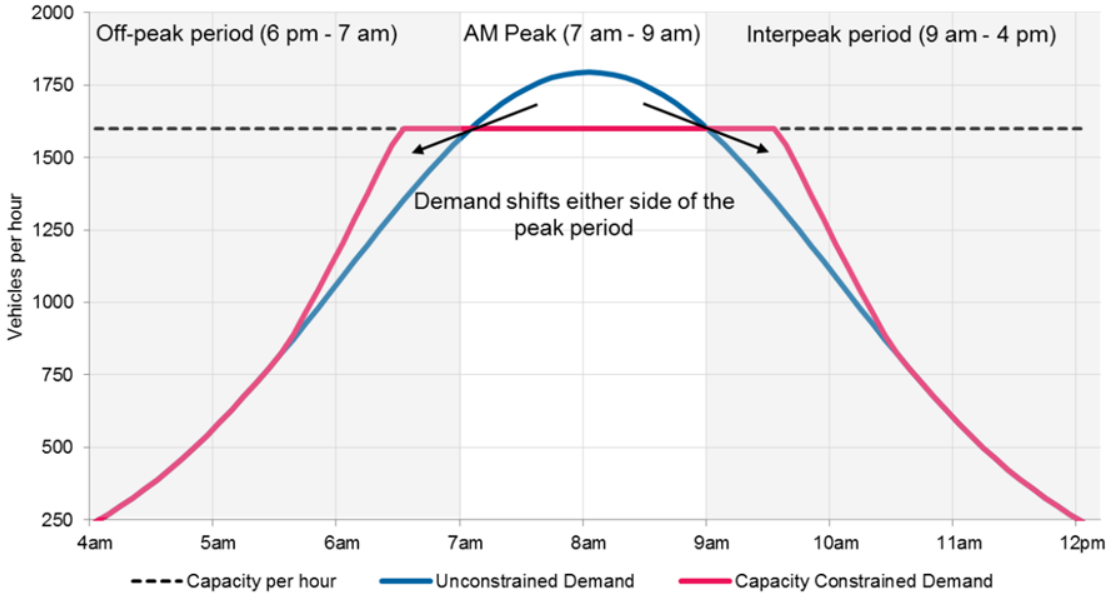
At a more local network level, especially in highly congested road networks, this results in the phenomenon known as peak spreading, where essentially road congestion conditions reach a peak level, but as additional traffic volumes are generated the peak congestion periods occur for longer periods of time across the day.

This outcome is shown in Figure 5.3, which identifies the likely spread of vehicle activity outside the busiest peak hour and into each shoulder period[5]. Should the North Road / East Boundary Road / Murrumbeena Road intersection remain in its current arrangement, but continued growth occurs in the area, ultimately peak spreading is expected to occur.

[4] https://grattan.edu.au/wp-content/uploads/2018/10/909-Remarkably-adaptive-Australian-cities-in-a-time-of-growth.pdf

[5] Source: West Gate Tunnel EES, Technical Report A.

Figure 5.3: Peak Spreading Sample (Extract from West Gate Tunnel EES)



5.3 Post Development Conditions

5.3.1 Traffic Generation

A first principles traffic generation assessment for the proposed level of development to be accommodated as part of the East Village precinct has been set out in Appendix C. Based on the information presented in Appendix C, the total estimated externally generated traffic activity by East Village results in 2,618 vehicle movements in the AM peak hour (consisting of 1,312 ingress and 1,306 egress movements) and 2,810 vehicle movements in the PM peak hour (consisting of 1,108 ingress and 1,702 egress movements). In terms of daily volumes, these will be in the order of 27,000 movements.

If the existing site generated traffic volumes are subtracted from the above estimated externally generated traffic activity by East Village, we end up with the additional traffic volumes that will be added to the existing traffic volumes shown in Figure 5.1 and Figure 5.2.

In this regard, the following additional external traffic volumes are expected as a result of East Village:

AM Peak Hour:

- Ingress = 862 vehicle movements
- Egress = 1,231 vehicle movements
- Total = 2,093 vehicle movements

PM Peak Hour:

- Ingress = 952 vehicle movements
- Egress = 1,284 vehicle movements
- Total = 2,236 vehicle movements

5.3.2 Traffic Distribution and Assignment

The directional distribution and assignment of the additional external traffic generated by the proposed development will be influenced by a number of factors, including the:

i configuration of the arterial road network in the immediate vicinity of the site
ii operation of intersections providing access between the local and arterial road network
iii distribution of households in the vicinity of the site
iv surrounding employment centres, retail centres and schools in relation to the site
v configuration of access points to the site.

In order to estimate the expected distribution of the additional external traffic generated by East Village, VITM has been used. This has been done by completing a Select Link Analysis of the traffic volumes generated by the VITM zone the site is located in during the 2016 AM peak period. The resulting Select Link Analysis for the site VITM zone is attached to this memorandum, which has been used to develop Figure 5.4 and Figure 5.5, that show the anticipated directional distributions for the additional external traffic volumes generated from and attracted to the site in the AM peak, respectively.

Figure 5.4: AM Peak Period Site Generation Directional Distributions

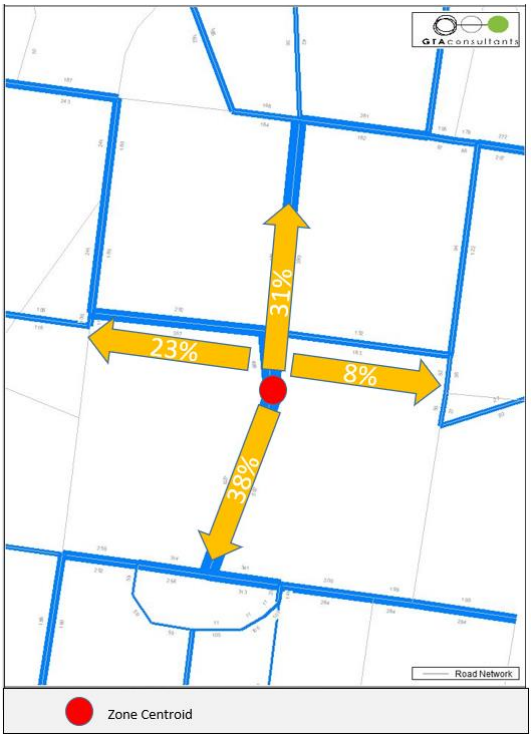
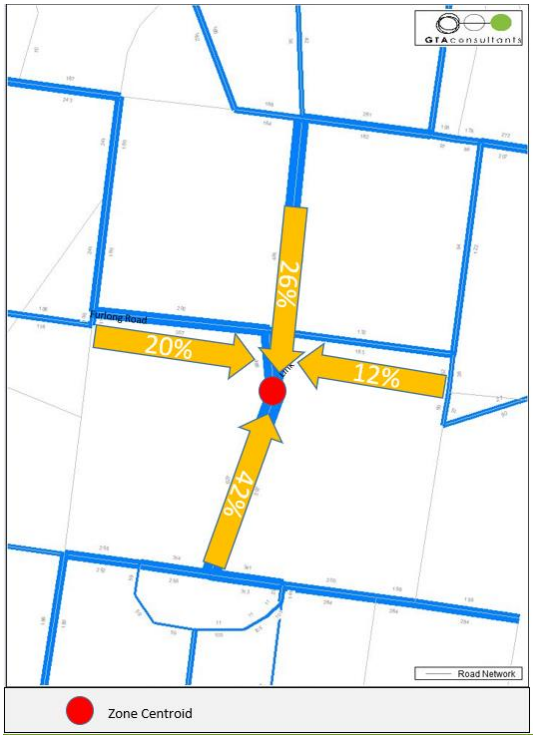


Figure 5.5: AM Peak Period Site Attraction Directional Distributions



It is proposed to adopt the directional distributions set out in Figure 5.4 and Figure 5.5 for the AM peak hour, and obviously reverse them in the PM peak hour.

5.3.3 Post Development Traffic Volumes

By adding the additional external development traffic to the existing conditions traffic volumes, we can obtain the 'Design' or Post-Development traffic volumes. The resulting AM and PM peak hour traffic volumes are outlined in Figure 5.6 and Figure 5.7, respectively.

Figure 5.6: Post-Development AM Peak Hour Traffic Volumes

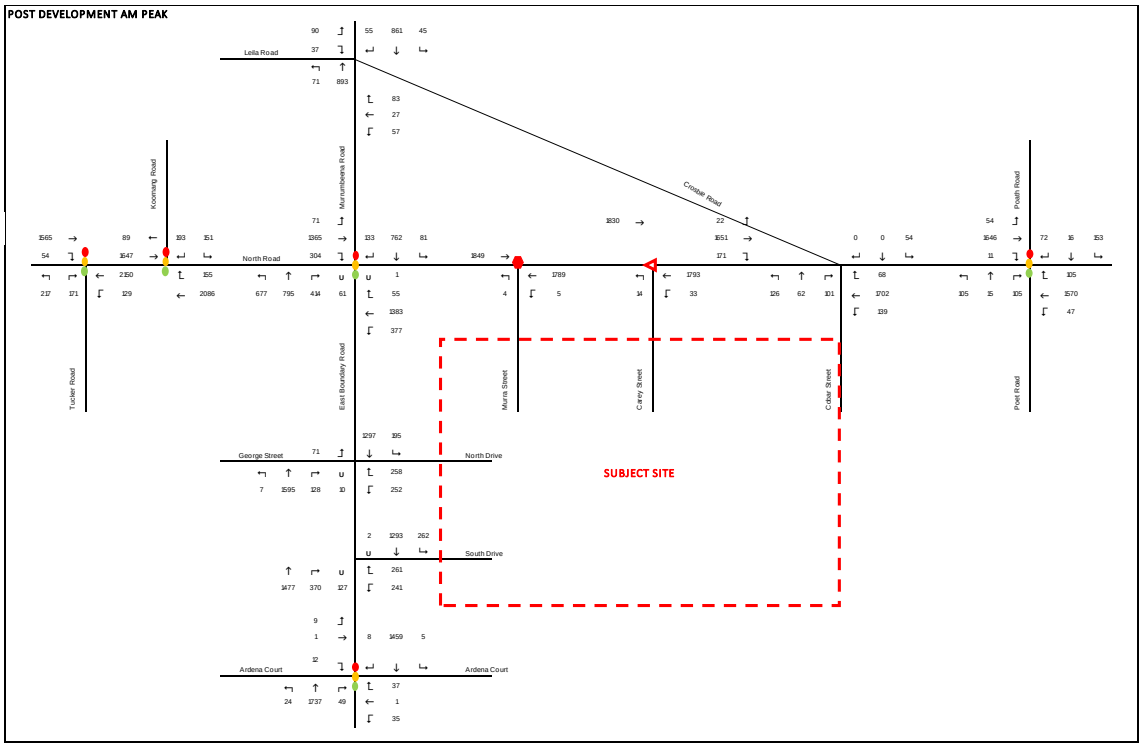
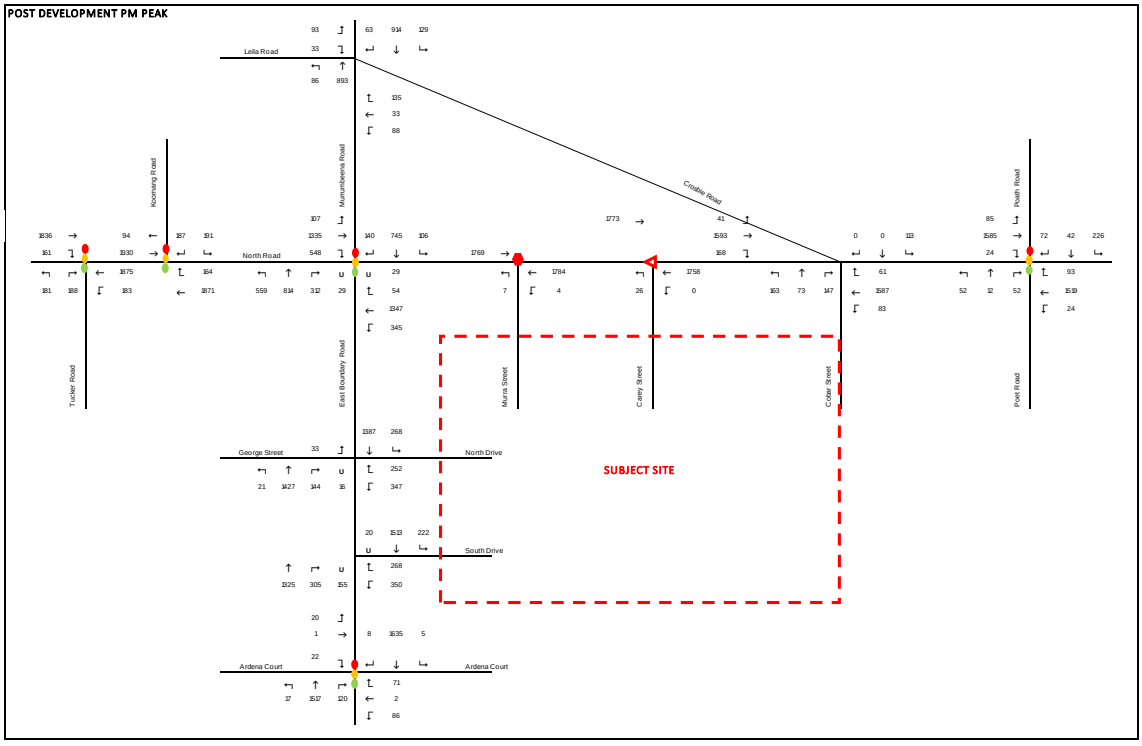


Figure 5.7: Post-Development PM Peak Hour Traffic Volumes



5.3.4 Post Development Modelling Results

Table 5.3 and Table 5.4 presents a summary of the post development operation of the modelled intersections in the AM and PM peak periods, respectively. Full details of the associated SIDRA Intersection modelling are provided in Appendix E.

Table 5.3: Post Development Operating Conditions in AM Peak

Intersection	DOS	Average Delay (sec)	95th Percentile Queue (m)
North Rd / East Boundary Rd / Murrumbeena Rd	**1.13**	113 sec	393 m
North Rd / Koornang Rd / Tucker Rd	0.96	38 sec	477 m
North Rd / Poath Rd	0.88	27 sec	403 m
East Boundary Rd / Ardena Ct	0.78	17 sec	266 m
East Boundary Rd / North Dr	**2.76**	230 sec	794 m
Leila Rd / Murrumbeena Rd	**2.70**	70 sec	263m
East Boundary Rd / South Dr	**3.33**	291 sec	905 m
North Rd / Crosbie Rd / Cobar Rd	**# 20.59**	1,407 sec	1,004 m

DOS – Degree of Saturation, # - Highest Network Intersection DOS

Table 5.4: Post Development Operating Conditions in PM Peak

Intersection	DOS	Average Delay (sec)	95th Percentile Queue (m)
North Rd / East Boundary Rd / Murrumbeena Rd	**1.18**	113 sec	544 m
North Rd / Koornang Rd / Tucker Rd	0.86	29 sec	281 m
North Rd / Poath Rd	0.76	21 sec	291 m
East Boundary Rd / Ardena Ct	0.77	21 sec	253 m
East Boundary Rd / North Dr	**3.01**	223 sec	834 m
Leila Rd / Murrumbeena Rd	**2.31**	35 sec	128 m
East Boundary Rd / South Dr	**4.13**	364 sec	1,021 m
North Rd / Crosbie Rd / Cobar Rd	**# 25.79**	2,199 sec	1,262 m

DOS – Degree of Saturation, # - Highest Network Intersection DOS

Table 5.3 and Table 5.4 indicates that following full development of East Village that the proximate road network will not be able to suitably accommodate the anticipated level of traffic generated, with the majority of the site access and proximate intersections operating outside of an acceptable DOS.

5.4 Mitigating Measures

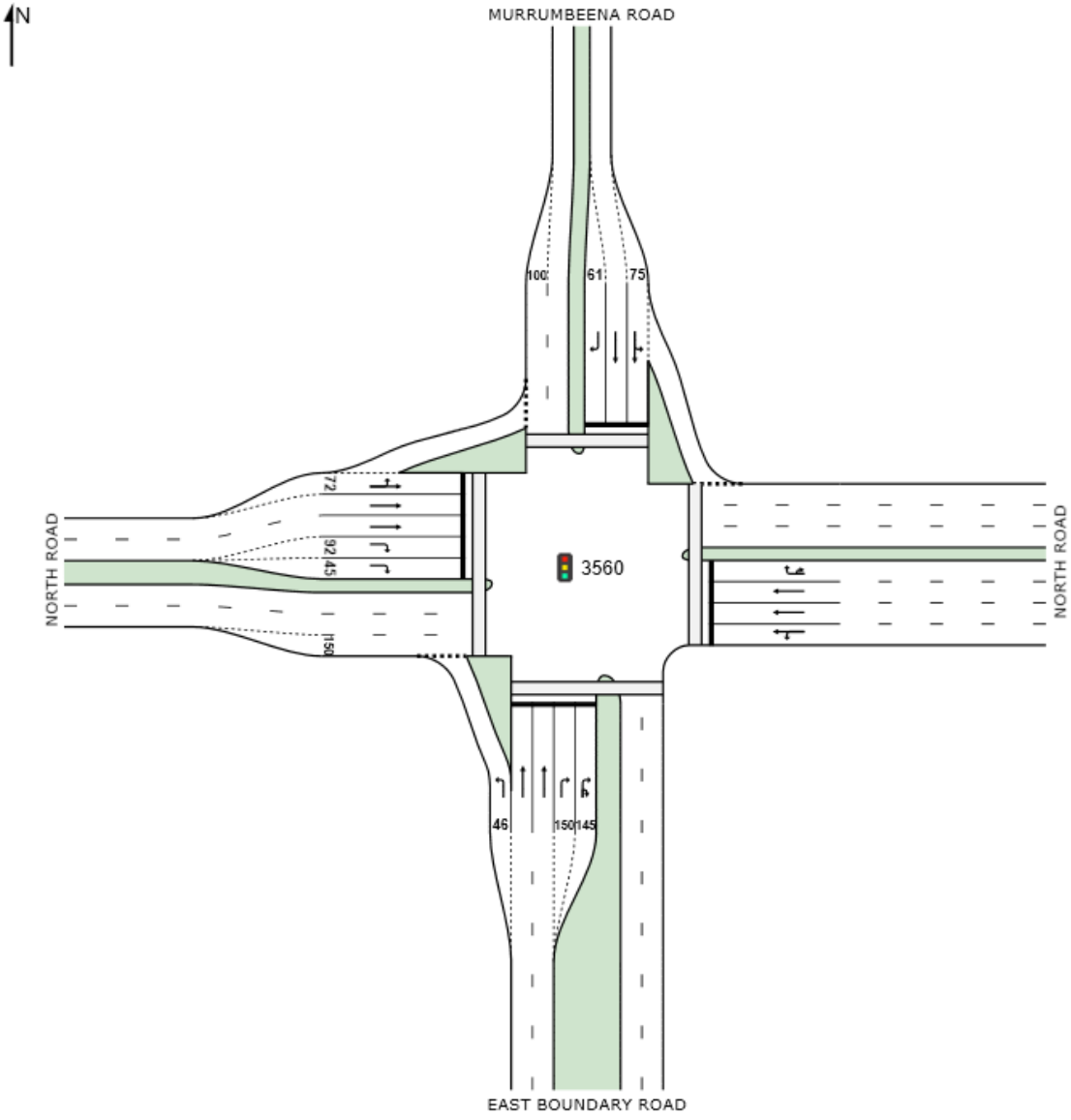
5.4.1 Proposed Mitigating Works

On this basis, a suite of mitigating measures has been identified to support the anticipated traffic generated by the proposed rezoning and development of East Village. The mitigating measures road works to the existing road infrastructure are outlined as follows:

- At the North Road / East Boundary Road / Murrumbeena Road signalised intersection:
  - Double right on the west approach
  - Continuation of the two departure lanes on the north approach
  - Continuation of the three departure lanes on the east and west approaches
  - Extend the right turns on the south and east approaches

The resulting intersection layout for the North Road / East Boundary Road / Murrumbeena Road signalised intersection is shown in Figure 5.8[6].

Figure 5.8: Resulting layout for the North Road / East Boundary Road / Murrumbeena Road intersection

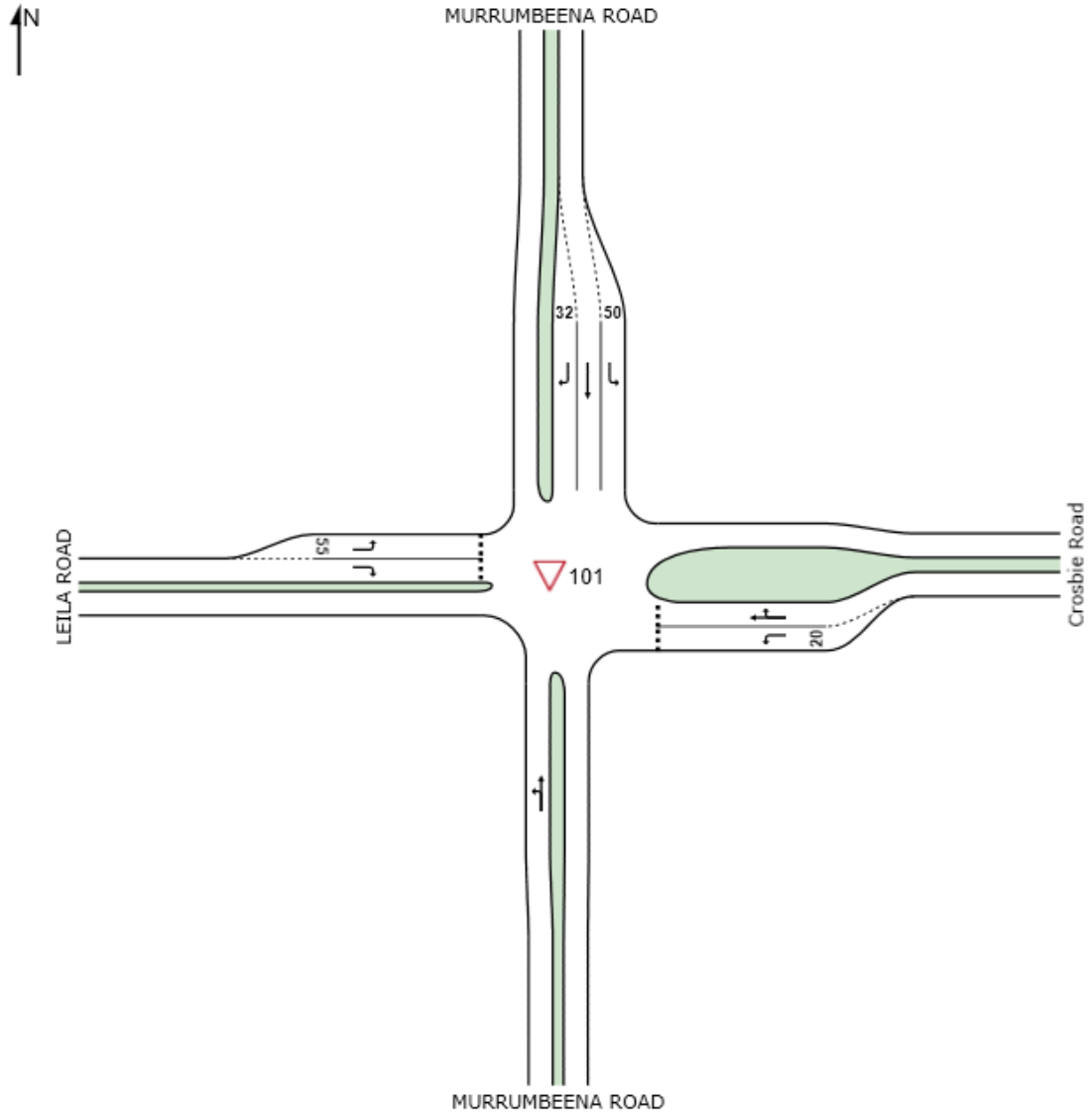


[6] East approach right turn lane is actually a 110m short lane. Shown as continuous due to the short lane extending past Murra Street.

- At the Murrumbeena Road / Leila Road / Crosbie Road intersection:
  - Convert to a signalised intersection
  - Extent the right turn lane on the north approach

The resulting intersection layout for the Murrumbeena Road / Leila Road / Crosbie Road intersection is shown in Figure 5.9.

Figure 5.9: Resulting layout for the Murrumbeena Road / Leila Road / Crosbie Road intersection

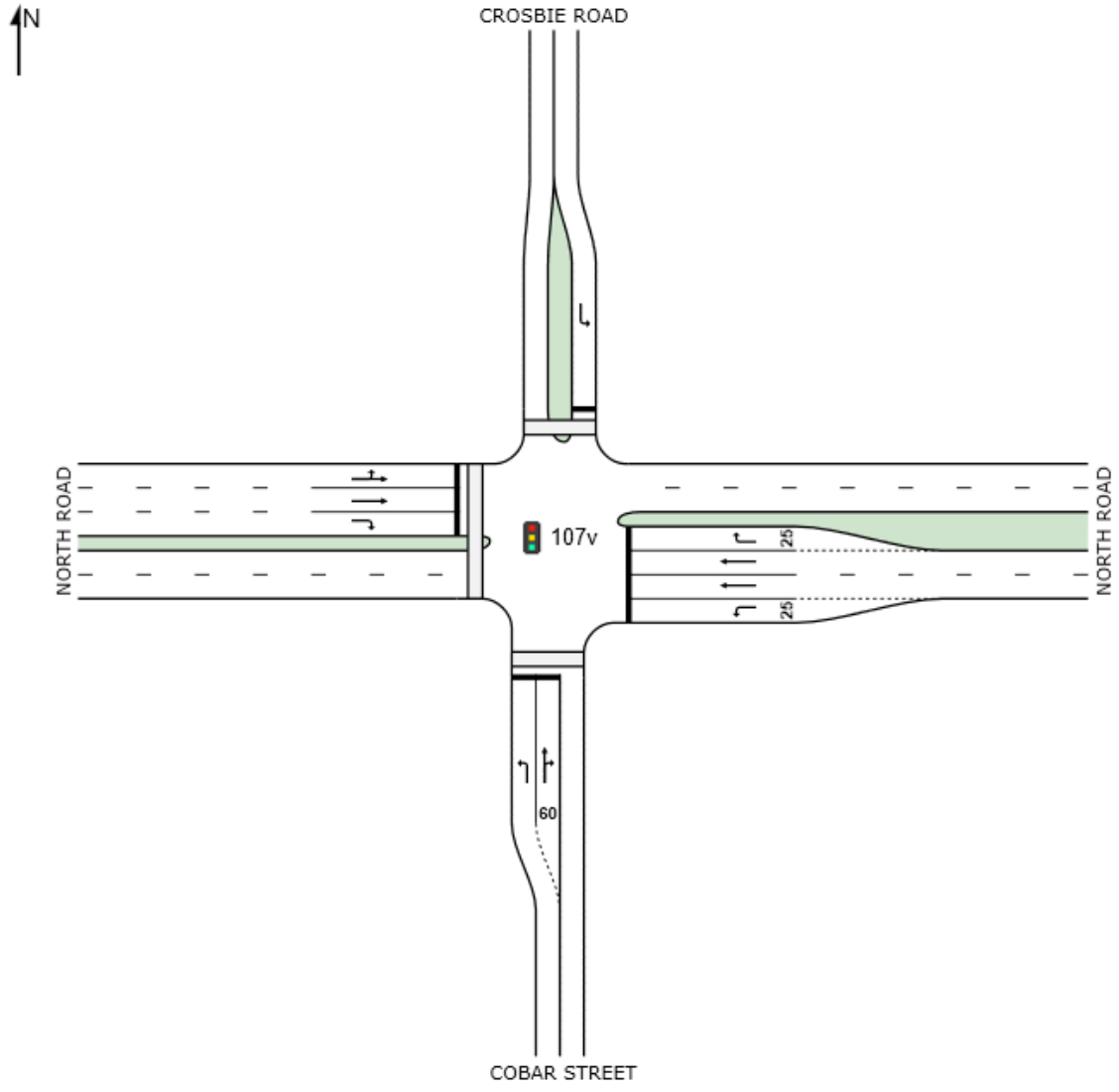


It will be necessary to install traffic signals at the three proposed site access intersections on North Road and East Boundary Road associated with the internal connector and access streets. The required intersection layouts are broadly outlined as follows:

- North Road / Cobar Street / Crosbie Road intersection:
  - Left turn lane and a through / right turn lane on the south approach
  - Left turn only lane on the north approach to minimise use of Cobar Street
  - Left turn lane on the east approach
  - Extend the right turn on the west approach

The resulting intersection layout for the North Road / Cobar Street / Crosbie Road intersection is shown in Figure 5.10.

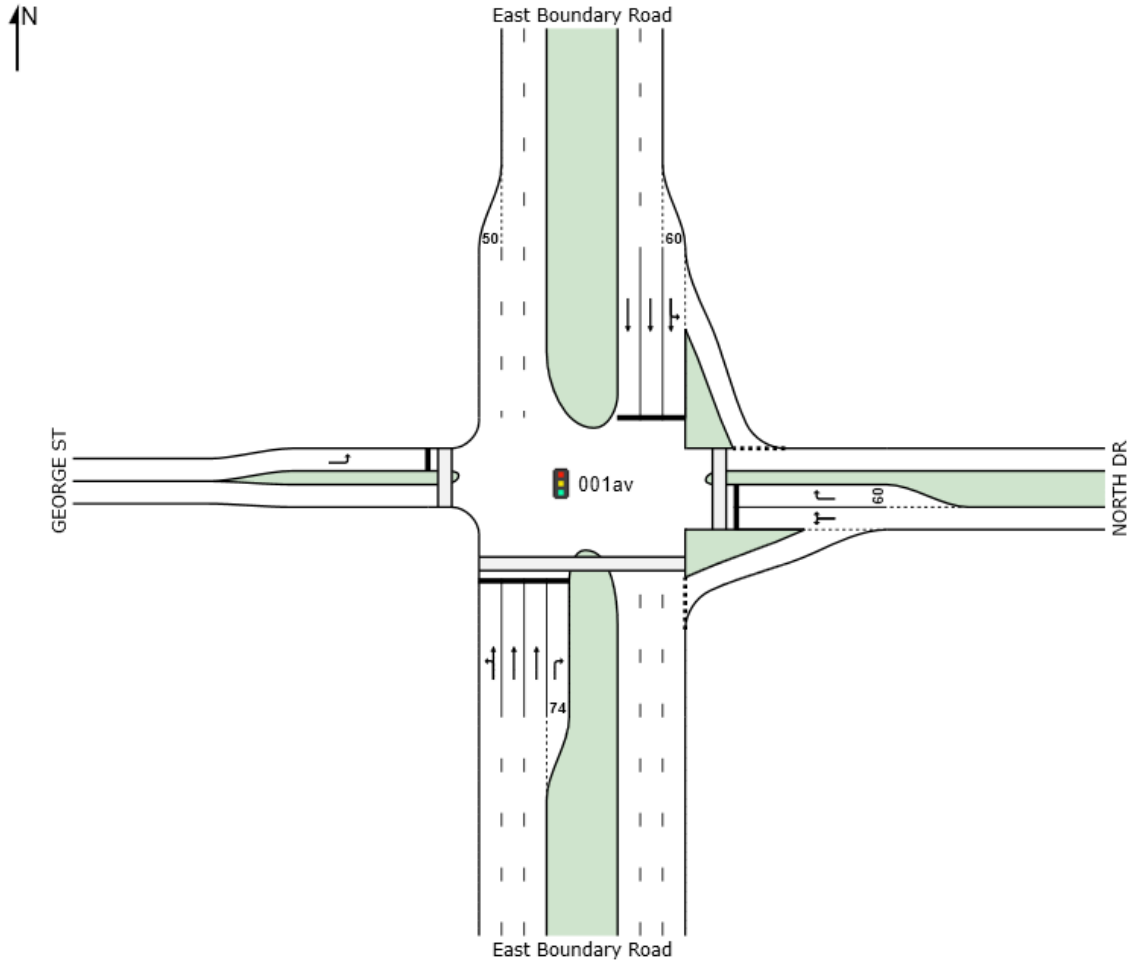
Figure 5.10: Resulting layout for the North Road / Cobar Street / Crosbie Road intersection



- East Boundary Road / North Drive / George Street intersection:
  - Right turn lane on the south approach
  - Double right turn lanes on the east approach
  - Left turn slip lanes on the north and east approaches
  - Additional short through lanes on the north approach
  - Additional through lanes on the south approach
  - Restrict George Street (west approach) to left-in / left-out only

The resulting intersection layout for the East Boundary Road / North Drive / George Street intersection is shown in Figure 5.11.

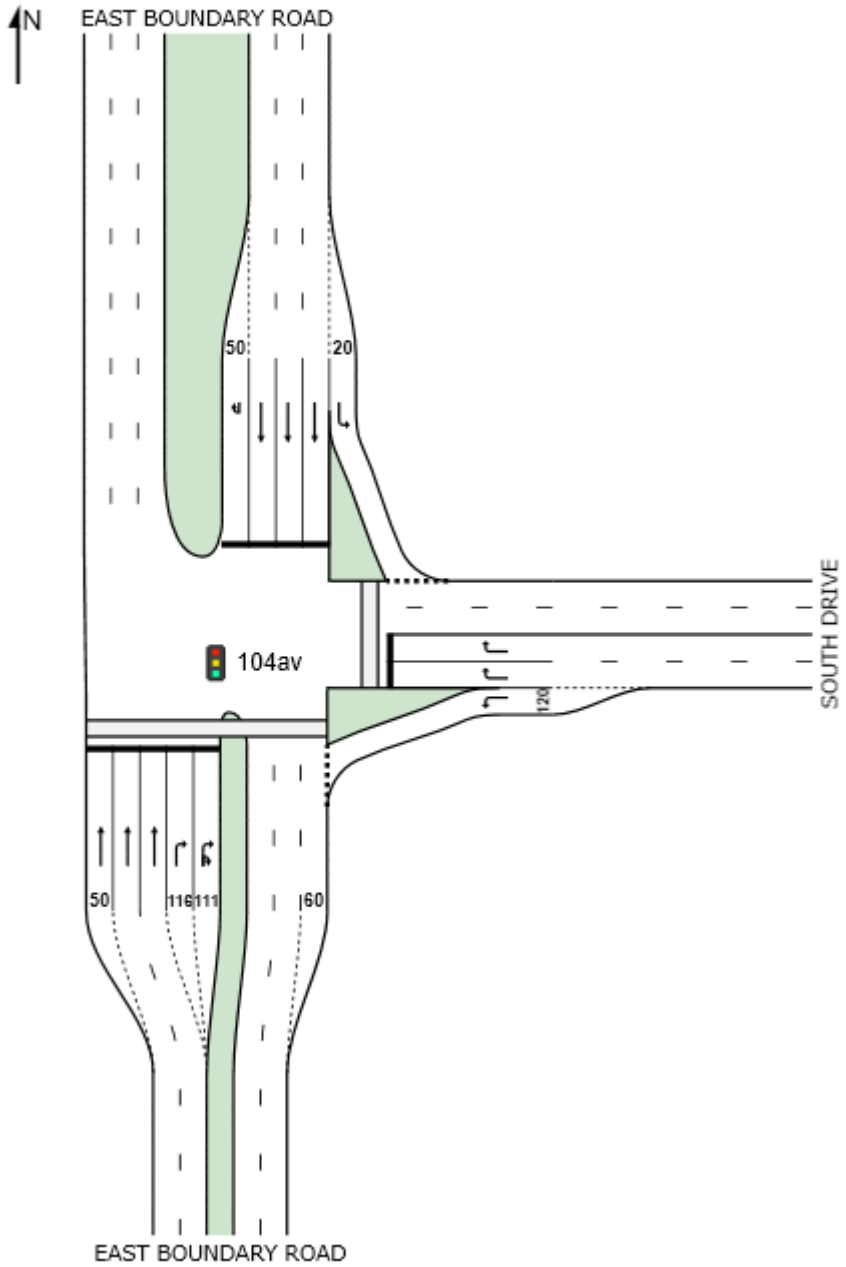
Figure 5.11: Resulting layout for the East Boundary Road / North Drive / George Street intersection



- East Boundary Road / South Drive intersection:
  - Double right turn lanes on the south and east approaches
  - Left-turn slip lane on the east approach
  - Left turn slip lane on the north approach
  - Additional through lanes on the north approach
  - Additional short through lanes on the south approach

The resulting intersection layout for the East Boundary Road / South Drive intersection is shown in Figure 5.12.

Figure 5.12: Resulting layout for the East Boundary Road / South Drive intersection



Concept level designs and supporting swept paths for the above mitigating road works are included in Appendix D.

5.4.2 Post Development with Mitigating Works Modelling Results

Table 5.5 and Table 5.6 presents a summary of the post development with mitigating works operation of the modelled intersections in the AM and PM peak periods, respectively. Full details of the associated SIDRA Intersection modelling is provided in Appendix E.

Table 5.5: Post Development with Mitigating Works Operating Conditions in AM Peak

Intersection	DOS	Average Delay (sec)	95th Percentile Queue (m)
North Rd / East Boundary Rd / Murrumbeena Rd	0.87	46 sec	228 m
North Rd / Koornang Rd / Tucker Rd	# 0.96	38 sec	477 m
North Rd / Poath Rd	0.84	25 sec	349 m
East Boundary Rd / Ardena Ct	0.65	11 sec	205 m
East Boundary Rd / North Dr / George St	0.69	24 sec	194 m
Leila Rd / Murrumbeena Rd	0.79	16 sec	207 m
East Boundary Rd / South Dr	0.65	22 sec	147 m
North Rd / Crosbie Rd / Cobar Rd	0.84	23 sec	308 m

DOS – Degree of Saturation, # - Highest Network Intersection DOS

Table 5.6: Post Development with Mitigating Works Operating Conditions in PM Peak

Intersection	DOS	Average Delay (sec)	95th Percentile Queue (m)
North Rd / East Boundary Rd / Murrumbeena Rd	#0.95	55 sec	289 m
North Rd / Koornang Rd / Tucker Rd	0.86	30 sec	281 m
North Rd / Poath Rd	0.82	22 sec	334 m
East Boundary Rd / Ardena Ct	0.66	16 sec	223 m
East Boundary Rd / North Dr / George St	0.62	21 sec	155 m
Leila Rd / Murrumbeena Rd	0.90	22 sec	310 m
East Boundary Rd / South Dr	0.63	19 sec	108 m
North Rd / Crosbie Rd / Cobar Rd	0.81	28 sec	285 m

DOS – Degree of Saturation, # - Highest Network Intersection DOS

Table 5.3 and Table 5.4 indicates that following full development of East Village and implementation of the suite of mitigating road works that the proximate road network will be able to suitably accommodate the anticipated level of traffic generated.

5.4.3 Development & Mitigating Works Staging

The overall staging of the subject site is understood to relate to the property ownership and leasing arrangements. In this regard, Figure 5.13 has been prepared to show the anticipated staging of East Village.

Figure 5.13: East Village Development Staging Plan

Based on Figure 5.13, it is expected that East Village will generally develop from the south to the north. The implications of this staging with the site access arrangements and mitigating works are outlined as follows:

- The mitigating road works at the North Road / East Boundary Road / Murrumbeena Road intersection will only need to be in place once the subject site achieves a net increase in the existing traffic volumes it generates.
- East Boundary site access intersections are expected to be implemented first, then the North Road site access intersection.
- All the associated mitigating works along North Road are not expected to be required until the adjacent properties are redeveloped, which will require the left-turn lanes on North Road to be provided, and the internal north-south connector road extends through to North Road, which will require the signalised site access intersection to be provided.
- The signalisation of the Murrumbeena Road / Leila Road / Crosbie Road intersection once the North Road / Cobar Street / Crosbie Road intersection is signalised.

5.5 Future Conditions

The responsibility of the broader road network to operate at a satisfactorily level into the future primarily sits with VicRoads and other State Government bodies. However, where new site access points to arterial roads are introduced, it is expected that they would be able to at least operate 10 years into the future.

As such, an assessment of how the three proposed signalised site access intersections will perform 10 years into the future is presented in this section.

5.5.1 Traffic Volume Growth (+10 years)

The Victorian Integrated Transport Model (VITM) reference case has been used to identify what the background road network growth will likely be in the area. In this regard, the change in the two-hour AM and PM peak hours between 2016 and 2031 on the primary road network have been extracted and are presented in Table 5.7, along with what the 10 year growth would likely be assuming it is linear over the above 15 year period from VITM.

Table 5.7: 10-Year Mid-Block Traffic Growth Levels

Road	Section	2016			2031			10yr Avg. Growth
		Daily	AM	PM	Daily	AM	PM	
North Road	Poath - Mackie	40,410	5,760	5,850	42,350	5,850	6,070	**102%**
	East Boundary - Poath	45,260	6,650	6,860	47,410	6,800	7,030	**102%**
	East Boundary - Koornang	35,980	5,890	6,210	39,950	6,320	6,640	**106%**
	Tucker - Bewdley	36,160	5,900	6,370	40,240	6,440	6,820	**106%**
Murrumbeena Road	Oakleigh - Leila	20,240	3,020	3,160	21,460	3,120	3,240	**103%**
	Leila - North	17,170	2,440	2,520	18,450	2,520	2,620	**103%**
East Boundary Road	North - Ardena	38,640	6,060	6,360	41,620	6,550	6,820	**105%**
	Ardena - McKinnon	36,340	5,760	5,900	38,940	6,140	6,280	**104%**

Table 5.7 indicates that there will likely only be moderate increases on the primary road network over the next 10 years, with between 2% and 6% growth.

This is considered to be reflective of the generally congested road network in the area, and that there is currently no major trip destination in the area drawing further afield user volumes in and through the area.

As such, by adding the above background growth to the post development traffic volumes, the resulting future AM and PM peak hour traffic volumes in the area are shown in Figure 5.1 and Figure 5.2, respectively.

Figure 5.14: Future AM Peak Hour Traffic Volumes (post development + 10 year growth)

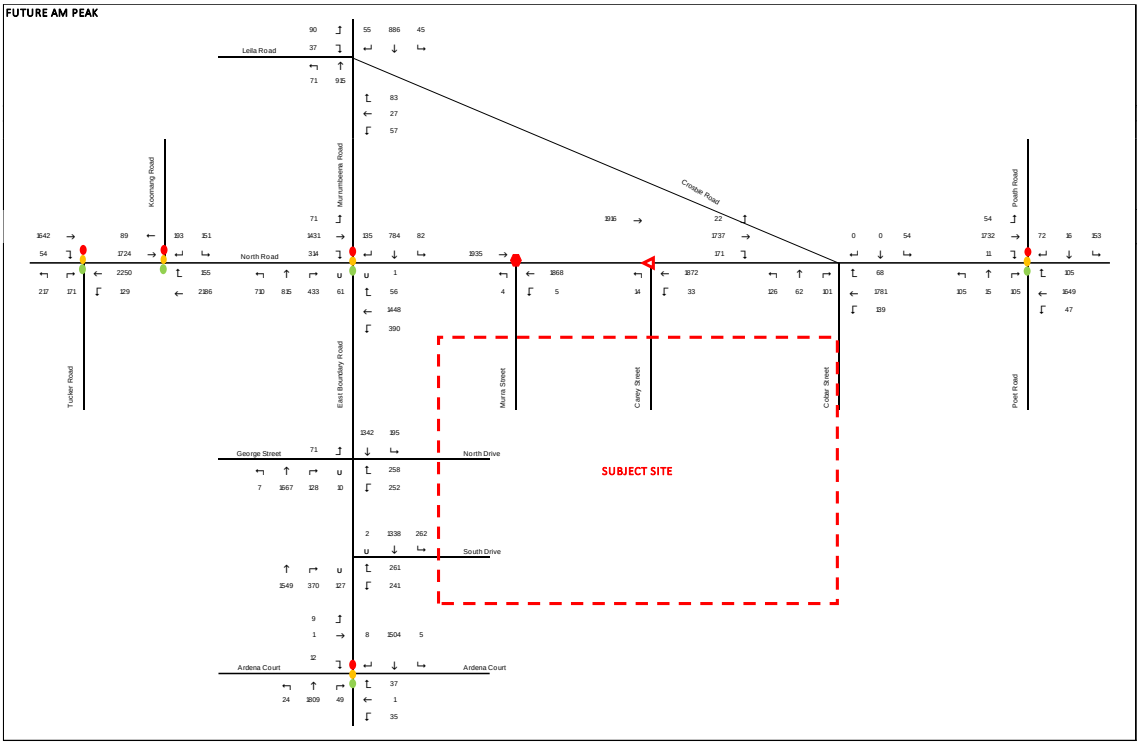
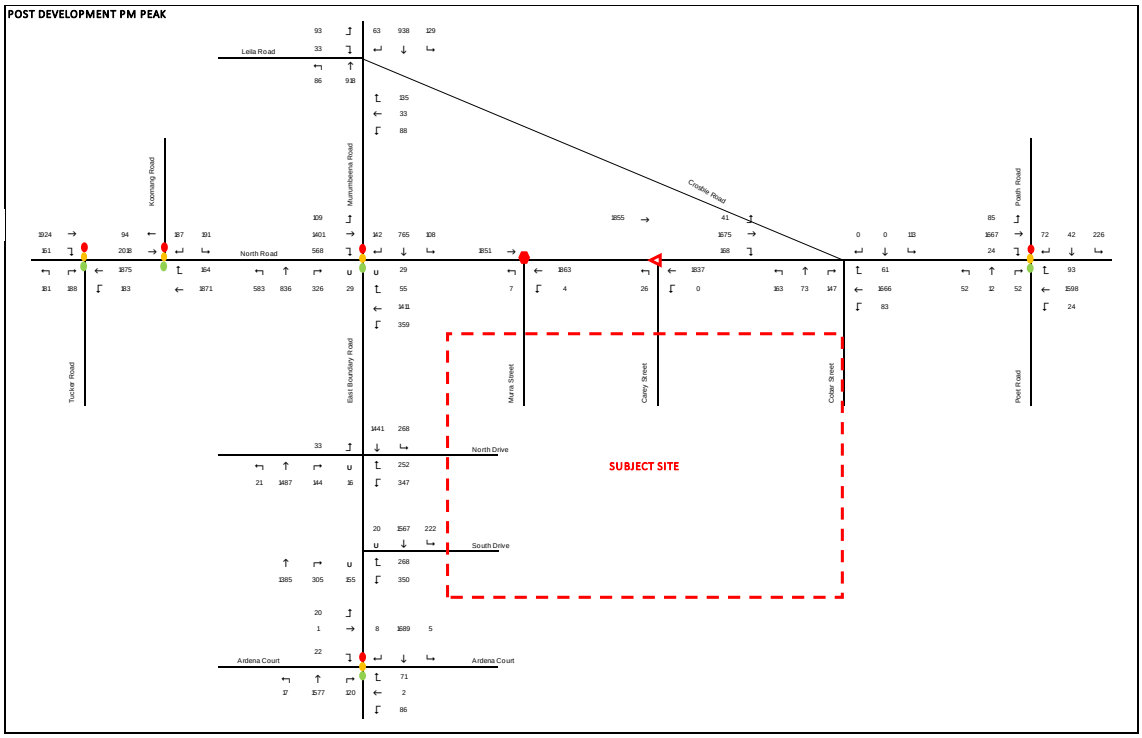


Figure 5.15: Future PM Peak Hour Traffic Volumes (post development + 10 year growth)



5.5.2 Future Site Access Intersection Modelling Results

Table 5.8 and Table 5.9 presents a summary of the future baseline operation of the modelled intersections in the AM and PM peak periods, respectively. Full details of the associated SIDRA Intersection modelling are provided in Appendix F.

Table 5.8: Future Baseline Operating Conditions in AM Peak

Intersection	DOS	Average Delay (sec)	95th Percentile Queue (m)
East Boundary Rd / North Dr / George St	0.69	24 sec	194 m
East Boundary Rd / South Dr	0.65	22 sec	147 m
North Rd / Crosbie Rd / Cobar Rd	# 0.84	23 sec	308 m

DOS – Degree of Saturation, # - Highest Network Intersection DOS

Table 5.9: Future Baseline Operating Conditions in PM Peak

Intersection	DOS	Average Delay (sec)	95th Percentile Queue (m)
East Boundary Rd / North Dr / George St	0.64	21 sec	174 m
East Boundary Rd / South Dr	0.64	19 sec	111 m
North Rd / Crosbie Rd / Cobar Rd	# 0.91	34 sec	398 m

DOS – Degree of Saturation, # - Highest Network Intersection DOS

Table 5.8 and Table 5.9 indicates that the site access intersections will continue to operate within an acceptable DOS under post development conditions and +10 years growth.

6. Integrated Transport Response

6.1 Transport Policy

Encouraging the use of public transport, walking and cycling as modes of transport, and reducing the reliance on private car use to access employment opportunities and services, is central to achieving the aims of a broad range of policy documents affecting the subject area and directing how it develops into the future, such as those listed in Section 2.

Given that East Village is located in the municipality of Glen Eria, which is in the southeast of metropolitan Melbourne, it has strong linkages to the following employment and services areas, which provides a prime opportunity to achieve the above core policy directives:

- Monash National Employment and Innovation Cluster (second largest employment precinct in metropolitan Melbourne, after the CBD)
- Caulfield Educational Precinct
- State significant activity centres of Bentleigh, Chadstone and Oakleigh.

Moreover, the increased density and mixed-use development proposal as part of East Village has the potential to become a local neighbourhood activity centre in its own right.

However, this does require a bit of a shift in thinking away from providing unbounded capacity for private motor vehicle use, towards facilities that help encourage the use of alternative transport modes. This is in part due to the constrained nature of the broader road network area East Village is located in, and the expected continued population and industry growth in the southeast, which won't be able to be purely serviced through building additional road capacity.

This has been well considered by the Victorian Auditor General in a report released on Managing Traffic Congestion (April 2013). Most importantly, the report notes that in recent times:

"Congestion management strategies remain heavily weighted towards the supply side with little attention to demand management. Continuing this approach poses a significant risk for achieving any congestion reduction benefits."

The report goes on to note:

"The state's increasingly constrained finances, coupled with significant population growth projected for Melbourne, indicates that an approach that ignores demand management is unsustainable. This warrants greater attention by transport agencies to address the demand-side factors contributing to congestion. Such strategies have been successful in alleviating congestion in other jurisdictions."

As such, a focus for the area and development of East Village should be to encourage shorter trips to local employment opportunities and services through more space efficient transport modes like public and active transport. At the same time we need to suppress (or at least not actively encourage) the less efficient modes like private car use during peak demand periods, especially the commuter peaks in the proximate area of the site, which are considered to have the least amount of available capacity to accommodate additional traffic demands.

This approach is broadly consistent with the policy documents affecting the area and directing how land develop is expected to occur more broadly across metropolitan Melbourne into the future. As such, it is expected that the above approach will be generally adopted and applied as part of developing the East Village Structure Plan.

6.2 Creating Modal Choice

6.2.1 Overview

People's behaviour will always be influenced by individual circumstances and preferences, and factors such as income, age and travel distance. As such, a range of alternatives to private car use need to be provided to achieve a meaningful shift in travel choice away from the existing private car use that currently occurs in the area. As there is no (or expected in the foreseeable future) rail access within walking distance of the subject site walking, cycling and bus are considered to be the most viable transport options for those accessing East Village.

In higher density mixed-use developments like East Village, increased opportunities to access them by walking, cycling and public transport tend to occur when compared to the existing lower density development in the proximate area, as there are an increased number of short trips, especially internal trips to the site. As noted in Appendix C, there is expected to be in the order of 20% to 30% of trips to occur within the site, and these at a minimum should be targeted to occur via walking and cycling. Moreover, local catchments of 20 minutes travel time should also be aimed to be supported for the site by all the viable alternative transport modes, which are broadly outlined as follows:

- **Walking catchment** = approx. 2km depending on delays at crossing facilities
- **Cycling catchment** = approx. 5km depending on delays at intersections and crossing facilities
- **Bus Catchment** = based on Figure 3.15, it could be up to 10km in each direction and connecting the site with the following areas:
    - North Road to the Monash Cluster to the east and North Brighton to the west
    - Murrumbeena Road to the Caulfield Precinct and Chadstone Activity Centre to the north
    - East Boundary Road to Moorabbin to the south.

Should the above walking, cycling and bus catchments be able to be provided, as well as a high quality integrated and connected path network within the site, then it would provide viable opportunities for a significant proportion of those that will be accessing East Village to do so via alternative transport modes, and reduce the number of people that will access the site by private car. The specific level of shift away from private car use is beyond the scope of this engagement and is dependent on what other developments and transport facilities are ultimately provided in the area, but a shift of 10% to 20% is not considered unreasonable against existing mode splits that occur in the area.

These are discussed further below, noting that the ability for the proposed initiatives within the broader network are outside the control of any one development, but with such a significant development as East Village, the potential for them to be provided increases, so where possible developments should try and integrate with them.

6.2.2 Walking Catchment

Generally speaking the local footpath network is reasonably complete, with paths on both sides of most roads. With a high quality internal path network and signalised crossing facilities to be provided on most approaches as part of the proposed signalised site intersections, then reasonable connectivity with the existing external pedestrian network is expected, and able to support access by foot within the 20 minute / 2km walking catchment of the site.

The only potential barrier to supporting the local walking catchment for East Village is to the east and south through the existing local residential neighbourhood, but with the proposed path connections through the abutting open space areas, this is considered to be overcome.

6.2.3 Bicycle Catchment

Bicycle facilities in the area are currently fairly poor, with the only facilities really being the on-road bicycle lanes on some of the arterial roads, which are not considered to be viable facilities for the majority of potential users. As a minimum for facilities to be considered viable by a wide range of potential users, bicycle facilities should be consistent with Figure 4 in the VicRoads Design Guidance for Strategically Important Cycling Corridors.

However, it is understood that the Kew to Highett SCC is proposed to be implemented along Murrumbeena Road and East Boundary Road, as described in Section 3.7.2, which will provide a high quality north-south bicycle facility, connecting the site with the proximate area and activity centres to the north and south. This facility is being supported as part of the East Village development proposal through the following:

- Bicycle lanterns on the signalised crossing facilities of the site access intersections
- Connecting bicycle paths along the internal connector streets.

In an east-west direction, there are currently no high quality facilities that exist or we are aware of being proposed. However, there are networks of low traffic volume and speed local residential streets, which could be used to provide local 'shimmy' routes. They typically require additional traffic calming, wayfinding and arterial road crossing facilities to support them, but they can provide viable facilities that could connect the site with the various open spaces and activity centres in the area. Their alignment with the signalised site access intersections on East Boundary Road and connecting paths through the open space on the south and east sides of the site provide good opportunities to start developing and connecting such facilities.

6.2.4 Public Transport Catchment

As previously mentioned, bus is the only expected viable public transport option to directly access the site. Moreover, bus network and route planning activities are occurring across metropolitan Melbourne, so there is expected to be improvements in the services in the area in the short to medium future.

In this regard, State Government departments have set general requirements for all new developments to try and provide the ability for the majority of new dwellings to be located within 400m of a potential bus route. For this to occur as part of East Village and still provide a highly efficient bus network in the area, it is expected that bus routes will be provided in the north-south and east-west directions along the arterial roads of Murrumbeena Road, East Boundary Road and North Road. The specific frequencies are not able to be advised, but it would be expected that they will be 10 to 20 minutes during peak commuter periods.

At a transport network level, the above routes should ideally connect with the proximate rail stations and key employment areas, to support the majority of trips accessing the site. They should be prioritised over general traffic through bus priority and jump lanes, with highly accessible and integrated stops where feasible.

Specific to East Village, it is expected that bus stop pairs will be provided on both the North Road and East Boundary Road frontages proximate to the proposed signalised site access intersections.

6.3 Travel Demand Management

East Village will be accommodating an entirely new population of people. As such, it provides the best time to nudge people's travel behaviour in the direction we ideally want them to, namely when they first start developing new travel behaviours associated with accessing the site. This in part requires the above indicated transport infrastructure to provide facilities and services that are considered viable by potential users, but these can be further supported through soft measures, commonly referred to as Travel Demand Management (TDM) measures.

Tailored TDM strategies can be developed for the East Village site, each accessing user type and/or tenancy, that essentially identify incentives that will help encourage desired travel behaviour and suppress unwanted travel behaviour. The specific need and level of intervention is dependent on what the overall mode split targets are for the development and the ability to achieve meaningful shifts in travel behaviour.

At this time, no specific incentives are being identified, but it is recommended that they form part of each subsequent development application that achieve at a minimum the following:

- Identification of the critical times that major congestion is likely to occur on the network and what proposed land uses will mainly contribute to them.
- Identify targeted interventions to suitably manage the transport demand being generated by the development proposal.
- A targeted implementation plan that outlines when and by who the measures to influence demand will be implemented.

7. Car Parking

7.1 Existing Conditions

As outlined in Section 3.6 and presented in Figure 3.10, there are currently 1,142 on-street spaces, including 1,001 spaces that are unrestricted during business hours, along the site frontages and within the proximate roads. On-site observations indicate that current on-street car parking demands are moderate and decrease as you move further away from the site. However, it is noted that Duncan Mackinnon Reserve attracts significant parking demands on the weekend.

As such, there is considered to only be currently isolated car parking issues, that can be generally managed through various car parking management approaches, such as additional or changes to the time restricted parking areas and/or introduction of resident permit parking on at least one side of local residential streets. It has not been observed or been advised that the existing land uses on the site generate parking demands that are not able to be generally accommodated on-site, so are not expected to have a significant impact on proximate local residential streets.

The only site specific situation of note is the car parking within the central median along the East Boundary Road frontage of the site. It is understood that these car parking spaces were provided as part of a Section 173 agreement for a development that occurred on-site. This arrangement is not common or typically permitted along arterial roads, as it generates various vehicle manoeuvres within the through lanes of a busy movement focused road corridor. However, once the associated development is removed (or others that create available car parking capacity on site), these car spaces could be removed.

7.2 Future

Approach Overview

Generally speaking, the provision of car parking will be determined as part of each specific development application. However, based on the general approach set out in this report, it is important that car parking is not over supplied, as it will encourage private car use.

In this regard, the car parking provision rates set out in Clause 52.06 of the Glen Eira Planning Scheme should be considered as maximum rates with a development of this nature, and consideration be given to reductions to the associated rates where supporting evidence in relation to the following decision guidelines are able to be provided:

- *"The likelihood of multi-purpose trips within the locality which are likely to be combined with a trip to the land in connection with the proposed use.*
- *The variation of car parking demand likely to be generated by the proposed use over time.*
- *The short-stay and long-stay car parking demand likely to be generated by the proposed use.*
- *The availability of public transport in the locality of the land.*
- *The convenience of pedestrian and cyclist access to the land.*
- *The provision of bicycle parking and end of trip facilities for cyclists in the locality of the land.*
- *The anticipated car ownership rates of likely or proposed visitors to or occupants (residents or employees) of the land.*
- *Any empirical assessment or case study"*

The combination of these factors often results in car parking demand being generated at rates different to the statutory rates, especially within higher density mixed-use developments like East Village, where residents can walk and cycle to employment, school and other services within and proximate to the site, as well as the potential to provide shared car parking facilities between the different land uses with temporal park demand differences, i.e. they generate peak parking demands at different times.

Noting the above, the following broad guidance is provided for the proposed land uses that make up the East Village precinct.

Commercial Land Uses

While there is proposed to be in the order of 80,000m^2 of commercial office space, there is considered to be significant opportunity to share the associated car parking facilities, provide high quality end-of-trip facilities and provide coordinated TDM measures to reduce the reliance on private car use in accessing the subject site.

Moreover, and especially when you consider there is also a significant residential population to be accommodated as part of East Village, that car share operations will be feasible to provide.

However, should the car parking provision for the commercial uses be near the statutory car parking rates for, then it is recommended that part of the shared car parking facilities be provided within above ground structured facilities with floor to ceiling heights that enable them to be able to be converted to commercial and retail tenancies in the future.

Mixed Use Retail Land Uses

The statutory car parking rates for retail land uses do not reflect any variability that exists with their size, which is widely understood to occur, and clearly demonstrated through Table 5.2 of the RTA Guide to Traffic Generating Developments, which is reproduced in Table 7.1.

Table 7.1: Shopping Centre Car Parking Rates

Gross Leasable Floor Area (GLFA) m^2	Car Parking Spaces per 100m^2 of GLFA
0 – 10,000	6.1
10,000 – 20,000	5.6
20,000 – 30,000	4.3
Over 30,000	4.1

Source: Table 5.2 of the RTA Guide of Traffic Generating Developments

Table 7.1 indicates that as retail centres increase in size their car parking rate of demand decreases, which is expected to be the case with East Village and likely to result in an overall rate of provision that is less than the statutory rates, especially if the supporting car parking facilities are shared, i.e. not made up of a number of small discreet and access restricted car parks.

School

The level of car parking provision for the 800 student secondary school will be advised by the education department. What will be key is that any drop-off / pick-up facilities are well planned and designed, so they are safely used.

It is also noted that the use of suitable car parking restrictions on the proximate roads, both internal and external to the site should be considered to minimise the potential for drop-off / pick-up facilities occurring where they are not desired. Other management measures could include the staggering of class start and finish times to spread when drop-off / pick-up activities occur, as well as carpooling and walking school bus programs to reduce the number of vehicles accessing the school.

Residential Dwellings

Car parking for the proposed residential dwelling lots are expected to be generally provided in accordance with the statutory parking requirements through a minimum provision of single garages for one and two bedroom dwellings and double garages for three or more bedroom dwellings. Visitor car parking demands are expected to be able to be accommodated on-street.

Apartments

Integrated car parking facilities are expected to be provided for the apartment buildings, with a maximum on-site car parking provision of one space for one and two bedroom apartments and two spaces for three or more bedroom apartments.

Residential visitor car parking demands are expected to be able to be comfortably accommodated on-street.

Consideration should also be given to reducing the above car parking provision to help encourage the use of alternative transport modes, especially for any small one-bedroom dwellings and/or if on-site car share facilities are provided.

8. Planning Requirements Checklist

8.1 Preamble

As the proposal is only in the Structure Plan and rezoning phase, the details are still being developed. However, eventually the development of the site will need to accord with the requirements of Clause 56 of the Glen Eira Planning Scheme. Therefore, this section of the report assesses the proposed development against the access and mobility requirements set out within Clause 56.06 of the Planning Scheme for subdivisions.

Clause 56 of the Glen Eira Planning Scheme sets out the following purpose:

"To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.

To create liveable and sustainable neighbourhoods and urban places with character and identify.

To achieve residential subdivision outcomes that appropriately respond to the site and its context for:

- *Metropolitan Melbourne growth areas*
- ***Infill sites within established residential areas***
- *Regional cities and towns*

To ensure residential subdivision design appropriately provides for:

- *Policy implementation*
- *Liveable and sustainable communities*
- *Resident lot design*
- *Urban landscape*
- ***Access and mobility management***
- *Integrated water management*
- *Site management*
- *Utilities."*

Clause 56 consists of a number of provisions made up of objectives and standards for implementation within the design of a new subdivision. The Clause states the following in respect to objectives and standards:

- *"Objectives. An objective describes the desired outcome to be achieved in the completed subdivision.*
- *Standards. A standard contains the requirements to meet the objective.*

A standard should normally be met. However, if the responsible authority is satisfied that an application for an alternative design solution meets the objective, the alternative design solution may be considered."

The relevant transport and access areas of Clause 56 that will be considered within this report is Clause 56.06, which aims to:

"achieve an urban structure where compact and walkable neighbourhoods are clustered to support larger activity centres on the Principal Public Transport Network in Metropolitan Melbourne and on the regional public transport network outside Metropolitan Melbourne.

To provide for walking (including persons with impaired mobility), cycling, public transport and other motor vehicles in an integrated manner.

To contribute to reduced car dependence, improved energy efficiency, reduced greenhouse gas emissions and reduced air pollution."

Standard C14 of the Clause requires that a plan of the layout of the neighbourhood be prepared that meets the objectives of:

- Clause 56.06-2 Walking and cycling network
- Clause 56.06-3 Public Transport network
- Clause 56.06-4 Neighbourhood street network.

Clause 56.06 divides walking and cycling facilities, public transport facilities and street network design into two areas, being Network Objectives and Detail Objectives, of which much of the latter is a matter for detailed design and therefore only the general intent agreed to as part of the Structure Plan.

8.2 Walking and Cycling

Statutory Requirements

The walking and cycling network and detailed objectives set out within Clause 56.06-2 and 56.06-5 respectively state the following:

Clause 56.06-2

- *"To contribute to community health and well-being by encouraging walking and cycling as part of the daily lives of residents, employees and visitors.*
- *To provide safe and direct movement through and between neighbourhoods by pedestrian and cyclists.*
- *To reduce car use, greenhouse gas emissions and air pollution."*

Clause 56.06-5

- *"To design and construct footpaths, shared cycle path networks that are safe, comfortably, well-constructed and accessible for people with disabilities.*
- *To design footpaths to accommodate wheelchairs, prams, scooters and other footpath vehicles".*

Standards C15 and C18 set out the requirements that should be met to meet the objectives of these Clauses.

Proposed Treatments

The following active transport facilities are proposed:

- Footpaths will generally be provided on both sides of the roads within the site
- Streets will be designed to encourage pedestrian and bicycle activity when adjacent to open space areas
- Connector streets to have a 3.0m wide dedicated bicycle facility on one side.

It is expected that the on-road traffic volume and speed environments on the other streets in the study area will generally be consistent with Figure 4 in the VicRoads Design Guidance for Strategically Important Cycling Corridors. This is considered to provide a suitable level of access for pedestrians and cyclists of all abilities expected to be generated within and potential to travel through the East Village precinct.

To support longer trips and integrate with the broad active transport network, the following facilities are proposed:

- Suitable corridor width provided within the precinct to accommodate the proposed north-south Strategic Cycling Corridor between Kew and Highett.
- Signalised crossing facilities (including bicycle lanterns where relevant) on most of the approaches of the signalised intersections along the arterial road site frontages of the site.
- Connecting shared paths through the abutting open spaces to connect with the local residential streets.

To the east and west of the site there are no specific bicycle facilities, but there is considered to be potential for local 'shimmy' routes, through specific traffic calming, wayfinding and arterial road crossing facilities to connect up with other open spaces and activity centres in the area.

Compliance to Clause 56

The objectives of Clauses 56.06-2 and 56.06-5 are considered to be met as follows:

- *A majority of lots would be within a reasonable walking distance of the following amenities:*
  - Public transport - bus services currently operate along North Road and expected to be provided along East Boundary Road in the future.
  - Neighbourhood shops - there will be a significant retail presence to be provided as part of the site.
  - Public open space – suitable green belts and passive open space are being contemplated.
  - Community facilities – these are expected to be provided as part of the development.
- The walking and cycling network through the subdivision is logical and generally follows the pattern of streets and public open spaces as follows:
  - Access Lanes - shared pedestrian, cycle and motor vehicle facilities on street.
  - Access Streets - shared cycle facilities on street, dedicated footpaths.
  - Connector Streets - marked cycle lanes on street and shared paths or separated bicycle paths on one side of the road where possible.
  - Public Open Spaces - shared paths through open spaces connecting to other facilities where possible.
- The walking and cycling network links into existing facilities allowing the cycling network to connect into the regional network.
- The proposed road reservations are sufficient to provide footpaths and cycle paths in line with the requirements of Table C1 of the Clause.

8.3 Public Transport

Statutory Requirements

Clause 56.06-3 and 56.06-6 set out the public transport network and detailed design objectives for subdivisions as follows:

Clause 56.06-3

"To provide an arterial road and neighbourhood street network that supports a direct efficient and safe public transport system.

To encourage maximum use of public transport."

Clause 56.06-6

"To provide for the safe, efficient operation of public transport and the comfort and convenience of public transport users; and.

To provide public transport stops that are accessible to people with disabilities."

Standards C16 and C19 set out the standards that need to be met in relation to bus routes and the location and design of bus and tram stops.

Proposed Treatments

While bus stops are already in place along North Road, provision has been made to accommodate a bus stop pair on East Boundary Road proximate to the proposed signalised site access intersections.

Once bus services operate along both the arterial site frontages almost the whole of the subject site will be within 400m walking distance of a bus stop.

Compliance with Clause 56

Section 3.8 of this report discusses the integrated transport network surrounding the development site from which it is apparent that public transport would be accessible to residents within the new subdivision.

Although the proposed development is considered large enough to suggest that public transport services along East Boundary Road could be viable, the implementation of these services and improvement of any of the existing is a matter for the public transport operators and Department of Economic Development, Jobs, Transport and Resources (DEDJTR). However, the objectives of Clause 56.06-3 and 56.06-6 are considered to be met from a planning perspective.

8.4 Neighbourhood Street

Statutory Requirements

Clauses 56.06.4 and 56.06-7 set out the neighbourhood street network and detail objectives and aims as follows:

Clause 56.06.4

"Provide for a direct, safe and easy movement through and between neighbourhoods for pedestrians, cyclists, public transport and other motor vehicles using the neighbourhood street network."

Clause 56.06.7

"To design and construct street carriageways and verges so that the geometry and traffic speeds provide an accessible and safe neighbourhood street system for all users."

Standards C17 and C20 set out a number of standards that should be met to achieve the aims of Clauses 56.06-4 and Clause 56.06-7.

Proposed Treatments

The proposed subdivision would connect into the existing street network at the following locations:

- New four-way signalised intersection on North Road at the intersection with Cobar Street and Crosbie Road.
- Two left-in / left-out only give way controlled intersections in North Road relatively evenly spaced between Cobar Street and East Boundary Road.

- Two new signalised intersections on East Boundary Road at the following locations:
  - X- intersection with North Road and George Street
  - T-intersection with South Drive, south of Garden Road.

In terms of the internal neighbourhood street network, an indicative street hierarchy is shown in Figure 8.1.

Figure 8.1: Indicative Street Network Hierarchy

Source: VPA

Compliance with Clause 56

Table 8.1 assesses the proposed road hierarchy generally against the requirements of Clause 56.06-7 of the Glen Eira Planning Scheme.

Table 8.1: Proposed Road Hierarchy Details

Street Type	Target Speed	Indicative Road Reservation Width	Parking Provision	Theoretical Capacity Daily Traffic Volume	Anticipated Peak Daily Traffic Volume
Access Lane	10kph	9.0m	None	300 vehicles per day	<300 vpd
Access Street – Level 1	20kph	16m	Kerbside parking along one side of the road	<1,000 vpd	<1,000 vpd
Access Street – Level 2	30kph	17m	Kerbside parking along one side of the road	1,000 to 2,000 vehicles per day	<2,000 vpd
Access Street – Level 3	40kph	23m	Kerbside parking along both sides of the road	2,000 to 3,000 vehicles per day	
Connector Street	50kph	27m	Kerbside or indented parking on both sides of the road	3,000 to 7,000 vehicles per day	10,000 vpd [1]

[1] Over the sections of the internal connector roads between the abutting arterial roads and the first major car park access points and/or side roads, are expected to carry in the order of 10,000 vpd but will be suitably designed to accommodate such traffic volumes.

As indicated within Table 8.1, the proposed road hierarchy generally accords with the minimum requirements necessary to allow carriageways, footpaths and cycle paths to be accommodated appropriate to the road type as specified within Table C1 of Clause 56.06.

It is noted that all road reservations include additional widths at intersections in order to incorporate the visibility splay requirements set out within Standard C20.

The speed targets for the internal street network would be met due to the inclusion of the following and with reference to Table 8.1 in the VicRoads Traffic Engineering Manual Volume 1, Chapter 8: Local Area Traffic Management:

- network design incorporating bends as slow points
- reducing block lengths and/or introduction of one-way sections
- provision of slow points or other similar suitable treatments to limit maximum leg lengths to achieve target speed.

The design of the latter would be undertaken as part of the detailed design of the street network and those that would be located on connector streets should be designed to accommodate buses.

The contemplated internal road network is anticipated to accommodate traffic volumes less than the associated road type's theoretical capacity, noting that the internal connecter streets will provide specific crossing facilities to support the separated bicycle facilities on one side of the connector streets at intersections with lower order roads, such as North Drive.

In addition, it is noted that no dedicated on-road bicycle lanes are proposed on the connector streets. Instead, separated bicycle facilities are being proposed on one side of the connector street carriageways within the road reserves, and with suitable crossing facilities they would be appropriate for the majority of potential users.

Moreover, if vehicle speeds are managed appropriately on the connector streets mixed traffic conditions are considered to be appropriate for those users that wish to cycle on the road. Furthermore, widening the carriageway to accommodate dedicated bicycle lanes is considered to be counterproductive in trying to manage vehicle speeds.

9. Conclusions

Based on the analysis and discussions presented within this report, the following conclusions are made:

i There is sufficient capacity within the immediate road network to accommodate the additional traffic movements anticipated as part of the development of East Village, subject to the following mitigating road works:

- At the North Road / East Boundary Road / Murrumbeena Road signalised intersection:
  - Double right on the west approach
  - Continuation of the two departure lanes on the north approach
  - Continuation of the three departure lanes on the east and west approaches
  - Increase the right turn lane lengths on the south and east approaches
- At the Murrumbeena Road / Leila Road / Crosbie Road intersection:
  - Convert to a signalised intersection
  - Extend the right turn lane on the north approach
- North Road / Cobar Street / Crosbie Road intersection:
  - Left turn lane and a through / right turn lane on the south approach
  - Left turn only lane on the north approach to minimise use of Cobar Street
  - Left turn lane on the east approach
  - Extend the right turn lane on the west approach
- East Boundary Road / North Drive / George Street intersection:
  - Right turn lane on the south approach
  - Double right turn lanes on the east approach
  - Left turn slip lanes on the north and east approaches
  - Additional short through lanes on the north approach
  - Additional through lanes on the south approach
  - George Street (west approach) restricted to left-in / left-out only
- East Boundary Road / South Drive intersection:
  - Double right turn lanes on the south and east approaches
  - Left-turn slip lane on the east and north approaches
  - Additional through lanes on the north approach
  - Additional short through lanes on the south approach

ii In addition, the following facilities are recommended to support alternative transport modes in accessing the site:

- Pedestrian crossing facilities (including bicycle lanterns where relevant) on most approaches to the three proposed signalised site intersections.
- Advocate for the proposed north-south Kew to Highett Strategic Cycling Corridor.
- Connecting shared paths through the abutting open spaces to connect with the local residential streets.
- Advocate for east-west 'shimmy' bicycle routes through local residential streets.
- Provision of a bus stop pair on the East Boundary Road site frontage proximate to the proposed signalised site intersections.
- Advocate for improved and additional north-south bus services to better connect the site with the other proximate activity centres and train stations.

Appendix A

Existing Conditions Modelling

A.1 Surveys

Existing traffic movement data was generally collected on Thursday 14 September through SCATS for the signalised intersections and the camera based surveys of the unsignalised and a majoirty of the signalised intersections, but those associated with the Murrumbeena Road / Leila Road / Crosbie Road intersection were collected on Thursday 21 September.

A.2 Existing Phasing and Off-Set Data

A request was submitted to VicRoads to record the SCATS IDM and off-set data for the survey days for the signalised intersections to identify the existing phasing and coordination arrangements. This has been provided and analysed to identify average cycle times for each signalised intersection during the AM and PM peaks, as well as the off-sets between the signals.

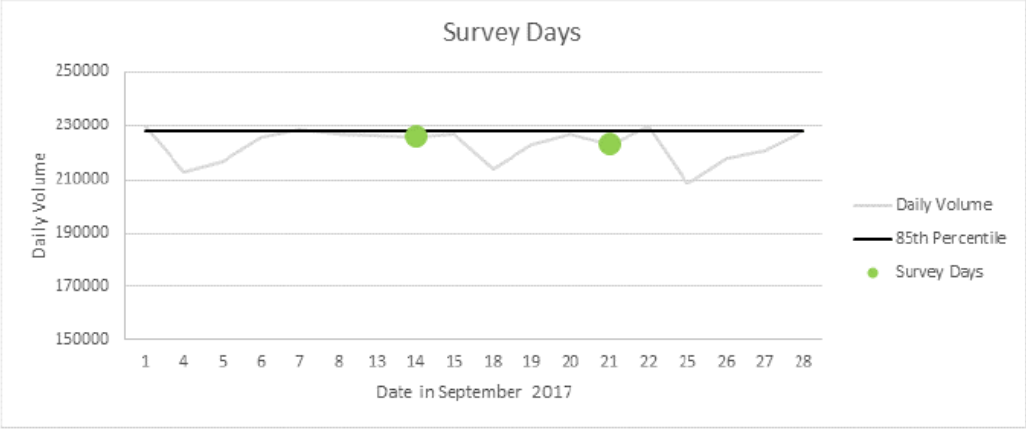
In addition, site observations of the signalised intersections were completed on the survey days, to identify movement splits for shared turning lanes, queue lengths and phasing data.

A.3 Design Day (85th percentile traffic volumes)

It is common practice to design for the 85th percentile traffic event. As such, to understand how representative the above survey days are to an 85th percentile design day, Figure A.1 has been prepared, which identifies the following:

- Daily SCATS traffic volumes through the North Road / East Boundary Road / Murrumbeena Road intersection over the month of October (excluding weekends, public holidays and those days with errors)
- 85th percentile daily traffic volume level
- The two survey days of Thursday 14 September and Thursday 21 September

Figure A.1: Survey Day vs Design Day



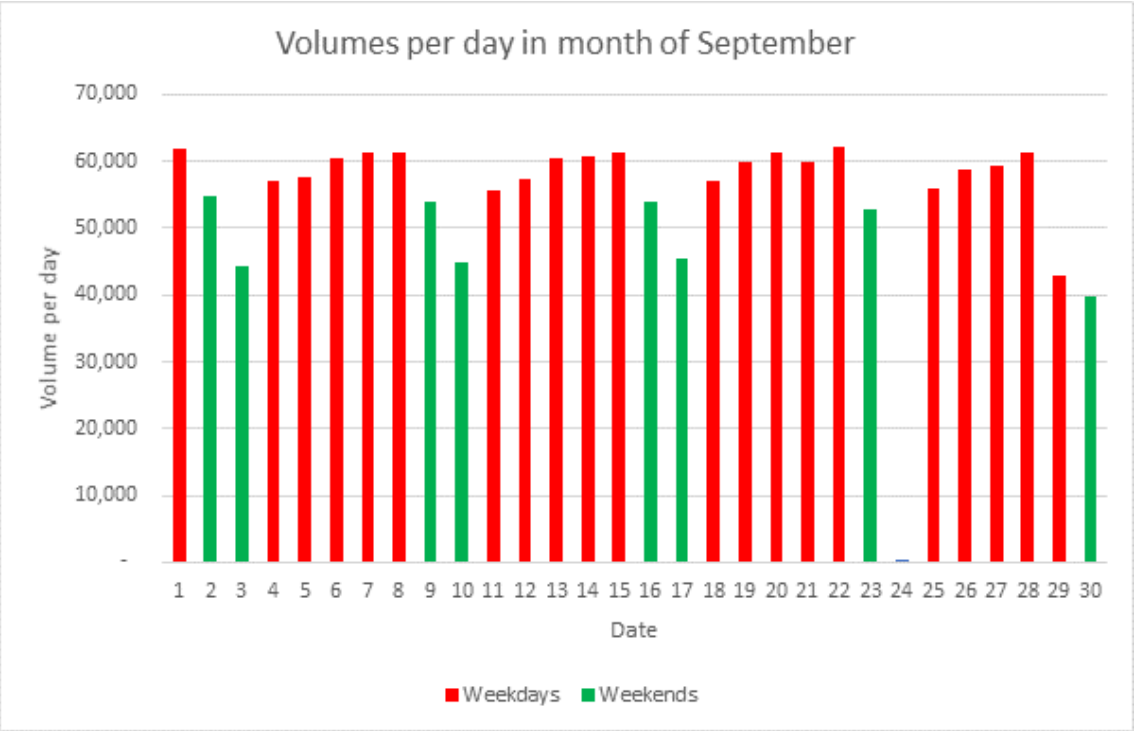
Based on the data presented in Figure A.1, the following has been identified about the survey days:

- Thursday 14 September represents a day where the daily traffic volumes were 0.8% less than the 85th percentile level
- Thursday 21 September represents a day where the daily traffic volumes were 2.2% less than the 85th percentile level

On this basis, GTA has adopted the traffic volume data collected on Thursday 14 September as is, and the traffic survey data collected at the Murrumbeena Road / Leila Road / Crosbie Road intersection on Thursday 21 September increased by 2.2%.

It is also noted that weekend traffic volumes through the Murrumbeena Road / Leila Road / Crosbie Road intersection are on average 83% of the average weekday, which is reflected through Figure A.2.

Figure A.2: Daily SCATS Volumes through the Murrumbeena Rd / Leila Rd / Crosbie Rd intersection



A.4 Existing Conditions Model Build

The operation of key intersections has been assessed using SIDRA INTERSECTION 8, a computer based modelling package which calculates intersection performance.

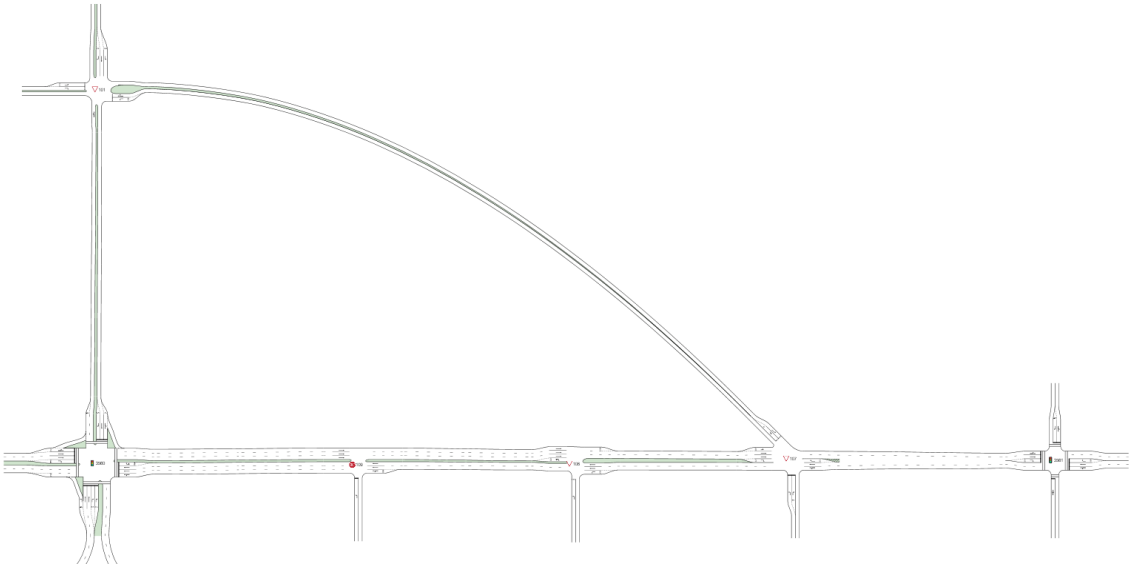
As part of the traffic assessment, the networking function available through SIDRA INTERSECTION 8 has been used for the following coordinated intersections:

- North Road Corridor, between Poath Road and East Boundary Road / Murrumbeena Road, and the East Boundary Road / Murrumbeena Road Corridor, between Oakleigh Road and Ardena Court.
- The North Road / Koornang Road and North Road / Tucker Road intersections (separated from the main network model due to distance and inability to model as a network model).

The networking function allows for consideration of the impacts that up and down stream intersections have on each intersection in the aim of better reflecting actual traffic conditions, as well as helping with the understanding of which intersections drive the operation of others along a corridor, i.e. the North Road / East Boundary Road / Murrumbeena Road intersection.

For reference, the northern section of the resulting North Road Corridor and East Boundary Road / Murrumbeena Road Corridor network SIDRA model is shown in Figure A.3. Only the northern section is provided as its quite a large network model.

Figure A.3: North Road Corridor & East Boundary Road/Murrumbeena Road Corridor (northern section)



A.5 Model Calibration

Network Function

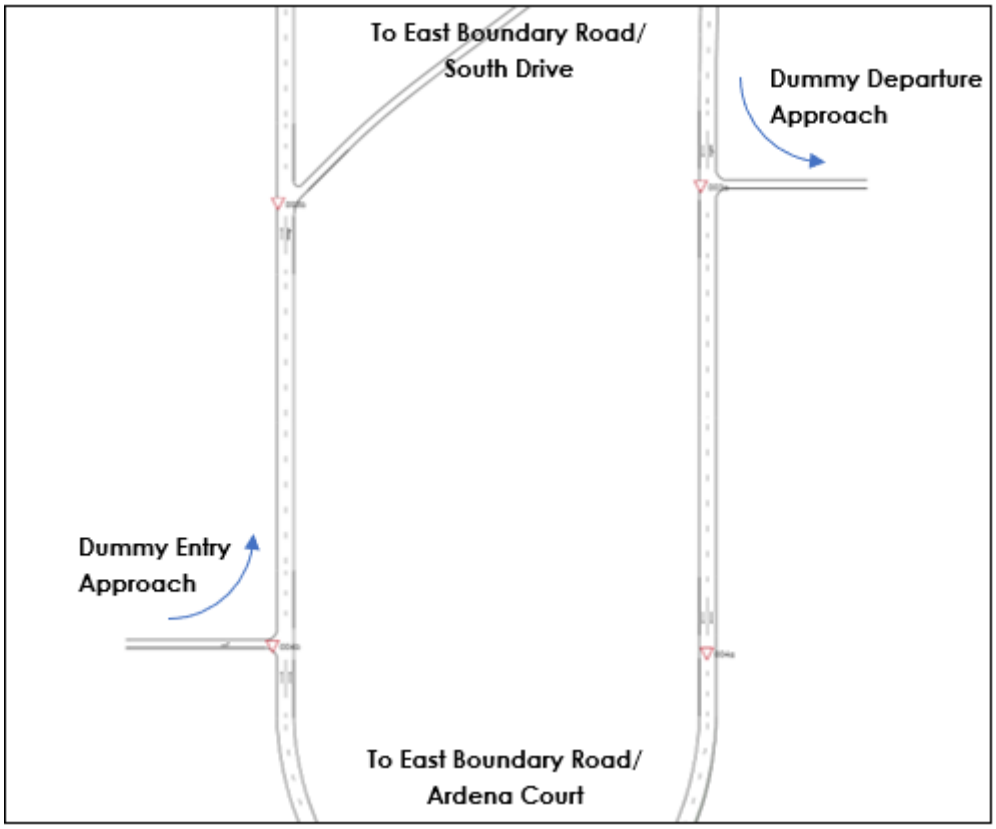
The majority of the abutting and proximate intersections likely to be impacted by the development proposal have been able to be incorporated into a single network model, except for the North Road / Koornang Road and North Road / Tucker Road intersections. Even when these two intersections are attempted to be modelled at off-set networked T-intersections, they have not been able to be suitably modelled through the SIDRA Intersection platform. As such, they have been modelled as a single X-intersection.

Balancing Network Volumes

As the network only captures the major intersections within the proposed network, it was concluded that the minor side roads/local streets between the major intersection may cause a discrepancy between intersection departure and approach volumes.

A comparison was made throughout the network between the departure and approach volumes with all links showing a favourable degree of similarity between these volumes. The only instance where there was a large discrepancy of traffic volumes occurred along East Boundary Road between the intersections of South Drive and Ardena Court. To calibrate the model, two 'dummy legs' where introduced at this location as shown in Figure A.4 which were used to add or subtract the required traffic volumes to balance the departure and approach volumes between the two intersections.

Figure A.4: Dummy legs to account for traffic volume differences between major intersections



Lane Utilisation

Lane utilisation factors were introduced at the North Road / East Boundary Road / Murrumbeena Road intersection to better reflect the splits identified by SCATS detector volumes. Specifically, the SCATS detector data identified more vehicles utilising the outside lanes on North Road despite the downstream short lane impacts.

It was also noted that there was a discrepancy between the right-turning volumes at the North Road / East Boundary Road / Murrumbeena Road intersection recorded through the survey data and SCATS detector volumes. As such, the survey volumes have been adopted but the lane utilisation increased for these movements to reflect what they have actually been able to accommodate.

Lane Movement Factor

Lane movement factors were introduced throughout the model at key locations were unnecessary lane movements occurred. A high number of vehicles would switch lanes between each site depending on the departure lanes and the subsequent turning volumes at the downstream intersection. To avoid excessive lane movements, lane movement factors were introduced to better manage vehicles switching lanes between sites.

Signal timings for the signalised intersections

- The analysis of the IDM data provided by VicRoads identified an average cycle time for each signalised intersection during the AM and PM peaks.
- The average cycle time was inputted into the SIDRA where the network model was set to 'user given cycle time' and allowed to allocated green time as per the inputted phasing arrangement and traffic volumes.

- As an example, a comparison between the SIDRA outputted signal timings and the observed IDM data signal timings for the North Road / East Boundary Road / Murrumbeena Road intersection is outlined in Table A.1 below.

Table A.1: North Road / East Boundary Road / Murrumbeena Road Intersection Signal Timings

Intersection	Peak Period	Scenario	Signal Timings					
			A	B	C	D	E	F
North Road / East Boundary Road / Murrumbeena Road	AM	Observed Signal Timings	52	21	28	24	52	21
		Modelled Signal Timings	50	22	30	24	50	22
	PM	Observed Signal Timings	51	15	28	31	51	15
		Modelled Signal Timings	43	15	34	36	43	15

Signal timing comparisons demonstrate that there is a strong relationship between the modelled signal timings and those observed as part of the IDM signal data obtained from VicRoads. This indicates that the model is a good reflection of the existing conditions of what occurred on-site during the surveyed day.

General site observations

- Queues within the SIDRA model generally reflected what was observed on-site at the key intersections.
- Those movements that dictate the resulting DOS each intersection was what were observed to be the movements that performed the worst.
- With the understanding that a DOS of 1.0 represents the point at which queued vehicles on approaches don't get through each signal cycle, the below results reflected generally what was observed out on-site.

Appendix B

SIDRA Intersection - Existing Conditions Results

MOVEMENT SUMMARY

Site: 3560 [2. NORTH ROAD / EAST BOUNDARY ROAD / MURRUMBEENA ROAD]

Network: N101 [Master Model]

NORTH ROAD / EAST BOUNDARY ROAD / MURRUMBEENA ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 126 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
1	L2	529	3.8	529	3.8	0.557	25.6	LOS C	18.5	133.8	0.72	0.86	0.86	45.1
2	T1	496	2.5	496	2.5	0.914	63.4	LOS E	26.1	186.7	0.97	0.97	1.20	14.0
3	R2	436	1.4	436	1.4	0.996	108.5	LOS F	18.5	131.4	1.00	1.10	1.69	8.8
Approach		1461	2.7	1461	2.7	0.996	63.1	LOS E	26.1	186.7	0.89	0.97	1.22	21.4
East: NORTH ROAD														
4	L2	397	2.1	397	2.1	0.510	30.4	LOS C	18.3	130.9	0.75	0.80	0.75	11.2
5	T1	1338	3.9	1338	3.9	0.979	80.2	LOS F	21.4	155.0	0.99	1.21	1.40	23.5
6	R2	58	5.5	58	5.5	0.597	73.1	LOS E	3.8	27.9	1.00	0.77	1.06	5.3
6u	U	1	0.0	1	0.0	0.597	74.3	LOS E	3.8	27.9	1.00	0.77	1.06	5.3
Approach		1794	3.6	1794	3.6	0.979	68.9	LOS E	21.4	155.0	0.94	1.10	1.24	22.1
North: MURRUMBEENA ROAD														
7	L2	32	10.0	32	10.0	0.982	101.4	LOS F	28.6	205.7	1.00	1.24	1.78	14.0
8	T1	623	2.4	623	2.4	0.982	94.3	LOS F	28.6	205.7	1.00	1.22	1.68	14.2
9	R2	138	1.5	138	1.5	0.860	76.5	LOS E	9.4	66.7	1.00	0.95	1.34	29.2
Approach		793	2.5	793	2.5	0.982	91.4	LOS F	28.6	205.7	1.00	1.18	1.62	17.1
West: NORTH ROAD														
10	L2	75	4.2	75	4.2	0.602	42.0	LOS D	23.2	166.4	0.81	0.77	1.20	34.7
11	T1	1329	2.3	1329	2.3	0.602	29.7	LOS C	23.2	166.4	0.79	0.71	0.92	38.1
12	R2	248	4.2	248	4.2	0.965	94.5	LOS F	19.8	143.4	1.00	1.07	1.55	19.2
Approach		1653	2.7	1653	2.7	0.965	40.0	LOS D	23.2	166.4	0.82	0.77	1.02	33.1
All Vehicles		5700	2.9	5700	2.9	0.996	62.2	LOS E	28.6	205.7	0.90	0.98	1.23	23.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	39.8	LOS D	0.1	0.1	0.80	0.80
P2	East Full Crossing	53	57.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	28.7	LOS C	0.1	0.1	0.68	0.68
P4	West Full Crossing	53	56.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	45.5	LOS E			0.84	0.84

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3559 [10. NORTH ROAD / KOORNANG ROAD / TUCKER ROAD]

10. NORTH ROAD / KOORNAND ROAD / TUCKER ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 126 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: TUCKER ROAD												
1	L2	228	3.0	0.460	38.2	LOS D	10.4	74.5	0.79	0.79	0.79	36.2
2	T1	180	3.0	0.712	51.4	LOS D	10.3	73.8	0.94	0.81	1.02	32.8
Approach		408	3.0	0.712	44.0	LOS D	10.4	74.5	0.86	0.80	0.89	34.6
East: NORTH ROAD												
4	L2	136	3.0	0.134	19.7	LOS B	3.9	28.1	0.51	0.70	0.51	46.0
5	T1	1895	3.0	0.829	22.5	LOS C	35.1	252.2	0.73	0.69	0.76	45.6
6	R2	163	3.0	0.808	70.9	LOS E	10.7	76.7	1.00	0.90	1.21	29.8
Approach		2194	3.0	0.829	25.9	LOS C	35.1	252.2	0.74	0.70	0.78	43.9
North: KOORNANG ROAD												
7	L2	159	3.0	0.250	36.8	LOS D	6.9	49.6	0.75	0.77	0.75	38.9
8	T1	203	3.0	0.593	50.3	LOS D	11.5	82.2	0.96	0.79	0.96	33.1
Approach		362	3.0	0.593	44.4	LOS D	11.5	82.2	0.87	0.78	0.87	35.6
West: NORTH ROAD												
10	L2	94	3.0	0.093	19.4	LOS B	2.6	18.9	0.49	0.69	0.49	44.5
11	T1	1468	3.0	0.631	18.9	LOS B	25.7	184.2	0.69	0.62	0.69	47.4
12	R2	57	3.0	0.281	62.5	LOS E	3.3	23.7	0.96	0.75	0.96	29.3
Approach		1619	3.0	0.631	20.5	LOS C	25.7	184.2	0.69	0.63	0.69	46.3
All Vehicles		4583	3.0	0.829	27.1	LOS C	35.1	252.2	0.74	0.69	0.76	43.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	15.8	LOS B	0.1	0.1	0.50	0.50
P2	East Full Crossing	53	57.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	4.3	LOS A	0.0	0.0	0.26	0.26
P4	West Full Crossing	53	57.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	33.7	LOS D			0.67	0.67

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: P:\V13600-13699\V136080 East Village - Integrated Transp\Modelling\SIDRA\180920-Updates\171028 SIDRA Network - Existing AM.sip8

MOVEMENT SUMMARY

Site: 3561 [6. NORTH ROAD / POATH ROAD / POET ROAD]

Network: N101 [Master Model]

NORTH ROAD / POATH ROAD / POET ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: POET ROAD														
1	L2	111	2.9	111	2.9	0.803	63.1	LOS E	15.6	111.8	1.00	0.93	1.15	17.0
2	T1	16	0.0	16	0.0	0.803	59.7	LOS E	15.6	111.8	1.00	0.93	1.15	26.3
3	R2	111	2.9	111	2.9	0.803	63.1	LOS E	15.6	111.8	1.00	0.93	1.15	26.4
Approach		237	2.7	237	2.7	0.803	62.9	LOS E	15.6	111.8	1.00	0.93	1.15	22.6
East: NORTH ROAD														
4	L2	49	2.1	49	2.1	0.801	23.1	LOS C	45.0	325.6	0.78	0.74	0.78	41.4
5	T1	1545	4.0	1545	4.0	0.801	15.6	LOS B	45.0	325.6	0.69	0.65	0.70	43.8
6	R2	111	2.9	111	2.9	0.673	36.1	LOS D	4.7	33.9	0.98	0.85	1.07	38.7
Approach		1705	3.8	1705	3.8	0.801	17.2	LOS B	45.0	325.6	0.71	0.66	0.72	43.0
North: POATH ROAD														
7	L2	161	3.3	161	3.3	0.368	39.1	LOS D	8.3	59.8	0.85	0.77	0.85	34.0
8	T1	17	0.0	17	0.0	0.368	34.5	LOS C	8.3	59.8	0.85	0.77	0.85	32.7
9	R2	76	2.8	76	2.8	0.276	54.4	LOS D	4.2	30.1	0.90	0.76	0.90	20.3
Approach		254	2.9	254	2.9	0.368	43.4	LOS D	8.3	59.8	0.87	0.77	0.87	30.3
West: NORTH ROAD														
10	L2	57	3.7	57	3.7	0.800	29.9	LOS C	43.0	307.0	0.86	0.80	0.86	47.0
11	T1	1627	2.3	1627	2.3	0.800	22.8	LOS C	43.0	307.0	0.83	0.77	0.83	50.9
12	R2	12	0.0	12	0.0	0.129	46.3	LOS D	0.6	4.1	0.77	0.72	0.77	33.8
Approach		1696	2.3	1696	2.3	0.800	23.2	LOS C	43.0	307.0	0.83	0.77	0.83	50.6
All Vehicles		3892	3.0	3892	3.0	0.803	24.3	LOS C	45.0	325.6	0.79	0.73	0.81	43.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	9.3	LOS A	0.1	0.1	0.38	0.38
P2	East Full Crossing	53	47.5	LOS E	0.2	0.2	0.86	0.86
P3	North Full Crossing	53	15.3	LOS B	0.1	0.1	0.49	0.49
P4	West Full Crossing	53	47.5	LOS E	0.2	0.2	0.86	0.86
All Pedestrians		211	29.9	LOS C			0.64	0.64

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1209 [5. EAST BOUNDARY ROAD / ARDENA COURT]

Network: N101 [Master Model]

EAST BOUNDARY ROAD / ARDENA COURT
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 117 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
1	L2	25	4.2	25	4.2	0.022	15.2	LOS B	0.5	3.9	0.40	0.66	0.40	42.4
2	T1	1452	3.0	1452	3.0	0.614	14.1	LOS B	25.1	179.9	0.66	0.60	0.66	45.6
3	R2	52	2.0	52	2.0	0.549	69.4	LOS E	3.1	22.1	1.00	0.76	1.04	26.0
Approach		1528	3.0	1528	3.0	0.614	16.0	LOS B	25.1	179.9	0.66	0.61	0.66	43.4
East: ARDENA COURT														
4	L2	37	2.9	37	2.9	0.079	37.9	LOS D	1.6	11.6	0.78	0.69	0.78	32.2
5	T1	1	0.0	1	0.0	0.079	34.5	LOS C	1.6	11.6	0.78	0.69	0.78	28.3
6	R2	39	2.7	39	2.7	0.151	48.5	LOS D	1.9	13.8	0.89	0.72	0.89	19.6
Approach		77	2.7	77	2.7	0.151	43.3	LOS D	1.9	13.8	0.84	0.70	0.84	26.3
North: EAST BOUNDARY ROAD														
7	L2	5	0.0	5	0.0	0.005	15.0	LOS B	0.1	0.8	0.39	0.64	0.39	38.1
8	T1	1038	3.0	1038	3.0	0.437	12.0	LOS B	15.0	108.1	0.56	0.50	0.56	53.9
9	R2	8	0.0	8	0.0	0.088	66.2	LOS E	0.5	3.4	0.98	0.66	0.98	22.4
Approach		1052	3.0	1052	3.0	0.437	12.4	LOS B	15.0	108.1	0.56	0.50	0.56	53.2
West: ARDENA COURT														
10	L2	9	0.0	9	0.0	0.082	46.0	LOS D	1.1	7.7	0.86	0.69	0.86	20.2
11	T1	1	0.0	1	0.0	0.082	42.6	LOS D	1.1	7.7	0.86	0.69	0.86	26.7
12	R2	13	0.0	13	0.0	0.082	45.9	LOS D	1.1	7.7	0.86	0.69	0.86	30.5
Approach		23	0.0	23	0.0	0.082	45.8	LOS D	1.1	7.7	0.86	0.69	0.86	26.7
All Vehicles		2680	2.9	2680	2.9	0.614	15.6	LOS B	25.1	179.9	0.63	0.57	0.63	46.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	52.8	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	11.1	LOS B	0.1	0.1	0.44	0.44
P3	North Full Crossing	53	52.8	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	10.3	LOS B	0.1	0.1	0.42	0.42
All Pedestrians		211	31.7	LOS D			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 103a [3a (east). EAST BOUNDARY ROAD / NORTH DRIVE]

Network: N101 [Master Model]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
3	R2	52	2.0	52	2.0	0.208	13.8	LOS B	0.7	5.3	0.81	0.93	0.86	14.4
3u	U	11	0.0	11	0.0	0.208	25.7	LOS D	0.7	5.3	0.81	0.93	0.86	9.9
Approach		62	1.7	62	1.7	0.208	15.8	NA	0.7	5.3	0.81	0.93	0.86	13.9
East: NORTH DRIVE														
4	L2	17	12.5	17	12.5	0.019	8.2	LOS A	0.1	0.6	0.51	0.64	0.51	47.7
5	T1	9	0.0	9	0.0	0.034	16.4	LOS C	0.1	0.8	0.79	0.90	0.79	39.2
Approach		26	8.0	26	8.0	0.034	11.1	LOS B	0.1	0.8	0.61	0.73	0.61	44.2
North: EAST BOUNDARY ROAD														
7	L2	72	2.9	72	2.9	0.328	3.5	LOS A	0.0	0.0	0.00	0.07	0.00	56.1
8	T1	1182	2.7	1182	2.7	0.328	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	56.6
Approach		1254	2.7	1254	2.7	0.328	0.2	NA	0.0	0.0	0.00	0.03	0.00	56.4
West: MEDIAN														
11	T1	8	0.0	8	0.0	0.392	25.3	LOS D	1.5	10.8	0.90	1.01	1.13	29.6
12	R2	56	3.8	56	3.8	0.392	31.8	LOS D	1.5	10.8	0.90	1.01	1.13	2.5
Approach		64	3.3	64	3.3	0.392	31.0	LOS D	1.5	10.8	0.90	1.01	1.13	8.7
All Vehicles		1406	2.8	1406	2.8	0.392	2.5	NA	1.5	10.8	0.09	0.13	0.10	38.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [1. MURRUMBEENA ROAD / LEILA ROAD]

Network: N101 [Master Model]

MURRUMBEENA ROAD / LEILA ROAD
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: MURRUMBEENA ROAD														
1	L2	75	1.4	75	1.4	0.353	5.6	LOS A	0.0	0.0	0.00	0.07	0.00	57.6
2	T1	599	2.5	599	2.5	0.353	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	59.3
Approach		674	2.3	674	2.3	0.353	0.7	NA	0.0	0.0	0.00	0.07	0.00	59.1
East: LEILA ROAD														
4	L2	58	9.1	58	9.1	0.107	10.5	LOS B	0.4	2.7	0.60	0.83	0.60	45.1
5	T1	28	0.0	28	0.0	0.563	60.0	LOS F	2.1	15.1	0.96	1.07	1.32	27.7
6	R2	21	10.0	21	10.0	0.563	85.5	LOS F	2.1	15.1	0.96	1.07	1.32	27.5
Approach		107	6.9	107	6.9	0.563	38.3	LOS E	2.1	15.1	0.77	0.94	0.93	32.3
North: MURRUMBEENA ROAD														
7	L2	47	6.7	47	6.7	0.027	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	50.9
8	T1	674	1.6	674	1.6	0.352	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	58	0.0	58	0.0	0.063	8.6	LOS A	0.3	2.0	0.59	0.72	0.59	47.7
Approach		779	1.8	779	1.8	0.352	1.0	NA	0.3	2.0	0.04	0.09	0.04	57.3
West: LEILA ROAD														
10	L2	95	1.1	95	1.1	0.133	8.1	LOS A	0.5	3.7	0.55	0.74	0.55	47.5
12	R2	39	0.0	39	0.0	0.499	71.2	LOS F	1.7	12.0	0.96	1.05	1.23	17.0
Approach		134	0.8	134	0.8	0.499	26.5	LOS D	1.7	12.0	0.67	0.83	0.74	36.4
All Vehicles		1694	2.2	1694	2.2	0.563	5.2	NA	2.1	15.1	0.12	0.19	0.14	52.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 104a [4a (east). EAST BOUNDARY ROAD / SOUTH DRIVE]

Network: N101 [Master Model]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
3	R2	96	1.1	96	1.1	0.300	18.0	LOS C	1.2	8.2	0.83	0.97	0.98	18.9
3u	U	134	3.1	134	3.1	0.759	51.5	LOS F	4.2	30.1	0.95	1.24	1.96	6.6
Approach		229	2.3	229	2.3	0.759	37.6	NA	4.2	30.1	0.90	1.13	1.55	13.8
East: NORTH DRIVE														
4	L2	5	0.0	5	0.0	0.008	8.8	LOS A	0.0	0.2	0.52	0.65	0.52	46.8
5	T1	13	0.0	13	0.0	0.065	22.7	LOS C	0.2	1.5	0.84	0.92	0.84	34.6
Approach		18	0.0	18	0.0	0.065	18.6	LOS C	0.2	1.5	0.75	0.84	0.75	37.5
North: EAST BOUNDARY ROAD														
7	L2	151	0.0	151	0.0	0.331	5.5	LOS A	0.0	0.0	0.00	0.14	0.00	55.4
8	T1	1113	3.0	1113	3.0	0.331	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	55.6
Approach		1263	2.7	1263	2.7	0.331	0.7	NA	0.0	0.0	0.00	0.07	0.00	55.5
All Vehicles		1511	2.6	1511	2.6	0.759	6.5	NA	4.2	30.1	0.15	0.24	0.24	32.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 107 [7. NORTH ROAD / CROSBIE ROAD / COBAR STREET]

Network: N101 [Master Model]

NORTH ROAD / CROSBIE ROAD / COBAR STREET
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: COBAR STREET														
1	L2	15	0.0	15	0.0	0.284	70.8	LOS F	0.7	4.6	0.96	1.02	1.03	16.1
3	R2	1	100.0	1	100.0	1.000	3337.7	LOS F	1.8	23.8	1.00	1.03	1.11	0.5
Approach		16	6.7	16	6.7	1.000	288.6	LOS F	1.8	23.8	0.96	1.02	1.04	5.6
East: NORTH ROAD														
4	L2	39	5.4	39	5.4	0.781	6.0	LOS A	0.0	0.0	0.00	0.02	0.00	57.8
5	T1	1792	3.8	1792	3.8	0.781	12.2	LOS B	26.7	193.2	0.19	0.01	0.39	46.3
6a	R1	72	7.4	72	7.4	1.000	176.7	LOS F	6.1	45.6	1.00	1.44	2.91	11.6
Approach		1902	3.9	1902	3.9	1.000	18.2	NA	26.7	193.2	0.22	0.07	0.48	41.9
NorthWest: CROSBIE ROAD														
27a	L1	57	7.4	57	7.4	0.128	11.7	LOS B	0.5	3.4	0.68	0.85	0.68	43.7
29b	R3	2	0.0	2	0.0	0.909	1959.4	LOS F	2.0	13.9	1.00	1.02	1.13	1.0
Approach		59	7.1	59	7.1	0.909	81.3	LOS F	2.0	13.9	0.70	0.86	0.70	16.7
West: NORTH ROAD														
10b	L3	23	9.1	23	9.1	0.015	7.4	LOS A	0.0	0.0	0.00	0.64	0.00	38.4
11	T1	1738	2.1	1738	2.1	0.452	1.1	LOS A	0.0	0.0	0.00	0.18	0.00	62.2
12	R2	5	20.0	5	20.0	0.214	155.2	LOS F	0.5	4.0	0.99	1.00	1.01	11.5
Approach		1766	2.2	1766	2.2	0.452	1.6	NA	0.5	4.0	0.00	0.19	0.00	58.6
All Vehicles		3743	3.2	3743	3.2	1.000	12.5	NA	26.7	193.2	0.13	0.14	0.26	41.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 3560 [2. NORTH ROAD / EAST BOUNDARY ROAD / MURRUMBEENA ROAD]

Network: N101 [Master Model]

NORTH ROAD / EAST BOUNDARY ROAD / MURRUMBEENA ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 128 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
1	L2	462	0.4	462	0.4	0.423	21.1	LOS C	13.4	94.4	0.58	0.82	0.74	48.0
2	T1	571	0.4	571	0.4	0.990	76.8	LOS E	21.1	148.0	0.99	1.02	1.34	11.9
3	R2	312	0.6	312	0.6	0.982	103.3	LOS F	12.8	90.2	1.00	1.08	1.68	9.2
Approach		1345	0.4	1345	0.4	0.990	63.8	LOS E	21.1	148.0	0.85	0.96	1.22	21.0
East: NORTH ROAD														
4	L2	345	0.3	345	0.3	0.626	45.8	LOS D	22.1	155.0	0.91	0.84	0.91	8.0
5	T1	1201	0.9	1201	0.9	0.974	79.6	LOS E	22.1	155.0	0.99	1.15	1.37	23.6
6	R2	54	0.0	54	0.0	0.798	77.5	LOS E	5.7	39.8	1.00	0.88	1.29	4.9
6u	U	29	0.0	29	0.0	0.798	78.8	LOS E	5.7	39.8	1.00	0.88	1.29	4.9
Approach		1629	0.7	1629	0.7	0.974	72.3	LOS E	22.1	155.0	0.98	1.07	1.27	21.2
North: MURRUMBEENA ROAD														
7	L2	55	3.6	55	3.6	0.627	61.0	LOS E	13.5	95.5	0.98	0.86	1.28	20.4
8	T1	479	0.6	479	0.6	0.895	62.7	LOS E	20.2	142.4	0.99	0.96	1.28	18.9
9	R2	136	0.7	136	0.7	0.942	89.6	LOS F	10.3	72.5	1.00	1.05	1.57	26.7
Approach		670	0.9	670	0.9	0.942	68.0	LOS E	20.2	142.4	0.99	0.97	1.34	21.4
West: NORTH ROAD														
10	L2	107	3.7	107	3.7	0.117	15.1	LOS B	3.2	23.4	0.48	0.62	0.48	50.9
11	T1	1243	2.1	1243	2.1	0.783	23.8	LOS C	34.1	242.5	0.75	0.68	0.75	42.0
12	R2	405	0.5	405	0.5	0.992	101.2	LOS F	34.5	242.2	0.96	1.10	1.53	18.3
Approach		1755	1.8	1755	1.8	0.992	41.1	LOS D	34.5	242.5	0.79	0.77	0.92	32.6
All Vehicles		5399	1.0	5399	1.0	0.992	59.5	LOS E	34.5	242.5	0.89	0.93	1.15	24.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	50.9	LOS E	0.2	0.2	0.89	0.89
P2	East Full Crossing	53	58.3	LOS E	0.2	0.2	0.96	0.96
P3	North Full Crossing	53	25.1	LOS C	0.1	0.1	0.63	0.63
P4	West Full Crossing	53	58.3	LOS E	0.2	0.2	0.96	0.96
All Pedestrians		211	48.1	LOS E			0.86	0.86

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3559 [10. NORTH ROAD / KOORNANG ROAD / TUCKER ROAD AM]

10. NORTH ROAD / KOORNAND ROAD / TUCKER ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 126 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: TUCKER ROAD												
1	L2	191	1.1	0.353	37.3	LOS D	8.4	59.6	0.77	0.77	0.77	36.6
2	T1	198	1.1	0.780	55.3	LOS E	11.9	83.9	0.96	0.88	1.11	31.7
Approach		388	1.1	0.780	46.5	LOS D	11.9	83.9	0.87	0.83	0.94	33.9
East: NORTH ROAD												
4	L2	193	1.1	0.188	20.2	LOS C	5.8	40.6	0.53	0.72	0.53	45.9
5	T1	1714	0.6	0.728	19.0	LOS B	26.5	186.2	0.69	0.62	0.69	47.3
6	R2	173	1.2	0.788	69.1	LOS E	11.1	78.7	1.00	0.89	1.17	30.2
Approach		2079	0.7	0.788	23.3	LOS C	26.5	186.2	0.70	0.65	0.72	45.1
North: KOORNANG ROAD												
7	L2	201	1.0	0.312	37.5	LOS D	9.0	63.2	0.78	0.78	0.78	38.7
8	T1	197	1.1	0.564	51.1	LOS D	11.2	78.8	0.96	0.79	0.96	32.8
Approach		398	1.1	0.564	44.2	LOS D	11.2	78.8	0.87	0.79	0.87	35.7
West: NORTH ROAD												
10	L2	99	1.1	0.097	19.4	LOS B	2.8	19.7	0.50	0.69	0.50	44.6
11	T1	1685	2.0	0.775	20.1	LOS C	32.1	228.4	0.73	0.66	0.73	46.8
12	R2	169	1.2	0.773	68.4	LOS E	10.8	76.7	1.00	0.88	1.15	28.0
Approach		1954	1.9	0.775	24.2	LOS C	32.1	228.4	0.74	0.68	0.76	44.4
All Vehicles		4819	1.2	0.788	27.3	LOS C	32.1	228.4	0.75	0.69	0.76	42.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	15.8	LOS B	0.1	0.1	0.50	0.50
P2	East Full Crossing	53	57.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	4.6	LOS A	0.1	0.1	0.27	0.27
P4	West Full Crossing	53	57.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	33.7	LOS D			0.67	0.67

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: P:\V13600-13699\V136080 East Village - Integrated Transp\Modelling\SIDRA\180920-Updates\171205 SIDRA Network - Existing PM - Sat Flow Change.sip8

MOVEMENT SUMMARY

Site: 3561 [6. NORTH ROAD / POATH ROAD / POET ROAD]

Network: N101 [Master Model]

NORTH ROAD / POATH ROAD / POET ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: POET ROAD														
1	L2	55	1.9	55	1.9	0.761	70.1	LOS E	8.2	58.1	1.00	0.91	1.18	16.0
2	T1	13	0.0	13	0.0	0.761	66.6	LOS E	8.2	58.1	1.00	0.91	1.18	25.1
3	R2	55	1.9	55	1.9	0.761	70.0	LOS E	8.2	58.1	1.00	0.91	1.18	25.2
Approach		122	1.7	122	1.7	0.761	69.7	LOS E	8.2	58.1	1.00	0.91	1.18	21.6
East: NORTH ROAD														
4	L2	25	0.0	25	0.0	0.724	18.9	LOS B	37.1	261.6	0.66	0.63	0.66	43.6
5	T1	1513	0.7	1513	0.7	0.724	11.1	LOS B	37.1	261.6	0.59	0.54	0.59	49.2
6	R2	98	1.1	98	1.1	0.548	28.7	LOS C	3.6	25.6	0.89	0.80	0.89	42.1
Approach		1636	0.7	1636	0.7	0.724	12.2	LOS B	37.1	261.6	0.61	0.56	0.61	48.1
North: POATH ROAD														
7	L2	238	0.9	238	0.9	0.718	47.8	LOS D	15.4	108.7	0.97	0.85	0.99	31.5
8	T1	44	0.0	44	0.0	0.718	43.3	LOS D	15.4	108.7	0.97	0.85	0.99	30.4
9	R2	76	1.4	76	1.4	0.252	54.8	LOS D	4.2	29.7	0.90	0.76	0.90	20.2
Approach		358	0.9	358	0.9	0.718	48.7	LOS D	15.4	108.7	0.95	0.83	0.98	29.4
West: NORTH ROAD														
10	L2	89	1.2	89	1.2	0.749	25.8	LOS C	39.1	278.3	0.78	0.74	0.78	49.1
11	T1	1515	2.1	1515	2.1	0.749	18.3	LOS B	39.1	278.3	0.74	0.68	0.74	53.7
12	R2	25	0.0	25	0.0	0.228	36.7	LOS D	1.1	8.0	0.70	0.75	0.70	36.6
Approach		1629	2.0	1629	2.0	0.749	19.0	LOS B	39.1	278.3	0.74	0.69	0.74	53.1
All Vehicles		3745	1.3	3745	1.3	0.761	20.5	LOS C	39.1	278.3	0.71	0.65	0.72	46.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	7.5	LOS A	0.1	0.1	0.34	0.34
P2	East Full Crossing	53	51.9	LOS E	0.2	0.2	0.89	0.89
P3	North Full Crossing	53	13.0	LOS B	0.1	0.1	0.45	0.45
P4	West Full Crossing	53	51.9	LOS E	0.2	0.2	0.89	0.89
All Pedestrians		211	31.0	LOS D			0.64	0.64

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1209 [5. EAST BOUNDARY ROAD / ARDENA COURT]

Network: N101 [Master Model]

EAST BOUNDARY ROAD / ARDENA COURT
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 116 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
1	L2	18	0.0	18	0.0	0.016	15.1	LOS B	0.4	2.6	0.40	0.66	0.40	42.4
2	T1	1187	0.5	1187	0.5	0.495	12.7	LOS B	18.1	127.6	0.59	0.53	0.59	47.3
3	R2	126	0.8	126	0.8	0.529	58.8	LOS E	6.9	48.6	0.98	0.79	0.98	28.1
Approach		1332	0.6	1332	0.6	0.529	17.1	LOS B	18.1	127.6	0.62	0.56	0.62	42.3
East: ARDENA COURT														
4	L2	91	0.0	91	0.0	0.151	32.1	LOS C	3.6	25.4	0.74	0.71	0.74	34.2
5	T1	2	0.0	2	0.0	0.151	28.7	LOS C	3.6	25.4	0.74	0.71	0.74	29.6
6	R2	75	0.0	75	0.0	0.287	50.2	LOS D	3.8	26.6	0.92	0.75	0.92	19.3
Approach		167	0.0	167	0.0	0.287	40.1	LOS D	3.8	26.6	0.82	0.73	0.82	27.9
North: EAST BOUNDARY ROAD														
7	L2	5	0.0	5	0.0	0.005	19.0	LOS B	0.1	0.9	0.47	0.64	0.47	36.1
8	T1	1183	0.4	1183	0.4	0.565	18.5	LOS B	21.8	152.9	0.71	0.64	0.71	48.0
9	R2	8	0.0	8	0.0	0.088	65.6	LOS E	0.5	3.3	0.98	0.66	0.98	22.5
Approach		1197	0.4	1197	0.4	0.565	18.8	LOS B	21.8	152.9	0.71	0.64	0.71	47.6
West: ARDENA COURT														
10	L2	21	0.0	21	0.0	0.169	48.2	LOS D	2.2	15.6	0.89	0.72	0.89	19.7
11	T1	1	0.0	1	0.0	0.169	44.8	LOS D	2.2	15.6	0.89	0.72	0.89	26.2
12	R2	23	0.0	23	0.0	0.169	48.1	LOS D	2.2	15.6	0.89	0.72	0.89	29.9
Approach		45	0.0	45	0.0	0.169	48.1	LOS D	2.2	15.6	0.89	0.72	0.89	25.7
All Vehicles		2741	0.5	2741	0.5	0.565	19.8	LOS B	21.8	152.9	0.68	0.61	0.68	42.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	52.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	15.6	LOS B	0.1	0.1	0.52	0.52
P3	North Full Crossing	53	52.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	10.4	LOS B	0.1	0.1	0.42	0.42
All Pedestrians		211	32.6	LOS D			0.71	0.71

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 103a [3a (east). EAST BOUNDARY ROAD / NORTH DRIVE]

Network: N101 [Master Model]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
3	R2	53	0.0	53	0.0	0.243	14.0	LOS B	0.9	6.3	0.82	0.95	0.91	14.8
3u	U	17	0.0	17	0.0	0.243	26.7	LOS D	0.9	6.3	0.82	0.95	0.91	9.3
Approach		69	0.0	69	0.0	0.243	17.1	NA	0.9	6.3	0.82	0.95	0.91	14.1
East: NORTH DRIVE														
4	L2	89	0.0	89	0.0	0.094	8.0	LOS A	0.4	2.8	0.52	0.70	0.52	47.7
5	T1	7	0.0	7	0.0	0.053	16.4	LOS C	0.1	0.6	0.79	0.90	0.79	39.2
Approach		97	0.0	97	0.0	0.094	8.6	LOS A	0.4	2.8	0.54	0.72	0.54	46.9
North: EAST BOUNDARY ROAD														
7	L2	62	0.0	62	0.0	0.327	3.5	LOS A	0.0	0.0	0.00	0.06	0.00	56.5
8	T1	1204	0.5	1204	0.5	0.327	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	57.0
Approach		1266	0.5	1266	0.5	0.327	0.2	NA	0.0	0.0	0.00	0.03	0.00	56.8
West: MEDIAN														
11	T1	4	0.0	4	0.0	0.206	20.3	LOS C	0.7	4.8	0.89	0.96	0.94	30.9
12	R2	26	0.0	26	0.0	0.206	29.5	LOS D	0.7	4.8	0.89	0.96	0.94	2.8
Approach		31	0.0	31	0.0	0.206	28.2	LOS D	0.7	4.8	0.89	0.96	0.94	9.7
All Vehicles		1463	0.4	1463	0.4	0.327	2.1	NA	0.9	6.3	0.09	0.14	0.10	42.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [1. MURRUMBEENA ROAD / LEILA ROAD]

Network: N101 [Master Model]

MURRUMBEENA ROAD / LEILA ROAD
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: MURRUMBEENA ROAD														
1	L2	91	1.2	91	1.2	0.401	5.6	LOS A	0.0	0.0	0.00	0.07	0.00	57.5
2	T1	684	0.5	684	0.5	0.401	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	59.2
Approach		775	0.5	775	0.5	0.401	0.7	NA	0.0	0.0	0.00	0.07	0.00	59.0
East: LEILA ROAD														
4	L2	88	4.8	88	4.8	0.144	9.8	LOS A	0.5	3.6	0.57	0.82	0.57	45.9
5	T1	35	0.0	35	0.0	1.000	183.8	LOS F	9.9	70.7	1.00	1.49	3.10	14.7
6	R2	65	3.2	65	3.2	1.000	191.1	LOS F	9.9	70.7	1.00	1.49	3.10	14.7
Approach		188	3.4	188	3.4	1.000	104.7	LOS F	9.9	70.7	0.80	1.17	1.91	18.6
North: MURRUMBEENA ROAD														
7	L2	136	0.8	136	0.8	0.074	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	50.9
8	T1	628	0.5	628	0.5	0.326	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	66	1.6	66	1.6	0.088	9.6	LOS A	0.4	2.6	0.62	0.80	0.62	47.1
Approach		831	0.6	831	0.6	0.326	1.7	NA	0.4	2.6	0.05	0.16	0.05	56.2
West: LEILA ROAD														
10	L2	98	0.0	98	0.0	0.160	9.0	LOS A	0.6	4.0	0.58	0.80	0.58	47.0
12	R2	35	0.0	35	0.0	0.635	115.8	LOS F	2.2	15.1	0.98	1.09	1.34	12.0
Approach		133	0.0	133	0.0	0.635	37.0	LOS E	2.2	15.1	0.69	0.88	0.78	32.7
All Vehicles		1926	0.8	1926	0.8	1.000	13.8	NA	9.9	70.7	0.15	0.27	0.26	45.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 104a [4a (east). EAST BOUNDARY ROAD / SOUTH DRIVE]

Network: N101 [Master Model]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
3	R2	12	0.0	12	0.0	0.040	16.5	LOS C	0.1	0.9	0.80	0.92	0.80	19.2
3u	U	163	1.3	163	1.3	1.000	106.1	LOS F	10.0	71.1	1.00	1.77	4.18	3.4
Approach		175	1.2	175	1.2	1.000	100.2	NA	10.0	71.1	0.99	1.71	3.95	4.4
East: SOUTH DRIVE														
4	L2	100	0.0	100	0.0	0.199	11.7	LOS B	0.7	5.0	0.67	0.86	0.68	43.5
5	T1	103	0.0	103	0.0	0.585	38.2	LOS E	2.5	17.8	0.93	1.09	1.42	26.9
Approach		203	0.0	203	0.0	0.585	25.2	LOS D	2.5	17.8	0.80	0.98	1.06	33.1
North: EAST BOUNDARY ROAD														
7	L2	18	0.0	18	0.0	0.345	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	57.1
8	T1	1324	0.5	1324	0.5	0.345	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.3
Approach		1342	0.5	1342	0.5	0.345	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.2
All Vehicles		1720	0.5	1720	0.5	1.000	13.2	NA	10.0	71.1	0.20	0.30	0.53	26.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 107 [7. NORTH ROAD / CROSBIE ROAD / COBAR STREET]

Network: N101 [Master Model]

NORTH ROAD / CROSBIE ROAD / COBAR STREET
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: COBAR STREET														
1	L2	18	0.0	18	0.0	0.049	14.5	LOS B	0.2	1.1	0.69	1.00	0.69	31.2
3	R2	1	0.0	1	0.0	1.000	3874.5	LOS F	2.0	14.3	1.00	1.03	1.10	0.5
Approach		19	0.0	19	0.0	1.000	228.9	LOS F	2.0	14.3	0.71	1.00	0.72	6.8
East: NORTH ROAD														
4	L2	1	0.0	1	0.0	0.431	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.5
5	T1	1671	0.7	1671	0.7	0.431	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6a	R1	64	1.6	64	1.6	0.737	80.6	LOS F	2.7	19.2	0.98	1.13	1.59	20.6
Approach		1736	0.7	1736	0.7	0.737	3.1	NA	2.7	19.2	0.04	0.04	0.06	55.9
NorthWest: CROSBIE ROAD														
27a	L1	119	0.9	119	0.9	0.238	11.4	LOS B	0.9	6.6	0.69	0.87	0.74	44.0
29b	R3	4	0.0	4	0.0	1.000	1193.7	LOS F	2.3	15.9	1.00	1.05	1.27	1.6
Approach		123	0.9	123	0.9	1.000	51.8	LOS F	2.3	15.9	0.70	0.88	0.76	22.6
West: NORTH ROAD														
10b	L3	43	4.9	43	4.9	0.027	7.4	LOS A	0.0	0.0	0.00	0.64	0.00	38.4
11	T1	1677	1.9	1677	1.9	0.435	1.1	LOS A	0.0	0.0	0.00	0.18	0.00	62.2
12	R2	2	0.0	2	0.0	0.015	30.4	LOS D	0.0	0.3	0.90	0.96	0.90	28.7
Approach		1722	2.0	1722	2.0	0.435	1.2	NA	0.0	0.3	0.00	0.19	0.00	60.9
All Vehicles		3600	1.3	3600	1.3	1.000	5.1	NA	2.7	19.2	0.05	0.15	0.06	51.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix C

Traffic Generation

C.1 Design Rates

The East Village development proposal is anticipated to accommodate the following key uses:

- Commercial (office)
- Retail (mix)
- Residential (medium to high density)
- School (most likely junior secondary school) of 1.2Ha in size

With each of these key uses, the initially proposed traffic generation rates are provided below.

Commercial (office)

Traffic generation rates for commercial uses tend to vary based on the level of car parking provision to be provided, efficiency of the building floor plates and types of office. However, for the purposes of assessing East Village as part of a land use change, it is assumed that car parking will be provided for 90% of the total staff numbers, and that 60% of the car spaces will turn-over in a peak hour.

Given that the employee density for the commercial land use as part of East Village is 50sqm/person, a commercial traffic generation rate of 1.08 peak hour movements per 100sqm of floor area is proposed.

Retail (mix)

Given that there is proposed to be just under 12,000sqm of mixed retail floor space, it is considered reasonable to consider it as a shopping centre. As such, Table 3.1 of the RTA Guide to Traffic Generating Developments indicates a rate of 6.0 movements per 100sqm of GLFA, or approx. 8.0 movements per 100sqm of LFA, in the PM peak hour.

Residential (medium to high density)

A single house on a standard lot in an outer metropolitan area will typically generate up to 1 trip in the peak hour and 8 to 10 trips per day. Medium density dwellings generally exhibit a lower traffic generation rate. In the outer metropolitan areas, where public transport accessibility is relatively low, the rate for medium density units is typically in the order of 6 to 8 trips per day. Closer to the Melbourne CAD the rate reduces to in the order of 3 to 6 trips per day depending on dwelling size, parking provisions and accessibility to public transport and local amenities, among other things.

These variations in household traffic generation rates are able to be identified through VISTA data. At this time, we have interrogated 2009 VISTA data, which indicates that households in Glen Eira on average complete 4.7 car movements per day. This is also similar, but marginally higher than what is able to be identified for the adjacent municipalities of Bayside and Kingston.

In terms of the peak hours, it is expected that 10% of the daily number will occur. As such, residential (medium to high density) traffic generation rate of 0.47 movements per dwelling is proposed.

School (secondary school)

At this time the specific number and type of school has not been identified. However, it is understood to most likely be in the order of 600-800 students for a 1.2Ha secondary school.

In terms of traffic generation rates, GTA has an empirical data base with 10 schools we have previously surveyed, and the results indicate the following rates during the school AM and PM peaks:

- AM Peak hour = 0.9 movements per student
- PM (School) Peak hour = 0.7 movements per student

It is noted that the PM peak hour tends to occur between 3:00pm and 4:00pm, which is before the typical PM network peak. As such, school traffic generation rate of 0.9 movements per student in the AM peak period is proposed. It is not intended to include the PM peak rate in this analysis.

C.2 Internal Trip Discounts

Guidance on internal trip generation rates and corresponding allowances for internal trip rate reductions can be sourced from VISTA for residential land uses which suggests the following trip purposes for all residences in metropolitan Melbourne[7]:

- Employment trips: 25.5%
- Education trips: 9.5%
- Retail/Shopping trips: 17.4%
- Social trips: 12.4%
- Recreation trips: 5.3%
- Other Trips: 30.1%

Sources such as RMS NSW Traffic Generation Guidelines (2002) recommend an internal trip discount rate of 25% in these circumstances.

For the benefit of a conservative on the high side assessment, an allowance for a 20% internal trip discount for the residential, retail and school uses has been assumed and relied upon for impact analysis.

On this basis, the resulting peak hour externally generated trip generation rates for the proposed land uses are set out in Table C.1.

Table C.1: External Trip Generation Rates

Use	Traffic Generation Rate	
	AM Peak	PM Peak
Commercial (office)	1.08 movements /100m^2	1.08 movements /100m^2
Retail (mix)	N/A	6.4 movements /100m^2
Residential	0.38 movements /dwelling	0.38 movements /dwelling
School	0.72 movements /student	N/A

C.3 Directional Splits

The assignment of traffic (i.e. the ratio between the inbound and outbound traffic movements) for the additional external peak hour traffic movements anticipated to be generated by East Village are presented in Table C.2.

[7] The Victorian Integrated Survey of Travel and Activity (VISTA) is an ongoing survey of household travel activity.

Table C.2: Assignment of Traffic (In and Out)

Use	AM	PM
Commercial (office)	90% In / 10% Out	10% In / 90% Out
Retail (mix)	90% In / 10% Out	40% In / 60% Out
Residential	20% In / 80% Out	60% In / 40% Out
School	50% In / 50% Out	50% In / 50% Out

C.4 Traffic Generation Summary

These external generation rates and the resulting traffic generation are summarised in Table C.3.

Table C.3: Total Land Use Traffic Generation Estimate

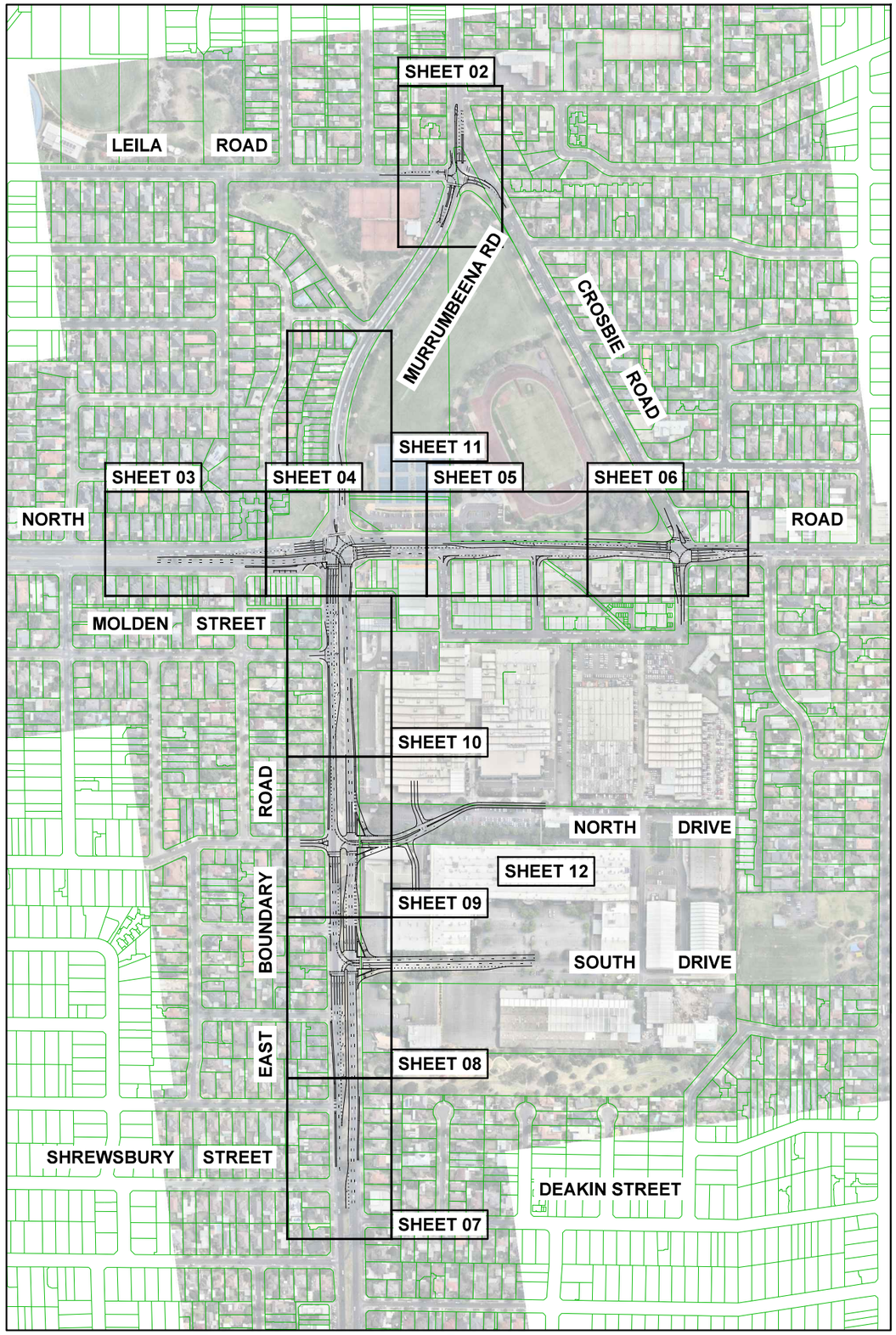
Use	Size	Traffic Generation Rate				Vehicle Movements			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Ingress	Egress	Ingress	Egress	Ingress	Egress	Ingress	Egress
Commercial (office)	~80,000m^2	0.97 movements /100m^2	0.11 movements /100m^2	0.11 movements /100m^2	0.97 movements /100m^2	776	88	88	776
Retail (mix)	~12,000m^2	N/A		2.56 movements /100m^2	3.84 movements /100m^2	0		307	461
Residential	~3,100 dwellings [1]	0.08 movements /dwelling	0.30 movements /dwelling	0.23 movements /dwelling	0.15 movements /dwelling	248	930	713	465
School	800 students	0.36 movements /student	0.36 movements /student	N/A		288	288	0	
					Total	**1,312**	**1,306**	**1,108**	**1,702**

[1] 100 dwellings higher than proposed as a result of previous iterations. This is conservative on the high side as a result.

As shown in Table C.3, the total estimated externally generated traffic activity by East Village results in 2,618 vehicle movements in the AM peak hour (consisting of 1,312 ingress and 1,306 egress movements) and 2,810 vehicle movements in the PM peak hour (consisting of 1,108 ingress and 1,702 egress movements). In terms of daily volumes, these will be in the order of 27,000 movements).

Appendix D

Concept Level Design Layouts & Swept Paths



Victorian Planning Authority

EAST VILLAGE MIXED USE DEVELOPMENT

PROPOSED INTERSECTION AND ROADWORKS

CONCEPT FUNCTIONAL LAYOUT PLANS

SHEET SCHEDULE	
SHEET 01	COVER SHEET AND GENERAL NOTES
SHEET 02	MURRUMBEENA ROAD, LEILA ROAD AND CROSBIE ROAD INTERSECTION
SHEET 03	NORTH ROAD (WEST OF MURRUMBEENA ROAD)
SHEET 04	NORTH ROAD, MURRUMBEENA ROAD AND EAST BOUNDARY ROAD INTERSECTION
SHEET 05	NORTH ROAD (EAST OF MURRUMBEENA ROAD)
SHEET 06	NORTH ROAD, CROSBIE ROAD AND COBAR STREET INTERSECTION
SHEET 07	EAST BOUNDARY ROAD AND DEAKIN STREET (SOUTH OF NORTH ROAD)
SHEET 08	EAST BOUNDARY ROAD AND SOUTH DRIVE (SOUTH OF NORTH ROAD)
SHEET 09	EAST BOUNDARY ROAD AND NORTH DRIVE (SOUTH OF NORTH ROAD)
SHEET 10	EAST BOUNDARY ROAD AND MOLDEN STREET (SOUTH OF NORTH ROAD)
SHEET 11	MURRUMBEENA ROAD (NORTH OF NORTH ROAD)
SHEET 12	NORTH DRIVE ALIGNMENT (EAST OF EAST BOUNDARY ROAD)

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GENERAL NOTES

1. ALL DIMENSIONS WITHIN THIS SET ARE BASED ON AERIAL PHOTOGRAPHY AND ARE APPROXIMATE ONLY.

N

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EAST VILLAGE DEVELOPMENT
NORTH ROAD AND MURRUMBEENA ROAD
CONCEPT FUNCTIONAL LAYOUT
COVER SHEET AND GENERAL NOTES

DRAWING NO. V136080-01-01 SHEET 1 OF 12 ISSUE F9

MALLANBOOL RESERVE

MURRUMBEENA ROAD

LEILA ROAD

RESIDENTIAL

DUNCAN MACKINNON RESERVE

CROSBIE ROAD

ROAD

41m STORAGE

RETAIN SERVICE ROAD ACCESS (TO BE CONFIRMED)

RESIDENTIAL

3.1 (E)
3.0 (E)
3.0
1.5
3.0
3.1 (E)
2.4
2.4
2.4
3.5
3.5
1.7
5.2 (E)
4.0
1.7 (E)
3.0
3.0
1.5
3.0
5.0 (E)

N

MAP REF 68/K8

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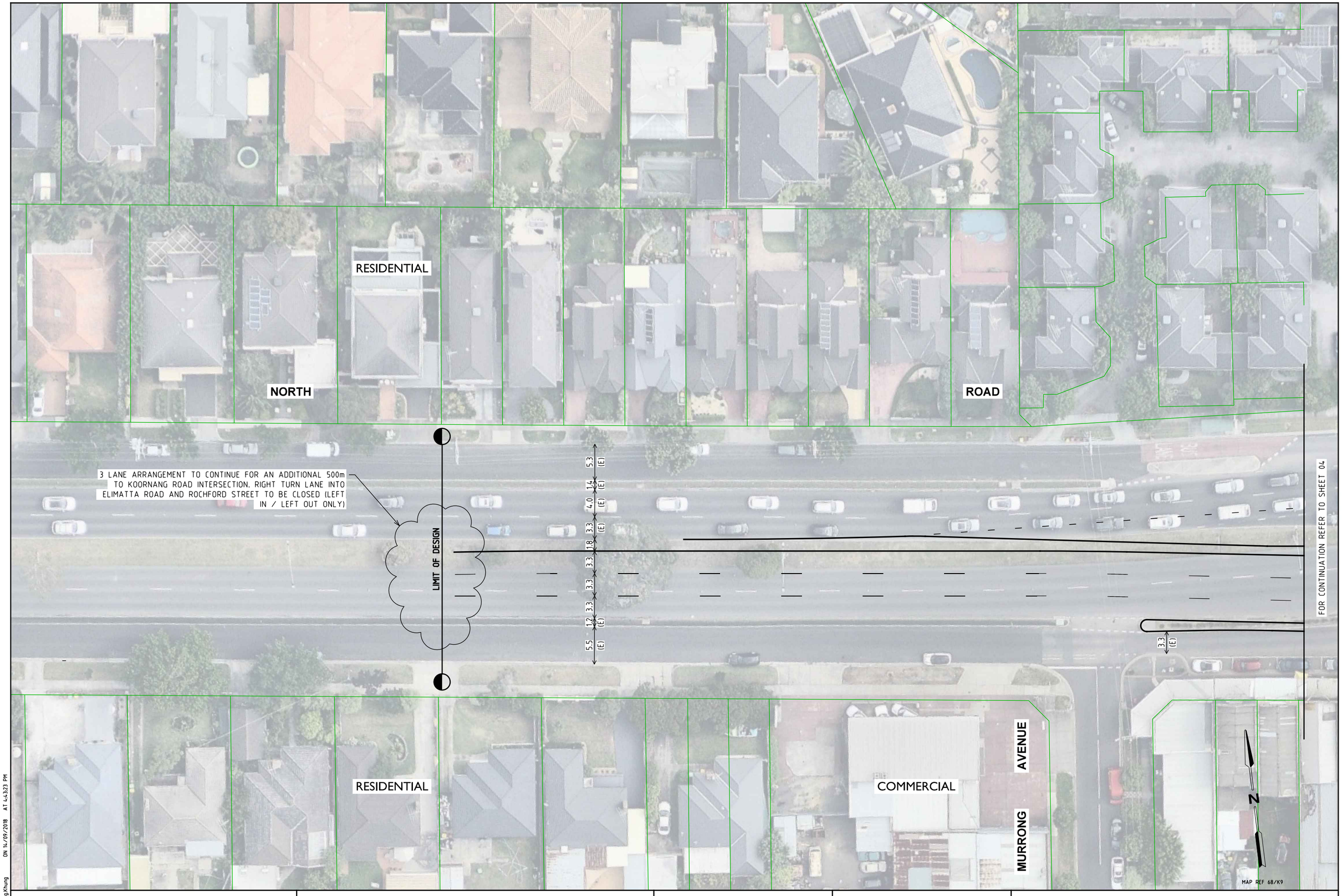
EAST VILLAGE
MURRUMBEENA RD, LEILA RD AND CROSBIE ROAD SIGNALISED INTERSECTION
CONCEPT FUNCTIONAL LAYOUT

DRAWING NO. V136080-01-02 SHEET 2 OF 12 ISSUE F9



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EAST VILLAGE DEVELOPMENT
NORTH ROAD
WEST OF MURRUMBEENA ROAD
CONCEPT FUNCTIONAL LAYOUT

DRAWING NO. V136080-01-03 SHEET 3 OF 12 ISSUE F9

DESIGN NOTES:

1. DESIGN VEHICLE - 25.0m AUSTROADS B-DOUBLE (GAZETTED B-DOUBLE ROUTE)

FOR CONTINUATION REFER TO SHEET 11

NOTE: POSSIBLE FUTURE ON-ROAD NORTH-SOUTH BICYCLE LANE FEASIBILITY TO BE INVESTIGATED AND CONFIRMED AT LATER DATE, BY OTHERS.

MURRUMBEENA ROAD

PROPOSED DEVELOPMENT

DUNCAN MACKINNON RESERVE

ROAD

NORTH

45m AND 92m STORAGE

110m STORAGE

FOR CONTINUATION REFER TO SHEET 03

FOR CONTINUATION REFER TO SHEET 05

EXISTING PROPOERTY BOUNDARY

150m STORAGE PER LANE

COMMERCIAL

EAST BOUNDARY ROAD

EAST VILLAGE (PROPOSED DEVELOPMENT)

FOR CONTINUATION REFER TO SHEET 10

MAP REF 68/K9

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EAST VILLAGE DEVELOPMENT
NORTH ROAD AND MURRUMBEENA ROAD SIGNALISED INTERSECTION
CONCEPT FUNCTIONAL LAYOUT

DRAWING NO. V136080-01-04 SHEET 4 OF 12 ISSUE F9

DUNCAN MACKINNON RESERVE

NORTH

ROAD

110m STORAGE

RIGHT TURN LANE TO BE REMOVED

MERGE FROM THREE LANES TO TWO LANES

160m STORAGE

FOR CONTINUATION REFER TO SHEET 04

FOR CONTINUATION REFER TO SHEET 06

3.1 (E)
3.3 (E)
3.1 (E)
4.3
3.0 (E)
3.0 (E)
3.2 (E)
3.5
4.0

1.0

2.0

3.5

4.0

SHIFT FOOTPATH ALIGNMENT FOR BETTER CROSSING LOCATION

PROPOSED BOUNDARY SET-BACK (TO BE CONFIRMED)

SHIFT FOOTPATH ALIGNMENT FOR BETTER CROSSING LOCATION

EXISTING LEFT TURN LANE TO BECOME PART OF DIVERGE FROM TWO LANES TO THREE LANES. LINE MARKING TO BE REMOVED

PROPOSED BOUNDARY SET-BACK (TO BE CONFIRMED)

MURRA STREET

CAREY STREET

3.3 (E) 3.8 (E) 3.8 (E) 4.5 (E)

3.3 (E) 3.8 (E) 3.5 (E) 4.5 (E)

EAST VILLAGE (PROPOSED DEVELOPMENT)

EAST VILLAGE (PROPOSED DEVELOPMENT)

N

MAP REF 68/K9

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EAST VILLAGE DEVELOPMENT
NORTH ROAD
EAST OF MURRUMBEENA ROAD
CONCEPT FUNCTIONAL LAYOUT

DRAWING NO. V136080-01-05 SHEET 5 OF 12 ISSUE F9

DESIGN NOTES:

1. DESIGN VEHICLE - 12.5m AUSTROADS SINGLE UNIT TRUCK

CROSBIE ROAD

DUNCAN MACKINNON RESERVE

NORTH

COMMERCIAL

ROAD

160m STORAGE

26m STORAGE

FOR CONTINUATION REFER TO SHEET 05

2.7 (E) 3.0 (E) 5.0 (E)

6.1

2.4

3.2 3.2 3.0

2.0 3.4 (E) 4.6 (E) 3.5 4.0

3.0 (E) 3.0 (E)

3.2 3.3 3.3 3.3

3.0

4.4

4.5

2.4

6.0 3.5 3.5 6.1 4.4

PROPOSED BOUNDARY SET-BACK (TO BE CONFIRMED)

PROPOSED BOUNDARY SET-BACK (TO BE CONFIRMED)

EAST VILLAGE (PROPOSED DEVELOPMENT)

EXISTING PROPERTY BOUNDARY

RESIDENTIAL

COBAR STREET

EAST VILLAGE (PROPOSED DEVELOPMENT)

N

MAP REF 69/A9

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EAST VILLAGE DEVELOPMENT
NORTH ROAD, CROSBIE ROAD AND COBAR STREET SIGNALISED INTERSECTION
CONCEPT FUNCTIONAL LAYOUT

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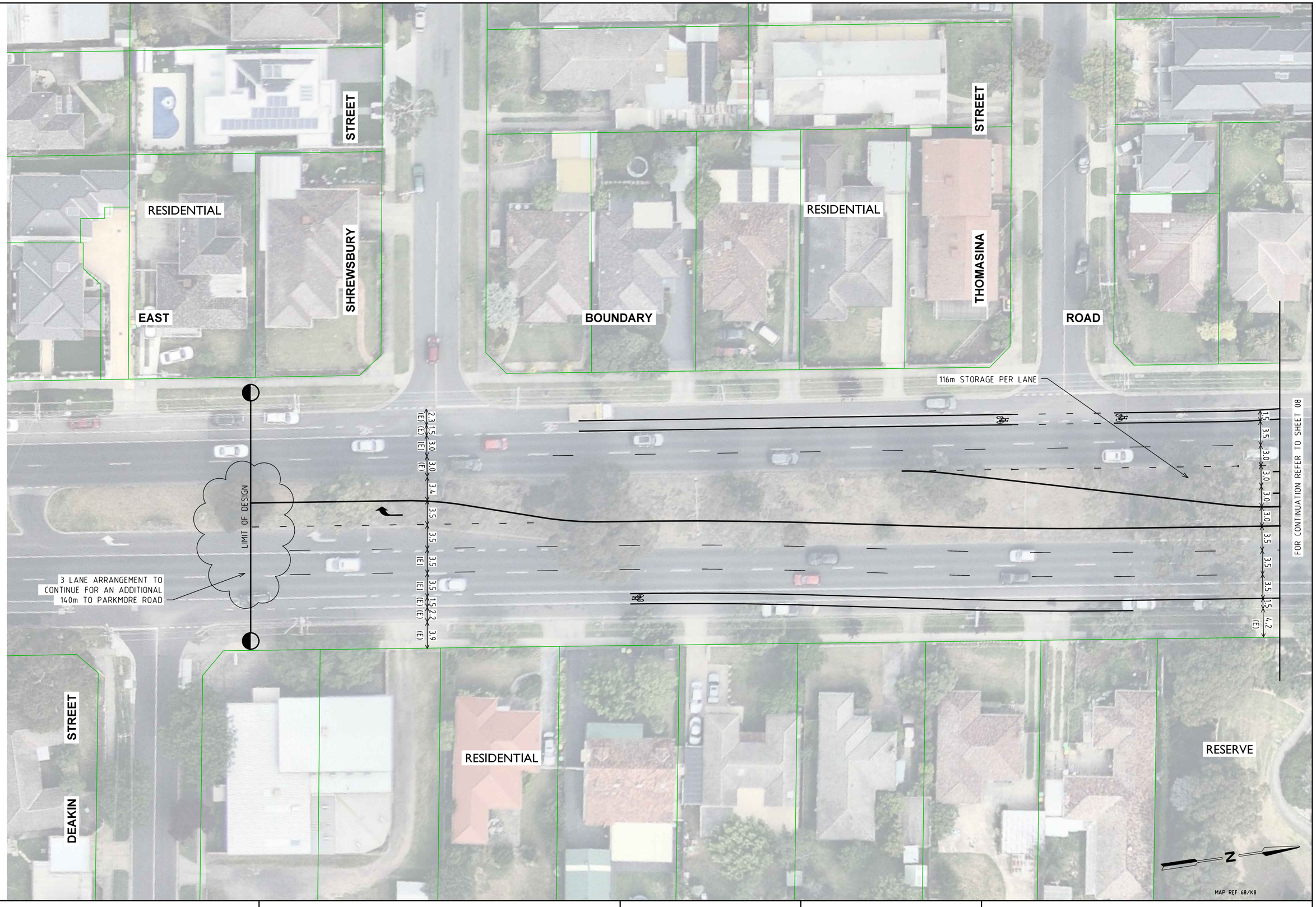

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PRELIMINARY PLAN
FOR DISCUSSION PURPOSES
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WARNING
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APPROVED BY	-
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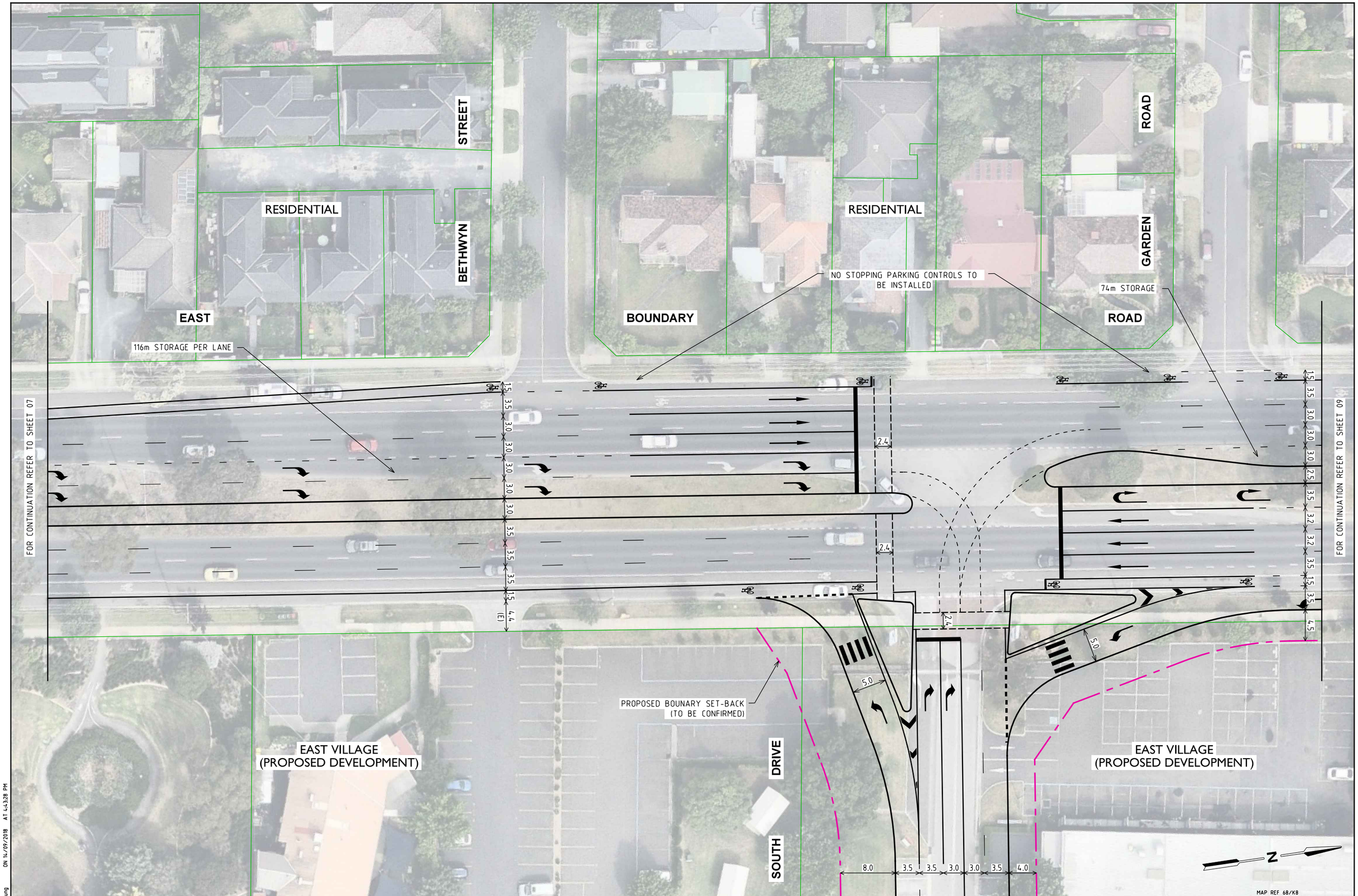
SCALE	A3
	0 5 10 1:500
CAD FILE NO.	V136080-01-F9.dgn

EAST VILLAGE DEVELOPMENT
EAST BOUNDARY ROAD AND DEAKIN STREET
SOUTH OF SOUTH DRIVE
CONCEPT FUNCTIONAL LAYOUT

DRAWING NO. V136080-01-07 SHEET 7 OF 12 ISSUE F9



PLOTTED BY : Farn-Ling Khung ON 14/09/2018 AT 4:43:28 PM

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EAST VILLAGE DEVELOPMENT
EAST BOUNDARY ROAD AND SOUTH DRIVE SIGNALISED INTERSECTION
CONCEPT FUNCTIONAL LAYOUT

DRAWING NO. V136080-01-08 SHEET 8 OF 12 ISSUE F9

RESIDENTIAL

STREET

GEORGE

EAST

BOUNDARY

ROAD

RESIDENTIAL

MAY REQUIRE RELOCATION OF EXISTING TELECOMMUNICATION ASSETS

MAY REQUIRE RELOCATIN OF EXISTING ELECTRICITY POLE

74m STORAGE

FOR CONTINUATION REFER TO SHEET 08

FOR CONTINUATION REFER TO SHEET 10

1.5 3.5 3.0 3.0 3.0 7.5

3.5 3.2 3.2 3.5 1.5 3.5 4.5

2.4

2.4

1.5 3.3 3.0 3.0 10.7

3.2 3.2 3.5 1.5

5.0 4.5

5.2 5.0

3.0 3.0 2.0 5.0 5.2

PROPOSED BOUNDARY SET-BACK (TO BE CONFIRMED)

EAST VILLAGE (PROPOSED DEVELOPMENT)

EAST VILLAGE (PROPOSED DEVELOPMENT)

DRIVE

NORTH

N

MAP REF 68/K8

PLOTTED BY : Farn-Ling Khung ON 14/09/2018 AT 4:43:29 PM

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CAD FILE NO. V136080-01-F9.dgn
SCALE A3 0 5 10 1:500

EAST VILLAGE DEVELOPMENT
EAST BOUNDARY ROAD AND NORTH DRIVE SIGNALISED INTERSECTION
CONCEPT FUNCTIONAL LAYOUT

DRAWING NO. V136080-01-09 SHEET 9 OF 12 ISSUE F9

RESIDENTIAL

RESIDENTIAL

STREET

MOLDEN

EAST

BOUNDARY

ROAD

PARKING TO BE RETAINED (APPROX. 17 SPACES)

PARKING TO BE REMOVED AND REINSTATED AS MEDIAN

CLOSURE OF MOLDEN STREET MEDIAN OPENING

FOR CONTINUATION REFER TO SHEET 09

FOR CONTINUATION REFER TO SHEET 04

3.3 1.5 3.0 3.0 3.0 3.0 5.0 3.9 3.4 1.5 2.1 (E) (E) 4.7 (E)

PROPOSED BOUNDARY SET-BACK (TO BE CONFIRMED)

EAST VILLAGE
(PROPOSED DEVELOPMENT)

N

MAP REF 68/K8

PLOTTED BY : Fern-LingKhung ON 14/09/2018 AT 4:43:30 PM

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EAST VILLAGE DEVELOPMENT
EAST BOUNDARY ROAD AND MOLDEN STREET
SOUTH OF NORTH ROAD
CONCEPT FUNCTIONAL LAYOUT

DRAWING NO. V136080-01-10 SHEET 10 OF 12 ISSUE F9

RESIDENTIAL

MURRUMBEENA

ROAD

3.0 1.5 (E) (E)

FOR CONTINUATION REFER TO SHEET 04

3.0 3.0 3.0

MATCH INTO EXISTING KERB

MATCH INTO EXISTING KERB

DUNCAN MACKINNON RESERVE

N

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EAST VILLAGE DEVELOPMENT
MURRUMBEENA ROAD
NORTH OF NORTH ROAD
CONCEPT FUNCTIONAL LAYOUT

DRAWING NO. V136080-01-11 SHEET 11 OF 12 ISSUE F9

BOUNDARY ROAD

PROPOSED ROAD

EAST

PROPOSED ROAD

NORTH DRIVE

40KM/HR DESIGN SPEED USED TO DETERMINE MINIMUM RADII IN ACCORDANCE WITH AUSTROADS PART 3.

40KM/HR DESIGN SPEED USED TO DETERMINE MINIMUM RADII IN ACCORDANCE WITH AUSTROADS PART 3.

5.0 4.5

5.2 5.0 2.0 3.0 3.0

5.0 5.2

5.0 3.65 3.65 4.7

5.0 3.65 3.65 4.7

7.5 3.0 3.0 9.5

N

MAP REF 68/K8

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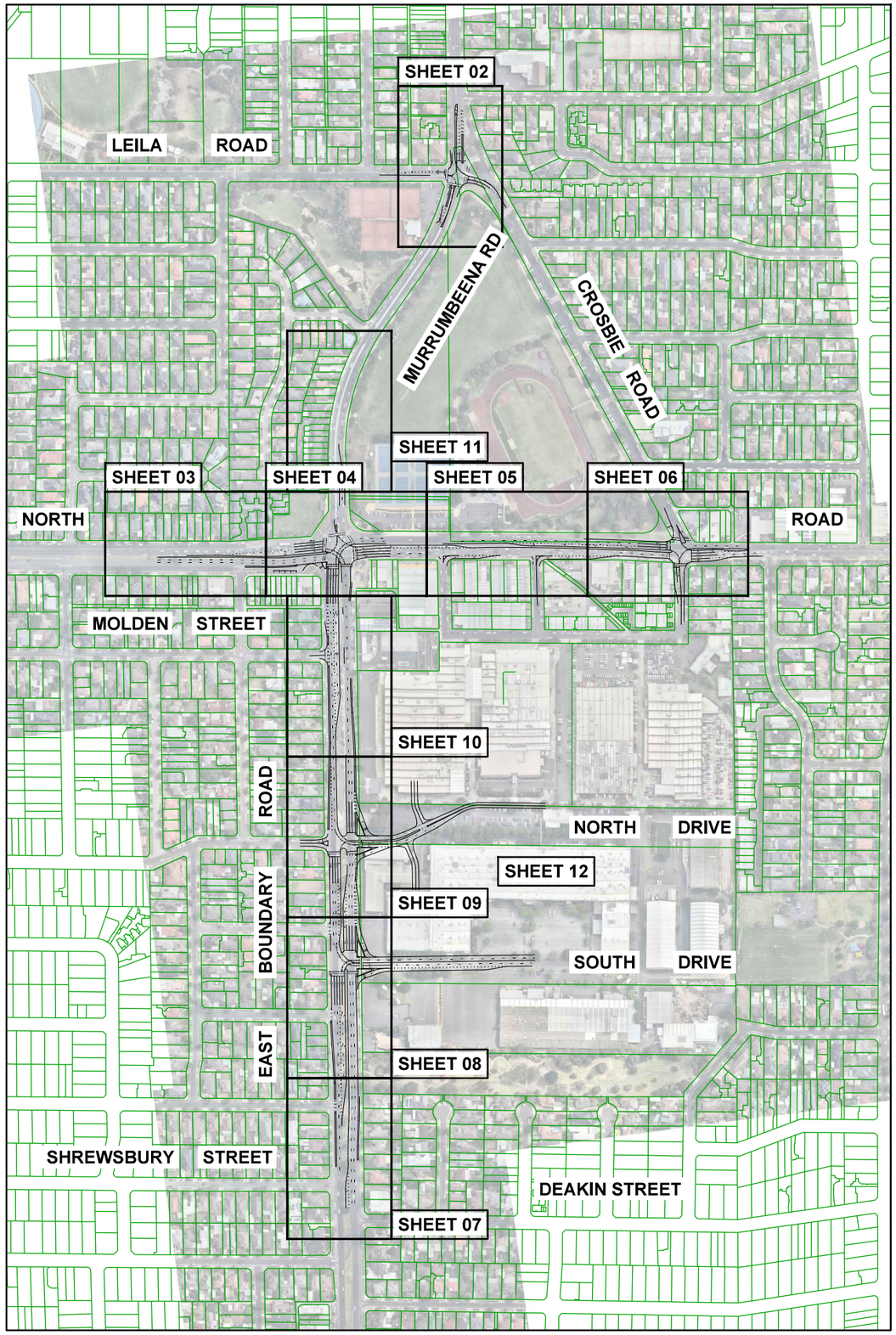
CAD FILE NO.	V136080-01-F9.dgn

EAST VILLAGE DEVELOPMENT
EAST BOUNDARY ROAD AND NORTH DRIVE NORTH DRIVE REALIGNMENT CONCEPT FUNCTIONAL LAYOUT

DRAWING NO. V136080-01-12 SHEET 12 OF 12 ISSUE F9



Victorian Planning Authority

EAST VILLAGE MIXED USE DEVELOPMENT

PROPOSED INTERSECTION AND ROADWORKS

CONCEPT FUNCTIONAL LAYOUT PLANS

SHEET SCHEDULE	
SHEET 01	COVER SHEET AND GENERAL NOTES
SHEET 02-04	MURRUMBEENA ROAD, LEILA ROAD AND CROSBIE ROAD INTERSECTION
SHEET 05-06	NORTH ROAD, MURRUMBEENA ROAD AND EAST BOUNDARY ROAD INTERSECTION
SHEET 07	NORTH ROAD (EAST OF MURRUMBEENA ROAD)
SHEET 08-10	NORTH ROAD, CROSBIE ROAD AND COBAR STREET INTERSECTION
SHEET 11-12	EAST BOUNDARY ROAD AND SOUTH DRIVE (SOUTH OF NORTH ROAD)
SHEET 13-14	EAST BOUNDARY ROAD AND NORTH DRIVE (SOUTH OF NORTH ROAD)
SHEET 15	NORTH DRIVE ALIGNMENT (EAST OF EAST BOUNDARY ROAD)
SHEET 09	EAST BOUNDARY ROAD AND NORTH DRIVE (SOUTH OF NORTH ROAD)

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GENERAL NOTES

1. ALL DIMENSIONS WITHIN THIS SET ARE BASED ON AERIAL PHOTOGRAPHY AND ARE APPROXIMATE ONLY.

N

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CAD FILE NO. V136080-AT01-F9.dgn

EAST VILLAGE DEVELOPMENT
NORTH ROAD AND MURRUMBEENA ROAD
SWEPT PATH ASSESSMENT
COVER SHEET AND GENERAL NOTES

DRAWING NO. V136080-AT01-01 SHEET 1 OF 15 ISSUE F9

PLOTTED BY : Fern-LingKhung ON 14/09/2018 AT 5:35:06 PM

B-DOUBLE 25M metres

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 20.6
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

MALLANBOOL RESERVE

MURRUMBEENA ROAD

LEILA ROAD

RESIDENTIAL

B-DOUBLE 25M AUSTROADS 2013 (4AU)

41m STORAGE

DUNCAN MACKINNON RESERVE

CROSBIE ROAD

RETAIN SERVICE ROAD ACCESS (TO BE CONFIRMED)

MAP REF 68/K8

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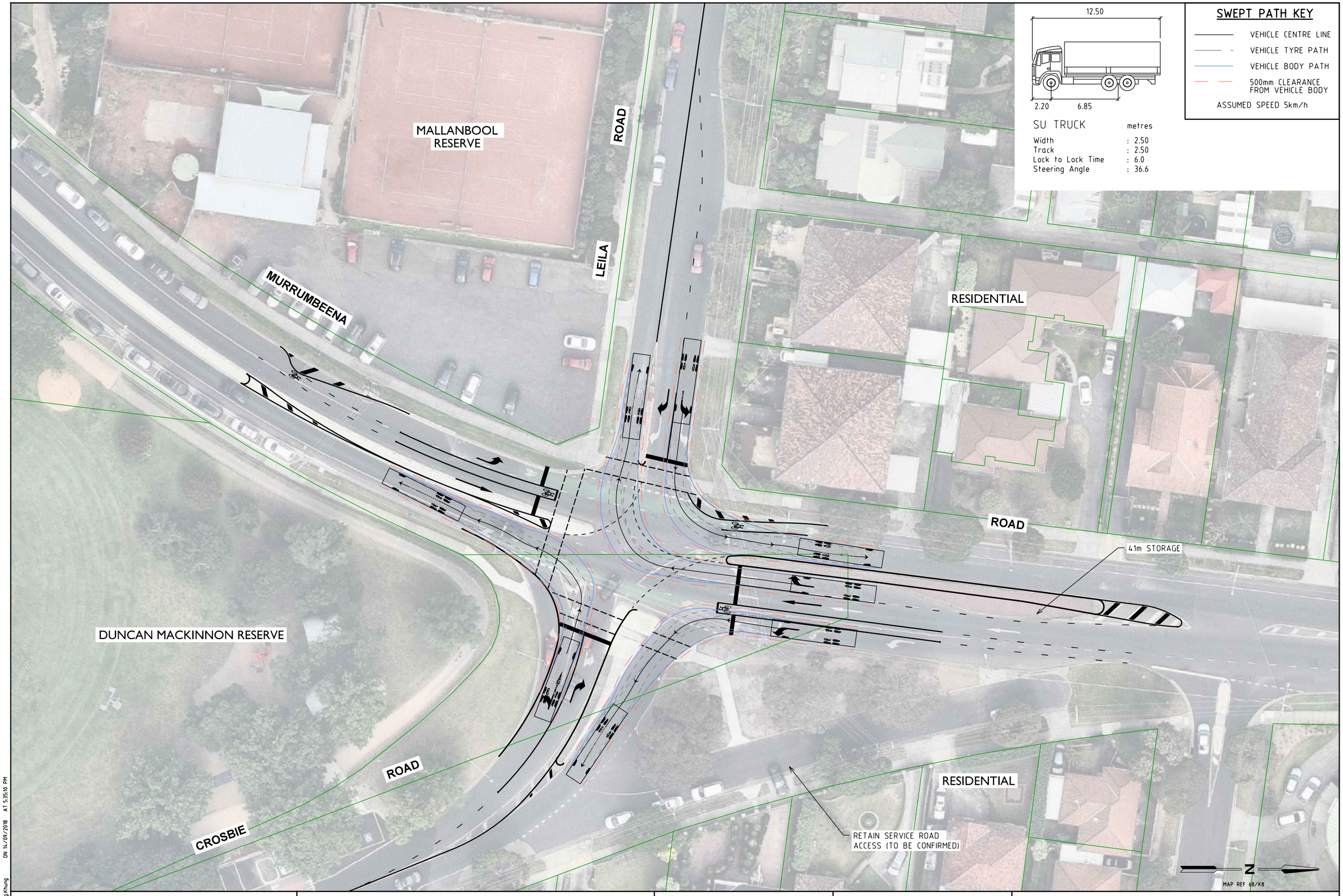
EAST VILLAGE
MURRUMBEENA RD, LEILA RD AND CROSBIE ROAD
SIGNALISED INTERSECTION
SWEPT PATH ASSESSMENT

DRAWING NO. V136080-AT01-02 SHEET 2 OF 15 ISSUE F9



SU TRUCK

	metres
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

PLOTTED BY : Fern-Ling Khung ON 14/09/2018 AT 5:35:10 PM

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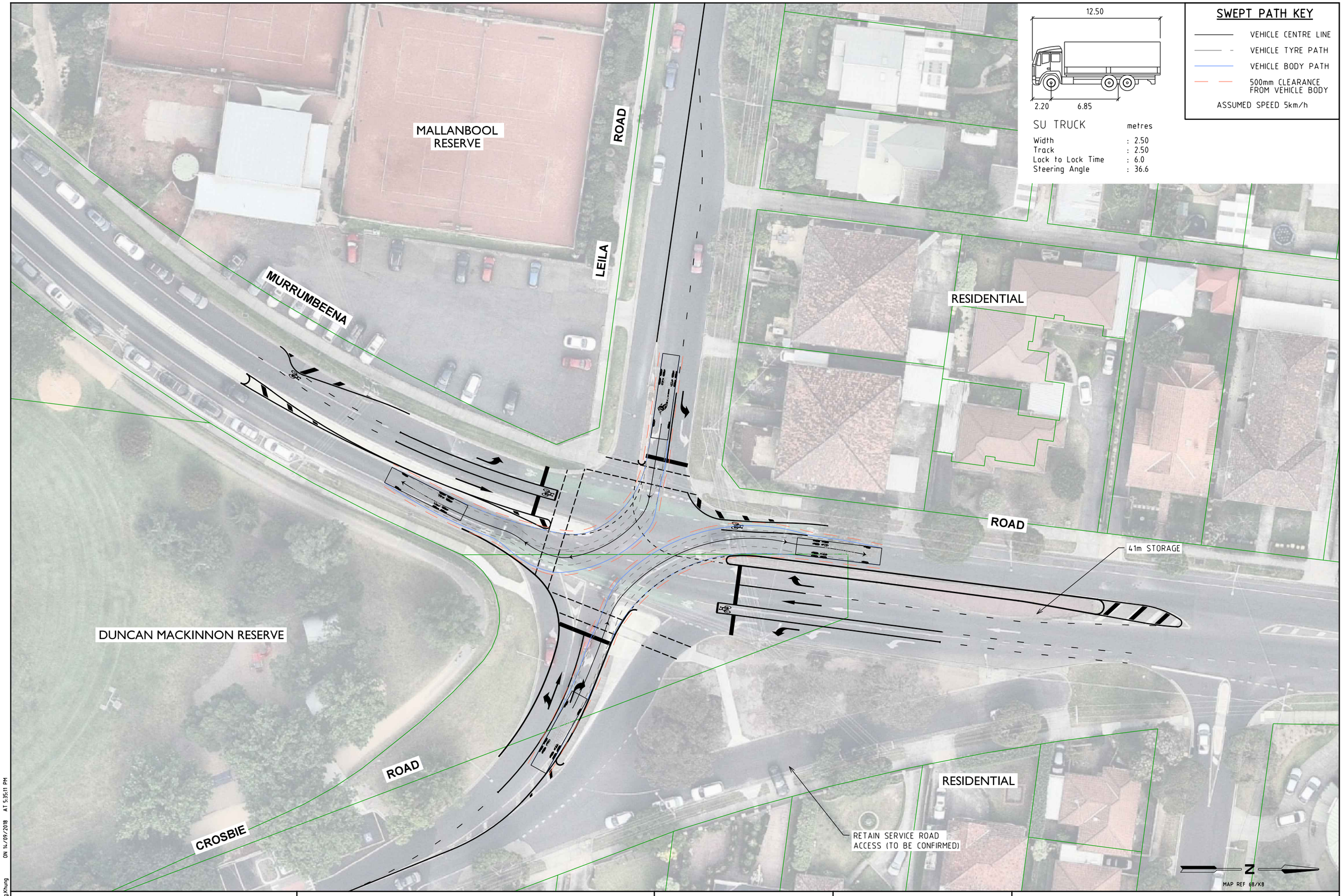
	0 5 10 1:500
CAD FILE NO.	V136080-AT01-F9.dgn

EAST VILLAGE
MURRUMBEENA RD, LEILA RD AND CROSBIE ROAD SIGNALISED INTERSECTION
SWEPT PATH ASSESSMENT

DRAWING NO. V136080-AT01-03 SHEET 3 OF 15 ISSUE F9



SU TRUCK

	metres
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

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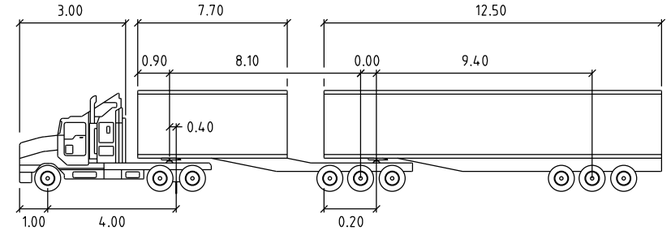
EAST VILLAGE
MURRUMBEENA RD, LEILA RD AND CROSBIE ROAD
SIGNALISED INTERSECTION
SWEPT PATH ASSESSMENT

DRAWING NO. V136080-AT01-04 SHEET 4 OF 15 ISSUE F9

DESIGN NOTES:

1. DESIGN VEHICLE - 25.0m AUSTROADS B-DOUBLE (GAZETTED B-DOUBLE ROUTE)



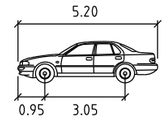
B-DOUBLE 25M metres

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 20.6
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h



PASSENGER-CAR metres

Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.6

MURRUMBEENA ROAD

PROPOSED DEVELOPMENT

NORTH

45m AND 92m STORAGE

DUNCAN MACKINNON RESERVE

ROAD

110m STORAGE

B-DOUBLE 25M AUSTROADS 2013 (4U)

EXISTING PROPOERTY BOUNDARY

150m STORAGE PER LANE

B-DOUBLE 25M AUSTROADS 2013 (4U)

COMMERCIAL

EAST BOUNDARY ROAD

EAST VILLAGE (PROPOSED DEVELOPMENT)

N

MAP REF 68/K9

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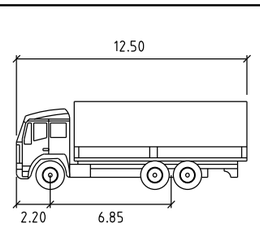
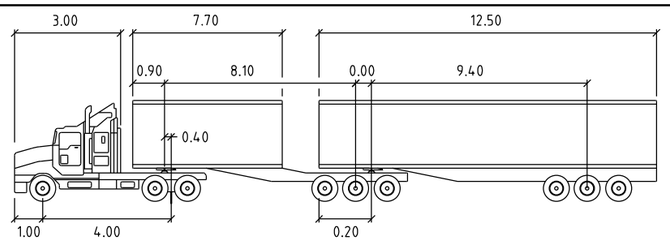
DESIGN NOTES:

1. DESIGN VEHICLE - 25.0m AUSTROADS B-DOUBLE (GAZETTED B-DOUBLE ROUTE)



SU TRUCK

	metres
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6



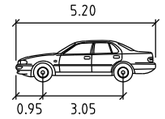
B-DOUBLE 25M

	metres		
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 20.6
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h



PASSENGER-CAR metres

Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.6

MURRUMBEENA ROAD

PROPOSED DEVELOPMENT

NORTH

45m AND 92m STORAGE

B-DOUBLE 25M AUSTROADS 2013 (AU)

PASSENGER-CAR AUSTROADS 2013 (AU)

DUNCAN MACKINNON RESERVE

ROAD

110m STORAGE

EXISTING PROPOERTY BOUNDARY

150m STORAGE PER LANE

COMMERCIAL

EAST BOUNDARY ROAD

EAST VILLAGE (PROPOSED DEVELOPMENT)

N

MAP REF 68/K9

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-	

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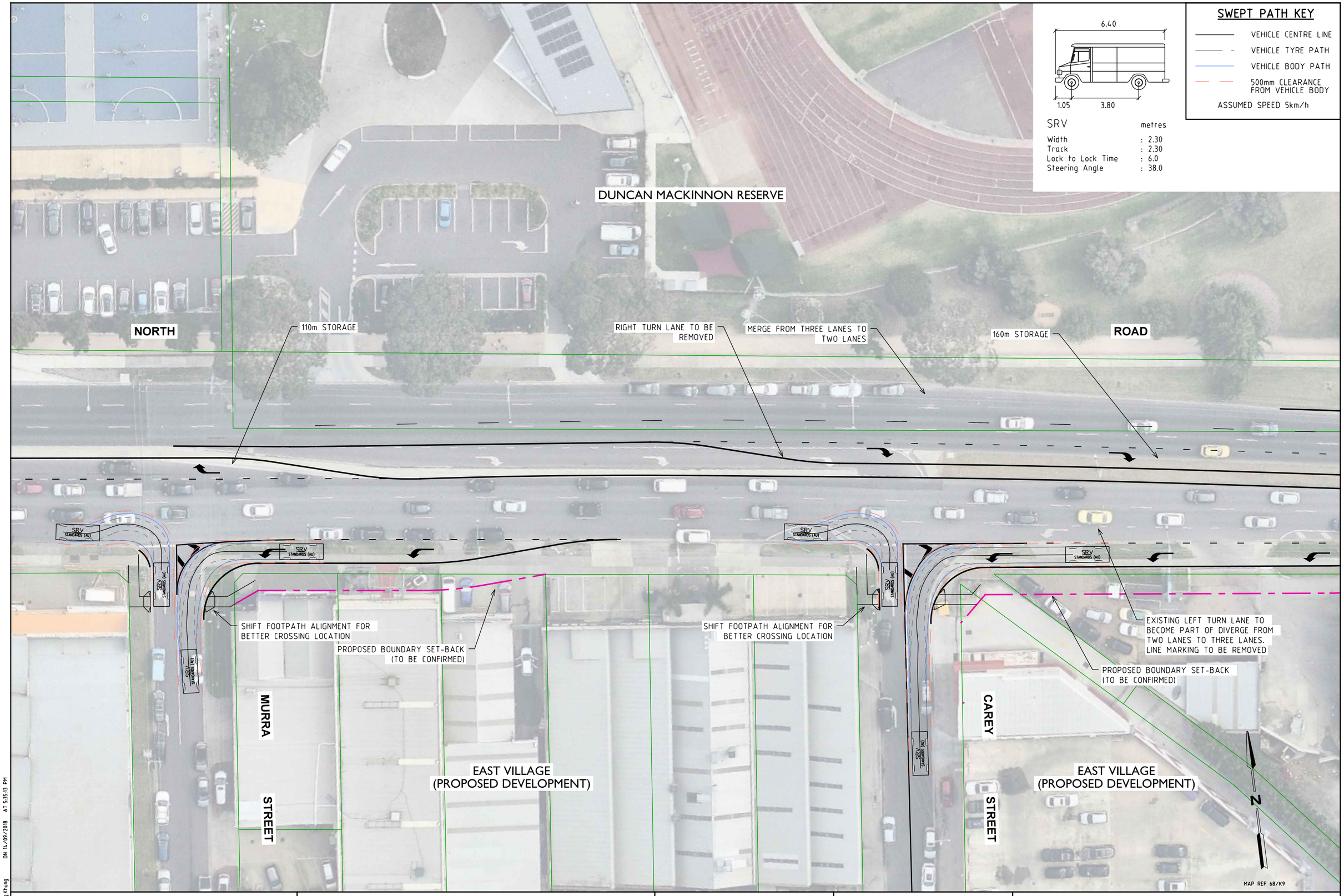

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APPROVED BY	-
DATE ISSUED	14 SEPTEMBER 2018
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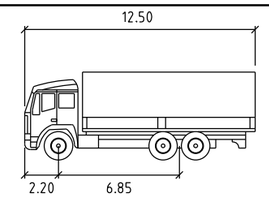
EAST VILLAGE DEVELOPMENT
NORTH ROAD
EAST OF MURRUMBEENA ROAD
SWEPT PATH ASSESSMENT

DRAWING NO. V136080-AT01-07 SHEET 7 OF 15 ISSUE F9

DESIGN NOTES:

1. DESIGN VEHICLE - 12.5m AUSTROADS SINGLE UNIT TRUCK



SU TRUCK metres

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

DUNCAN MACKINNON RESERVE

NORTH

CROSBIE ROAD

COMMERCIAL

160m STORAGE

26m STORAGE

PROPOSED BOUNDARY SET-BACK (TO BE CONFIRMED)

PROPOSED BOUNDARY SET-BACK (TO BE CONFIRMED)

EAST VILLAGE (PROPOSED DEVELOPMENT)

EXISTING PROPERTY BOUNDARY

RESIDENTIAL

COBAR STREET

EAST VILLAGE (PROPOSED DEVELOPMENT)

N

MAP REF 69/A9

PLOTTED BY : Farn-Ling.Khung ON 14/09/2018 AT 5:35:14 PM

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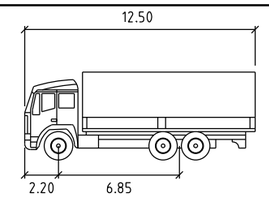
DESIGN CHECK	-
APPROVED BY	-
DATE ISSUED	14 SEPTEMBER 2018
SCALE	A3
	0 5 10 1:500
CAD FILE NO.	V136080-AT01-F9.dgn

EAST VILLAGE DEVELOPMENT
NORTH ROAD, CROSBIE ROAD AND COBAR STREET SIGNALISED INTERSECTION
SWEPT PATH ASSESSMENT

DRAWING NO. V136080-AT01-08 SHEET 8 OF 15 ISSUE F9

DESIGN NOTES:

1. DESIGN VEHICLE - 12.5m AUSTROADS SINGLE UNIT TRUCK



SU TRUCK

	metres
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

DUNCAN MACKINNON RESERVE

NORTH

CROSBIE ROAD

COMMERCIAL

ROAD

160m STORAGE

26m STORAGE

PROPOSED BOUNDARY SET-BACK (TO BE CONFIRMED)

EAST VILLAGE (PROPOSED DEVELOPMENT)

PROPOSED BOUNDARY SET-BACK (TO BE CONFIRMED)

COBAR STREET

EXISTING PROPERTY BOUNDARY

RESIDENTIAL

EAST VILLAGE (PROPOSED DEVELOPMENT)

N

MAP REF 69/A9

PLOTTED BY : Farn-Ling.Khung ON 14/09/2018 AT 5:35:15 PM

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APPROVED BY	-
DATE ISSUED	14 SEPTEMBER 2018
SCALE	A3
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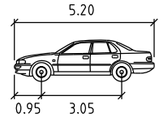
CAD FILE NO.	V136080-AT01-F9.dgn

EAST VILLAGE DEVELOPMENT
NORTH ROAD, CROSBIE ROAD AND COBAR STREET SIGNALISED INTERSECTION
SWEPT PATH ASSESSMENT

DRAWING NO. V136080-AT01-09 SHEET 9 OF 15 ISSUE F9

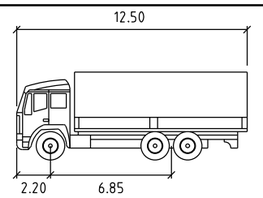
DESIGN NOTES:

1. DESIGN VEHICLE - 12.5m AUSTROADS SINGLE UNIT TRUCK



PASSENGER-CAR metres

Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.6



SU TRUCK metres

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

CROSBIE ROAD

DUNCAN MACKINNON RESERVE

NORTH

COMMERCIAL

ROAD

160m STORAGE

26m STORAGE

PROPOSED BOUNDARY SET-BACK (TO BE CONFIRMED)

PROPOSED BOUNDARY SET-BACK (TO BE CONFIRMED)

EAST VILLAGE (PROPOSED DEVELOPMENT)

EAST VILLAGE (PROPOSED DEVELOPMENT)

EXISTING PROPERTY BOUNDARY

RESIDENTIAL

COBAR STREET

N

MAP REF 69/A9

PLOTTED BY : Farn-Ling.Khung ON 14/09/2018 AT 5:35:16 PM

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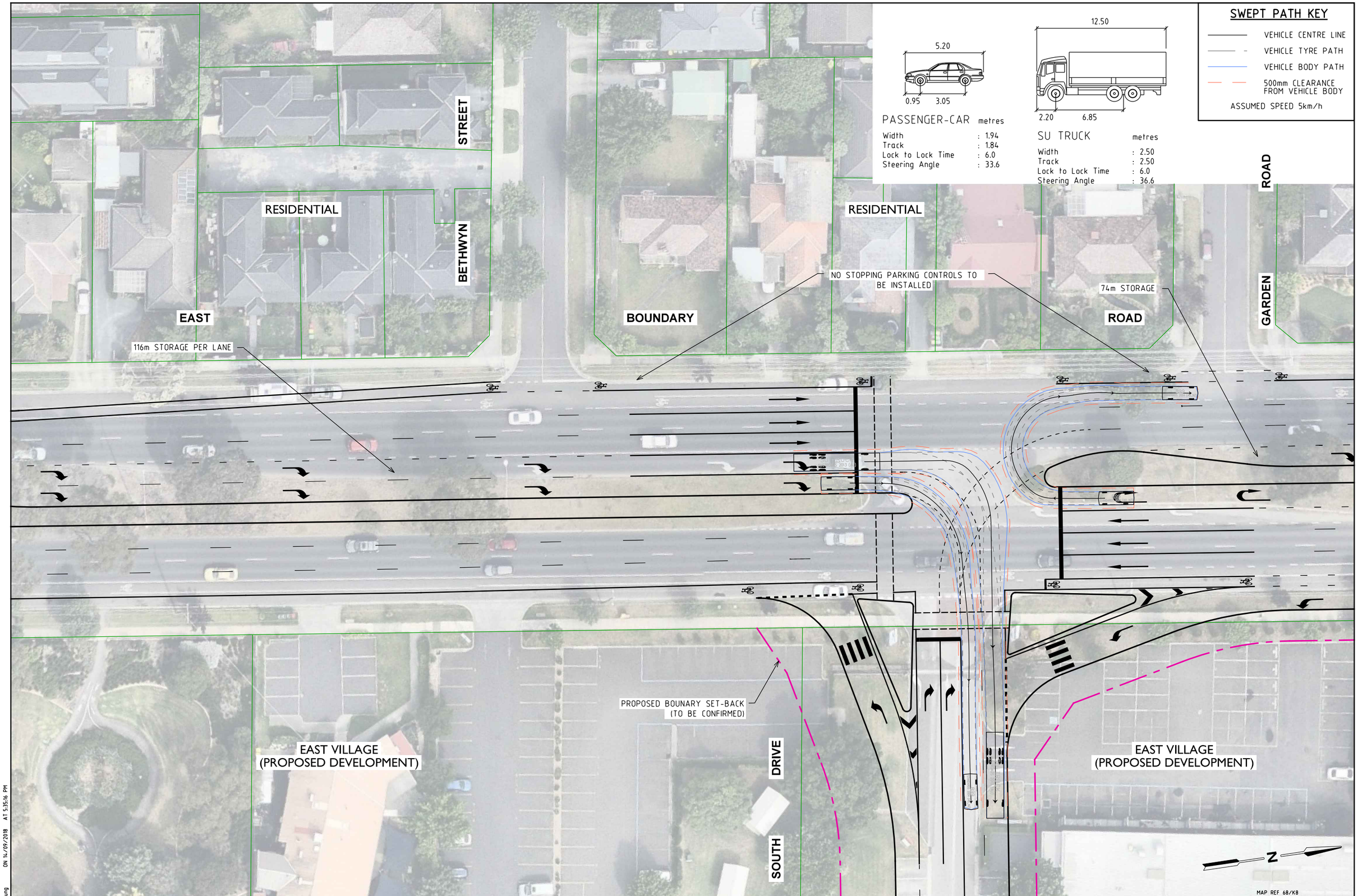
APPROVED BY -
DATE ISSUED 14 SEPTEMBER 2018

SCALE A3 0 5 10 1:500
CAD FILE NO. V136080-AT01-F9.dgn

EAST VILLAGE DEVELOPMENT
NORTH ROAD, CROSBIE ROAD AND COBAR STREET SIGNALISED INTERSECTION
SWEPT PATH ASSESSMENT

DRAWING NO. V136080-AT01-10 SHEET 10OF 15 ISSUE F9



5.20

0.95 3.05

PASSENGER-CAR metres

Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.6

12.50

2.20 6.85

SU TRUCK metres

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

PLOTTED BY : Farn-LingKhung ON 14/09/2018 AT 5:35:16 PM

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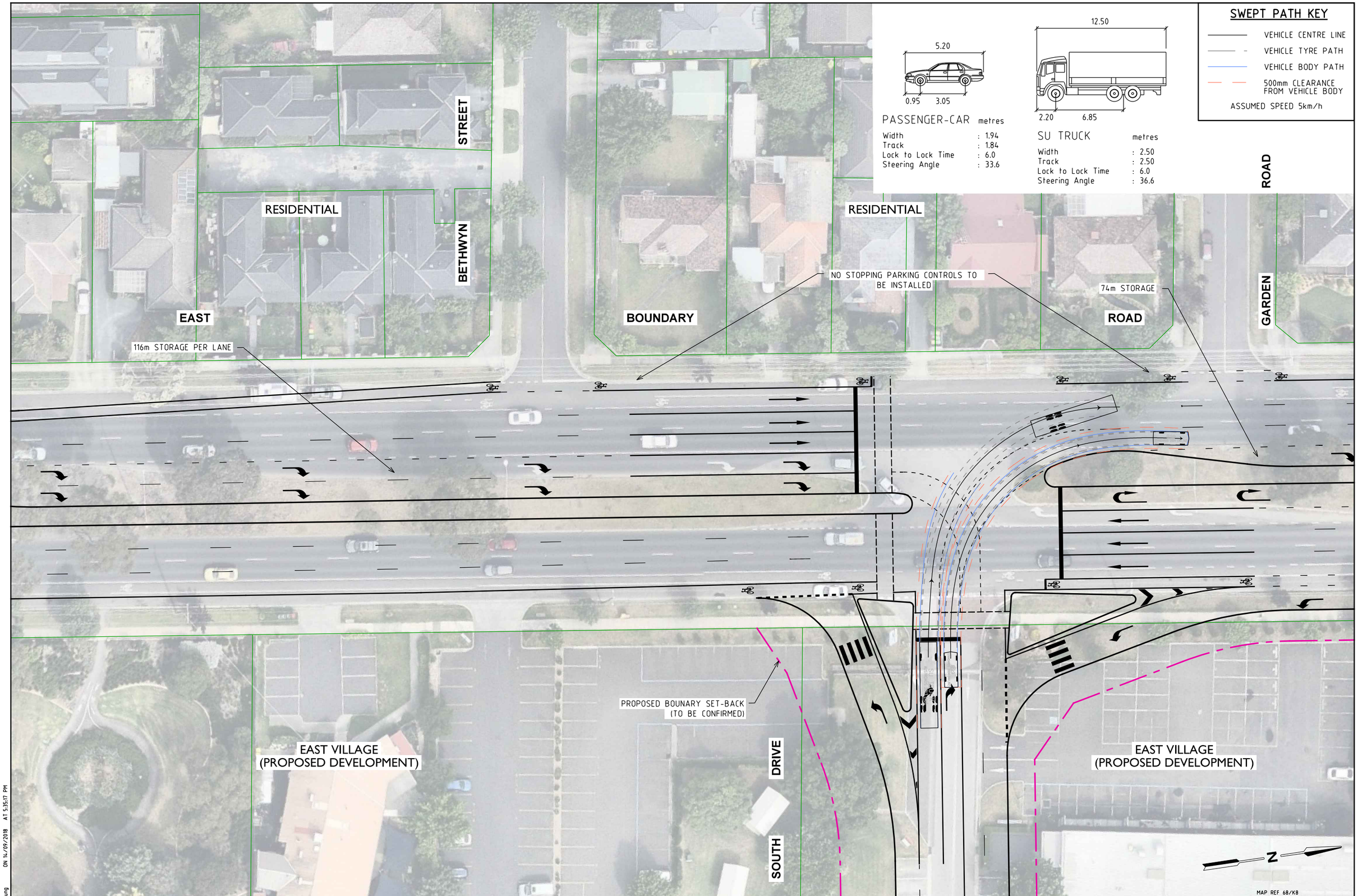
DATE ISSUED 14 SEPTEMBER 2018

SCALE A3 0 5 10 1:500
CAD FILE NO. V136080-AT01-F9.dgn

EAST VILLAGE DEVELOPMENT
EAST BOUNDARY ROAD AND SOUTH DRIVE SIGNALISED INTERSECTION
SWEPT PATH ASSESSMENT

DRAWING NO. V136080-AT01-11 SHEET 11OF 15 ISSUE F9



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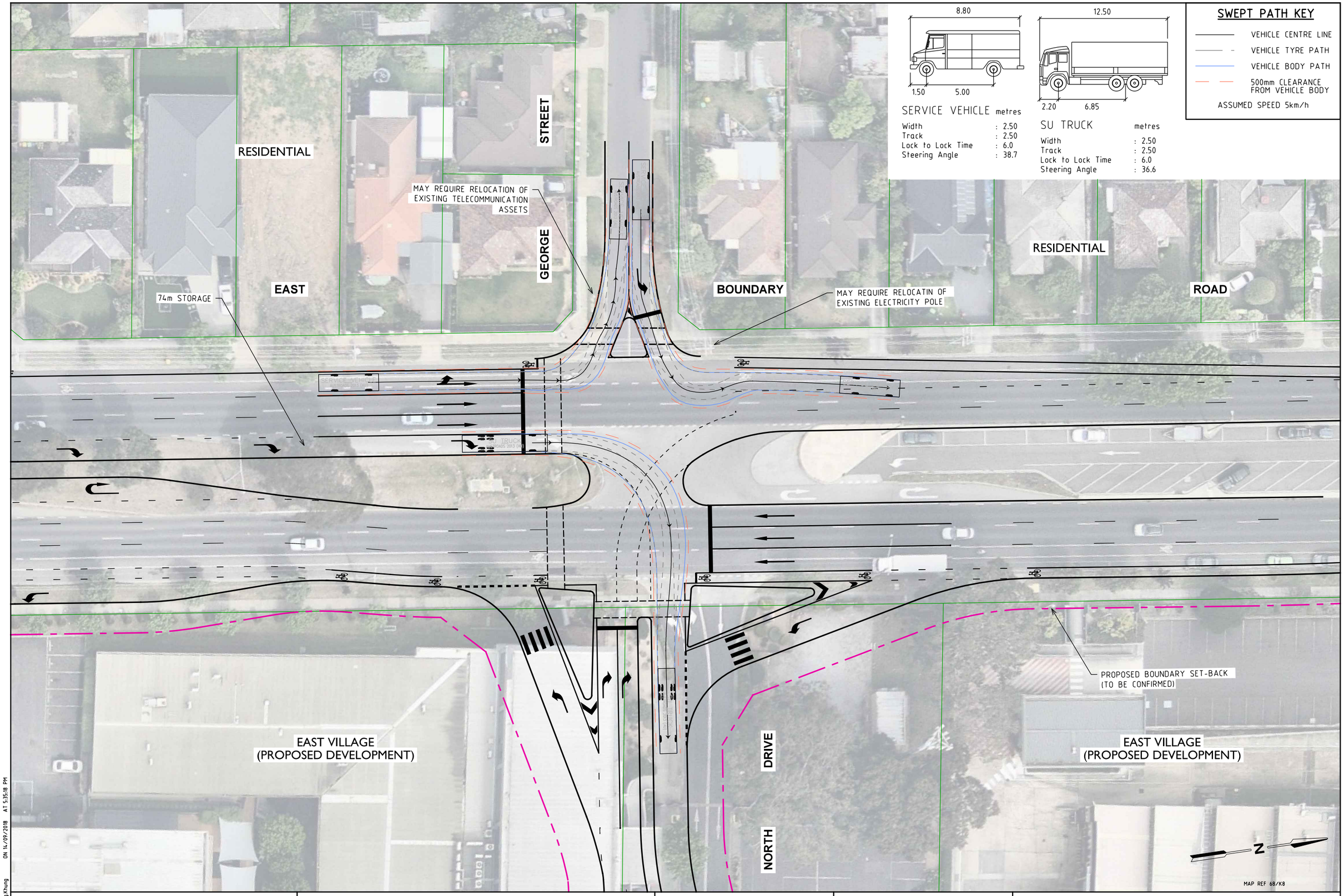
EAST VILLAGE DEVELOPMENT
EAST BOUNDARY ROAD AND SOUTH DRIVE SIGNALISED INTERSECTION
SWEPT PATH ASSESSMENT

DRAWING NO. V136080-AT01-12 SHEET 12OF 15 ISSUE F9



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DATE ISSUED 14 SEPTEMBER 2018

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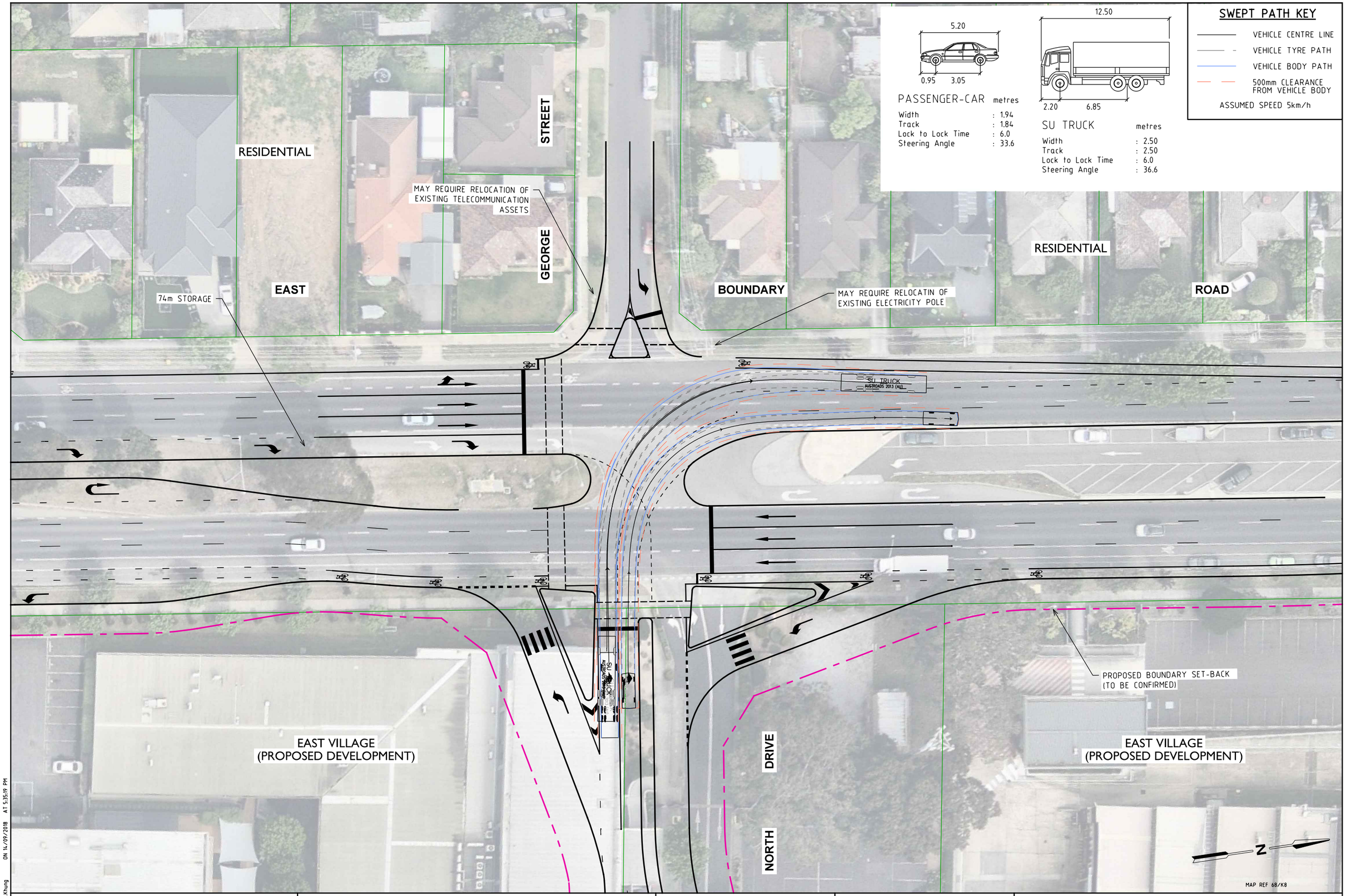
CAD FILE NO. V136080-AT01-F9.dgn

EAST VILLAGE DEVELOPMENT
EAST BOUNDARY ROAD AND NORTH DRIVE SIGNALISED INTERSECTION
SWEPT PATH ASSESSMENT

DRAWING NO. V136080-AT01-13 SHEET 13OF 15 ISSUE F9



5.20

0.95 3.05

PASSENGER-CAR metres

Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.6

12.50

2.20 6.85

SU TRUCK metres

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

PLOTTED BY : Farn-Ling.Khung ON 14/09/2018 AT 5:35:19 PM

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DATE ISSUED 14 SEPTEMBER 2018

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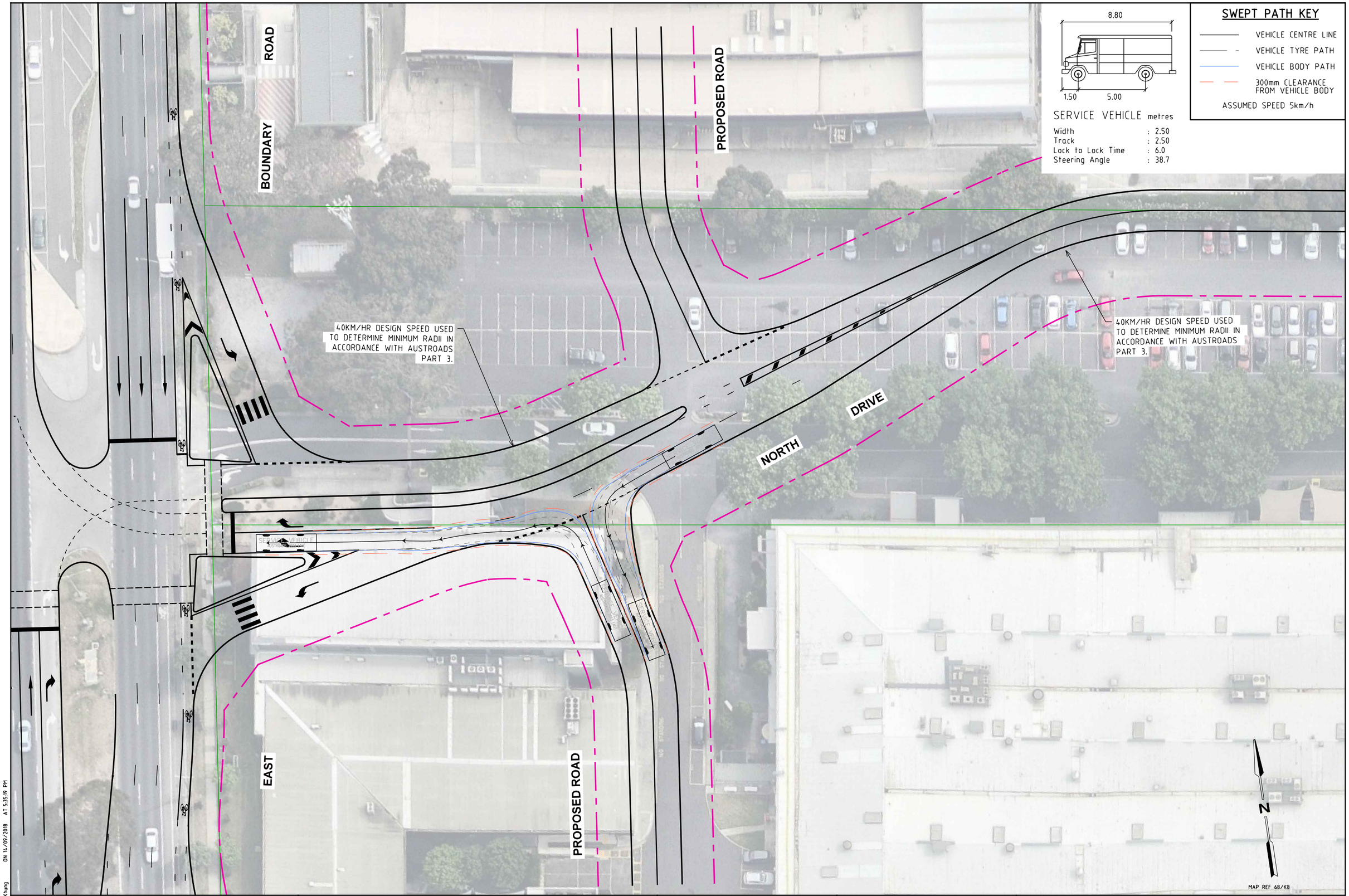
CAD FILE NO. V136080-AT01-F9.dgn

EAST VILLAGE DEVELOPMENT
EAST BOUNDARY ROAD AND NORTH DRIVE SIGNALISED INTERSECTION
SWEPT PATH ASSESSMENT

DRAWING NO. V136080-AT01-14 SHEET 14OF 15 ISSUE F9



SERVICE VEHICLE metres

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

PLOTTED BY : Fern-LingKhung ON 14/09/2018 AT 5:35:19 PM

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SCALE A3 0 5 10 1:500
CAD FILE NO. V136080-AT01-F9.dgn

EAST VILLAGE DEVELOPMENT
EAST BOUNDARY ROAD AND NORTH DRIVE
NORTH DRIVE REALIGNMENT
CONCEPT FUNCTIONAL LAYOUT

DRAWING NO. V136080-AT01-15 SHEET 15 OF 15 ISSUE F9

Appendix E

SIDRA Intersection – Post Development Results

E.1 Existing Layout

MOVEMENT SUMMARY

Site: 3560 [2. NORTH ROAD / EAST BOUNDARY ROAD / MURRUMBEENA ROAD]

Network: N101 [Master Model]

NORTH ROAD / EAST BOUNDARY ROAD / MURRUMBEENA ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 126 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
1	L2	713	2.8	573	3.5	0.595	28.0	LOS C	18.8	135.4	0.74	0.92	1.02	43.7
2	T1	837	1.5	671	1.9	1.092	128.5	LOS F	55.2	392.5	0.97	1.30	1.67	7.5
3	R2	436	1.4	349	1.8	1.067	153.4	LOS F	22.4	159.2	1.00	1.22	2.03	6.3
Approach		1985	2.0	1593 N1	2.4	1.092	97.8	LOS F	55.2	392.5	0.89	1.15	1.52	15.3
East: NORTH ROAD														
4	L2	397	2.1	372	2.3	0.590	37.6	LOS D	20.4	145.8	0.84	0.83	0.84	9.5
5	T1	1456	3.6	1366	3.9	1.133	183.5	LOS F	21.4	155.0	0.99	1.69	2.08	12.4
6	R2	58	5.5	54	5.8	0.663	75.3	LOS E	3.7	26.9	1.00	0.79	1.14	5.1
6u	U	1	0.0	1	0.0	0.663	76.5	LOS E	3.7	26.9	1.00	0.79	1.14	5.1
Approach		1912	3.4	1793 N1	3.6	1.133	149.9	LOS F	21.4	155.0	0.96	1.48	1.80	12.2
North: MURRUMBEENA ROAD														
7	L2	85	3.7	83	3.8	1.093	142.9	LOS F	42.0	299.5	1.00	1.35	1.98	8.5
8	T1	802	1.8	778	1.9	1.093	150.0	LOS F	44.5	316.7	1.00	1.45	2.00	8.7
9	R2	138	1.5	134	1.6	0.918	83.7	LOS F	9.7	68.5	1.00	1.02	1.50	27.8
Approach		1025	2.0	995 N1	2.0	1.093	140.5	LOS F	44.5	316.7	1.00	1.38	1.93	10.7
West: NORTH ROAD														
10	L2	75	4.2	75	4.2	0.886	62.2	LOS E	45.7	326.4	0.99	1.03	1.56	27.2
11	T1	1437	2.1	1437	2.1	0.886	52.7	LOS D	45.7	326.4	0.93	0.97	1.32	28.2
12	R2	320	3.3	320	3.3	1.111	183.0	LOS F	37.4	268.9	1.00	1.33	2.13	11.2
Approach		1832	2.4	1832	2.4	1.111	75.9	LOS E	45.7	326.4	0.94	1.04	1.47	22.2
All Vehicles		6754	2.5	6213 N1	2.7	1.133	113.2	LOS F	55.2	392.5	0.94	1.25	1.65	14.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	44.7	LOS E	0.2	0.2	0.84	0.84
P2	East Full Crossing	53	55.4	LOS E	0.2	0.2	0.94	0.94
P3	North Full Crossing	53	30.8	LOS D	0.1	0.1	0.70	0.70
P4	West Full Crossing	53	51.7	LOS E	0.2	0.2	0.91	0.91
All Pedestrians		211	45.6	LOS E			0.85	0.85

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3559 [10. NORTH ROAD / KOORNANG ROAD / TUCKER ROAD]

10. NORTH ROAD / KOORNAND ROAD / TUCKER ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 126 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: TUCKER ROAD												
1	L2	228	3.0	0.485	39.9	LOS D	10.6	76.5	0.81	0.79	0.81	35.6
2	T1	180	3.0	0.709	51.3	LOS D	10.3	73.7	0.94	0.81	1.02	32.8
Approach		408	3.0	0.709	44.9	LOS D	10.6	76.5	0.87	0.80	0.90	34.3
East: NORTH ROAD												
4	L2	136	3.0	0.131	18.7	LOS B	3.8	27.1	0.49	0.70	0.49	46.6
5	T1	2196	3.0	0.962	47.9	LOS D	66.5	477.4	0.79	0.91	1.02	35.8
6	R2	163	3.0	0.942	88.1	LOS F	12.2	87.9	1.00	1.04	1.54	26.6
Approach		2495	3.0	0.962	49.0	LOS D	66.5	477.4	0.79	0.90	1.03	35.5
North: KOORNANG ROAD												
7	L2	159	3.0	0.262	38.3	LOS D	7.1	50.9	0.77	0.77	0.77	38.3
8	T1	203	3.0	0.592	50.3	LOS D	11.5	82.2	0.96	0.79	0.96	33.1
Approach		362	3.0	0.592	45.1	LOS D	11.5	82.2	0.88	0.78	0.88	35.4
West: NORTH ROAD												
10	L2	94	3.0	0.090	18.4	LOS B	2.5	18.2	0.48	0.69	0.48	45.1
11	T1	1647	3.0	0.696	18.6	LOS B	29.4	210.8	0.70	0.64	0.70	47.5
12	R2	57	3.0	0.328	65.0	LOS E	3.4	24.3	0.97	0.75	0.97	28.7
Approach		1798	3.0	0.696	20.1	LOS C	29.4	210.8	0.70	0.64	0.70	46.6
All Vehicles		5063	3.0	0.962	38.1	LOS D	66.5	477.4	0.77	0.79	0.89	38.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	14.8	LOS B	0.1	0.1	0.49	0.49
P2	East Full Crossing	53	57.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	3.8	LOS A	0.0	0.0	0.25	0.25
P4	West Full Crossing	53	57.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	33.3	LOS D			0.66	0.66

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: P:\V13600-13699\V136080 East Village - Integrated Transp\Modelling\SIDRA\180920-Updates\180427 SIDRA Network - Future AM - Existing Layout - Post Dev No Growth.sip8

MOVEMENT SUMMARY

Site: 3561 [6. NORTH ROAD / POATH ROAD / POET ROAD]

Network: N101 [Master Model]

NORTH ROAD / POATH ROAD / POET ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: POET ROAD														
1	L2	111	2.9	111	2.9	0.863	70.1	LOS E	16.7	119.8	1.00	1.00	1.26	16.0
2	T1	16	0.0	16	0.0	0.863	66.6	LOS E	16.7	119.8	1.00	1.00	1.26	25.1
3	R2	111	2.9	111	2.9	0.863	70.1	LOS E	16.7	119.8	1.00	1.00	1.26	25.2
Approach		237	2.7	237	2.7	0.863	69.8	LOS E	16.7	119.8	1.00	1.00	1.26	21.4
East: NORTH ROAD														
4	L2	49	2.1	49	2.1	0.878	28.3	LOS C	55.8	402.7	0.88	0.85	0.91	39.1
5	T1	1653	3.7	1653	3.7	0.878	23.4	LOS C	55.8	402.7	0.75	0.75	0.82	37.0
6	R2	111	2.9	111	2.9	0.658	34.3	LOS C	4.6	33.0	0.96	0.84	1.04	39.5
Approach		1813	3.6	1813	3.6	0.878	24.2	LOS C	55.8	402.7	0.76	0.76	0.83	37.4
North: POATH ROAD														
7	L2	161	3.3	161	3.3	0.379	40.0	LOS D	8.4	60.6	0.86	0.78	0.86	33.7
8	T1	17	0.0	17	0.0	0.379	35.4	LOS D	8.4	60.6	0.86	0.78	0.86	32.5
9	R2	76	2.8	76	2.8	0.299	56.5	LOS E	4.3	30.8	0.92	0.76	0.92	19.9
Approach		254	2.9	254	2.9	0.379	44.6	LOS D	8.4	60.6	0.88	0.77	0.88	29.9
West: NORTH ROAD														
10	L2	57	3.7	53	3.8	0.775	28.7	LOS C	40.9	291.7	0.83	0.77	0.83	47.6
11	T1	1733	2.1	1615	2.2	0.775	21.8	LOS C	40.9	291.7	0.81	0.75	0.81	51.5
12	R2	12	0.0	11	0.0	0.142	56.3	LOS E	0.6	4.3	0.85	0.72	0.85	31.4
Approach		1801	2.2	1679[N1]	2.2	0.775	22.2	LOS C	40.9	291.7	0.81	0.75	0.81	51.2
All Vehicles		4104	2.9	3982[N1]	3.0	0.878	27.4	LOS C	55.8	402.7	0.81	0.77	0.85	41.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	8.9	LOS A	0.1	0.1	0.37	0.37
P2	East Full Crossing	53	48.4	LOS E	0.2	0.2	0.86	0.86
P3	North Full Crossing	53	14.8	LOS B	0.1	0.1	0.48	0.48
P4	West Full Crossing	53	48.4	LOS E	0.2	0.2	0.86	0.86
All Pedestrians		211	30.1	LOS D			0.64	0.64

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1209 [5. EAST BOUNDARY ROAD / ARDENA COURT]

Network: N101 [Master Model]

EAST BOUNDARY ROAD / ARDENA COURT
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 117 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
1	L2	25	4.2	25	4.2	0.022	15.2	LOS B	0.5	3.9	0.40	0.66	0.40	42.4
2	T1	1828	2.4	1828	2.4	0.782	16.7	LOS B	37.3	266.1	0.78	0.72	0.78	42.8
3	R2	52	2.0	52	2.0	0.549	69.4	LOS E	3.1	22.1	1.00	0.76	1.04	26.0
Approach		1905	2.4	1905	2.4	0.782	18.1	LOS B	37.3	266.1	0.78	0.72	0.78	41.4
East: ARDENA COURT														
4	L2	37	2.9	37	2.9	0.079	37.9	LOS D	1.6	11.6	0.78	0.69	0.78	32.2
5	T1	1	0.0	1	0.0	0.079	34.5	LOS C	1.6	11.6	0.78	0.69	0.78	28.3
6	R2	39	2.7	39	2.7	0.151	48.5	LOS D	1.9	13.8	0.89	0.72	0.89	19.6
Approach		77	2.7	77	2.7	0.151	43.3	LOS D	1.9	13.8	0.84	0.70	0.84	26.3
North: EAST BOUNDARY ROAD														
7	L2	5	0.0	5	0.0	0.004	15.0	LOS B	0.1	0.7	0.39	0.64	0.39	38.1
8	T1	1536	2.1	1481	2.0	0.621	14.2	LOS B	25.5	181.6	0.66	0.61	0.66	51.7
9	R2	8	0.0	8	0.0	0.085	66.1	LOS E	0.5	3.3	0.98	0.66	0.98	22.4
Approach		1549	2.0	1495 N1	2.0	0.621	14.5	LOS B	25.5	181.6	0.66	0.61	0.66	51.3
West: ARDENA COURT														
10	L2	9	0.0	9	0.0	0.082	46.0	LOS D	1.1	7.7	0.86	0.69	0.86	20.2
11	T1	1	0.0	1	0.0	0.082	42.6	LOS D	1.1	7.7	0.86	0.69	0.86	26.7
12	R2	13	0.0	13	0.0	0.082	45.9	LOS D	1.1	7.7	0.86	0.69	0.86	30.5
Approach		23	0.0	23	0.0	0.082	45.8	LOS D	1.1	7.7	0.86	0.69	0.86	26.7
All Vehicles		3555	2.2	3500 N1	2.3	0.782	17.3	LOS B	37.3	266.1	0.73	0.67	0.73	45.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	52.8	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	11.1	LOS B	0.1	0.1	0.44	0.44
P3	North Full Crossing	53	52.8	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	10.3	LOS B	0.1	0.1	0.42	0.42
All Pedestrians		211	31.7	LOS D			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 103a [3a (east). EAST BOUNDARY ROAD / NORTH DRIVE]

Network: N101 [Master Model]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
3	R2	240	0.4	215	0.5	0.797	34.8	LOS D	5.3	37.3	0.95	1.32	2.27	6.1
3u	U	11	0.0	9	0.0	0.797	47.7	LOS E	5.3	37.3	0.95	1.32	2.27	4.8
Approach		251	0.4	224[N1]	0.5	0.797	35.4	NA	5.3	37.3	0.95	1.32	2.27	6.1
East: NORTH DRIVE														
4	L2	265	0.8	265	0.8	0.261	8.0	LOS A	1.2	8.7	0.55	0.73	0.55	47.7
5	T1	272	0.0	272	0.0	2.764	1609.8	LOS F	113.4	793.8	1.00	7.30	26.09	1.1
Approach		537	0.4	537	0.4	2.764	818.3	LOS F	113.4	793.8	0.78	4.06	13.47	2.2
North: EAST BOUNDARY ROAD														
7	L2	197	1.1	180	1.1	0.361	3.5	LOS A	0.0	0.0	0.00	0.15	0.00	55.4
8	T1	1307	2.4	1197	2.5	0.361	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	53.3
Approach		1504	2.2	1378[N1]	2.3	0.361	0.5	NA	0.0	0.0	0.00	0.07	0.00	54.6
West: MEDIAN														
11	T1	8	0.0	8	0.0	1.852	861.7	LOS F	4.1	29.8	1.00	2.02	5.57	1.9
12	R2	56	3.8	56	3.8	1.852	909.0	LOS F	4.1	29.8	1.00	2.02	5.57	0.1
Approach		64	3.3	64	3.3	1.852	902.8	LOS F	4.1	29.8	1.00	2.02	5.57	0.3
All Vehicles		2356	1.7	2203[N1]	1.8	2.764	229.6	NA	113.4	793.8	0.32	1.23	3.68	3.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [1. MURRUMBEENA ROAD / LEILA ROAD]

Network: N101 [Master Model]

MURRUMBEENA ROAD / LEILA ROAD
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: MURRUMBEENA ROAD														
1	L2	75	1.4	61	1.6	0.433	5.6	LOS A	0.0	0.0	0.00	0.04	0.00	57.7
2	T1	940	1.6	771	1.8	0.433	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	59.5
Approach		1015	1.6	832 N1	1.8	0.433	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
East: LEILA ROAD														
4	L2	58	9.1	38	13.5	0.119	15.4	LOS C	0.4	2.9	0.76	0.90	0.76	40.4
5	T1	28	0.0	18	0.0	2.716	1647.4	LOS F	36.7	263.0	1.00	2.08	5.88	2.0
6	R2	87	2.4	56	3.7	2.716	1671.8	LOS F	36.7	263.0	1.00	2.08	5.88	2.0
Approach		174	4.2	112 N1	6.5	2.716	1101.1	LOS F	36.7	263.0	0.92	1.67	4.13	2.5
North: MURRUMBEENA ROAD														
7	L2	47	6.7	47	6.7	0.027	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	50.9
8	T1	906	1.2	906	1.2	0.471	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	58	0.0	58	0.0	0.079	9.9	LOS A	0.3	2.4	0.64	0.79	0.64	46.9
Approach		1012	1.4	1012	1.4	0.471	0.9	NA	0.3	2.4	0.04	0.07	0.04	57.7
West: LEILA ROAD														
10	L2	95	1.1	95	1.1	0.169	10.0	LOS A	0.6	4.5	0.62	0.82	0.62	46.4
12	R2	39	0.0	39	0.0	1.347	546.6	LOS F	10.6	74.0	1.00	1.62	3.45	3.0
Approach		134	0.8	134	0.8	1.347	166.3	LOS F	10.6	74.0	0.73	1.05	1.45	13.3
All Vehicles		2334	1.6	2090 N1	1.8	2.716	70.4	NA	36.7	263.0	0.11	0.21	0.33	22.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 104a [4a (east). EAST BOUNDARY ROAD / SOUTH DRIVE]

Network: N101 [Master Model]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
3	R2	284	0.4	284	0.4	1.356	360.6	LOS F	31.9	223.7	1.00	4.02	13.10	4.7
3u	U	134	3.1	134	3.1	1.089	185.5	LOS F	14.1	101.4	1.00	1.97	4.98	2.0
Approach		418	1.3	418	1.3	1.356	304.6	NA	31.9	223.7	1.00	3.36	10.51	4.2
East: NORTH DRIVE														
4	L2	254	0.0	254	0.0	0.383	10.9	LOS B	1.9	13.4	0.63	0.91	0.83	44.3
5	T1	275	0.0	275	0.0	3.326	2125.7	LOS F	129.3	904.9	1.00	4.66	16.69	0.9
Approach		528	0.0	528	0.0	3.326	1110.5	LOS F	129.3	904.9	0.82	2.86	9.07	1.6
North: EAST BOUNDARY ROAD														
7	L2	276	0.0	255	0.0	0.396	5.5	LOS A	0.0	0.0	0.00	0.20	0.00	54.7
8	T1	1361	2.5	1258	2.4	0.396	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	54.4
Approach		1637	2.1	1513[N1]	2.0	0.396	0.9	NA	0.0	0.0	0.00	0.10	0.00	54.6
All Vehicles		2583	1.5	2459[N1]	1.6	3.326	291.0	NA	129.3	904.9	0.35	1.25	3.73	3.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 107 [7. NORTH ROAD / CROSBIE ROAD / COBAR STREET]

Network: N101 [Master Model]

NORTH ROAD / CROSBIE ROAD / COBAR STREET
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: COBAR STREET														
1	L2	133	0.0	133	0.0	20.593	17687.7	LOS F	143.4	1004.0	1.00	2.41	6.36	0.1
1a	L1	65	0.0	65	0.0	20.593	17708.4	LOS F	143.4	1004.0	1.00	2.41	6.36	0.1
3	R2	106	1.0	106	1.0	17.719	15142.0	LOS F	94.2	665.3	1.00	1.60	3.37	0.1
Approach		304	0.4	304	0.4	20.593	16802.5	LOS F	143.4	1004.0	1.00	2.13	5.31	0.1
East: NORTH ROAD														
4	L2	146	1.4	146	1.4	0.830	6.0	LOS A	47.6	343.4	0.00	0.06	0.00	57.4
5	T1	1792	3.8	1792	3.8	0.830	12.3	LOS B	47.6	343.4	0.20	0.04	0.42	45.9
6a	R1	72	7.4	72	7.4	1.000	159.6	LOS F	5.5	41.0	1.00	1.42	2.89	12.5
Approach		2009	3.7	2009	3.7	1.000	17.1	NA	47.6	343.4	0.22	0.09	0.48	43.0
NorthWest: CROSBIE ROAD														
27a	L1	57	7.4	57	7.4	0.846	150.6	LOS F	3.8	28.3	0.99	1.20	1.86	10.3
29b	R3	2	0.0	2	0.0	0.909	1915.1	LOS F	1.9	13.6	1.00	1.02	1.13	1.0
Approach		59	7.1	59	7.1	0.909	213.6	LOS F	3.8	28.3	0.99	1.19	1.84	7.7
West: NORTH ROAD														
10b	L3	23	9.1	22	9.3	0.014	7.5	LOS A	0.0	0.0	0.00	0.64	0.00	38.4
11	T1	1738	2.1	1656	2.1	0.839	5.1	LOS A	3.4	24.3	0.03	0.16	0.03	43.6
12	R2	180	0.6	171	0.6	5.936	4501.4	LOS F	53.0	372.8	1.00	2.30	7.91	0.5
Approach		1941	2.0	1849 N1	2.1	5.936	421.9	NA	53.0	372.8	0.12	0.37	0.76	1.7
All Vehicles		4314	2.8	4222 N1	2.8	20.593	1406.7	NA	143.4	1004.0	0.24	0.37	0.97	1.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 3560 [2. NORTH ROAD / EAST BOUNDARY ROAD / MURRUMBEENA ROAD]

Network: N101 [Master Model]

NORTH ROAD / EAST BOUNDARY ROAD / MURRUMBEENA ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 128 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
1	L2	559	0.4	445	0.4	0.385	18.4	LOS B	11.8	83.0	0.53	0.78	0.66	49.8
2	T1	814	0.2	648	0.3	1.084	108.5	LOS F	31.6	221.5	1.00	1.17	1.60	8.8
3	R2	312	0.6	249	0.8	1.078	158.9	LOS F	13.1	92.4	1.00	1.20	2.10	6.1
Approach		1685	0.4	1342 N1	0.4	1.084	87.9	LOS F	31.6	221.5	0.84	1.05	1.38	16.2
East: NORTH ROAD														
4	L2	345	0.3	316	0.3	0.736	52.5	LOS D	22.1	155.0	0.98	0.86	0.98	7.2
5	T1	1347	0.8	1233	0.9	1.145	187.2	LOS F	22.1	155.0	1.00	1.61	2.08	12.1
6	R2	54	0.0	49	0.0	0.835	80.1	LOS F	5.3	37.1	1.00	0.90	1.38	4.8
6u	U	29	0.0	27	0.0	0.835	81.4	LOS F	5.3	37.1	1.00	0.90	1.38	4.8
Approach		1775	0.7	1625 N1	0.7	1.145	156.1	LOS F	22.1	155.0	0.99	1.43	1.83	11.7
North: MURRUMBEENA ROAD														
7	L2	106	1.9	101	1.9	0.812	65.0	LOS E	22.6	159.5	1.00	0.97	1.44	19.4
8	T1	745	0.4	712	0.4	1.160	155.6	LOS F	58.1	408.4	1.00	1.45	1.96	9.2
9	R2	136	0.7	130	0.8	0.900	82.3	LOS F	9.3	65.7	1.00	0.99	1.45	28.1
Approach		987	0.6	943 N1	0.6	1.160	135.8	LOS F	58.1	408.4	1.00	1.34	1.83	12.0
West: NORTH ROAD														
10	L2	107	3.7	107	3.7	0.127	17.3	LOS B	4.0	28.9	0.51	0.61	0.51	49.0
11	T1	1335	1.9	1335	1.9	0.848	26.5	LOS C	42.5	302.4	0.79	0.73	0.81	40.1
12	R2	548	0.4	548	0.4	1.180	238.5	LOS F	77.5	543.9	1.00	1.47	2.36	8.9
Approach		1990	1.6	1990	1.6	1.180	84.4	LOS F	77.5	543.9	0.83	0.93	1.22	20.5
All Vehicles		6437	0.9	5900 N1	0.9	1.180	113.2	LOS F	77.5	543.9	0.91	1.16	1.52	15.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	55.4	LOS E	0.2	0.2	0.93	0.93
P2	East Full Crossing	53	58.3	LOS E	0.2	0.2	0.96	0.96
P3	North Full Crossing	53	25.1	LOS C	0.1	0.1	0.63	0.63
P4	West Full Crossing	53	58.3	LOS E	0.2	0.2	0.96	0.96
All Pedestrians		211	49.3	LOS E			0.87	0.87

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3559 [10. NORTH ROAD / KOORNANG ROAD / TUCKER ROAD PM]

10. NORTH ROAD / KOORNAND ROAD / TUCKER ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 126 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: TUCKER ROAD												
1	L2	191	1.1	0.389	39.8	LOS D	8.8	61.9	0.80	0.78	0.80	35.7
2	T1	198	1.1	0.864	63.7	LOS E	12.9	91.3	0.98	0.97	1.29	29.5
Approach		388	1.1	0.864	52.0	LOS D	12.9	91.3	0.89	0.88	1.05	32.2
East: NORTH ROAD												
4	L2	193	1.1	0.180	18.7	LOS B	5.4	38.4	0.50	0.71	0.50	46.6
5	T1	1969	0.5	0.814	19.1	LOS B	33.5	235.3	0.70	0.65	0.71	47.3
6	R2	173	1.2	0.844	73.1	LOS E	11.6	81.8	1.00	0.93	1.27	29.3
Approach		2335	0.6	0.844	23.0	LOS C	33.5	235.3	0.71	0.67	0.74	45.2
North: KOORNANG ROAD												
7	L2	201	1.0	0.335	40.0	LOS D	9.3	65.7	0.80	0.79	0.80	37.8
8	T1	197	1.1	0.641	53.3	LOS D	11.4	80.7	0.98	0.81	0.98	32.2
Approach		398	1.1	0.641	46.6	LOS D	11.4	80.7	0.89	0.80	0.89	35.0
West: NORTH ROAD												
10	L2	99	1.1	0.093	17.9	LOS B	2.6	18.6	0.47	0.69	0.47	45.4
11	T1	1933	1.7	0.856	23.5	LOS C	39.6	281.4	0.75	0.72	0.79	45.1
12	R2	169	1.2	0.829	72.1	LOS E	11.2	79.5	1.00	0.91	1.24	27.2
Approach		2201	1.7	0.856	27.0	LOS C	39.6	281.4	0.76	0.73	0.81	43.2
All Vehicles		5322	1.1	0.864	28.5	LOS C	39.6	281.4	0.76	0.72	0.80	42.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	14.3	LOS B	0.1	0.1	0.48	0.48
P2	East Full Crossing	53	57.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	4.3	LOS A	0.0	0.0	0.26	0.26
P4	West Full Crossing	53	57.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	33.3	LOS D			0.66	0.66

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: P:\V13600-13699\V136080 East Village - Integrated Transp\Modelling\SIDRA\180920-Updates\180427 SIDRA Network - Future PM - Existing Layout - Post Dev No Growth.sip8

MOVEMENT SUMMARY

Site: 3561 [6. NORTH ROAD / POATH ROAD / POET ROAD]

Network: N101 [Master Model]

NORTH ROAD / POATH ROAD / POET ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: POET ROAD														
1	L2	55	1.9	55	1.9	0.708	67.4	LOS E	8.0	56.6	1.00	0.87	1.11	16.4
2	T1	13	0.0	13	0.0	0.708	64.0	LOS E	8.0	56.6	1.00	0.87	1.11	25.6
3	R2	55	1.9	55	1.9	0.708	67.4	LOS E	8.0	56.6	1.00	0.87	1.11	25.7
Approach		122	1.7	122	1.7	0.708	67.0	LOS E	8.0	56.6	1.00	0.87	1.11	22.0
East: NORTH ROAD														
4	L2	25	0.0	25	0.0	0.761	20.1	LOS C	41.3	290.7	0.71	0.67	0.71	43.0
5	T1	1599	0.7	1599	0.7	0.761	12.1	LOS B	41.3	290.7	0.62	0.58	0.62	47.9
6	R2	98	1.1	98	1.1	0.539	28.2	LOS C	3.5	24.6	0.88	0.80	0.88	42.3
Approach		1722	0.7	1722	0.7	0.761	13.1	LOS B	41.3	290.7	0.64	0.59	0.64	47.1
North: POATH ROAD														
7	L2	238	0.9	238	0.9	0.693	46.2	LOS D	15.1	106.1	0.96	0.83	0.96	32.0
8	T1	44	0.0	44	0.0	0.693	41.6	LOS D	15.1	106.1	0.96	0.83	0.96	30.8
9	R2	76	1.4	76	1.4	0.243	53.8	LOS D	4.1	29.4	0.89	0.76	0.89	20.4
Approach		358	0.9	358	0.9	0.693	47.2	LOS D	15.1	106.1	0.94	0.82	0.95	29.8
West: NORTH ROAD														
10	L2	89	1.2	80	1.3	0.740	26.2	LOS C	38.1	271.6	0.78	0.73	0.78	48.9
11	T1	1668	1.9	1490	2.1	0.740	18.7	LOS B	38.1	271.6	0.74	0.68	0.74	53.4
12	R2	25	0.0	23	0.0	0.232	40.7	LOS D	1.1	7.6	0.74	0.75	0.74	35.4
Approach		1783	1.8	1592 N1	2.0	0.740	19.4	LOS B	38.1	271.6	0.74	0.69	0.74	52.8
All Vehicles		3985	1.2	3794 N1	1.3	0.761	20.7	LOS C	41.3	290.7	0.72	0.66	0.73	45.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	7.8	LOS A	0.1	0.1	0.35	0.35
P2	East Full Crossing	53	51.0	LOS E	0.2	0.2	0.89	0.89
P3	North Full Crossing	53	13.4	LOS B	0.1	0.1	0.45	0.45
P4	West Full Crossing	53	51.0	LOS E	0.2	0.2	0.89	0.89
All Pedestrians		211	30.8	LOS D			0.64	0.64

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1209 [5. EAST BOUNDARY ROAD / ARDENA COURT]

Network: N101 [Master Model]

EAST BOUNDARY ROAD / ARDENA COURT
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 116 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
1	L2	18	0.0	18	0.0	0.016	15.1	LOS B	0.4	2.6	0.40	0.66	0.40	42.4
2	T1	1597	0.4	1597	0.4	0.666	15.0	LOS B	28.9	203.1	0.70	0.64	0.70	44.6
3	R2	126	0.8	126	0.8	0.722	65.5	LOS E	7.4	52.5	1.00	0.84	1.13	26.7
Approach		1741	0.4	1741	0.4	0.722	18.7	LOS B	28.9	203.1	0.72	0.66	0.73	41.0
East: ARDENA COURT														
4	L2	91	0.0	91	0.0	0.164	34.5	LOS C	3.8	26.5	0.76	0.71	0.76	33.5
5	T1	2	0.0	2	0.0	0.164	31.1	LOS C	3.8	26.5	0.76	0.71	0.76	29.1
6	R2	75	0.0	75	0.0	0.287	50.2	LOS D	3.8	26.6	0.92	0.75	0.92	19.3
Approach		167	0.0	167	0.0	0.287	41.5	LOS D	3.8	26.6	0.83	0.73	0.83	27.5
North: EAST BOUNDARY ROAD														
7	L2	5	0.0	5	0.0	0.005	17.1	LOS B	0.1	0.8	0.44	0.64	0.44	37.0
8	T1	1721	0.3	1709	0.3	0.765	19.6	LOS B	36.0	252.9	0.82	0.75	0.82	47.1
9	R2	8	0.0	8	0.0	0.087	65.6	LOS E	0.5	3.3	0.98	0.66	0.98	22.5
Approach		1735	0.3	1723 N1	0.3	0.765	19.8	LOS B	36.0	252.9	0.82	0.75	0.82	46.8
West: ARDENA COURT														
10	L2	21	0.0	21	0.0	0.170	48.2	LOS D	2.2	15.6	0.89	0.72	0.89	19.7
11	T1	1	0.0	1	0.0	0.170	44.8	LOS D	2.2	15.6	0.89	0.72	0.89	26.2
12	R2	23	0.0	23	0.0	0.170	48.1	LOS D	2.2	15.6	0.89	0.72	0.89	29.9
Approach		45	0.0	45	0.0	0.170	48.1	LOS D	2.2	15.6	0.89	0.72	0.89	25.7
All Vehicles		3688	0.3	3677 N1	0.3	0.765	20.6	LOS C	36.0	252.9	0.77	0.70	0.78	42.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	52.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	13.5	LOS B	0.1	0.1	0.48	0.48
P3	North Full Crossing	53	52.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	10.4	LOS B	0.1	0.1	0.42	0.42
All Pedestrians		211	32.1	LOS D			0.70	0.70

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 103a [3a (east). EAST BOUNDARY ROAD / NORTH DRIVE]

Network: N101 [Master Model]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
3	R2	204	0.0	176	0.0	0.824	44.1	LOS E	5.3	37.2	0.97	1.34	2.37	5.8
3u	U	17	0.0	15	0.0	0.824	56.9	LOS F	5.3	37.2	0.97	1.34	2.37	3.8
Approach		221	0.0	191[N1]	0.0	0.824	45.1	NA	5.3	37.2	0.97	1.34	2.37	5.7
East: NORTH DRIVE														
4	L2	358	0.0	358	0.0	0.347	8.4	LOS A	2.0	13.8	0.57	0.78	0.64	47.2
5	T1	273	0.0	273	0.0	3.013	1834.3	LOS F	119.2	834.3	1.00	7.15	25.73	1.0
Approach		631	0.0	631	0.0	3.013	797.9	LOS F	119.2	834.3	0.76	3.53	11.49	2.2
North: EAST BOUNDARY ROAD														
7	L2	278	0.0	245	0.0	0.389	3.5	LOS A	0.0	0.0	0.00	0.19	0.00	55.2
8	T1	1420	0.4	1255	0.5	0.389	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	52.3
Approach		1698	0.4	1500[N1]	0.4	0.389	0.6	NA	0.0	0.0	0.00	0.09	0.00	54.2
West: MEDIAN														
11	T1	4	0.0	4	0.0	1.023	271.7	LOS F	4.3	29.8	1.00	1.25	2.15	4.8
12	R2	26	0.0	26	0.0	1.023	369.4	LOS F	4.3	29.8	1.00	1.25	2.15	0.2
Approach		31	0.0	31	0.0	1.023	355.9	LOS F	4.3	29.8	1.00	1.25	2.15	0.9
All Vehicles		2580	0.2	2352[N1]	0.3	3.013	222.5	NA	119.2	834.3	0.29	1.13	3.30	3.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 101 [1. MURRUMBEENA ROAD / LEILA ROAD]

Network: N101 [Master Model]

MURRUMBEENA ROAD / LEILA ROAD
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: MURRUMBEENA ROAD														
1	L2	91	1.2	78	1.3	0.461	5.6	LOS A	0.0	0.0	0.00	0.05	0.00	57.7
2	T1	940	0.3	814	0.4	0.461	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.4
Approach		1031	0.4	892[N1]	0.5	0.461	0.6	NA	0.0	0.0	0.00	0.05	0.00	59.2
East: LEILA ROAD														
4	L2	88	4.8	60	6.8	0.192	16.4	LOS C	0.6	4.6	0.80	0.92	0.83	39.5
5	T1	35	0.0	23	0.0	1.152	353.9	LOS F	17.3	123.0	1.00	1.70	4.28	11.2
6	R2	142	1.5	95	2.1	1.152	235.6	LOS F	17.3	123.0	1.00	1.70	4.28	11.2
Approach		265	2.4	177[N1]	3.4	1.152	177.1	LOS F	17.3	123.0	0.93	1.44	3.12	13.2
North: MURRUMBEENA ROAD														
7	L2	136	0.8	136	0.8	0.074	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	50.9
8	T1	962	0.3	962	0.3	0.498	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	66	1.6	66	1.6	0.107	10.9	LOS B	0.4	3.0	0.68	0.87	0.68	46.3
Approach		1164	0.5	1164	0.5	0.498	1.3	NA	0.4	3.0	0.04	0.12	0.04	57.0
West: LEILA ROAD														
10	L2	98	0.0	98	0.0	0.198	10.8	LOS B	0.7	4.9	0.68	0.85	0.69	45.9
12	R2	35	0.0	35	0.0	2.305	1422.0	LOS F	18.3	128.2	1.00	1.64	3.64	1.2
Approach		133	0.0	133	0.0	2.305	380.4	LOS F	18.3	128.2	0.76	1.06	1.46	6.7
All Vehicles		2593	0.6	2366[N1]	0.7	2.305	35.4	NA	18.3	128.2	0.13	0.24	0.33	32.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 104a [4a (east). EAST BOUNDARY ROAD / SOUTH DRIVE]

Network: N101 [Master Model]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
3	R2	268	0.0	268	0.0	1.683	652.2	LOS F	32.0	223.7	1.00	4.53	15.65	2.8
3u	U	163	1.3	163	1.3	1.000	95.0	LOS F	8.9	63.0	1.00	1.73	4.14	3.8
Approach		432	0.5	432	0.5	1.683	441.5	NA	32.0	223.7	1.00	3.47	11.30	2.9
East: SOUTH DRIVE														
4	L2	368	0.0	368	0.0	0.690	17.5	LOS C	5.0	34.7	0.83	1.18	1.69	38.3
5	T1	282	0.0	282	0.0	4.128	2850.8	LOS F	145.8	1020.7	1.00	3.96	14.01	0.6
Approach		651	0.0	651	0.0	4.128	1246.2	LOS F	145.8	1020.7	0.90	2.39	7.03	1.4
North: EAST BOUNDARY ROAD														
7	L2	234	0.0	214	0.0	0.432	5.5	LOS A	0.0	0.0	0.00	0.15	0.00	55.3
8	T1	1593	0.4	1456	0.4	0.432	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	55.4
Approach		1826	0.3	1670[N1]	0.3	0.432	0.7	NA	0.0	0.0	0.00	0.08	0.00	55.4
All Vehicles		2908	0.3	2752[N1]	0.3	4.128	364.2	NA	145.8	1020.7	0.37	1.16	3.43	2.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 107 [7. NORTH ROAD / CROSBIE ROAD / COBAR STREET]

Network: N101 [Master Model]

NORTH ROAD / CROSBIE ROAD / COBAR STREET
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: COBAR STREET														
1	L2	172	0.0	172	0.0	24.556	21249.1	LOS F	180.2	1261.5	1.00	2.48	6.57	0.1
1a	L1	77	0.0	77	0.0	24.556	21266.9	LOS F	180.2	1261.5	1.00	2.48	6.57	0.1
3	R2	155	0.0	155	0.0	25.789	22389.3	LOS F	139.2	974.7	1.00	1.60	3.39	0.1
Approach		403	0.0	403	0.0	25.789	21690.1	LOS F	180.2	1261.5	1.00	2.15	5.35	0.1
East: NORTH ROAD														
4	L2	87	0.0	87	0.0	0.787	5.9	LOS A	34.4	241.9	0.00	0.03	0.00	57.8
5	T1	1671	0.7	1671	0.7	0.787	32.1	LOS D	34.4	241.9	0.14	0.03	0.46	33.8
6a	R1	64	1.6	64	1.6	1.184	321.6	LOS F	10.7	76.2	1.00	1.66	3.95	6.7
Approach		1822	0.7	1822	0.7	1.184	41.0	NA	34.4	241.9	0.16	0.09	0.56	30.6
NorthWest: CROSBIE ROAD														
27a	L1	119	0.9	119	0.9	1.022	158.7	LOS F	9.7	68.4	1.00	1.66	3.79	9.8
29b	R3	4	0.0	4	0.0	1.000	1108.2	LOS F	2.1	14.8	1.00	1.05	1.27	1.7
Approach		123	0.9	123	0.9	1.022	191.1	LOS F	9.7	68.4	1.00	1.64	3.70	8.4
West: NORTH ROAD														
10b	L3	43	4.9	41	5.0	0.026	7.4	LOS A	0.0	0.0	0.00	0.64	0.00	38.4
11	T1	1677	1.9	1602	1.9	0.779	7.5	LOS A	5.2	36.9	0.06	0.16	0.09	37.0
12	R2	177	0.0	169	0.0	2.857	1724.4	LOS F	53.3	372.8	1.00	2.91	10.82	1.3
Approach		1897	1.8	1812 N1	1.8	2.857	167.5	NA	53.3	372.8	0.15	0.43	1.09	4.1
All Vehicles		4245	1.1	4160 N1	1.1	25.789	2198.5	NA	180.2	1261.5	0.26	0.48	1.35	0.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

E.2 With Mitigating Works

MOVEMENT SUMMARY

Site: 3560 [2. NORTH ROAD / EAST BOUNDARY ROAD / MURRUMBEENA ROAD]

Network: N101 [Master Model]

NORTH ROAD / EAST BOUNDARY ROAD / MURRUMBEENA ROAD
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
1	L2	713	2.8	713	2.8	0.664	19.6	LOS B	22.7	162.6	0.59	0.77	0.59	49.1
2	T1	837	1.5	837	1.5	0.666	27.6	LOS C	22.4	159.0	0.71	0.67	0.71	26.7
3	R2	436	1.4	436	1.4	0.860	63.9	LOS E	16.8	119.3	1.00	0.88	1.12	14.3
3u	U	64	0.0	64	0.0	0.860	64.9	LOS E	15.6	110.2	1.00	0.88	1.13	14.2
Approach		2049	1.9	2049	1.9	0.860	33.7	LOS C	22.7	162.6	0.74	0.76	0.77	31.8
East: NORTH ROAD														
4	L2	397	2.1	397	2.1	0.752	43.1	LOS D	21.7	155.0	0.94	0.86	0.94	8.8
5	T1	1456	3.6	1456	3.6	0.866	48.9	LOS D	21.7	155.0	0.99	0.95	1.07	31.6
6	R2	58	5.5	58	5.5	0.302	66.6	LOS E	3.6	26.2	0.97	0.75	0.97	5.7
6u	U	1	0.0	1	0.0	0.302	67.8	LOS E	3.6	26.2	0.97	0.75	0.97	5.7
Approach		1912	3.4	1912	3.4	0.866	48.2	LOS D	21.7	155.0	0.98	0.93	1.04	28.1
North: MURRUMBEENA ROAD														
7	L2	85	3.7	85	3.7	0.838	57.7	LOS E	30.7	219.2	0.98	0.96	1.30	21.4
8	T1	802	1.8	802	1.8	0.838	53.6	LOS D	30.7	219.2	0.99	0.96	1.22	21.1
9	R2	140	1.5	140	1.5	0.694	73.3	LOS E	9.1	64.7	1.00	0.82	1.05	30.0
Approach		1027	1.9	1027	1.9	0.838	56.6	LOS E	30.7	219.2	0.99	0.94	1.21	23.0
West: NORTH ROAD														
10	L2	75	4.2	75	4.2	0.839	53.6	LOS D	31.9	227.8	0.96	0.94	1.25	30.0
11	T1	1437	2.1	1437	2.1	0.839	46.9	LOS D	32.0	227.8	0.94	0.90	1.10	30.2
12	R2	320	3.3	320	3.3	0.803	74.5	LOS E	10.7	77.1	1.00	0.88	1.19	22.7
Approach		1832	2.4	1832	2.4	0.839	52.0	LOS D	32.0	227.8	0.95	0.90	1.12	28.6
All Vehicles		6820	2.4	6820	2.4	0.866	46.1	LOS D	32.0	227.8	0.90	0.87	1.01	28.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	45.0	LOS E	0.2	0.2	0.83	0.83
P2	East Full Crossing	53	51.0	LOS E	0.2	0.2	0.89	0.89
P3	North Full Crossing	53	41.7	LOS E	0.2	0.2	0.80	0.80
P4	West Full Crossing	53	48.4	LOS E	0.2	0.2	0.86	0.86
All Pedestrians		211	46.5	LOS E			0.85	0.85

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3559 [10. NORTH ROAD / KOORNANG ROAD / TUCKER ROAD PM]

10. NORTH ROAD / KOORNAND ROAD / TUCKER ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 126 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: TUCKER ROAD												
1	L2	191	1.1	0.389	39.8	LOS D	8.8	61.9	0.80	0.78	0.80	35.7
2	T1	198	1.1	0.864	63.7	LOS E	12.9	91.3	0.98	0.97	1.29	29.5
Approach		388	1.1	0.864	52.0	LOS D	12.9	91.3	0.89	0.88	1.05	32.2
East: NORTH ROAD												
4	L2	193	1.1	0.180	18.7	LOS B	5.4	38.4	0.50	0.71	0.50	46.6
5	T1	1969	0.5	0.845	21.8	LOS C	38.2	268.3	0.71	0.68	0.75	45.9
6	R2	173	1.2	0.844	73.1	LOS E	11.6	81.8	1.00	0.93	1.27	29.3
Approach		2335	0.6	0.845	25.4	LOS C	38.2	268.3	0.72	0.70	0.77	44.1
North: KOORNANG ROAD												
7	L2	201	1.0	0.335	40.0	LOS D	9.3	65.7	0.80	0.79	0.80	37.8
8	T1	197	1.1	0.641	53.3	LOS D	11.4	80.7	0.98	0.81	0.98	32.2
Approach		398	1.1	0.641	46.6	LOS D	11.4	80.7	0.89	0.80	0.89	35.0
West: NORTH ROAD												
10	L2	99	1.1	0.093	17.9	LOS B	2.6	18.6	0.47	0.69	0.47	45.4
11	T1	1933	1.7	0.856	23.5	LOS C	39.6	281.4	0.75	0.72	0.79	45.1
12	R2	169	1.2	0.829	72.1	LOS E	11.2	79.5	1.00	0.91	1.24	27.2
Approach		2201	1.7	0.856	27.0	LOS C	39.6	281.4	0.76	0.73	0.81	43.2
All Vehicles		5322	1.1	0.864	29.6	LOS C	39.6	281.4	0.76	0.73	0.82	42.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	14.3	LOS B	0.1	0.1	0.48	0.48
P2	East Full Crossing	53	57.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	4.3	LOS A	0.0	0.0	0.26	0.26
P4	West Full Crossing	53	57.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	33.3	LOS D			0.66	0.66

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: P:\V13600-13699\V136080 East Village - Integrated Transp\Modelling\SIDRA\180920-Updates\180920 SIDRA Network - Future PM - Post Dev No Growth - TfV&VR response.sip8

MOVEMENT SUMMARY

Site: 3561 [6. NORTH ROAD / POATH ROAD / POET ROAD]

Network: N101 [Master Model]

NORTH ROAD / POATH ROAD / POET ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: POET ROAD														
1	L2	111	2.9	111	2.9	0.837	66.7	LOS E	16.2	115.8	1.00	0.97	1.21	16.5
2	T1	16	0.0	16	0.0	0.837	63.3	LOS E	16.2	115.8	1.00	0.97	1.21	25.7
3	R2	111	2.9	111	2.9	0.837	66.7	LOS E	16.2	115.8	1.00	0.97	1.21	25.8
Approach		237	2.7	237	2.7	0.837	66.5	LOS E	16.2	115.8	1.00	0.97	1.21	21.9
East: NORTH ROAD														
4	L2	49	2.1	49	2.1	0.826	23.2	LOS C	48.3	348.8	0.81	0.76	0.81	41.4
5	T1	1653	3.7	1653	3.7	0.826	16.3	LOS B	48.3	348.8	0.70	0.67	0.72	43.1
6	R2	111	2.9	111	2.9	0.702	39.7	LOS D	5.1	36.7	1.00	0.86	1.13	37.3
Approach		1813	3.6	1813	3.6	0.826	17.9	LOS B	48.3	348.8	0.72	0.68	0.75	42.3
North: POATH ROAD														
7	L2	161	3.3	161	3.3	0.379	40.0	LOS D	8.4	60.6	0.86	0.78	0.86	33.7
8	T1	17	0.0	17	0.0	0.379	35.4	LOS D	8.4	60.6	0.86	0.78	0.86	32.5
9	R2	76	2.8	76	2.8	0.287	55.4	LOS E	4.2	30.4	0.91	0.76	0.91	20.1
Approach		254	2.9	254	2.9	0.379	44.3	LOS D	8.4	60.6	0.87	0.77	0.87	30.0
West: NORTH ROAD														
10	L2	57	3.7	57	3.7	0.836	30.2	LOS C	47.2	336.4	0.89	0.83	0.89	46.8
11	T1	1733	2.1	1733	2.1	0.836	23.6	LOS C	47.2	336.4	0.86	0.80	0.87	50.5
12	R2	12	0.0	12	0.0	0.143	49.3	LOS D	0.6	4.3	0.80	0.73	0.80	33.1
Approach		1801	2.2	1801	2.2	0.836	23.9	LOS C	47.2	336.4	0.86	0.80	0.87	50.2
All Vehicles		4104	2.9	4104	2.9	0.837	25.0	LOS C	48.3	348.8	0.81	0.76	0.83	43.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	8.9	LOS A	0.1	0.1	0.37	0.37
P2	East Full Crossing	53	48.4	LOS E	0.2	0.2	0.86	0.86
P3	North Full Crossing	53	14.8	LOS B	0.1	0.1	0.48	0.48
P4	West Full Crossing	53	48.4	LOS E	0.2	0.2	0.86	0.86
All Pedestrians		211	30.1	LOS D			0.64	0.64

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1209 [5. EAST BOUNDARY ROAD / ARDENA COURT]

Network: N101 [Master Model]

EAST BOUNDARY ROAD / ARDENA COURT
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
1	L2	25	4.2	25	4.2	0.019	11.1	LOS B	0.4	3.0	0.28	0.65	0.28	44.5
2	T1	1828	2.4	1828	2.4	0.650	8.9	LOS A	28.7	205.3	0.54	0.51	0.54	52.3
3	R2	52	2.0	52	2.0	0.611	77.4	LOS E	3.5	24.8	1.00	0.77	1.09	24.6
Approach		1905	2.4	1905	2.4	0.650	10.8	LOS B	28.7	205.3	0.55	0.52	0.55	49.2
East: ARDENA COURT														
4	L2	37	2.9	37	2.9	0.163	54.0	LOS D	2.1	15.1	0.92	0.71	0.92	28.2
5	T1	1	0.0	1	0.0	0.163	50.6	LOS D	2.1	15.1	0.92	0.71	0.92	25.2
6	R2	39	2.7	39	2.7	0.302	67.2	LOS E	2.4	17.5	0.98	0.73	0.98	16.4
Approach		77	2.7	77	2.7	0.302	60.6	LOS E	2.4	17.5	0.95	0.72	0.95	22.6
North: EAST BOUNDARY ROAD														
7	L2	5	0.0	5	0.0	0.004	11.0	LOS B	0.1	0.6	0.27	0.63	0.27	41.2
8	T1	1536	2.1	1536	2.1	0.544	7.8	LOS A	20.8	148.1	0.47	0.44	0.47	59.2
9	R2	8	0.0	8	0.0	0.098	73.5	LOS E	0.5	3.8	0.98	0.67	0.98	22.0
Approach		1549	2.0	1549	2.0	0.544	8.1	LOS A	20.8	148.1	0.47	0.44	0.47	58.6
West: ARDENA COURT														
10	L2	9	0.0	9	0.0	0.173	59.8	LOS E	1.4	9.5	0.96	0.70	0.96	17.6
11	T1	1	0.0	1	0.0	0.173	56.3	LOS E	1.4	9.5	0.96	0.70	0.96	24.2
12	R2	13	0.0	13	0.0	0.173	59.6	LOS E	1.4	9.5	0.96	0.70	0.96	27.3
Approach		23	0.0	23	0.0	0.173	59.5	LOS E	1.4	9.5	0.96	0.70	0.96	23.7
All Vehicles		3555	2.2	3555	2.2	0.650	11.0	LOS B	28.7	205.3	0.53	0.49	0.53	51.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	6.5	LOS A	0.1	0.1	0.32	0.32
P3	North Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	5.9	LOS A	0.1	0.1	0.30	0.30
All Pedestrians		211	32.7	LOS D			0.63	0.63

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 001av [001a. EAST BOUNDARY ROAD BETWEEN NORTH ROAD AND NORTH DRIVE - Signals]

Network: N101 [Master Model]

EAST BOUNDARY ROAD BETWEEN NORTH ROAD AND NORTH DRIVE - east
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: East Boundary Road														
1	L2	7	0.0	7	0.0	0.215	10.7	LOS B	2.3	15.9	0.16	0.17	0.43	50.9
2	T1	1679	0.0	1679	0.0	0.689	13.1	LOS B	24.5	171.8	0.50	0.46	0.54	24.7
3	R2	145	0.0	145	0.0	0.678	73.9	LOS E	9.5	66.5	1.00	0.82	1.03	20.6
Approach		1832	0.0	1832	0.0	0.689	17.9	LOS B	24.5	171.8	0.54	0.49	0.58	23.6
East: NORTH DR														
4	L2	265	0.0	265	0.0	0.657	41.2	LOS D	12.9	90.2	0.94	0.95	1.21	25.9
6	R2	272	0.0	272	0.0	0.657	56.2	LOS E	12.9	90.2	0.98	0.86	1.05	21.4
Approach		537	0.0	537	0.0	0.657	48.8	LOS D	12.9	90.2	0.96	0.90	1.13	23.4
North: East Boundary Road														
7	L2	205	0.0	205	0.0	0.501	24.0	LOS C	21.1	147.5	0.69	0.75	0.97	41.9
8	T1	1365	0.0	1365	0.0	0.501	21.0	LOS C	27.7	193.7	0.76	0.72	0.84	28.0
Approach		1571	0.0	1571	0.0	0.501	21.4	LOS C	27.7	193.7	0.75	0.72	0.86	30.9
West: GEORGE ST														
10	L2	75	0.0	75	0.0	0.349	64.1	LOS E	4.5	31.4	0.96	0.77	0.96	19.5
Approach		75	0.0	75	0.0	0.349	64.1	LOS E	4.5	31.4	0.96	0.77	0.96	19.5
All Vehicles		4014	0.0	4014	0.0	0.689	24.3	LOS C	27.7	193.7	0.69	0.64	0.77	26.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	15.8	LOS B	0.1	0.1	0.49	0.49
P4	West Full Crossing	53	14.3	LOS B	0.1	0.1	0.47	0.47
All Pedestrians		158	29.8	LOS C			0.64	0.64

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101vv [1. MURRUMBEENA ROAD / LEILA ROAD - Signals]

Network: N101 [Master Model]

MURRUMBEENA ROAD / LEILA ROAD
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: MURRUMBEENA ROAD														
1	L2	75	1.4	75	1.4	0.053	7.0	LOS A	0.4	3.1	0.13	0.60	0.13	48.6
2	T1	940	1.6	940	1.6	0.720	5.5	LOS A	18.2	129.0	0.34	0.32	0.34	54.9
Approach		1015	1.6	1015	1.6	0.720	5.6	LOS A	18.2	129.0	0.32	0.34	0.32	54.3
East: LEILA ROAD														
4	L2	60	8.8	60	8.8	0.603	73.8	LOS E	5.8	42.6	1.00	0.78	1.02	18.3
5	T1	28	0.0	28	0.0	0.603	68.1	LOS E	5.8	42.6	1.00	0.78	1.02	27.7
6	R2	87	2.4	87	2.4	0.493	62.5	LOS E	5.3	37.6	1.00	0.77	1.00	29.4
Approach		176	4.2	176	4.2	0.603	67.3	LOS E	5.8	42.6	1.00	0.78	1.01	25.8
North: MURRUMBEENA ROAD														
7	L2	47	6.7	47	6.7	0.029	5.9	LOS A	0.1	1.1	0.10	0.59	0.10	50.3
8	T1	906	1.2	906	1.2	0.794	9.9	LOS A	29.3	206.9	0.57	0.53	0.57	45.4
9	R2	58	0.0	58	0.0	0.232	20.4	LOS C	1.8	12.9	0.52	0.71	0.52	41.3
Approach		1012	1.4	1012	1.4	0.794	10.3	LOS B	29.3	206.9	0.54	0.54	0.54	45.2
West: LEILA ROAD														
10	L2	95	1.1	95	1.1	0.668	71.5	LOS E	6.2	43.9	1.00	0.82	1.09	26.1
12	R2	39	0.0	39	0.0	0.225	56.2	LOS E	2.2	15.4	0.96	0.72	0.96	19.8
Approach		134	0.8	134	0.8	0.668	67.0	LOS E	6.2	43.9	0.99	0.79	1.05	24.7
All Vehicles		2336	1.6	2336	1.6	0.794	15.8	LOS B	29.3	206.9	0.51	0.48	0.51	44.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	7.8	LOS A	0.1	0.1	0.35	0.35
P4	West Full Crossing	53	7.8	LOS A	0.1	0.1	0.35	0.35
All Pedestrians		158	25.0	LOS C			0.55	0.55

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: P:\V13600-13699\V136080 East Village - Integrated Transp\Modelling\SIDRA\180920-Updates\180920 SIDRA Network - Future AM - Post Dev No Growth - TfV&VR response.sip8

MOVEMENT SUMMARY

Site: 104av [4a (east). EAST BOUNDARY ROAD / SOUTH DRIVE - Signals]

Network: N101 [Master Model]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
2	T1	1555	0.0	1555	0.0	0.503	10.8	LOS B	18.0	126.0	0.51	0.46	0.51	39.0
3	R2	389	0.3	389	0.3	0.646	53.3	LOS D	16.4	115.1	0.96	0.84	0.96	17.7
3u	U	134	3.1	134	3.1	0.646	55.6	LOS E	13.8	97.8	0.96	0.84	0.96	16.0
Approach		2078	0.3	2078	0.3	0.646	21.6	LOS C	18.0	126.0	0.63	0.56	0.63	27.2
East: SOUTH DRIVE														
4	L2	254	0.0	254	0.0	0.329	13.9	LOS B	6.4	44.9	0.48	0.71	0.48	41.5
6	R2	275	0.0	275	0.0	0.614	63.5	LOS E	9.0	63.1	0.99	0.81	0.99	19.9
Approach		528	0.0	528	0.0	0.614	39.7	LOS D	9.0	63.1	0.74	0.76	0.75	26.5
North: EAST BOUNDARY ROAD														
7	L2	276	0.0	276	0.0	0.198	8.4	LOS A	3.6	25.5	0.26	0.62	0.26	48.6
8	T1	1361	2.5	1361	2.5	0.640	17.0	LOS B	20.5	146.7	0.57	0.51	0.57	21.6
9u	U	2	0.0	2	0.0	0.037	76.8	LOS E	0.1	1.0	1.00	0.62	1.00	6.7
Approach		1639	2.1	1639	2.1	0.640	15.6	LOS B	20.5	146.7	0.52	0.53	0.52	28.9
All Vehicles		4245	0.9	4245	0.9	0.646	21.6	LOS C	20.5	146.7	0.60	0.57	0.60	27.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
All Pedestrians		105	59.3	LOS E			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 107v [7. NORTH ROAD / CROSBIE ROAD / COBAR STREET - Signals]

Network: N101 [Master Model]

NORTH ROAD / CROSBIE ROAD / COBAR STREET
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: COBAR STREET														
1	L2	133	0.0	133	0.0	0.299	43.4	LOS D	6.7	46.8	0.86	0.75	0.86	20.7
2	T1	65	0.0	65	0.0	0.790	66.9	LOS E	11.4	80.2	1.00	0.92	1.17	17.4
3	R2	106	1.0	106	1.0	0.790	69.9	LOS E	11.4	80.2	1.00	0.92	1.17	17.4
Approach		304	0.3	304	0.3	0.790	57.7	LOS E	11.4	80.2	0.94	0.85	1.03	18.7
East: NORTH ROAD														
4	L2	146	1.4	146	1.4	0.108	9.2	LOS A	2.1	15.0	0.30	0.65	0.30	45.0
5	T1	1792	3.8	1792	3.8	0.838	19.2	LOS B	42.6	308.0	0.78	0.72	0.78	41.1
6	R2	72	0.0	72	0.0	0.626	74.0	LOS E	4.7	33.1	1.00	0.79	1.07	21.6
Approach		2009	3.5	2009	3.5	0.838	20.4	LOS C	42.6	308.0	0.75	0.72	0.76	40.2
North: CROSBIE ROAD														
7	L2	57	0.0	57	0.0	0.497	72.8	LOS E	3.7	25.9	1.00	0.75	1.00	18.1
Approach		57	0.0	57	0.0	0.497	72.8	LOS E	3.7	25.9	1.00	0.75	1.00	18.1
West: NORTH ROAD														
10	L2	23	0.0	23	0.0	0.669	18.9	LOS B	31.8	226.3	0.63	0.66	0.63	26.5
11	T1	1738	2.1	1738	2.1	0.669	13.6	LOS B	31.8	226.7	0.63	0.66	0.63	26.6
12	R2	180	0.6	180	0.6	0.791	71.3	LOS E	11.9	84.0	1.00	0.87	1.16	19.2
Approach		1941	1.9	1941	1.9	0.791	19.0	LOS B	31.8	226.7	0.67	0.68	0.68	23.9
All Vehicles		4312	2.5	4312	2.5	0.838	23.1	LOS C	42.6	308.0	0.73	0.71	0.75	32.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	12.1	LOS B	0.1	0.1	0.43	0.43
P3	North Full Crossing	53	8.9	LOS A	0.1	0.1	0.37	0.37
P4	West Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
All Pedestrians		158	26.7	LOS C			0.59	0.59

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: P:\V13600-13699\V136080 East Village - Integrated Transp\Modelling\SIDRA\180920-Updates\180920 SIDRA Network - Future AM - Post Dev No Growth - TfV&VR response.sip8

MOVEMENT SUMMARY

Site: 3560 [2. NORTH ROAD / EAST BOUNDARY ROAD / MURRUMBEENA ROAD]

Network: N101 [Master Model]

NORTH ROAD / EAST BOUNDARY ROAD / MURRUMBEENA ROAD
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
1	L2	588	3.4	588	3.4	0.548	23.8	LOS C	24.1	173.9	0.78	0.82	0.78	46.4
2	T1	857	1.5	857	1.5	0.935	71.1	LOS E	40.8	289.0	1.00	1.04	1.26	13.5
3	R2	328	1.9	328	1.9	0.916	74.7	LOS E	12.7	90.6	1.00	0.91	1.25	12.6
3u	U	31	0.0	31	0.0	0.916	75.7	LOS E	12.1	85.9	1.00	0.91	1.26	12.6
Approach		1804	2.2	1804	2.2	0.935	56.4	LOS E	40.8	289.0	0.93	0.94	1.10	23.0
East: NORTH ROAD														
4	L2	363	2.3	363	2.3	0.804	43.3	LOS D	21.6	155.0	0.97	0.88	1.00	8.8
5	T1	1418	3.7	1418	3.7	0.926	60.5	LOS E	21.6	155.0	1.00	1.04	1.20	28.0
6	R2	57	5.6	57	5.6	0.734	75.8	LOS E	5.9	42.5	1.00	0.84	1.17	5.0
6u	U	31	0.0	31	0.0	0.734	77.2	LOS E	5.9	42.5	1.00	0.84	1.17	5.0
Approach		1868	3.4	1868	3.4	0.926	57.9	LOS E	21.6	155.0	0.99	1.00	1.16	25.0
North: MURRUMBEENA ROAD														
7	L2	112	2.8	112	2.8	0.915	66.7	LOS E	33.0	234.9	1.00	1.05	1.42	19.2
8	T1	784	1.9	784	1.9	0.915	61.3	LOS E	33.0	234.9	0.97	1.01	1.30	19.3
9	R2	147	1.4	147	1.4	0.876	76.0	LOS E	10.0	70.8	1.00	0.89	1.20	29.4
Approach		1043	1.9	1043	1.9	0.915	63.9	LOS E	33.0	234.9	0.98	1.00	1.29	21.3
West: NORTH ROAD														
10	L2	113	2.8	113	2.8	0.642	39.2	LOS D	29.2	208.1	0.85	0.83	1.14	36.0
11	T1	1405	2.1	1405	2.1	0.642	30.8	LOS C	29.2	208.1	0.82	0.74	0.92	37.4
12	R2	577	1.8	577	1.8	0.953	87.7	LOS F	22.1	157.2	0.99	1.03	1.46	20.3
Approach		2095	2.1	2095	2.1	0.953	46.9	LOS D	29.2	208.1	0.86	0.83	1.08	30.3
All Vehicles		6811	2.4	6811	2.4	0.953	55.1	LOS E	40.8	289.0	0.93	0.93	1.14	25.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	48.4	LOS E	0.2	0.2	0.86	0.86
P2	East Full Crossing	53	53.7	LOS E	0.2	0.2	0.91	0.91
P3	North Full Crossing	53	31.9	LOS D	0.1	0.1	0.70	0.70
P4	West Full Crossing	53	54.6	LOS E	0.2	0.2	0.92	0.92
All Pedestrians		211	47.1	LOS E			0.85	0.85

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 3559 [10. NORTH ROAD / KOORNANG ROAD / TUCKER ROAD PM]

10. NORTH ROAD / KOORNAND ROAD / TUCKER ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 126 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: TUCKER ROAD												
1	L2	191	1.1	0.389	39.8	LOS D	8.8	61.9	0.80	0.78	0.80	35.7
2	T1	198	1.1	0.864	63.7	LOS E	12.9	91.3	0.98	0.97	1.29	29.5
Approach		388	1.1	0.864	52.0	LOS D	12.9	91.3	0.89	0.88	1.05	32.2
East: NORTH ROAD												
4	L2	193	1.1	0.180	18.7	LOS B	5.4	38.4	0.50	0.71	0.50	46.6
5	T1	1969	0.5	0.845	21.8	LOS C	38.2	268.3	0.71	0.68	0.75	45.9
6	R2	173	1.2	0.844	73.1	LOS E	11.6	81.8	1.00	0.93	1.27	29.3
Approach		2335	0.6	0.845	25.4	LOS C	38.2	268.3	0.72	0.70	0.77	44.1
North: KOORNANG ROAD												
7	L2	201	1.0	0.335	40.0	LOS D	9.3	65.7	0.80	0.79	0.80	37.8
8	T1	197	1.1	0.641	53.3	LOS D	11.4	80.7	0.98	0.81	0.98	32.2
Approach		398	1.1	0.641	46.6	LOS D	11.4	80.7	0.89	0.80	0.89	35.0
West: NORTH ROAD												
10	L2	99	1.1	0.093	17.9	LOS B	2.6	18.6	0.47	0.69	0.47	45.4
11	T1	1933	1.7	0.856	23.5	LOS C	39.6	281.4	0.75	0.72	0.79	45.1
12	R2	169	1.2	0.829	72.1	LOS E	11.2	79.5	1.00	0.91	1.24	27.2
Approach		2201	1.7	0.856	27.0	LOS C	39.6	281.4	0.76	0.73	0.81	43.2
All Vehicles		5322	1.1	0.864	29.6	LOS C	39.6	281.4	0.76	0.73	0.82	42.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	14.3	LOS B	0.1	0.1	0.48	0.48
P2	East Full Crossing	53	57.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	4.3	LOS A	0.0	0.0	0.26	0.26
P4	West Full Crossing	53	57.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	33.3	LOS D			0.66	0.66

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: P:\V13600-13699\V136080 East Village - Integrated Transp\Modelling\SIDRA\180920-Updates\180920 SIDRA Network - Future PM - Post Dev No Growth - TfV&VR response.sip8

MOVEMENT SUMMARY

Site: 3561 [6. NORTH ROAD / POATH ROAD / POET ROAD]

Network: N101 [Master Model]

NORTH ROAD / POATH ROAD / POET ROAD
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: POET ROAD														
1	L2	55	5.8	55	5.8	0.803	72.8	LOS E	8.4	61.2	1.00	0.95	1.24	15.6
2	T1	13	0.0	13	0.0	0.803	69.3	LOS E	8.4	61.2	1.00	0.95	1.24	24.7
3	R2	55	5.8	55	5.8	0.803	72.7	LOS E	8.4	61.2	1.00	0.95	1.24	24.6
Approach		122	5.2	122	5.2	0.803	72.4	LOS E	8.4	61.2	1.00	0.95	1.24	21.1
East: NORTH ROAD														
4	L2	25	4.2	25	4.2	0.762	19.6	LOS B	40.5	292.6	0.70	0.66	0.70	43.2
5	T1	1599	3.8	1599	3.8	0.762	11.6	LOS B	40.5	292.6	0.62	0.57	0.62	48.5
6	R2	98	3.2	98	3.2	0.612	35.4	LOS D	4.3	31.1	0.97	0.83	1.01	39.0
Approach		1722	3.8	1722	3.8	0.762	13.1	LOS B	40.5	292.6	0.64	0.59	0.64	47.1
North: POATH ROAD														
7	L2	238	2.2	238	2.2	0.725	48.1	LOS D	15.5	110.3	0.97	0.85	1.00	31.4
8	T1	44	0.0	44	0.0	0.725	43.6	LOS D	15.5	110.3	0.97	0.85	1.00	30.3
9	R2	76	2.8	76	2.8	0.252	54.8	LOS D	4.2	30.0	0.90	0.76	0.90	20.2
Approach		358	2.1	358	2.1	0.725	49.0	LOS D	15.5	110.3	0.96	0.83	0.98	29.3
West: NORTH ROAD														
10	L2	89	2.4	89	2.4	0.823	27.6	LOS C	46.8	333.7	0.85	0.80	0.85	48.1
11	T1	1668	2.2	1668	2.2	0.823	20.0	LOS C	46.8	333.7	0.79	0.74	0.80	52.6
12	R2	25	0.0	25	0.0	0.265	40.5	LOS D	1.2	8.6	0.74	0.75	0.74	35.4
Approach		1783	2.2	1783	2.2	0.823	20.7	LOS C	46.8	333.7	0.80	0.74	0.80	52.0
All Vehicles		3985	3.0	3985	3.0	0.823	21.5	LOS C	46.8	333.7	0.75	0.69	0.76	45.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	7.5	LOS A	0.1	0.1	0.34	0.34
P2	East Full Crossing	53	51.9	LOS E	0.2	0.2	0.89	0.89
P3	North Full Crossing	53	13.0	LOS B	0.1	0.1	0.45	0.45
P4	West Full Crossing	53	51.9	LOS E	0.2	0.2	0.89	0.89
All Pedestrians		211	31.0	LOS D			0.64	0.64

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1209 [5. EAST BOUNDARY ROAD / ARDENA COURT]

Network: N101 [Master Model]

EAST BOUNDARY ROAD / ARDENA COURT
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
1	L2	18	5.9	18	5.9	0.014	11.1	LOS B	0.3	2.1	0.28	0.64	0.28	44.5
2	T1	1597	2.7	1597	2.7	0.567	8.0	LOS A	22.4	160.3	0.49	0.45	0.49	53.7
3	R2	126	0.8	126	0.8	0.635	68.6	LOS E	8.0	56.3	1.00	0.81	1.03	26.2
Approach		1741	2.6	1741	2.6	0.635	12.4	LOS B	22.4	160.3	0.52	0.48	0.52	46.9
East: ARDENA COURT														
4	L2	91	1.2	91	1.2	0.277	49.4	LOS D	5.0	35.3	0.90	0.74	0.90	29.4
5	T1	2	0.0	2	0.0	0.277	46.0	LOS D	5.0	35.3	0.90	0.74	0.90	26.0
6	R2	75	1.4	75	1.4	0.596	70.3	LOS E	4.9	34.6	1.00	0.79	1.04	16.0
Approach		167	1.3	167	1.3	0.596	58.7	LOS E	5.0	35.3	0.94	0.76	0.96	23.6
North: EAST BOUNDARY ROAD														
7	L2	5	0.0	5	0.0	0.004	13.4	LOS B	0.1	0.7	0.33	0.63	0.33	39.8
8	T1	1721	1.8	1721	1.8	0.664	12.9	LOS B	31.3	222.6	0.63	0.59	0.63	53.7
9	R2	8	0.0	8	0.0	0.098	73.5	LOS E	0.5	3.8	0.98	0.67	0.98	22.0
Approach		1735	1.8	1735	1.8	0.664	13.2	LOS B	31.3	222.6	0.64	0.59	0.64	53.3
West: ARDENA COURT														
10	L2	21	0.0	21	0.0	0.408	64.1	LOS E	2.8	19.6	0.99	0.74	0.99	16.9
11	T1	1	0.0	1	0.0	0.408	60.7	LOS E	2.8	19.6	0.99	0.74	0.99	23.6
12	R2	23	0.0	23	0.0	0.408	64.0	LOS E	2.8	19.6	0.99	0.74	0.99	26.5
Approach		45	0.0	45	0.0	0.408	63.9	LOS E	2.8	19.6	0.99	0.74	0.99	22.5
All Vehicles		3688	2.1	3688	2.1	0.664	15.5	LOS B	31.3	222.6	0.60	0.55	0.60	46.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	9.3	LOS A	0.1	0.1	0.38	0.38
P3	North Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P4	West Full Crossing	53	5.9	LOS A	0.1	0.1	0.30	0.30
All Pedestrians		211	33.4	LOS D			0.65	0.65

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 001av [001a. EAST BOUNDARY ROAD / NORTH DRIVE]

Network: N101 [Master Model]

EAST BOUNDARY ROAD BETWEEN NORTH ROAD AND NORTH DRIVE - east
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: East Boundary Road														
1	L2	22	0.0	22	0.0	0.201	12.9	LOS B	3.0	21.1	0.19	0.23	0.49	48.2
2	T1	1502	0.0	1502	0.0	0.616	14.0	LOS B	22.2	155.3	0.51	0.47	0.55	24.0
3	R2	168	0.0	168	0.0	0.620	70.4	LOS E	10.8	75.4	1.00	0.82	1.00	21.3
Approach		1693	0.0	1693	0.0	0.620	19.6	LOS B	22.2	155.3	0.55	0.50	0.59	23.5
East: NORTH DR														
4	L2	365	0.0	365	0.0	0.589	31.0	LOS C	15.1	105.8	0.86	0.94	1.09	30.2
6	R2	265	0.0	265	0.0	0.589	52.2	LOS D	15.1	105.8	0.94	0.84	0.98	22.4
Approach		631	0.0	631	0.0	0.589	39.9	LOS D	15.1	105.8	0.90	0.90	1.04	26.4
North: East Boundary Road														
7	L2	282	0.0	282	0.0	0.616	23.8	LOS C	20.0	141.5	0.59	0.73	0.91	41.7
8	T1	1460	2.3	1460	2.3	0.616	12.5	LOS B	20.0	141.5	0.43	0.43	0.51	35.5
Approach		1742	1.9	1742	1.9	0.616	14.4	LOS B	20.0	141.5	0.45	0.48	0.57	37.3
West: GEORGE ST														
10	L2	4	0.0	4	0.0	0.037	69.1	LOS E	0.3	1.8	0.96	0.64	0.96	18.6
Approach		4	0.0	4	0.0	0.037	69.1	LOS E	0.3	1.8	0.96	0.64	0.96	18.6
All Vehicles		4069	0.8	4069	0.8	0.620	20.6	LOS C	22.2	155.3	0.56	0.55	0.66	29.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	22.3	LOS C	0.1	0.1	0.59	0.59
P4	West Full Crossing	53	13.4	LOS B	0.1	0.1	0.45	0.45
All Pedestrians		158	31.7	LOS D			0.67	0.67

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101vv [1. MURRUMBEENA ROAD / LEILA ROAD - Signals]

Network: N101 [Master Model]

MURRUMBEENA ROAD / LEILA ROAD
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: MURRUMBEENA ROAD														
1	L2	91	1.2	91	1.2	0.066	6.7	LOS A	0.4	2.6	0.08	0.59	0.08	48.8
2	T1	940	1.6	940	1.6	0.753	5.0	LOS A	16.7	118.5	0.31	0.29	0.31	55.3
Approach		1031	1.5	1031	1.5	0.753	5.2	LOS A	16.7	118.5	0.29	0.32	0.29	54.6
East: LEILA ROAD														
4	L2	93	5.7	93	5.7	0.868	76.5	LOS E	8.8	63.6	1.00	0.97	1.38	17.8
5	T1	35	0.0	35	0.0	0.868	70.9	LOS E	8.8	63.6	1.00	0.97	1.38	27.1
6	R2	142	1.5	142	1.5	0.792	59.9	LOS E	8.5	60.2	1.00	0.87	1.20	30.0
Approach		269	2.7	269	2.7	0.868	67.0	LOS E	8.8	63.6	1.00	0.92	1.29	25.8
North: MURRUMBEENA ROAD														
7	L2	136	2.3	136	2.3	0.082	5.9	LOS A	0.4	3.1	0.11	0.60	0.11	50.3
8	T1	962	1.1	962	1.1	0.897	22.6	LOS C	43.8	309.6	0.65	0.67	0.73	34.6
9	R2	66	0.0	66	0.0	0.275	21.9	LOS C	2.3	15.8	0.55	0.73	0.55	40.6
Approach		1164	1.2	1164	1.2	0.897	20.6	LOS C	43.8	309.6	0.58	0.66	0.65	36.4
West: LEILA ROAD														
10	L2	98	1.1	98	1.1	0.863	80.1	LOS F	6.9	49.1	1.00	0.96	1.39	24.5
12	R2	35	0.0	35	0.0	0.195	53.4	LOS D	1.9	13.3	0.95	0.72	0.95	20.5
Approach		133	0.8	133	0.8	0.863	73.1	LOS E	6.9	49.1	0.99	0.90	1.28	23.8
All Vehicles		2597	1.5	2597	1.5	0.897	22.0	LOS C	43.8	309.6	0.53	0.56	0.61	40.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	8.9	LOS A	0.1	0.1	0.37	0.37
P4	West Full Crossing	53	8.9	LOS A	0.1	0.1	0.37	0.37
All Pedestrians		158	25.7	LOS C			0.57	0.57

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: P:\V13600-13699\V136080 East Village - Integrated Transp\Modelling\SIDRA\180920-Updates\180920 SIDRA Network - Future PM - Post Dev No Growth - TfV&VR response.sip8

MOVEMENT SUMMARY

Site: 104av [4a (east). EAST BOUNDARY ROAD / SOUTH DRIVE]

Network: N101 [Master Model]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
2	T1	1395	0.0	1395	0.0	0.380	9.6	LOS A	13.1	91.9	0.47	0.42	0.47	40.7
3	R2	321	0.3	321	0.3	0.613	52.8	LOS D	15.4	108.2	0.95	0.83	0.95	18.0
3u	U	163	2.6	163	2.6	0.613	55.3	LOS E	12.3	87.3	0.95	0.83	0.95	16.0
Approach		1879	0.3	1879	0.3	0.613	20.9	LOS C	15.4	108.2	0.59	0.52	0.59	27.3
East: NORTH DRIVE														
4	L2	368	0.0	368	0.0	0.513	14.5	LOS B	11.1	77.8	0.57	0.75	0.57	41.0
6	R2	282	0.0	282	0.0	0.600	63.9	LOS E	9.2	64.1	0.99	0.81	0.99	19.8
Approach		651	0.0	651	0.0	0.600	35.9	LOS D	11.1	77.8	0.75	0.77	0.75	28.0
North: EAST BOUNDARY ROAD														
7	L2	234	0.0	234	0.0	0.166	7.0	LOS A	1.5	10.4	0.13	0.59	0.13	50.1
8	T1	1593	2.1	1593	2.1	0.631	9.7	LOS A	14.7	104.9	0.35	0.31	0.35	29.9
9u	U	21	0.0	21	0.0	0.337	79.6	LOS E	1.4	10.1	1.00	0.71	1.00	6.5
Approach		1847	1.8	1847	1.8	0.631	10.1	LOS B	14.7	104.9	0.33	0.35	0.33	34.0
All Vehicles		4377	0.9	4377	0.9	0.631	18.6	LOS B	15.4	108.2	0.50	0.49	0.50	29.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
All Pedestrians		105	59.3	LOS E			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 107v [7. NORTH ROAD / CROSBIE ROAD / COBAR STREET - Signals]

Network: N101 [Master Model]

NORTH ROAD / CROSBIE ROAD / COBAR STREET
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: COBAR STREET														
1	L2	172	0.0	172	0.0	0.334	39.6	LOS D	8.3	58.0	0.84	0.76	0.84	21.6
2	T1	77	0.0	77	0.0	0.800	63.7	LOS E	15.2	106.8	1.00	0.92	1.14	17.8
3	R2	155	0.7	155	0.7	0.800	66.4	LOS E	15.2	106.8	1.00	0.92	1.14	17.8
Approach		403	0.3	403	0.3	0.800	54.5	LOS D	15.2	106.8	0.93	0.85	1.01	19.2
East: NORTH ROAD														
4	L2	87	2.4	87	2.4	0.065	9.0	LOS A	1.2	8.7	0.29	0.64	0.29	45.1
5	T1	1671	4.0	1671	4.0	0.814	21.2	LOS C	39.4	285.0	0.80	0.74	0.80	39.8
6	R2	64	0.0	64	0.0	0.375	67.3	LOS E	4.0	27.8	0.98	0.76	0.98	22.9
Approach		1822	3.8	1822	3.8	0.814	22.2	LOS C	39.4	285.0	0.79	0.74	0.79	39.1
North: CROSBIE ROAD														
7	L2	119	0.0	119	0.0	0.694	70.9	LOS E	7.7	54.2	1.00	0.83	1.09	18.5
Approach		119	0.0	119	0.0	0.694	70.9	LOS E	7.7	54.2	1.00	0.83	1.09	18.5
West: NORTH ROAD														
10	L2	43	0.0	43	0.0	0.727	24.7	LOS C	34.4	244.8	0.76	0.75	0.76	20.9
11	T1	1677	2.1	1677	2.1	0.727	19.4	LOS B	34.4	244.8	0.76	0.75	0.76	21.0
12	R2	177	0.6	177	0.6	0.777	70.7	LOS E	11.6	81.9	1.00	0.87	1.15	19.3
Approach		1897	1.9	1897	1.9	0.777	24.3	LOS C	34.4	244.8	0.78	0.76	0.79	20.5
All Vehicles		4241	2.5	4241	2.5	0.814	27.6	LOS C	39.4	285.0	0.80	0.76	0.82	29.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	14.3	LOS B	0.1	0.1	0.47	0.47
P3	North Full Crossing	53	12.5	LOS B	0.1	0.1	0.44	0.44
P4	West Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
All Pedestrians		158	28.7	LOS C			0.62	0.62

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: P:\V13600-13699\V136080 East Village - Integrated Transp\Modelling\SIDRA\180920-Updates\180920 SIDRA Network - Future PM - Post Dev No Growth - TfV&VR response.sip8

Appendix F

SIDRA Intersection –Future Site Access Intersection Results

MOVEMENT SUMMARY

Site: 001av [001a. EAST BOUNDARY ROAD BETWEEN NORTH ROAD AND NORTH DRIVE - Signals]

Network: N101 [Master Model]

EAST BOUNDARY ROAD BETWEEN NORTH ROAD AND NORTH DRIVE - east
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: East Boundary Road														
1	L2	7	0.0	7	0.0	0.215	10.7	LOS B	2.3	15.9	0.16	0.17	0.43	50.9
2	T1	1679	0.0	1679	0.0	0.689	13.1	LOS B	24.5	171.8	0.50	0.46	0.54	24.7
3	R2	145	0.0	145	0.0	0.678	73.9	LOS E	9.5	66.5	1.00	0.82	1.03	20.6
Approach		1832	0.0	1832	0.0	0.689	17.9	LOS B	24.5	171.8	0.54	0.49	0.58	23.6
East: NORTH DR														
4	L2	265	0.0	265	0.0	0.657	41.2	LOS D	12.9	90.2	0.94	0.95	1.21	25.9
6	R2	272	0.0	272	0.0	0.657	56.2	LOS E	12.9	90.2	0.98	0.86	1.05	21.4
Approach		537	0.0	537	0.0	0.657	48.8	LOS D	12.9	90.2	0.96	0.90	1.13	23.4
North: East Boundary Road														
7	L2	205	0.0	205	0.0	0.501	24.0	LOS C	21.1	147.5	0.69	0.75	0.97	41.9
8	T1	1365	0.0	1365	0.0	0.501	21.0	LOS C	27.7	193.7	0.76	0.72	0.84	28.0
Approach		1571	0.0	1571	0.0	0.501	21.4	LOS C	27.7	193.7	0.75	0.72	0.86	30.9
West: GEORGE ST														
10	L2	75	0.0	75	0.0	0.349	64.1	LOS E	4.5	31.4	0.96	0.77	0.96	19.5
Approach		75	0.0	75	0.0	0.349	64.1	LOS E	4.5	31.4	0.96	0.77	0.96	19.5
All Vehicles		4014	0.0	4014	0.0	0.689	24.3	LOS C	27.7	193.7	0.69	0.64	0.77	26.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	15.8	LOS B	0.1	0.1	0.49	0.49
P4	West Full Crossing	53	14.3	LOS B	0.1	0.1	0.47	0.47
All Pedestrians		158	29.8	LOS C			0.64	0.64

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 104av [4a (east). EAST BOUNDARY ROAD / SOUTH DRIVE - Signals]

Network: N101 [Master Model]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
2	T1	1555	0.0	1555	0.0	0.503	10.8	LOS B	18.0	126.0	0.51	0.46	0.51	39.0
3	R2	389	0.3	389	0.3	0.646	53.3	LOS D	16.4	115.1	0.96	0.84	0.96	17.7
3u	U	134	3.1	134	3.1	0.646	55.6	LOS E	13.8	97.8	0.96	0.84	0.96	16.0
Approach		2078	0.3	2078	0.3	0.646	21.6	LOS C	18.0	126.0	0.63	0.56	0.63	27.2
East: SOUTH DRIVE														
4	L2	254	0.0	254	0.0	0.329	13.9	LOS B	6.4	44.9	0.48	0.71	0.48	41.5
6	R2	275	0.0	275	0.0	0.614	63.5	LOS E	9.0	63.1	0.99	0.81	0.99	19.9
Approach		528	0.0	528	0.0	0.614	39.7	LOS D	9.0	63.1	0.74	0.76	0.75	26.5
North: EAST BOUNDARY ROAD														
7	L2	276	0.0	276	0.0	0.198	8.4	LOS A	3.6	25.5	0.26	0.62	0.26	48.6
8	T1	1361	2.5	1361	2.5	0.640	17.0	LOS B	20.5	146.7	0.57	0.51	0.57	21.6
9u	U	2	0.0	2	0.0	0.037	76.8	LOS E	0.1	1.0	1.00	0.62	1.00	6.7
Approach		1639	2.1	1639	2.1	0.640	15.6	LOS B	20.5	146.7	0.52	0.53	0.52	28.9
All Vehicles		4245	0.9	4245	0.9	0.646	21.6	LOS C	20.5	146.7	0.60	0.57	0.60	27.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
All Pedestrians		105	59.3	LOS E			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 107v [7. NORTH ROAD / CROSBIE ROAD / COBAR STREET - Signals]

Network: N101 [Master Model]

NORTH ROAD / CROSBIE ROAD / COBAR STREET
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: COBAR STREET														
1	L2	133	0.0	133	0.0	0.299	43.4	LOS D	6.7	46.8	0.86	0.75	0.86	20.7
2	T1	65	0.0	65	0.0	0.790	66.9	LOS E	11.4	80.2	1.00	0.92	1.17	17.4
3	R2	106	1.0	106	1.0	0.790	69.9	LOS E	11.4	80.2	1.00	0.92	1.17	17.4
Approach		304	0.3	304	0.3	0.790	57.7	LOS E	11.4	80.2	0.94	0.85	1.03	18.7
East: NORTH ROAD														
4	L2	146	1.4	146	1.4	0.108	9.2	LOS A	2.1	15.0	0.30	0.65	0.30	45.0
5	T1	1792	3.8	1792	3.8	0.838	19.2	LOS B	42.6	308.0	0.78	0.72	0.78	41.1
6	R2	72	0.0	72	0.0	0.626	74.0	LOS E	4.7	33.1	1.00	0.79	1.07	21.6
Approach		2009	3.5	2009	3.5	0.838	20.4	LOS C	42.6	308.0	0.75	0.72	0.76	40.2
North: CROSBIE ROAD														
7	L2	57	0.0	57	0.0	0.497	72.8	LOS E	3.7	25.9	1.00	0.75	1.00	18.1
Approach		57	0.0	57	0.0	0.497	72.8	LOS E	3.7	25.9	1.00	0.75	1.00	18.1
West: NORTH ROAD														
10	L2	23	0.0	23	0.0	0.669	18.9	LOS B	31.8	226.3	0.63	0.66	0.63	26.5
11	T1	1738	2.1	1738	2.1	0.669	13.6	LOS B	31.8	226.7	0.63	0.66	0.63	26.6
12	R2	180	0.6	180	0.6	0.791	71.3	LOS E	11.9	84.0	1.00	0.87	1.16	19.2
Approach		1941	1.9	1941	1.9	0.791	19.0	LOS B	31.8	226.7	0.67	0.68	0.68	23.9
All Vehicles		4312	2.5	4312	2.5	0.838	23.1	LOS C	42.6	308.0	0.73	0.71	0.75	32.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	12.1	LOS B	0.1	0.1	0.43	0.43
P3	North Full Crossing	53	8.9	LOS A	0.1	0.1	0.37	0.37
P4	West Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
All Pedestrians		158	26.7	LOS C			0.59	0.59

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: P:\V13600-13699\V136080 East Village - Integrated Transp\Modelling\SIDRA\180920-Updates\180920 SIDRA Network - Future AM - Post Dev With Growth - TfV&VR response.sip8

MOVEMENT SUMMARY

Site: 001av [001a. EAST BOUNDARY ROAD / NORTH DRIVE]

Network: N101 [Master Model]

EAST BOUNDARY ROAD BETWEEN NORTH ROAD AND NORTH DRIVE - east
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: East Boundary Road														
1	L2	22	0.0	22	0.0	0.210	13.3	LOS B	3.5	24.8	0.20	0.24	0.50	47.9
2	T1	1565	0.0	1565	0.0	0.642	14.0	LOS B	24.9	174.3	0.52	0.48	0.56	24.1
3	R2	168	0.0	168	0.0	0.620	70.3	LOS E	10.8	75.4	1.00	0.82	1.00	21.3
Approach		1756	0.0	1756	0.0	0.642	19.4	LOS B	24.9	174.3	0.56	0.51	0.61	23.6
East: NORTH DR														
4	L2	365	0.0	365	0.0	0.624	34.1	LOS C	15.5	108.5	0.88	0.96	1.15	28.8
6	R2	265	0.0	265	0.0	0.624	52.6	LOS D	15.5	108.5	0.95	0.85	1.00	22.3
Approach		631	0.0	631	0.0	0.624	41.9	LOS D	15.5	108.5	0.91	0.91	1.08	25.7
North: East Boundary Road														
7	L2	282	0.0	282	0.0	0.648	24.8	LOS C	22.3	157.6	0.62	0.75	0.95	41.2
8	T1	1517	2.2	1514	2.2	0.648	13.2	LOS B	22.3	157.6	0.45	0.45	0.54	34.8
Approach		1799	1.9	1796 N1	1.9	0.648	15.0	LOS B	22.3	157.6	0.48	0.50	0.60	36.6
West: GEORGE ST														
10	L2	4	0.0	4	0.0	0.049	72.1	LOS E	0.3	1.9	0.98	0.64	0.98	18.0
Approach		4	0.0	4	0.0	0.049	72.1	LOS E	0.3	1.9	0.98	0.64	0.98	18.0
All Vehicles		4189	0.8	4187 N1	0.8	0.648	20.9	LOS C	24.9	174.3	0.58	0.57	0.68	29.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	22.3	LOS C	0.1	0.1	0.59	0.59
P4	West Full Crossing	53	12.5	LOS B	0.1	0.1	0.44	0.44
All Pedestrians		158	31.4	LOS D			0.66	0.66

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 104av [4a (east). EAST BOUNDARY ROAD / SOUTH DRIVE]

Network: N101 [Master Model]

Staged crossing Stage 1 (Minor Road) at three-way intersection with 5-lane major road. Major road turn lane is treated as a full-length lane.
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: EAST BOUNDARY ROAD														
2	T1	1458	0.0	1458	0.0	0.426	9.9	LOS A	15.0	105.3	0.48	0.43	0.48	40.2
3	R2	321	0.3	321	0.3	0.633	53.8	LOS D	15.6	109.4	0.96	0.83	0.96	17.9
3u	U	163	2.6	163	2.6	0.633	56.3	LOS E	12.4	88.3	0.96	0.83	0.96	15.8
Approach		1942	0.3	1942	0.3	0.633	21.0	LOS C	15.6	109.4	0.60	0.53	0.60	27.3
East: NORTH DRIVE														
4	L2	368	0.0	368	0.0	0.528	15.3	LOS B	11.7	82.2	0.60	0.76	0.60	40.3
6	R2	282	0.0	282	0.0	0.641	64.8	LOS E	9.7	67.7	1.00	0.82	1.02	19.6
Approach		651	0.0	651	0.0	0.641	36.7	LOS D	11.7	82.2	0.77	0.79	0.78	27.6
North: EAST BOUNDARY ROAD														
7	L2	234	0.0	233	0.0	0.165	7.3	LOS A	1.7	11.7	0.14	0.59	0.14	49.8
8	T1	1649	2.0	1647	2.0	0.641	9.8	LOS A	15.5	110.6	0.36	0.32	0.36	29.7
9u	U	21	0.0	21	0.0	0.344	79.7	LOS E	1.4	10.1	1.00	0.71	1.00	6.5
Approach		1904	1.8	1902 N1	1.8	0.641	10.3	LOS B	15.5	110.6	0.34	0.36	0.34	33.7
All Vehicles		4497	0.9	4494 N1	0.9	0.641	18.8	LOS B	15.6	110.6	0.51	0.49	0.52	28.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
P2	East Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
All Pedestrians		105	59.3	LOS E			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 107v [7. NORTH ROAD / CROSBIE ROAD / COBAR STREET - Signals]

Network: N101 [Master Model]

NORTH ROAD / CROSBIE ROAD / COBAR STREET
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: COBAR STREET														
1	L2	172	0.0	172	0.0	0.425	44.0	LOS D	8.9	62.2	0.89	0.78	0.89	20.5
2	T1	77	0.0	77	0.0	0.889	73.0	LOS E	16.5	116.3	1.00	1.03	1.32	16.4
3	R2	155	0.7	155	0.7	0.889	75.8	LOS E	16.5	116.3	1.00	1.03	1.32	16.4
Approach		403	0.3	403	0.3	0.889	61.7	LOS E	16.5	116.3	0.95	0.92	1.13	17.9
East: NORTH ROAD														
4	L2	87	2.4	87	2.4	0.063	8.6	LOS A	1.1	8.1	0.27	0.64	0.27	45.3
5	T1	1754	3.8	1754	3.8	0.908	35.8	LOS D	55.0	397.6	0.88	0.91	1.00	32.2
6	R2	64	0.0	64	0.0	0.409	68.7	LOS E	4.0	28.1	0.99	0.76	0.99	22.6
Approach		1905	3.6	1905	3.6	0.908	35.7	LOS D	55.0	397.6	0.85	0.90	0.97	32.5
North: CROSBIE ROAD														
7	L2	119	0.0	119	0.0	0.757	73.5	LOS E	7.9	55.6	1.00	0.86	1.17	18.0
Approach		119	0.0	119	0.0	0.757	73.5	LOS E	7.9	55.6	1.00	0.86	1.17	18.0
West: NORTH ROAD														
10	L2	43	0.0	43	0.0	0.736	23.2	LOS C	34.4	244.8	0.74	0.74	0.74	22.1
11	T1	1763	2.0	1763	2.0	0.736	17.9	LOS B	34.4	244.8	0.74	0.74	0.74	22.2
12	R2	177	0.6	177	0.6	0.888	80.3	LOS F	12.7	89.2	1.00	0.94	1.36	17.9
Approach		1983	1.9	1983	1.9	0.888	23.6	LOS C	34.4	244.8	0.76	0.76	0.80	20.8
All Vehicles		4411	2.4	4411	2.4	0.908	33.6	LOS C	55.0	397.6	0.83	0.83	0.91	26.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	12.5	LOS B	0.1	0.1	0.44	0.44
P3	North Full Crossing	53	11.2	LOS B	0.1	0.1	0.42	0.42
P4	West Full Crossing	53	59.3	LOS E	0.2	0.2	0.96	0.96
All Pedestrians		158	27.7	LOS C			0.60	0.60

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Project: P:\V13600-13699\V136080 East Village - Integrated Transp\Modelling\SIDRA\180920-Updates\180920 SIDRA Network - Future PM - Post Dev With Growth - TfV&VR response.sip8

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