CITY OF SOUTH PERTH

INTEGRATED TRANSPORT PLAN

APPENDICE

City of South Perth

Integrated Transport Plan – Traffic and Congestion Forecast

PROJECT	**Integrated Transport Plan – Traffic and Congestion Forecast**			
FILE	81113-576-FLYT-REP-0007			
Revision	**Description**	**Originator**	**Review**	**Date**
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2	Final	CAS	SCK	08/03/2021

EXECUTIVE SUMMARY

Flyt were appointed by the City of South Perth (referred to as the City hereafter City) to provide Traffic Engineering and Transport Planning services for the initial stages of the City of South Perth Integrated Transport Plan. Specifically, this report is the completion of the Traffic and Congestion Forecast project.

The key elements covered in this report are:

- Examination and documenting existing traffic volumes on the City's distributor roads, including typical traffic speeds
- Highlighting areas where and when (i.e. time, day and duration) congestion typically occurs
- Establishing locations where there is evidence of higher rates of crashes and/or conflict between different transport modes, including pedestrians.

There were three milestones associated with the project which will support the development of an Integrated Transport Plan (ITP) in 2021 to sit alongside other strategic planning documents being delivered.

The overall Distributor Road network within the City operates well during key peak times given the volume of traffic moving into and through the City. There are noticeable fluctuations in volumes and speeds associated with peak periods that would be common place throughout similar locations around the Perth metropolitan area.

The morning peak period operates as a more point-to-point flow of movements associated with employment and education trips whilst the afternoon weekday peak is spread out over a longer period of timing which is associated with fluctuations in commuting patterns, linked trips to multiple destinations and trips being taken for non-employment reasons such as recreation trips or entertainment trips.

Whilst there are some obvious congested locations during weekday peak periods, none of those observed or historically apparent would be considered to be a wholesale failure of the network to cope or be a limiter in supporting strategic land use goals of the City. Most of these locations are associated with key intersections along the Canning Highway corridor or at the Kwinana Freeway interchanges at Mill Point Road and Canning Highway / Manning Road. These locations will continue to see the same sorts of conditions during peak periods for the future – this should be considered normal operation.

Results from the speed analysis highlight the importance of slower speed zones around key areas such as local centres and school zones. There is a relatively high level of compliance in terms of maintaining the posted speed limit on the Distributor Road network, with the exception of those roads that are purely designed for continuous flow with no urban frontage such as Hayman Road, Kent Street and some sections of Manning Road.

Given the overall volume of traffic experienced in the City on an average weekday and throughout the year, the volume of significant or major crashes recorded throughout a five year period does not suggest that there are any substantial issues apparent.

Crashes between motor vehicles will always be a factor in the City as no substantial urban road system or street network can deliver no accidents, injuries or fatalities. The mature state of the road network indicates that the majority of these crashes will continue to fit the profile of those recorded over the past five years – generally at the lower end of the scale and mainly due to driver inattention in fine, daylight conditions. Pedestrian accidents do not appear to be a specific issue however the City has a substantial off-street path network that provides a safe environment where vehicle interaction is minimal.

The Western Australian Black Spot Program requires a minimum of 10 intersection crashes over five years on State roads, such as Canning Highway and five crashes over five years on local roads, to qualify for consideration. This would mean that 13 out of the 29 intersections along Canning Highway (State Road) and 24 of the 118 intersections on local distributor roads would qualify for Black Spot Program based on crash volumes alone.

The City should continue to monitor these locations on Distributor Roads and address them on an ongoing basis. Above all, reducing speed within the higher activity centre areas will assist in reducing the level of crashes experienced and also support safer conditions for pedestrians and other vulnerable road users.

The City has a substantial network of primary walking and cycling facilities along the Swan River foreshore, through Sir James Mitchell Park and along the Kwinana Freeway. These connections are some of the most popular walking and cycling routes in Perth. In addition, most areas of the city have a mature tree canopy that support walking trips and an extensive network of local street connections with footpaths.

In addition, the City has worked with the Town of Victoria Park to develop a bike plan that pre-empted the Long Term Cycle Network developed by the Department of Transport (DoT). For there to be any substantial increase in cycling and walking in the City during the course of the ITP being in place, high quality segregated facilities need to be provided that connect up areas of activity along or adjacent to many distributor road corridors. This will have implications for street design, for use of existing road reserves, on-street parking and cost of developing and maintaining the network. Without a step change in infrastructure beyond what was envisaged with the Joint Bike Plan, cycle usage will stay at similar levels to that of today – a negligible contribution to overall movement patterns.

The City has a bus network with a number of high frequency services that connect up major interchanges with Activity Centres. It is also unique in that it has the only passenger terminal for the Ferry network outside of Central Perth. This facility is a key drawcard for visitors to the City and in particular the foreshore area and the Zoo.

The local bus routes provide lower frequency connections between the City and Central Perth. This network is primarily aimed at commuting movements.

Canning Bridge Station is a key interchange on the overall network and on the Perth to Mandurah rail line. It supports the movement of people between the rail network and Curtin University and also underpins the development proposed for the Canning Bridge Activity Centre. For many years, the case has been progressed with State Government for the construction of a new station at South Perth, however this has been overlooked for other outer suburban low density commuter belt locations along the Perth to Mandurah line such as Aubin Grove, Karnup and Lakelands. The City should continue to proactively lobby for the South Perth train station with the State, focussing on the delivery of meeting housing density targets and potential increased public transport patronage in and around the South Perth station precinct.

For public transport to increase in usage and be more attractive, not only does the reconfiguration of Canning Bridge Station and the development of South Perth Station by the Public Transport Authority (PTA) need to occur, the City will need to be proactive in supporting and assisting in the delivery of on-street bus priority where and when it is required. This is particularly important to Canning Bridge, the connection to Curtin University and through the South Perth Activity Centre.

Information that is taken from macroscopic, or metropolitan wide, traffic models is dependent on the inputs used to inform the model and the parameters or assumptions that are made in constructing the model. Although the City has no control over the latter point, the quality of data flowing into the model can be influenced by the City. To ensure that there is a more accurate representation of the potential impacts within the City, a review of the network, links and employment and housing inputs into ROM24 would be helpful in addressing some of the existing deficiencies.

Ultimately, the outputs from ROM24 cannot be relied on for assessing more localised impacts and it is not designed to achieve that task at any rate. The lack of constraint within the strategic model limits its applicability in understanding impacts in the City or defining impacts on the distributor road network. As illustrated, many major roads in the City have not seen growth over a decade but all are forecast to grow in volumes over the next 10-20 years.

That the City has an existing operational model that allows for assessment of development impacts and other traffic management measures already, is a diligent approach. Although that model was not assessed for this project and therefore could not be vouched for, it covers a large part of the City that is subject to development pressures and is an appropriate tool.

The traffic forecast review highlights the volume of traffic that passes through the City without having an internal purpose. This through traffic is largely contained on the Kwinana Freeway and Canning Highway corridors, however its impact is obvious around the peak hour congestion or queueing on approach to interchanges and also at points where the local distributor road network intersects with Canning Highway.

This situation will not change and it is an accepted reality of how the transport network of an inner city area functions. Perth has been planned for accommodating and encouraging the predominance of private vehicle movement and nothing at a strategic level will change that situation within the life of the ITP.

Engagement for the initial stage of the ITP was focussed to key transport agencies, given the much broader engagement process that the City would undertake during the production of the ITP and associated planning strategy documents planned for 2021. As such, engagement was to be focussed on Main Roads WA and the PTA.

Engagement with the PTA assisted in examining the implications for Canning Bridge Station, as well as future planning for South Perth Station and the form of the supporting bus network in the City. Discussions with Main Roads WA focussed on the impacts of the Smart Freeways project and also provided clarity on the future planning for the Canning Highway corridor between the Causeway and Henley Street.

The recommendations and strategies within this report are high level and designed to provide a framework from which the City can progress the development of the ITP throughout 2021. The ultimate recommendations of the ITP will be subject to a substantial filtering and technical review process that will be informed by an engagement process to be led by the City's Officers.

The recommendations have been informed by the Traffic and Congestion Forecast Report completed for the City, as well as review of the strategic planning documents relevant to this exercise. The city-wide recommendations have been designed to address wider issues that cross over all or multiple locations. Some would be a continuation of existing practice in place by Council, others would be aimed at shaping the ITP and their outcomes.

There are 16 City wide recommendations provided within this report that focus on:

- Function of the ITP
- Engagement with State Government agencies on elements such as South Perth Train Station, Canning Bridge, Smart Freeways
- Investigations into key areas that the City can deliver – CAT Buses, Parking Strategy being implanted, Activity Centre outcomes and review of cycle connections
- Investigating future of Manning Road designation.

Nine specific recommendations have been included for locations on the distributor road network, which include:

- Reviewing the overall network and how it is designated
- Undertaking analysis of Movement and Place proposals by DoT and DPLH
- Review widths of Distributor Road network near intersections to understand where any alterations could be made within reserves
- Review locations for on-street parking
- Range of monitoring and data availability.

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1. INTRODUCTION

1.1 Report

Flyt were appointed by the City of South Perth (the City) to provide Traffic Engineering and Transport Planning services for the initial stages of the City of South Perth Integrated Transport Plan. Specifically, this report is the completion of the Traffic and Congestion Forecast project.

The key elements covered in this report are:

- Examination and documenting existing traffic volumes on the City's distributor roads, including typical traffic speeds
- Highlighting areas where and when (i.e. time, day and duration) congestion typically occurs
- Establishing locations where there is evidence of higher rates of crashes and/or conflict between different transport modes, including pedestrians.

This report is set out to cover these main tasks split into three sections focussing on Milestones 1, 2 and 3.

1.2 Traffic and Congestion Forecast Project

As set out in the RfQ for the project:

"*Over the next 10-20 years the Greater Perth region will grow towards a population of 3.5 million inhabitants. The City of South Perth (the City) is required to plan for its share of this growth, with a target of over 8,000 new dwellings identified in the State Government's Perth and Peel @3.5 Million strategic plan.*

The City is preparing an Integrated Transport Plan (ITP), which will set out an integrated approach to transport planning to support future population growth across the City. Existing mobility plans, including parking and bicycle strategies, will be built upon to improve existing infrastructure and address future trends.

The City seeks submissions from suitably qualified consultants to prepare a traffic and congestion forecast and recommend strategies to address identified issues, to inform the ITP.

The objectives of the traffic and congestion forecast are to:

- *Understand existing traffic volumes and congestion locations*
- *Identify locations with elevated potential for conflict between road users and different transport modes*
- *Identify likely future traffic volumes and congestion locations with consideration of the expected growth of the City (as detailed in the City's Draft Local Planning Strategy)*
- *Determine priority areas of the road network for intervention to manage identified issues*
- *Recommend strategies to address identified priority areas and issues*.".

2. MILESTONES

2.1 Introduction

There were three key milestones that the City were working towards, all of which are addressed within this report. The requirements for each milestone are set out in the following sections.

2.2 Milestone 1 Tasks

To address the City requirements, the following tasks were undertaken to report on Milestone 1:

- Discuss the headline performance issues with Council staff at an Inception Meeting. The minutes from the Inception Meeting are included in Appendix A
- Review inputs into Canning Bridge Activity Centre Plan and the South Perth Activity Centre Plan
- Obtain the baseline information provided by the City of South Perth, including all classified count and speed data that is available for the network collected by the City, information extracted from the Main Roads WA TrafficMap service including SCATS outputs and classified count data, outputs from reports and other data sources that were relevant.
- Establish a register of the distributor network characteristics
- Download typical network performance mapping available through Google Maps
- Meet with Main Roads WA Operational staff to discuss any issues they have with the network as it operates and to interrogate them over the performance of the network and any likely changes to be made that are not already understood by the City
- Undertake a driving tour of the key areas raised by the City and Main Roads WA during peak periods
- Extract running data and usage profiles from Strava Metro to understand the paths of recreational runners or walkers
- Extract all pedestrian count information available from the Main Roads WA TrafficMap system
- Obtain the Transperth bus network map for reference purposes
- Access crash statistics for intersections in the City via the Crash Reporting System of Main Roads WA and supplement this with any information that the City may have available in relation to listed Blackspots or those locations within any traffic management plans that have been cited as an issue
- Map the data obtained
- Produce this report that would set out all of the findings of this stage of the project, which would include:
    - Schematic information on network congestion, alongside actual footage of key sections of the network
    - Analysis of speed profiles and key congestion areas using maps, graphs and information taken from our site tour
    - Information from the Main Roads WA TrafficMap system on network performance
    - Tables and maps setting out the location of the top crash locations in the City
    - Other data information relevant to the completion of the Milestone as discussed with the City
    - Minutes of meetings with Council and Main Roads WA.

The information in this report is set out using these heading points:

- Network Performance
- Crash Information
- Other Data
- Engagement.

Milestone 1 is addressed in sections 3, 4 and 5 of this report.

2.3 Milestone 2 Tasks

Milestone 2 tasks related to the modelling outputs available and commentary on the major projects that are located within the City. The tasks required to be completed were:

Provide a forecast of congestion locations for the years 2025 and 2030 based on the City's population forecast and traffic modelling. Clearly articulate the methodology and assumptions for the forecast, and provide supporting maps to spatially identify areas of priority. Explain the reasons for prioritisation

Analyse and discuss the likely impacts of significant transport projects including (but not limited to):

- South Perth Train Station
- Canning Bridge Bus Port
- Manning Road on-ramp
- Smart Freeways project
- A local CAT bus service
- Increasing traffic movements to and from Curtin University
- Long Term Cycle Network and implementation of the City's Joint Bike Plan.

Milestone 2 is addressed in sections 6, 7 and 8 of this report.

2.4 Milestone 3 Tasks

Milestone 3 tasks completed the project and included the following two elements:

- Recommend strategies and innovations that the City can employ to reduce and manage the impact of congestion on the transport network.
- Prepare and present the project outcomes to a briefing of the City's Councillors. The briefing will take place on a weekday evening for one hour.

Milestone 3 is addressed in section 9 of this report.

3. MILESTONE 1 - NETWORK PERFORMANCE

3.1 Distributor Road Network

The distributor road network, extracted from the Main Roads WA Road Information Mapping system, is shown in Figure 1.

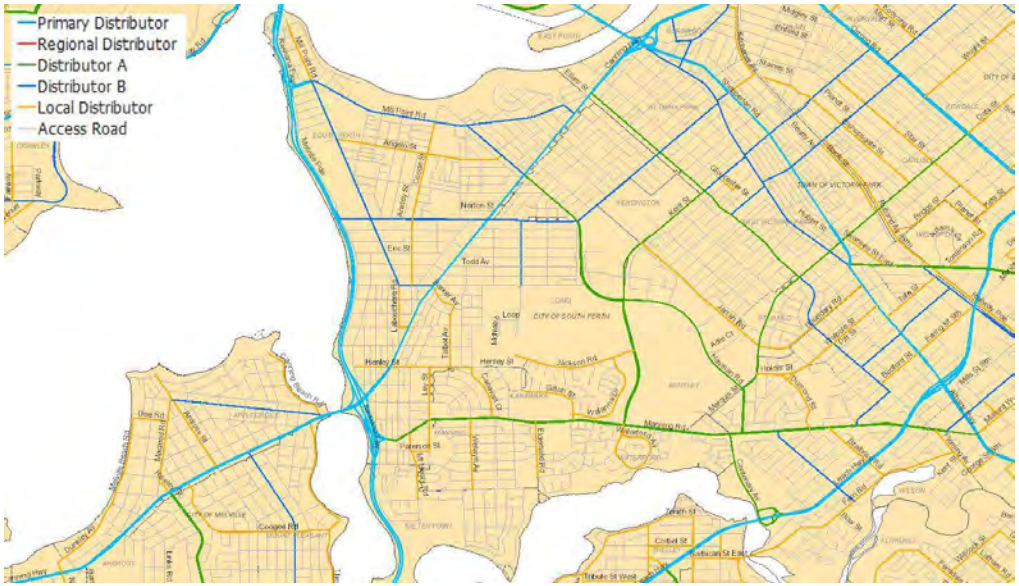


Figure 1 Distributor road network (source: Main Roads WA)

The classification table for the road network, as developed by Main Roads in conjunction with Local Authorities, is shown in **Error! Reference source not found.** overleaf. Although these classifications have no statutory weight, they were designed to standardise roads into distinct categories for operational purposes and to allow for alignment between state and local responsibilities.

The one category of road type within the classification that does have a statutory basis are Primary Distributor roads. These roads are defined under the Main Roads Act and are solely controlled and planned for by Main Roads WA. All other public roads in the City are under the control of the City.

The City has a number of different classified district roads, as set out in Table 1.

Table 1 District distributor roads in City of South Perth

Type	Road	Suburb
District Distributor A	Centenary Ave	Waterford
District Distributor A	Manning Road	Waterford - Manning
District Distributor A	Kent Street	Como-Bentley
District Distributor A & B	Douglas Ave - Hayman Road	Como-Kensington
District Distributor B	South Terrace – George Street	South Perth - Kensington
District Distributor B	Labouchere Road	South Perth - Como
District Distributor B	Murray Street	Como
District Distributor B	Thelma Street	Como
District Distributor B	Mill Point Road - Way Road	South Perth

The local distributor road network provides connections between the district distributor roads and also acts as a feeder or key corridor into residential areas such as Salter Point, Waterford and Karawara. The list of local distributor roads is set out in Table 2.

ROAD HIERARCHY FOR WESTERN AUSTRALIA
ROAD TYPES AND CRITERIA (see Note 1)

CRITERIA	PRIMARY DISTRIBUTOR (PD) (see Note 2)	DISTRICT DISTRIBUTOR A (DA)	DISTRICT DISTRIBUTOR B (DB)	REGIONAL DISTRIBUTOR (RD)	LOCAL DISTRIBUTOR (LD)	ACCESS ROAD (A)
Primary Criteria						
1. Location (see Note 3)	All of WA incl. BUA	Only Built Up Area.	Only Built Up Area.	Only Non Built Up Area. (see Note 4)	All of WA incl. BUA	All of WA incl. BUA
2. Responsibility	Main Roads Western Australia.	Local Government.	Local Government.	Local Government.	Local Government.	Local Government.
3. Degree of Connectivity	High. Connects to other Primary and Distributor roads.	High. Connects to Primary and/or other Distributor roads.	High. Connects to Primary and/or other Distributor roads.	High. Connects to Primary and/or other Distributor roads.	Medium. Minor Network Role Connects to Distributors and Access Roads.	Low. Provides mainly for property access.
4. Predominant Purpose	Movement of inter regional and/or cross town/city traffic, e.g. freeways, highways and main roads.	High capacity traffic movements between industrial, commercial and residential areas.	Reduced capacity but high traffic volumes travelling between industrial, commercial and residential areas.	Roads linking significant destinations and designed for efficient movement of people and goods between and within regions.	Movement of traffic within local areas and connect access roads to higher order Distributors.	Provision of vehicle access to abutting properties
Secondary Criteria						
5. Indicative Traffic Volume (AADT)	In accordance with Classification Assessment Guidelines.	Above 8 000 vpd	Above 6 000 vpd.	Greater than 100 vpd	Built Up Area - Maximum desirable volume 6 000 vpd. Non Built Up Area – up to 100 vpd.	Built Up Area - Maximum desirable volume 3 000 vpd. Non Built Up Area – up to 75 vpd.
6. Recommended Operating Speed	60 – 110 km/h (depending on design characteristics).	60 – 80 km/h.	60 – 70 km/h.	50 – 110 km/h (depending on design characteristics).	Built Up Area 50 - 60 km/h (desired speed) Non Built Up Area 60 – 110 km/h (depending on design characteristics).	Built Up Area 50 km/h (desired speed). Non Built Up Area 50 – 110 km/h (depending on design characteristics).
7. Heavy Vehicles permitted	Yes.	Yes.	Yes.	Yes.	Yes, but preferably only to service properties.	Only to service properties.
8. Intersection treatments	Controlled with appropriate measures e.g. high speed traffic management, signing, line marking, grade separation.	Controlled with appropriate measures e.g. traffic signals.	Controlled with appropriate Local Area Traffic Management.	Controlled with measures such as signing and line marking of intersections.	Controlled with minor Local Area Traffic Management or measures such as signing.	Self controlling with minor measures.
9. Frontage Access	None on Controlled Access Roads. On other routes, preferably none, but limited access is acceptable to service individual properties.	Prefer not to have residential access. Limited commercial access, generally via service roads.	Residential and commercial access due to its historic status Prefer to limit when and where possible.	Prefer not to have property access. Limited commercial access, generally via lesser roads.	Yes, for property and commercial access due to its historic status. Prefer to limit whenever possible. Side entry is preferred.	Yes.
10. Pedestrians	Preferably none. Crossing should be controlled where possible.	With positive measures for control and safety e.g. pedestrian signals.	With appropriate measures for control and safety e.g. median/islands refuges.	Measures for control and safety such as careful siteing of school bus stops and rest areas.	Yes, with minor safety measures where necessary.	Yes.
11. Buses	Yes.	Yes.	Yes.	Yes.	Yes.	If necessary (see Note 5)
12. On-Road Parking	No (emergency parking on shoulders only).	Generally no. Clearways where necessary.	Not preferred. Clearways where necessary.	No – emergency parking on shoulders – encourage parking in off road rest areas where possible.	Built Up Area – yes, where sufficient width and sight distance allow safe passing. Non Built Up Area – no. Emergency parking on shoulders.	Yes, where sufficient width and sight distance allow safe passing.
13. Signs & Linemarking	Centrelines, speed signs, guide and service signs to highway standard.	Centrelines, speed signs, guide and service signs.	Centrelines, speed signs, guide and service signs.	Centrelines, speed signs and guide signs.	Speed and guide signs.	Urban areas – generally not applicable. Rural areas - Guide signs.
14. Rest Areas/Parking Bays	In accordance with Main Roads' *Roadside Stopping Places Policy*.	Not Applicable.	Not Applicable.	Parking Bays/Rest Areas. Desired at 60km spacing.	Not Applicable.	Not Applicable.

Figure 2 - Main Roads WA classification table

Table 2 Local distributor road network

Type	Road	Suburb
Local Distributor	Mill Point Road	South Perth
Local Distributor	Angelo Street	South Perth
Local Distributor	Coode Street	South Perth – Como
Local Distributor	Labouchere Road - Saunders Street	Como
Local Distributor	Barker Avenue – Talbot Avenue	Como
Local Distributor	Henley Street	Como
Local Distributor	Ley Street	Como - Manning
Local Distributor	Canavan Crescent – Bruce Street	Como
Local Distributor	Mt Henry Road – Clydesdale Street	Salter Point – Manning
Local Distributor	Welwyn Avenue	Manning
Local Distributor	Elderfield Road	Manning – Waterford
Local Distributor	Waterford Avenue	Waterford
Local Distributor	Gillon Street	Karawara
Local Distributor	Jackson Road	Karawara
Local Distributor	Walanna Drive	Karawara

The distributor roads within the City formed the basis for the assessment within this report.

3.2 Existing Traffic Volumes

Information was extracted from a range of sources to understand the existing average weekday and AM and PM peak period vehicle movements. These sources were:

- Count data extracted from the Main Roads WA TrafficMap website which provides volume and daily counts at a range of locations on the distributor road network
- SCATS data from traffic signal locations around the City
- Information collected for the City as part of monitoring programmes for street management
- Other counts and data collected for the South Perth Activity Centre and Canning Bridge Activity Centre.

The data referred to in this section is primarily Average Daily Traffic volumes for the distributor road network (midnight to midnight) which means that some volumes on a daily basis would fluctuate and there would likely be seasonal volumes associated with a drop off in school run activity. Data collected for TrafficMap, Activity Centres and the City purposes would all be outside of school holiday periods and therefore would likely represent typical all day and peak period movements.

For AM and PM peak hours, the hourly recorded data was taken as a peak and they may vary from site to site due to localised factors. The AM peak hour is typically between 8.00am and 9.00am which covers both commuting and school run trips. For the afternoon peak hour, some locations near schools experienced an earlier peak associated with a high volume of parent pick up traffic. This is true of locations such as Coode Street near Wesley College.

For reporting purposes, this section was split into suburbs and the City Intramaps base map was used for background. Some locations had entire counts for all movements available, whilst others had to be split to reflect movements along different arms of intersections. Where there was a shared movement, an estimate of turning traffic was made using known data and equalising volumes at subsequent intersections.

3.2.1 South Perth

Volumes available for the distributor road network in South Perth are shown in Figure 3. These volumes are taken from data throughout 2018 to 2020. The primacy of Mill Point Road and Labouchere Road feeding to and from the Kwinana Freeway is evident.

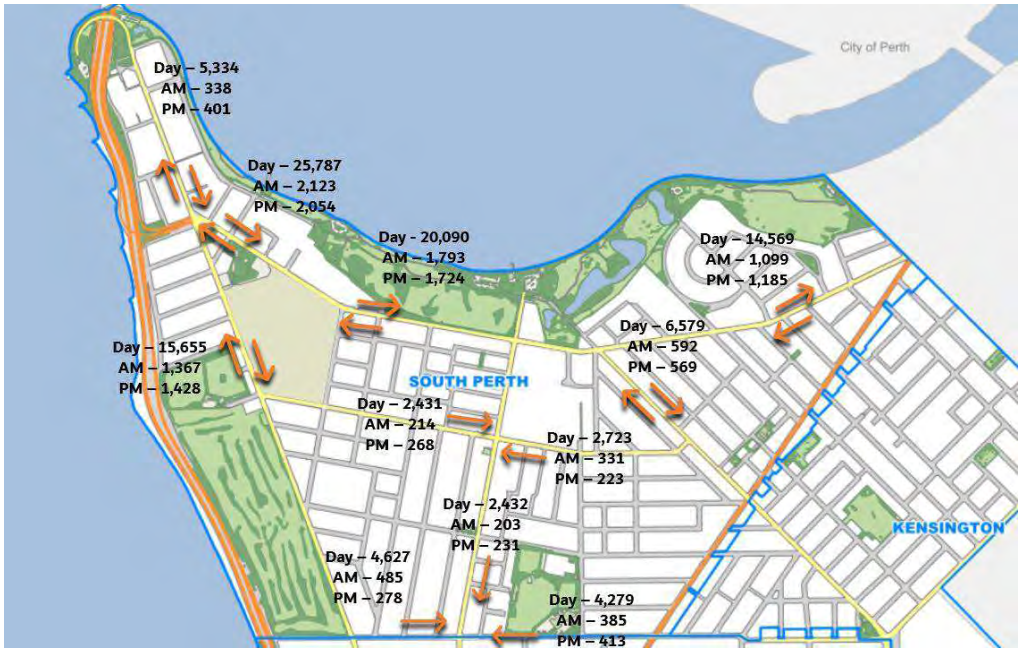


Figure 3 Distributor road volumes - South Perth

All other distributor roads within the area had relatively low volumes, with Douglas Avenue between Canning Highway and Mill Point Road carrying a relatively higher volume of traffic than other feeder approaches. This is primarily due to its connection to Hayman Road and the Activity Centre at Bentley Curtin.

3.2.2 Kensington

Kensington is split by four distributor roads that provide connection through South Perth to Victoria Park and the regional road network. The higher traffic volumes on Douglas Avenue south of Canning Highway shown in Figure 4 also indicate a movement of traffic to and from the primary road network. Peak flows on the distributor road network in Kensington occur at traditional commuter peak times.

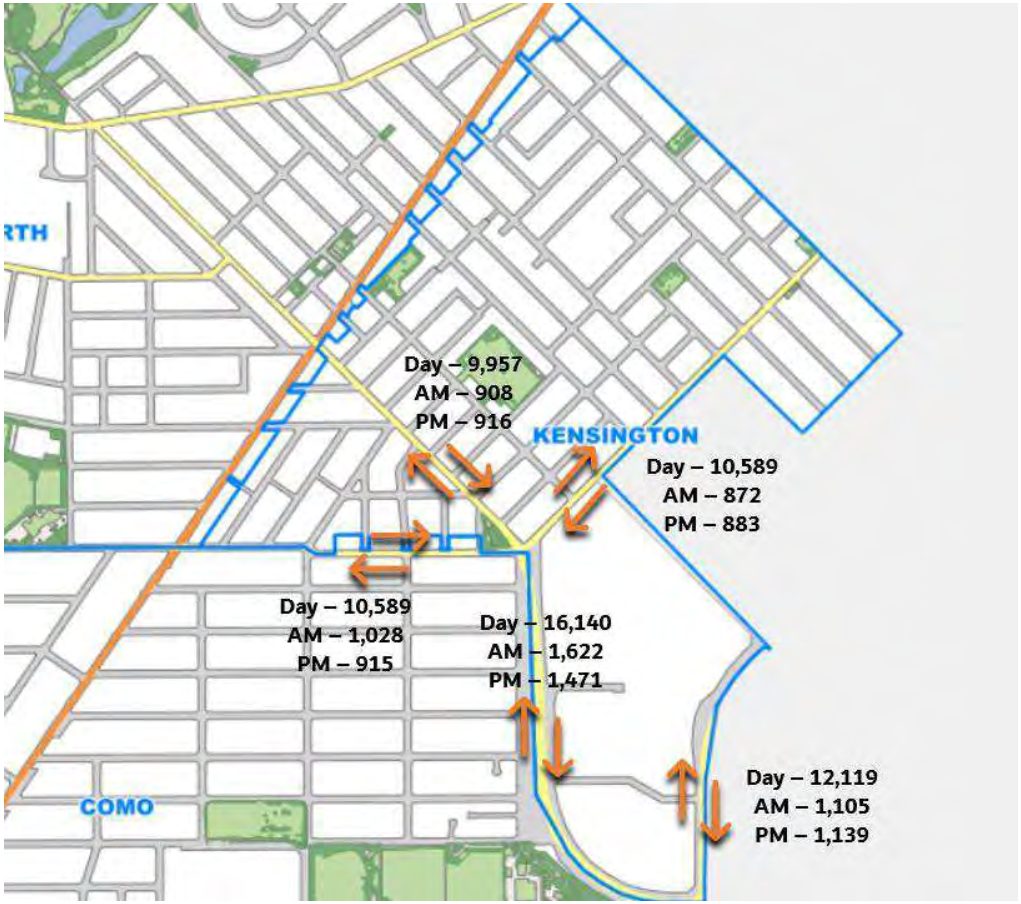


Figure 4 Distributor road volumes – Kensington

3.2.3 Como

Traffic volumes for the distributor road network in Como are shown in Figure 5. The distributor road network generally feeds into Canning Highway and Kwinana Freeway. The corridor along Labouchere Road also acts as an important connection between Como and South Perth. Peak volumes in the AM peak hour are generally within commuting peak hours, with some PM peak hours around schools (such as Thelma Street) recording higher volumes than traditional peaks.

Figure 5 Distributor road volumes – Como

3.2.4 Manning

Volumes for the distributor road network in the location of Manning are shown in Figure 6. This locality is divided by Manning Road itself, which provides a regional road connection between Albany Highway and the Kwinana Freeway/Canning Bridge Interchange, as well as providing a distributor function for the Bentley - Curtin Activity Centre and the Karawara retail centre.

The volumes of traffic along Manning Road are the highest on the distributor road network within the City, although these are further to the east of Manning in Waterford.

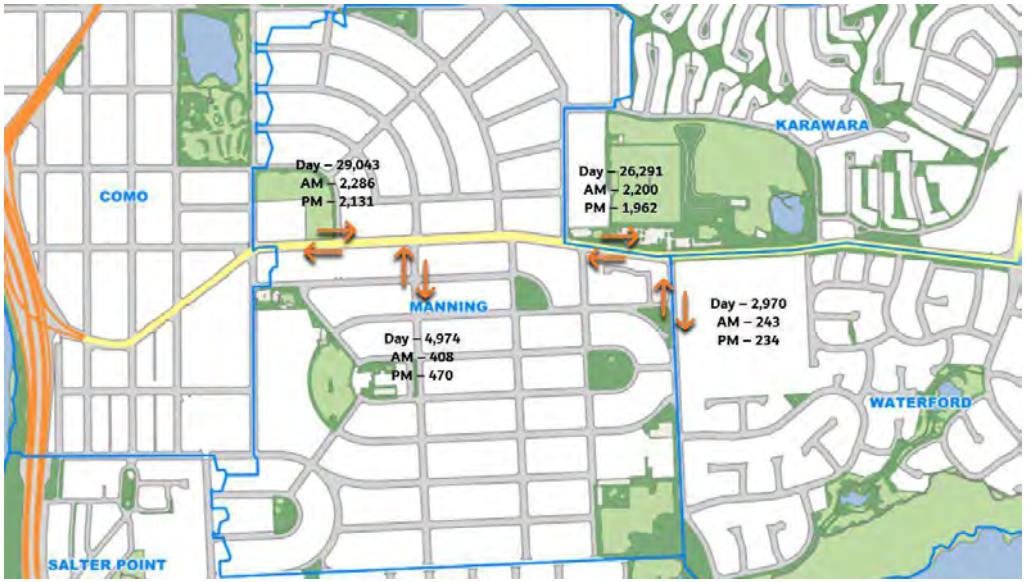


Figure 6 Distributor road volumes – Manning

3.2.5 Waterford

Volumes recorded on the distributor road network in Waterford are shown in Figure 7.

As with Manning, the network in Waterford is dominated by Manning Road, with the intersections of Manning Road with Kent Street and Centenary Avenue forming the busiest parts of the overall distributor road network in the City.

The peak period movements along this corridor are more reflective of the traditional peak periods and is heavily influenced by sub-regional movements through the corridor with vehicles accessing Bentley - Curtin Activity Centre or travelling further along the regional road network.

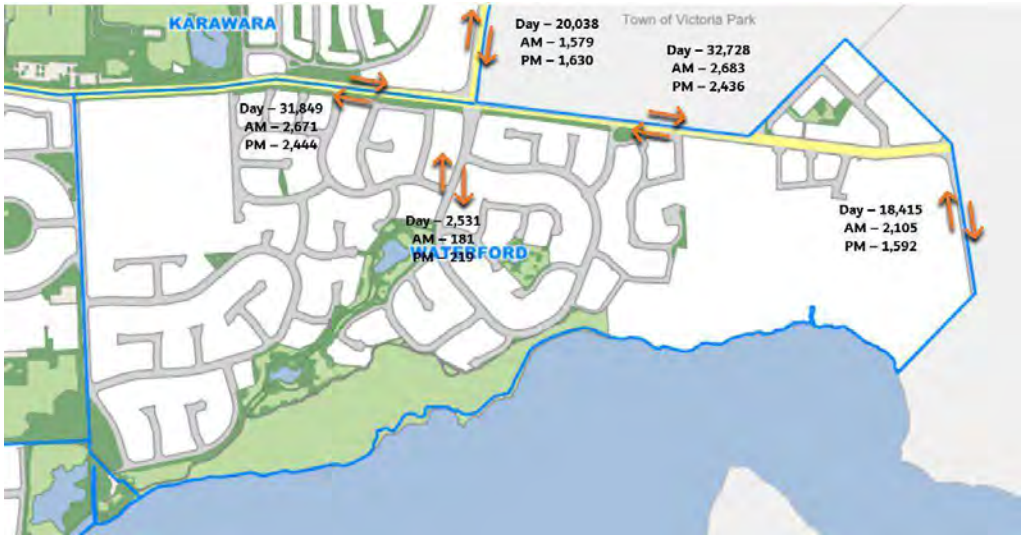


Figure 7 Distributor road volumes – Waterford

3.3 Definition of Congestion

As noted within many research and industry papers, there is no universal definition of traffic congestion that could be easily applied to every situation and context.

As noted within the State of the Environment 2016 Report[1] (every 5 years, the Australian Government commissions an independent review of the state of the environment):

"*Given the size and structure of large parts of Australia's cities, motor vehicle travel is essential if city residents are to access jobs and services. However, such travel also comes at a cost. For residents, there are the ongoing costs of owning and operating a motor vehicle, and the time taken to travel. This is a particular burden on residents who have few transport alternatives and are required to travel long distances. In addition, congestion, productivity, and environmental costs are all rising. Australia is one of the world's highest per-person emitters of greenhouse gases. Transport emissions are particularly high and continuing to grow (Armstrong et al. 2015). Increasingly, motor vehicle travel is becoming a strain for the functioning of our cities and their economies.*

The 'avoidable' cost of congestion (where the benefits to road users of some travel in congested conditions are less than the costs imposed on other road users and the wider community) *for Australian capital cities is estimated to be around $16.5 billion in 2014–15, having grown from about $12.8 billion in 2010.This total comprises approximately $6 billion in private time costs, $8 billion in business time costs, $1.5 billion in extra vehicle operating costs and $1 billion in additional air pollution costs (BITRE 2015b).*".

[1] https://soe.environment.gov.au/theme/built-environment/topic/2016/increased-traffic#Impact_of_traffic_increases

Separately, research papers developed by the OECD and those reviewing broader concepts of traffic congestion arrive at a range of definitions. A paper presented by Mohammed Aftabuzzaman from Monash University at the 30th Australian Transport Research Forum sets out a range of definitions, as set out in Figure 8.

Table 1: Alternate definitions of congestion

	Definition	Author
Demand Capacity related	Traffic congestion occurs when travel demand exceeds the existing road system capacity.	Rosenbloom, 1978
	Congestion is a condition in which the number of vehicles attempting to use a roadway at any time exceeds the ability of the roadway to carry the load at generally acceptable service levels.	Rothenberg, 1985
	Congestion is a condition that arises because more people wish to travel at a given time than the transportation system can accommodate: a simple case of demand exceeding supply.	The Institute of Civil Engineers, 1989 cited in Miller and Li, 1994
	When vehicular volume on a transportation facility (street or highway) exceeds the capacity of that facility, the result is a state of congestion.	Vuchic and Kikuchi, 1994
	Congestion is the impedance vehicles impose on each other, due to the speed-flow relationship, in conditions where the use of a transport system approaches its capacity.	ECMT, 1999
	Congestion may be defined as state of traffic flow on a transportation facility characterized by high densities and low speeds, relative to some chosen reference state (with low densities and high speeds).	Bovy and Salomon, 2002
Delay- travel time related	Congestion is an imbalance between traffic flow and capacity that causes increased travel time, cost and modification of behaviour.	Pisaraski, 1990 cited in Miller and Li, 1994
	Traffic congestion is travel time or delay in excess of that normally incurred under light or free-flow travel conditions.	Lomax et al, 1997
	Traffic congestion is a condition of traffic delay (when the flow of traffic is slowed below reasonable speeds) because the number of vehicles trying to use the road exceeds the traffic network capacity to handle them.	Weisbrod, Vary and Treyz, 2001
	Congestion is the presence of delays along a physical pathway due to presence of other users	Kockelman, 2004
	Congestion can defined as the situation when traffic is moving at speeds below the designed capacity of a roadway.	Downs, 2004
	In the transportation realm, congestion usually relates to an excess of vehicles on a portion of roadway at a particular time resulting in speeds that are slower—sometimes much slower—than normal or "free flow" speeds.	Cambridge Systematics and TTI, 2005
Cost related	Traffic congestion refers to the incremental costs resulting from interference among road users.	VTPI, 2005

Figure 8 Alternative definitions of congestion (source: Md Aftabuzzaman)

3.4 Peak Period Traffic

To analyse the morning peak conditions, on-site surveys were undertaken on a typical Tuesday in November 2020. The conditions were recorded through on-site observations from a vehicle, recorded within in-car footage and then tracked remotely through Google Maps to provide a comparison of the actual journey with that displayed in Google Maps at the time.

Google Maps uses Tom Tom data collected from vehicles using the in-car GPS system and is an accurate measurement of overall network performance. Although definitive values are not placed on how "congested" or "constrained" a part of the network is, it provides users with a comparative measurement based on general journey times. The routes used, as agreed with City officers, is shown overlaid on Figure 9.

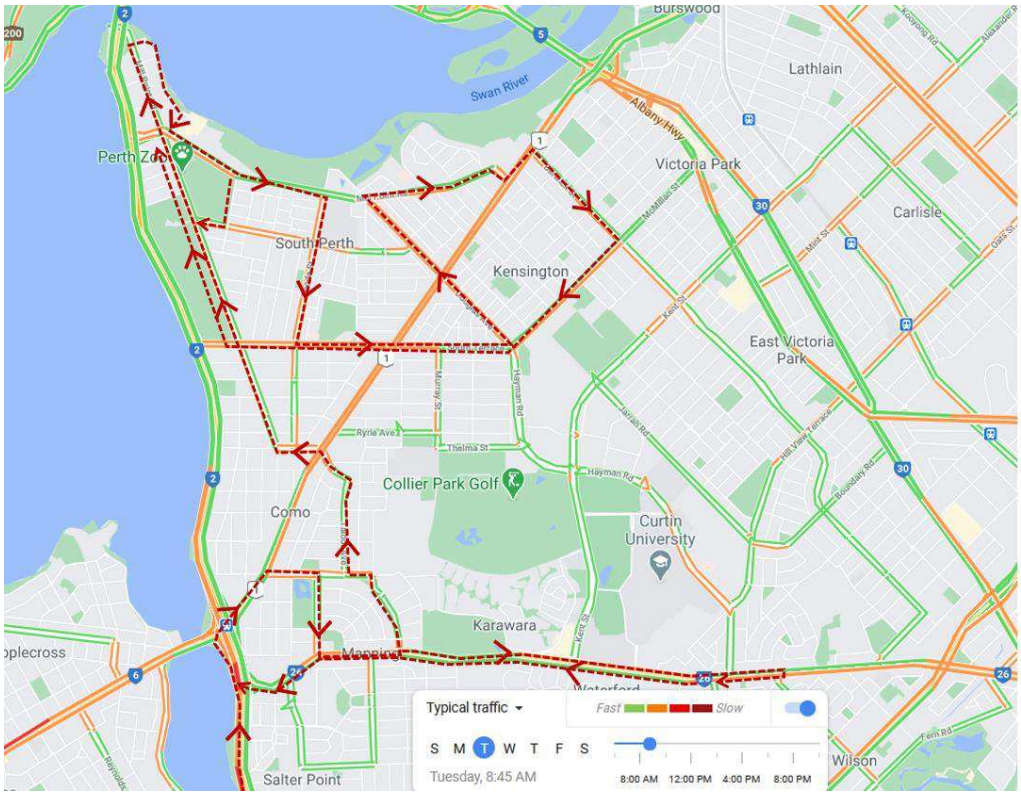


Figure 9 General route of peak hour traffic observations (source: Google Maps)

A number of routes or specific corridors were surveyed at least three times to understand any fluctuations in performance. These included:

- Labouchere Road between Angelo Street and Mill Point Road
- Mill Point Road on approach to the Kwinana Freeway

- Manning Road corridor between Canavan Crescent and Centenary Drive in both directions
- Manning Road approach to the Kwinana Freeway and Canning Highway interchange.

3.4.1 Labouchere Road

Labouchere Road within South Perth was surveyed four times in each direction during the peak period at 7.30am, 7.45am, 8.07am and 8.55am. Screenshots from those survey times are shown in Figure 10.

Figure 10 Screenshots of in-car footage - Labouchere Road

Live traffic performance representation for the survey is shown in Figure 11 with Figure 12 showing the accumulated typical traffic performance mapping for a weekday Tuesday at the time of the fourth run.

During the live traffic surveys, no congested conditions or any form of substantial queueing was observed for any of the time periods. Queues that had previously been synonymous with Labouchere Road northbound heading towards the freeway ramp were not evident, with only the Mill Point Road approach seeing queueing traffic which was a product of the proximity of the signalised intersections as well as traffic demands.

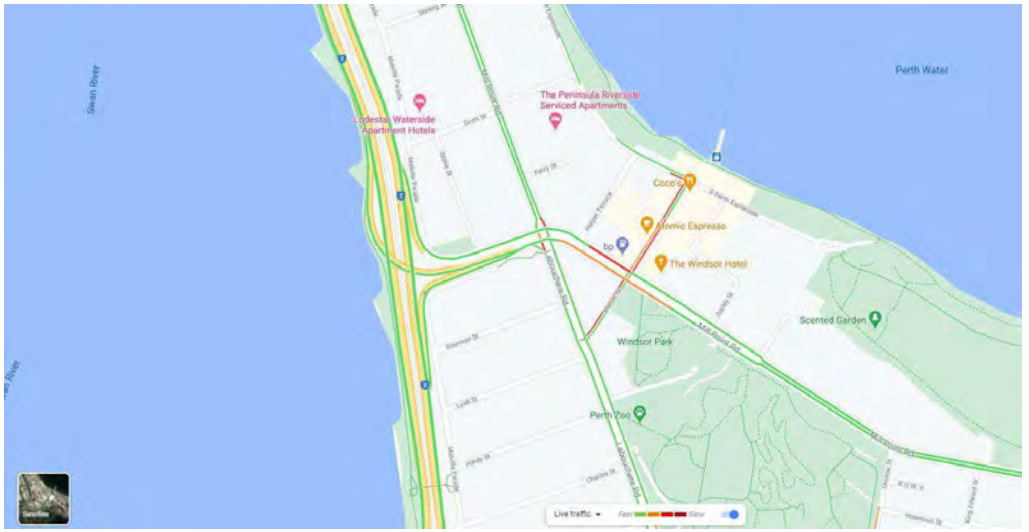


Figure 11 Screenshot of live traffic function on Google Maps on day of survey - Labouchere Rd (source: Google)

Figure 12 Screenshot of typical traffic function on Google Maps - Labouchere Rd (source: Google)

3.4.2 Mill Point Road Approach

This section of the distributor road network was surveyed at the same time as Labouchere Road, as set out in section 3.4.1. Screen shots of the eastbound and westbound movements are set out in Figure 13 and Figure 14.

Figure 13 Screenshots of in-car footage – Mill Point Rd eastbound

Figure 14 Screenshots of in-car footage - Mill Point Rd westbound

During the surveys, the through put of vehicles on the westbound approach to the Freeway ramps was obvious. On the westbound survey runs, the back of the queue on approach to the Freeway ramp typically extended to the intersection of Mends Street but cleared within a single phase. The consistent flows of vehicles from the east, which is uninterrupted, resulted in some queueing at the Mends Street intersection but this was all observed to have been catered for in a single cycle of the traffic signals.

3.4.3 Manning Road Corridor (Waterford)

This corridor was surveyed three times – the initial run through the area was at 7.15am to understand if there was any early congestion associated with commuting traffic, then subsequent runs were completed at 8.30am and 8.45am. A range of screenshots of the surveys is shown in Figure 15 to Figure 19.

The difference in conditions between the early and later time periods was evident, with flows at all main intersections operating with some queueing contained in turning pockets and approach lanes. All vehicles seen at intersections were able to clear the intersections during a full cycle time. There was no sustained congestion or delay to the survey vehicle that were not expected.

The corridor as a whole performed well within capacity and flows on approach were heavy but continuous.

Replication of the live traffic conditions shown on Google Maps taking Tom Tom data is shown for the early survey period in Figure 20 and the later survey period in Figure 21. These live measurements show the higher traffic volumes in the later period which is a combination of higher traffic flows associated with commuting, school runs and trips associated with Bentley - Curtin Activity Centre.

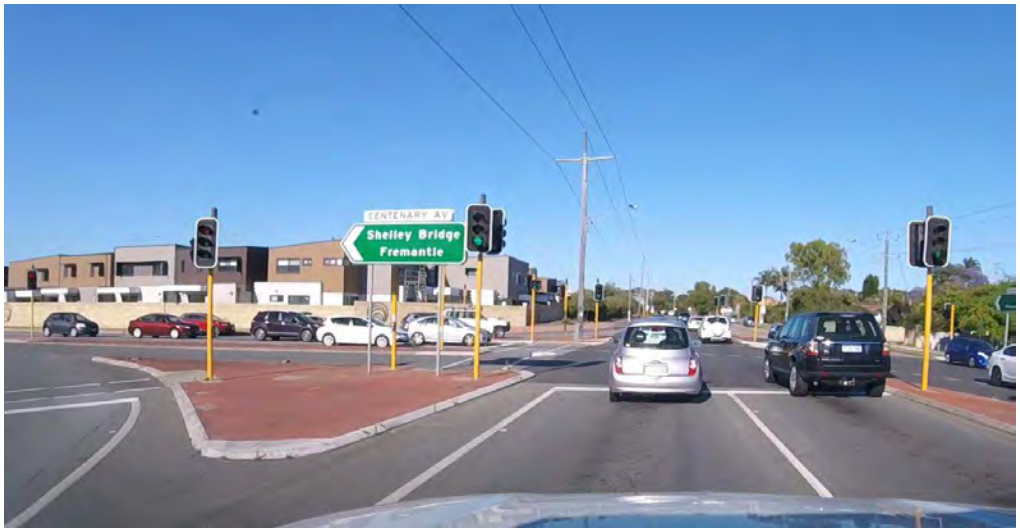


Figure 15 Screenshot of in-car footage - Manning Road westbound at Centenary Avenue

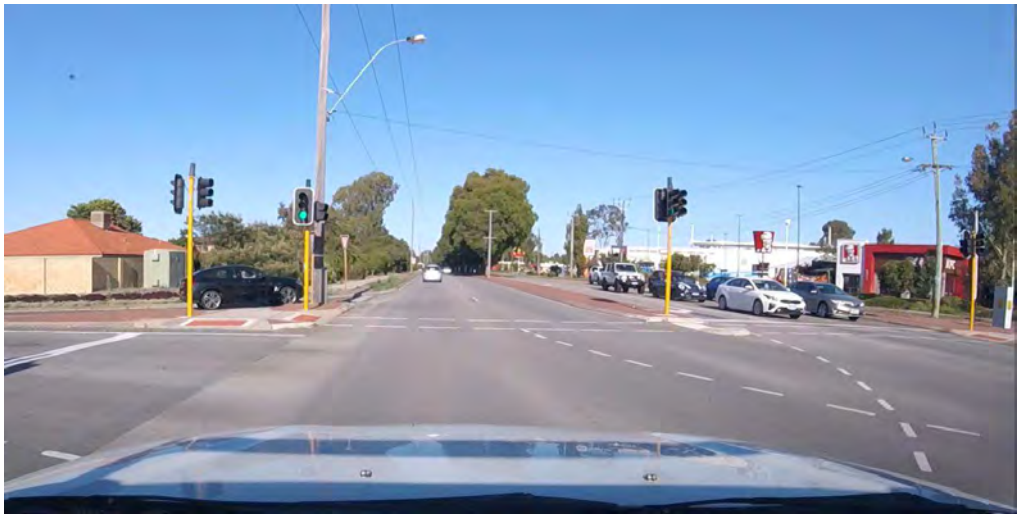


Figure 16 Screenshot of in-car footage - Manning Road westbound at Kent Street

Figure 17 Screenshot of in-car footage - Manning Road eastbound at Centenary Avenue

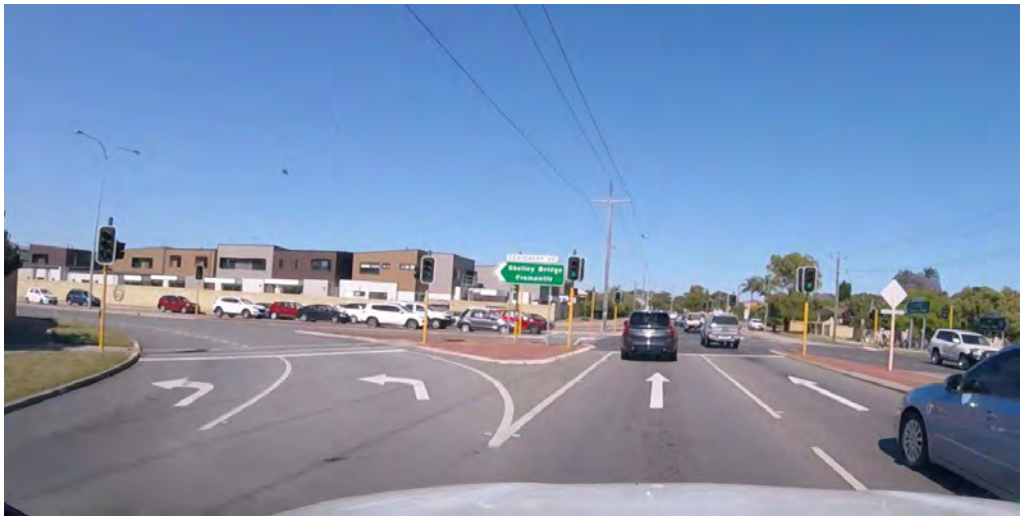


Figure 18 Screenshot of in-car footage - Manning Road westbound at Centenary Avenue late

Figure 19 Screenshot of in-car footage - Manning Road westbound at Kent Street late

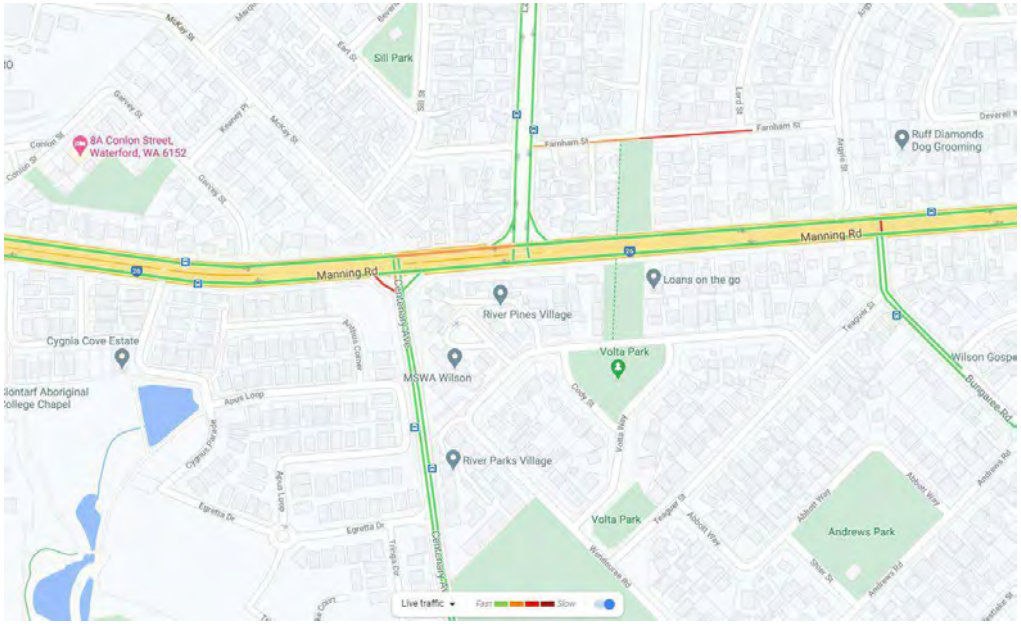


Figure 20 Screenshot of live traffic function on Google Maps on day of survey - Manning Rd early survey (source: Google)

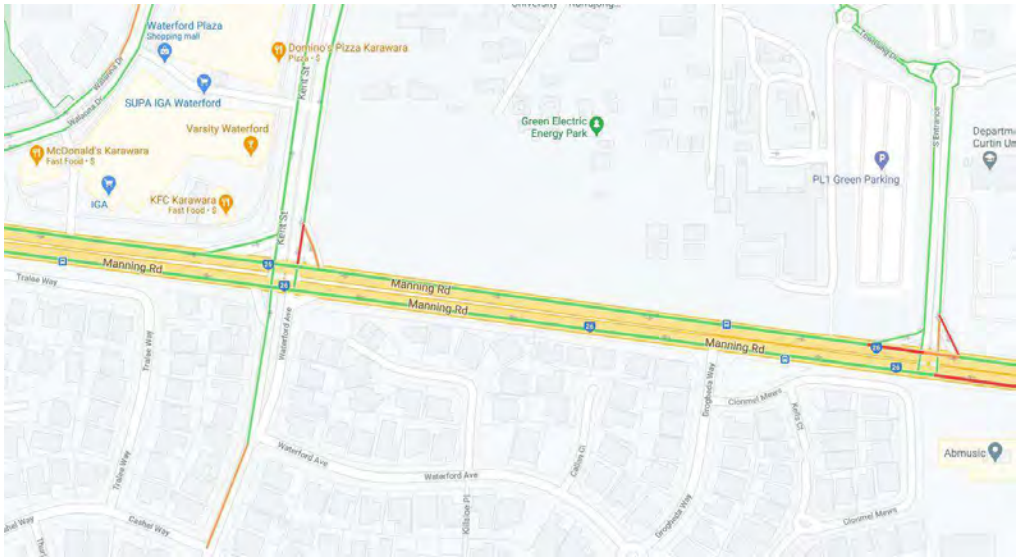


Figure 21 Screenshot of live traffic function on Google Maps on day of survey - Manning Rd late survey (source: Google)

3.4.4 Manning Road Corridor (Manning)

The western end of the Manning Road corridor was also surveyed early and later within the survey time period to understand if there were differences and build up of flows over the commuting period that impacted upon the local distributor road network. Survey screenshots in Figure 22 and Figure 23 and the correlating Google Map images of traffic conditions shown in Figure 24 and Figure 25 illustrate the differences in conditions associated with traffic accessing the Freeway.

Figure 22 Screenshot of in-car footage - Manning Road on-ramp to Freeway early

Figure 23 Screenshot of in-car footage - Manning Road on-ramp to Freeway late

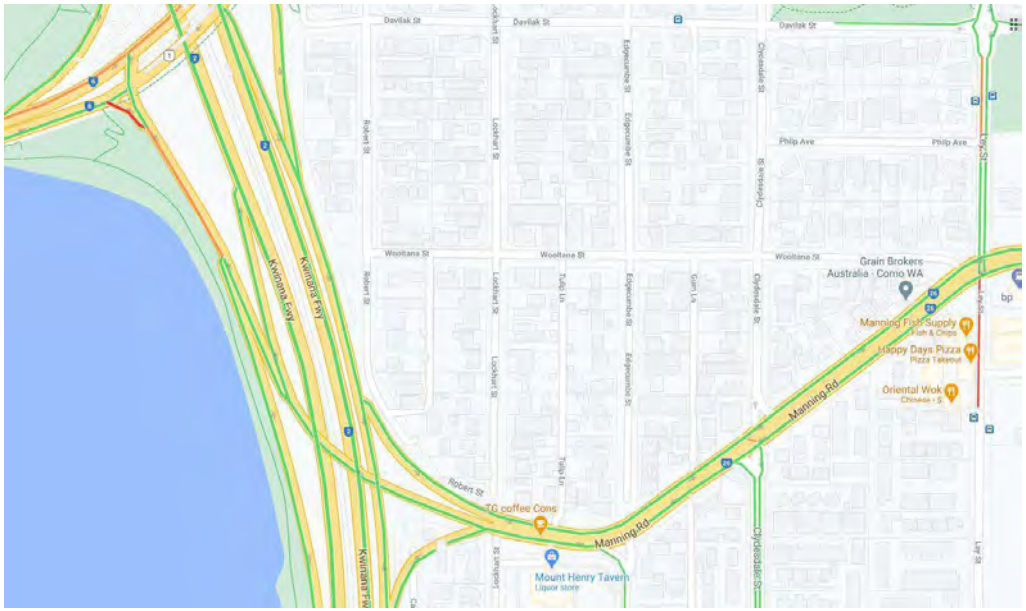


Figure 24 Screenshot of live traffic function on Google Maps on day of survey - Manning Rd on-bound ramp early (source: Google)

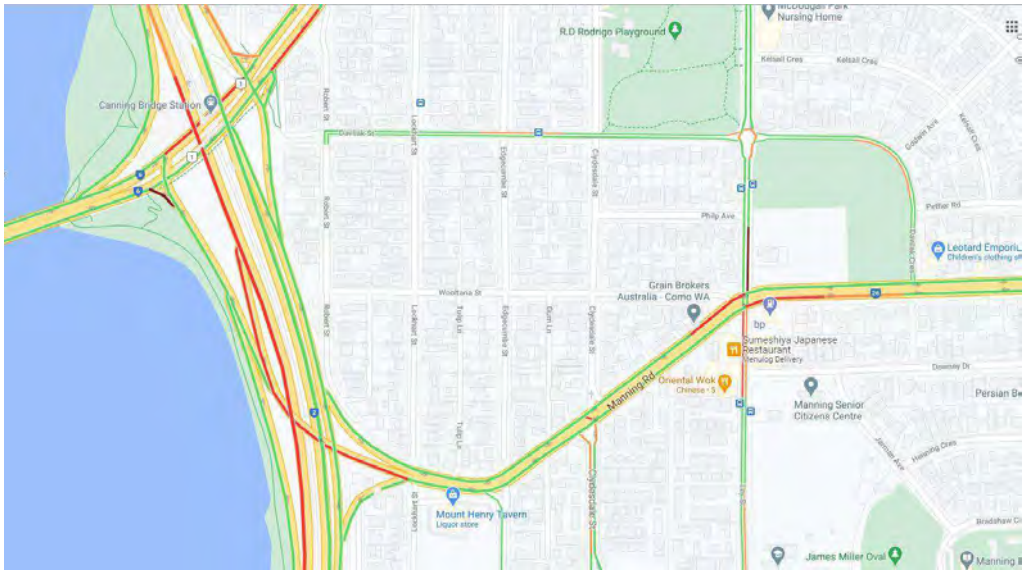


Figure 25 Screenshot of live traffic function on Google Maps on day of survey - Manning Rd on-bound ramp late (source: Google)

The queues associated with the later time period did not extend back past the Mt Henry Tavern, nor did they influence traffic accessing the southbound ramp on to the Kwinana Freeway. Traffic on approach to the Freeway at Ley Street was queued at all legs however traffic observed at the intersection cleared the traffic signals during a cycle and no blocking or extra ordinary congestion was observed.

3.4.5 Other Locations

Other notable locations for intermittent traffic conditions observed on the local distributor network during the survey were:

- Barker Avenue approach to Canning Highway (Figure 26)
- South Terrace westbound approach to Canning Highway (Figure 27)
- Thelma Street eastbound approach to Canning Highway (Figure 28).

All three of these intersections required multiple signal cycles to cross over the Canning Highway corridor. In most instances, this was a product of the prioritisation of Canning Highway traffic movements and the capacity associated with the local distributor road approaches.

For Thelma Street, this area of the network was surveyed at school drop off and there was a noticeably higher volume of traffic in the area compared to earlier survey times. The stop start nature of traffic in the area and the reduced speed zone combined to limit flows and improve overall safety. The replication of the Google Maps live traffic conditions in the area at the time of the school run survey is shown in Figure 29

Figure 26 Screenshot of in-car footage – Barker Ave approach to Canning Highway

Figure 27 Screenshot of in-car footage – South Terrace westbound approach to Canning Highway

Figure 28 Screenshot of in-car footage – Thelma Road eastbound approach to Canning Highway

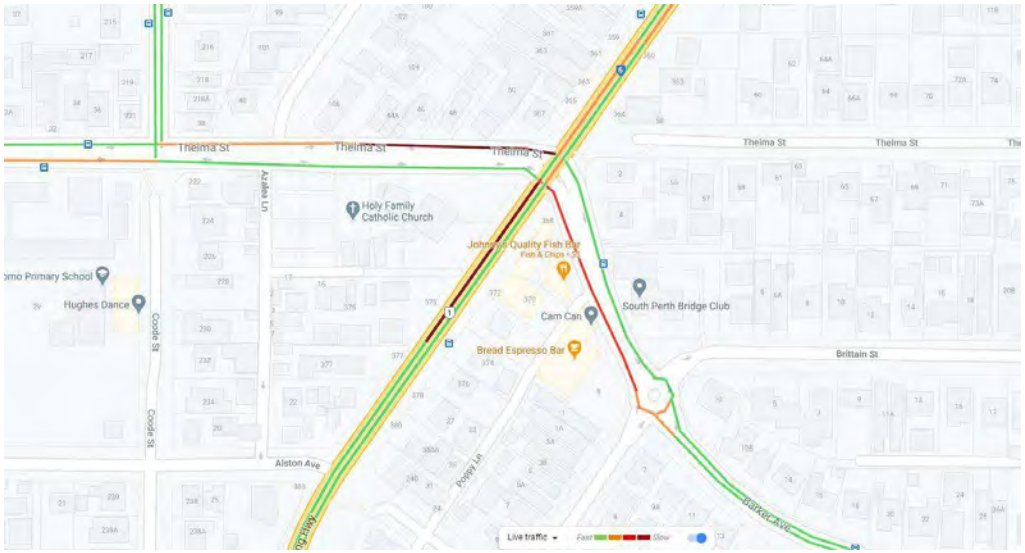


Figure 29 Screenshot of live traffic function on Google Maps on day of survey – Thelma Street and Barker Rd (source: Google)

3.5 Afternoon Peak Period Traffic

Traffic flows in the afternoon peak period are again heaviest at the approaches to the key crossing points of the Canning Highway corridor and isolated locations specific to activity during the afternoon peaks. Typical traffic conditions are shown from Google Maps and Tom Tom data in thirty minute increments for the survey day in Figure 30 to Figure 36. Key localised issues include:

- Localised reduction in traffic flows associated with a range of school sites around the City at 3.00pm
- Early evening "congested" conditions along key local streets in local centres – such as Preston Street in Como and around Angelo Street from 5.00pm onwards when retail and food and beverage outlets experience higher turnover
- Reduced traffic speeds on Davilak Street around 5.00pm which captures Kiss and Ride pick up activity at Canning Bridge Station

Overall, the afternoon peak along the distributor road network is typically busier for a longer period of time and therefore heavier around local centres due to the greater volume of vehicles associated with the network. Many of these are linked trips associated with returning commuters undertaking tasks such as retail shopping, picking up children from school/day care providers, food and beverage trips and afternoon or early evening recreational trips to sporting or community facilities.

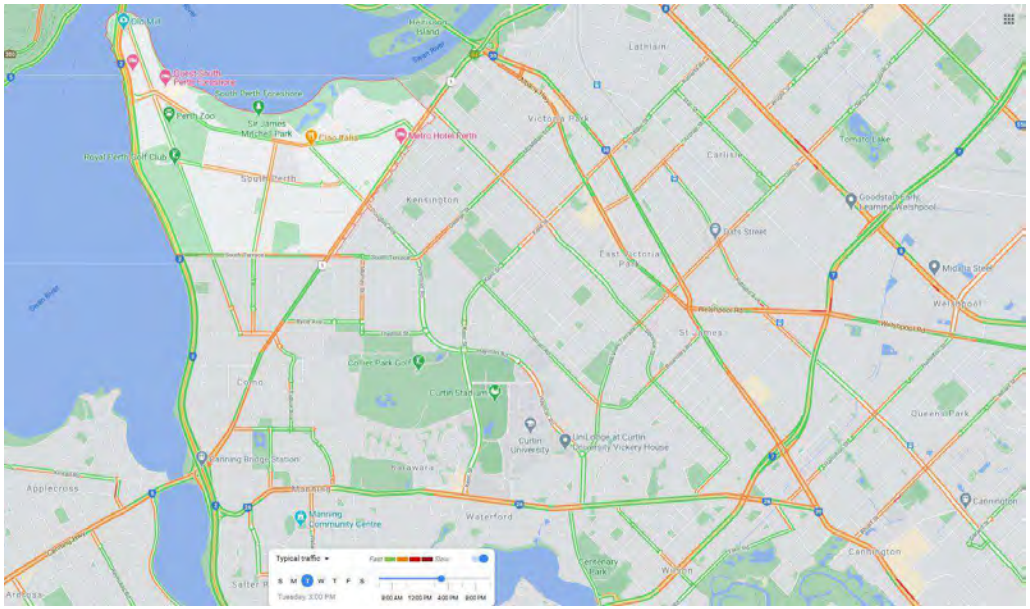


Figure 30 Screenshot of typical traffic function on Google Maps – City of South Perth 3.00pm (source: Google)

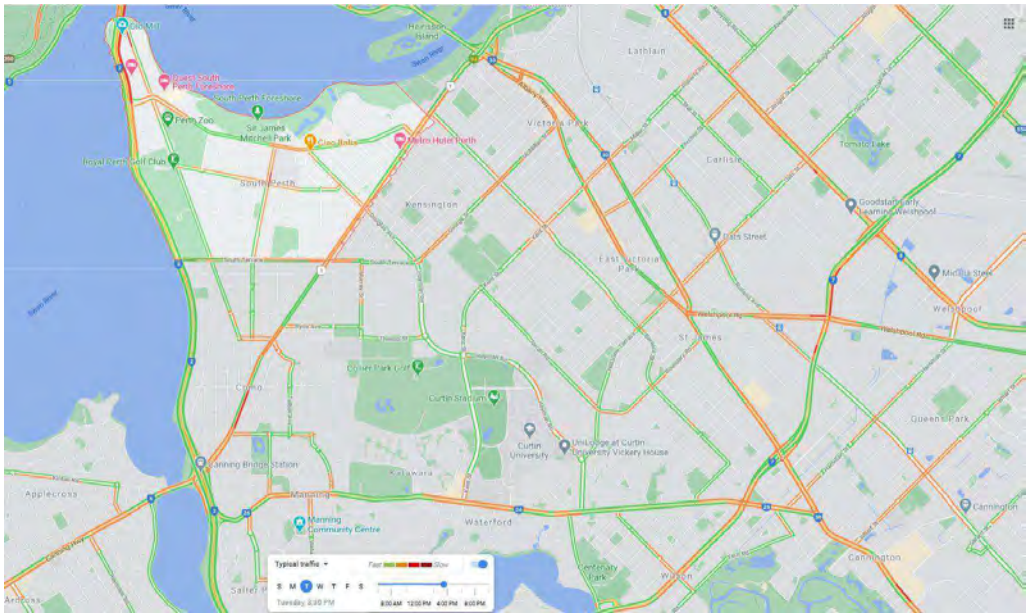


Figure 31 Screenshot of typical traffic function on Google Maps – City of South Perth 3.30pm (source: Google)

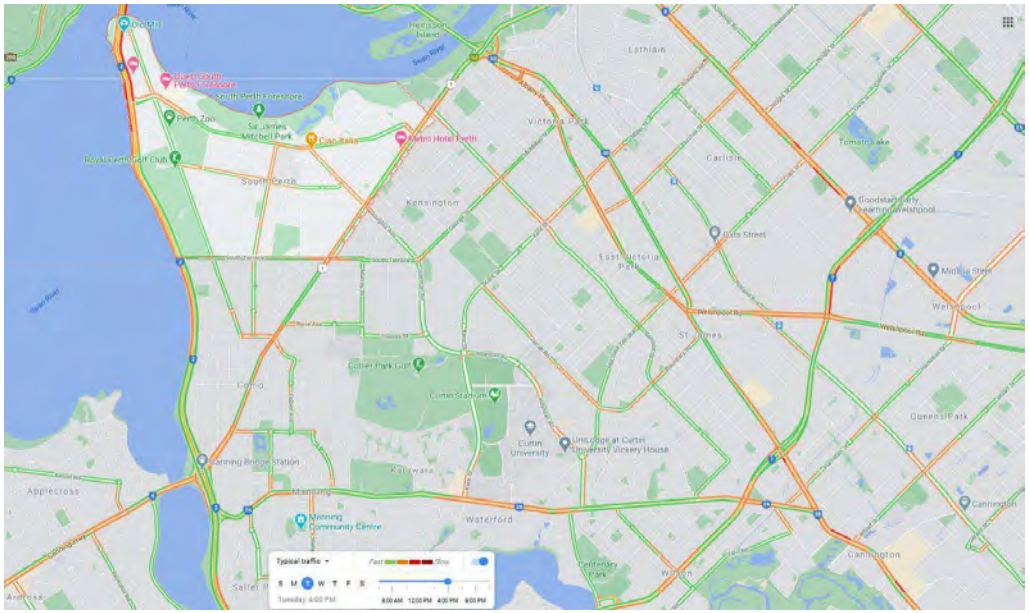


Figure 32 Screenshot of typical traffic function on Google Maps – City of South Perth 4.00pm (source: Google)

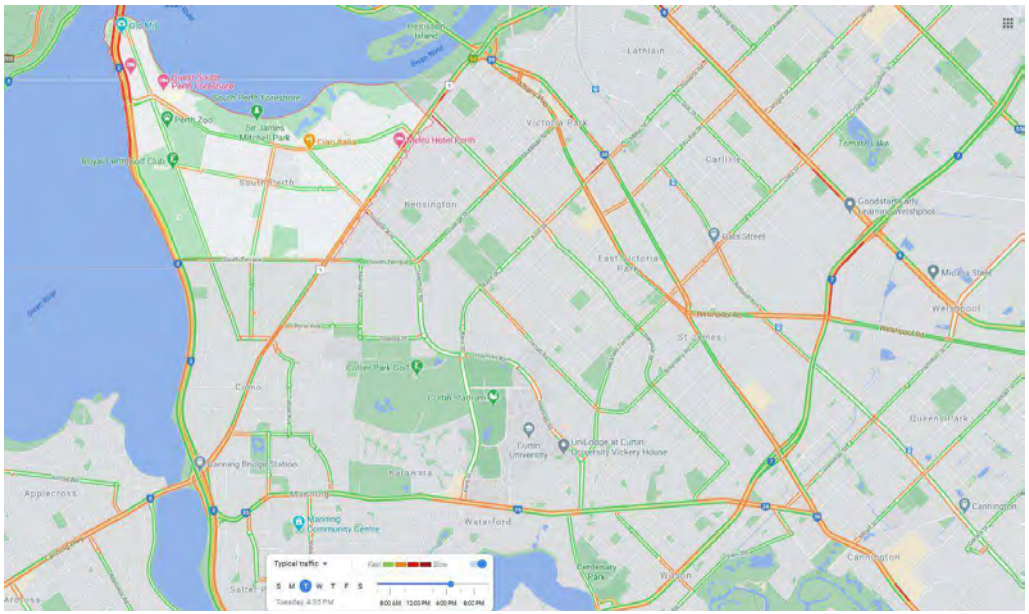


Figure 33 Screenshot of typical traffic function on Google Maps – City of South Perth 4.30pm (source: Google)

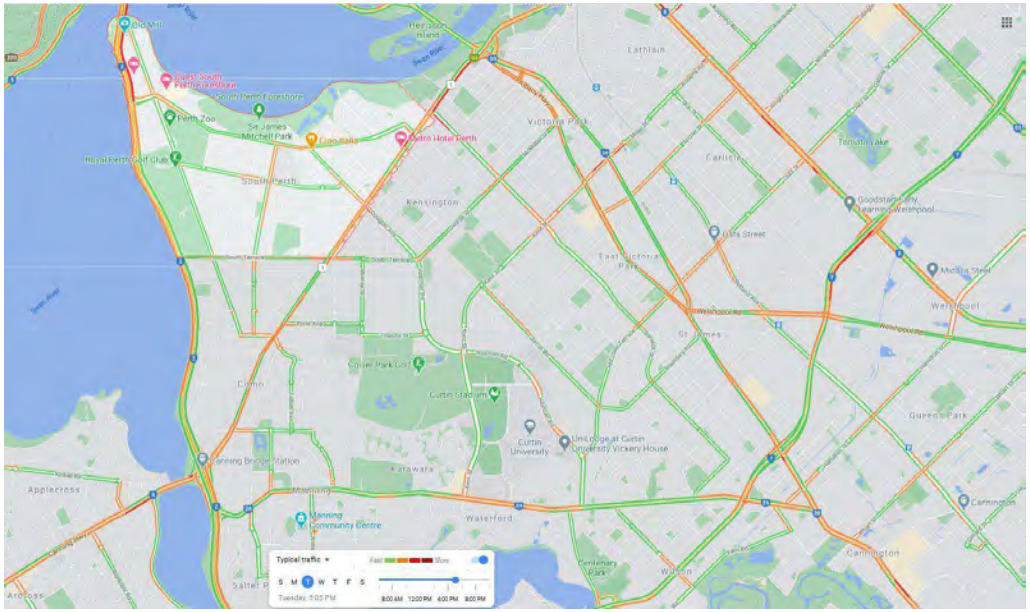


Figure 34 Screenshot of typical traffic function on Google Maps – City of South Perth 5.00pm (source: Google)

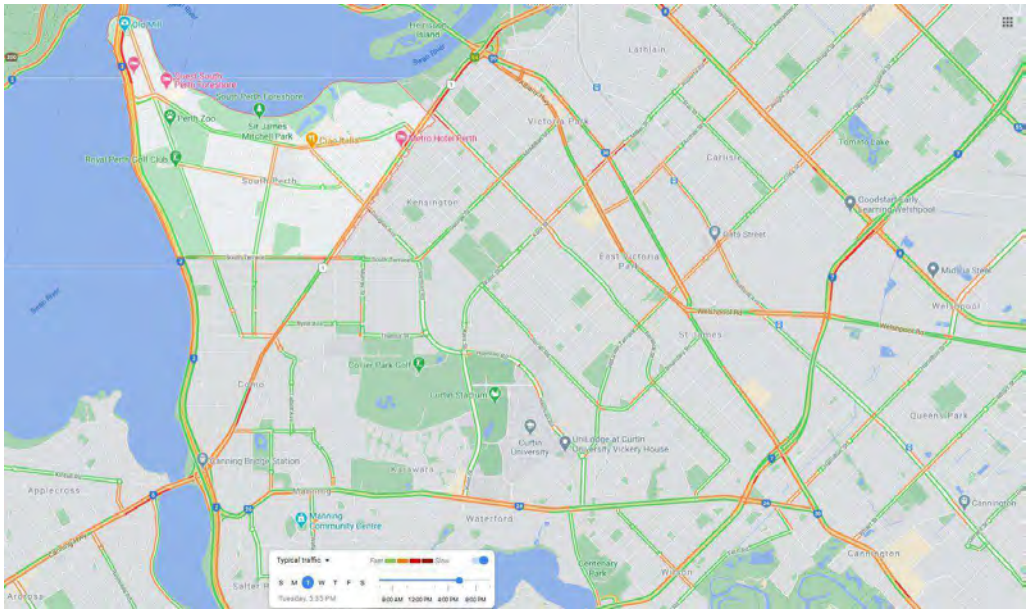


Figure 35 Screenshot of typical traffic function on Google Maps – City of South Perth 5.30pm (source: Google)

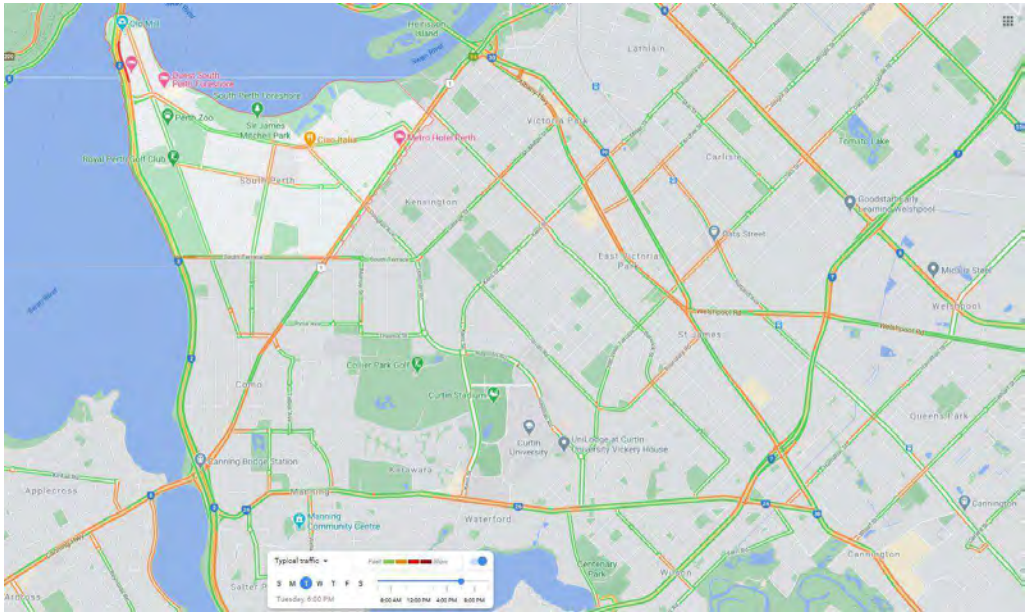


Figure 36 Screenshot of typical traffic function on Google Maps – City of South Perth 6.00pm (source: Google)

3.6 Posted Speed Limits – Distributor Roads

Posted speed limits are imposed on all streets and roads within the City. This information is available through the Main Roads WA Road Information Mapping system. The overall posted speed zone map of the City is shown in Figure 37, with the posted speed limits on the distributor road network in the City (outside of those areas with a 50km/h speed limit) are set out in Table 3.

There are two lower speed 40km/h posted speed zones in the City, located along:

- Angelo Street between Rose Avenue and Norfolk Street
- Walanna Drive, between Melinga Court and Lowan Loop.

In addition to these permanently posted areas, there are 12 school speed zones that enforce lower speed limits at times specific to the operation of schools.

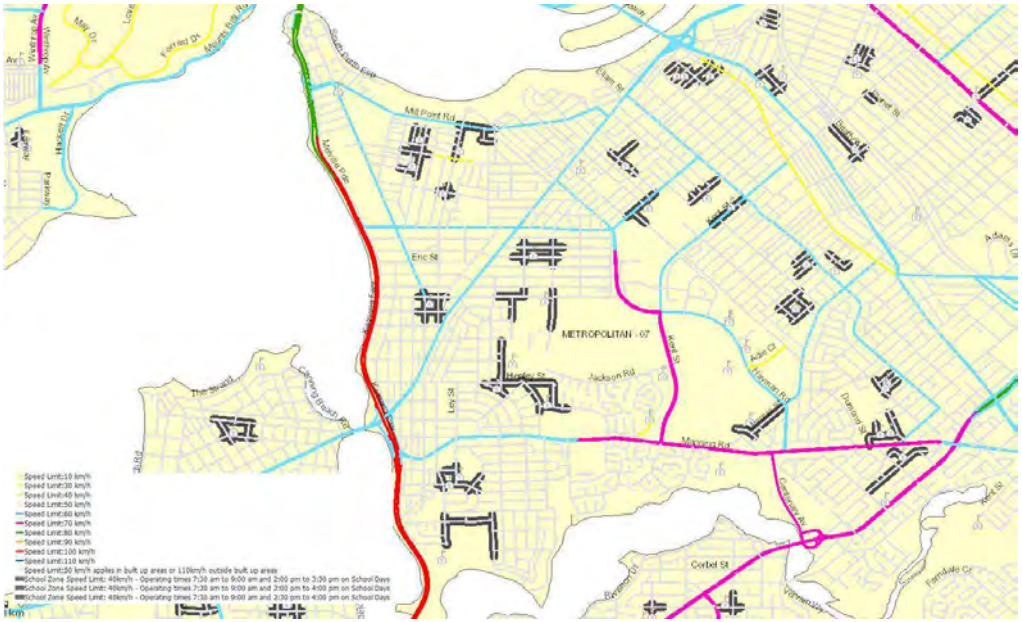


Figure 37 Existing posted speed limits - City of South Perth (source: Main Roads WA)

Table 3 Posted speed limits of distributor road network

Road	From	To	Posted Speed
Labouchere Road	Mill Point Road	Thelma Street	60km/h
South Terrace	Kwinana Freeway	Hayman Road	60km/h
Douglas Avenue	Canning Highway	Hayman Road	60km/h
George Street	Hayman Road	Berwick Street	60km/h
Manning Road	Kwinana Freeway	East of Elderfield Road	60km/h
Mill Point Road / Way Road	Kwinana Freeway	Canning Highway	60km/h
Hayman Road	Douglas Avenue	Kent Street	60-70km/h
Manning Road	East of Elderfield Road	City of Canning	70km/h
Kent Street	Hayman Road	Manning Road	70km/h
Centenary Avenue			70km/h

3.7 Speed Profile – Distributor Roads

Information relating to the current speed profile of the distributor road network is available from the Main Roads WA TrafficMap system. Not all sections of the distributor road network have data available, this section reports on the data available for the network. Two measurements are provided in this section, 85th percentile and median speed. These are defined as:

- 85th percentile, as per Australian Standards 1742.4 is defined as the speed at or below which 85% of all vehicles are observed to travel under free-flowing conditions past a nominated point.
- Median speeds – or the midpoint value of all speeds recorded on that section of road.

The location of information extracted from TrafficMap is shown in Figure 38.

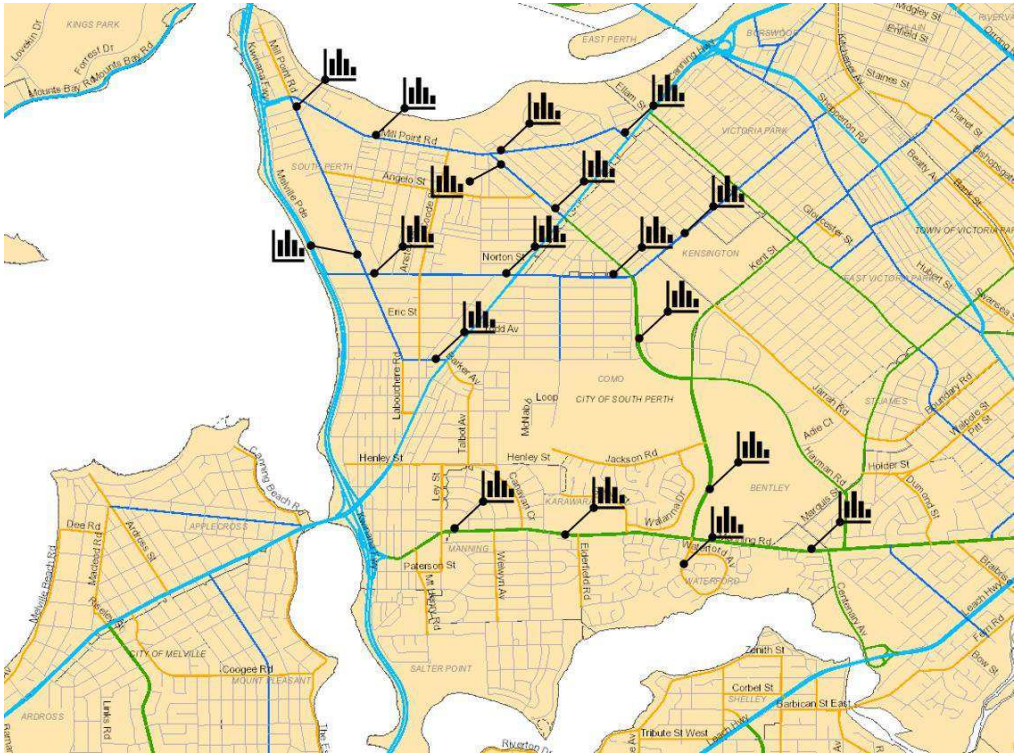


Figure 38 Locations of available speed data on distributor road network in City of South Perth

3.7.1 Douglas Avenue

Two locations were examined along Douglas Avenue in the section of road between Mill Point Road and Canning Highway where the speed limit is 50km/h and there is existing traffic management, median treatments and verge parking. There are no school zones along this section of road and both ends of the street are controlled by traffic signal intersections.

The profile of all vehicle movements in Figure 39 and Figure 40 show the impact of lower speeds during the respective peak periods. The overall 85th percentile speed, which indicates more free flow traffic conditions, is virtually uninterrupted in profile towards the northern end of the street, with only night time movements higher in both average and 85th percentile consistently.

This indicates that the measures in place along Douglas Avenue to support a lower speed zone of 50km/h are appropriate. The consistent profile of both average speed and 85th percentile also indicates that there are few obstacles or breaks in flow along Douglas Avenue. Speeds during the middle of the day are higher, which would correspond with lower vehicle volumes.

Figure 39 Speed profile Douglas Avenue north of Canning Highway 2018

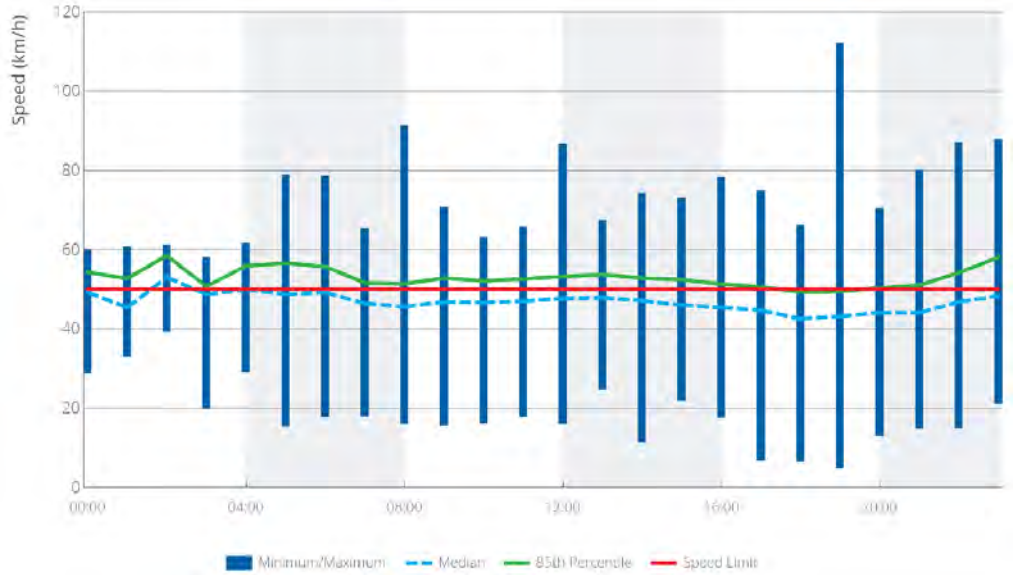


Figure 40 Speed profile Douglas Avenue south of Mill Point Road 2018

3.7.2 George Street

The speed profile measurements for George Street near Baron Hay Court are shown in Figure 41. Although the posted speed limit is 60km/h for this section of the distributor road network, there is a 40km/h school zone present for Kensington Secondary School which accounts for the obvious dips in both 85th percentile and average speeds at 8.00am and 3.00pm. It is noticeable that the 85th percentile speeds recorded for free flow vehicles is still around 10km/h above the sign posted limit for these times whilst the average is at 40km/h.

At other times of the day, the 85th percentile speed sits at the speed limit for this location. This is due to a number of specific locational factors. This section of road is undulating and the location of the survey would be on an uphill slope. Most importantly, however, is the fact that the Kensington Police Station is located within close proximity to this site and therefore driver behaviour would likely be modified.

Figure 41 Speed profile George Street south of Baron Hay Court

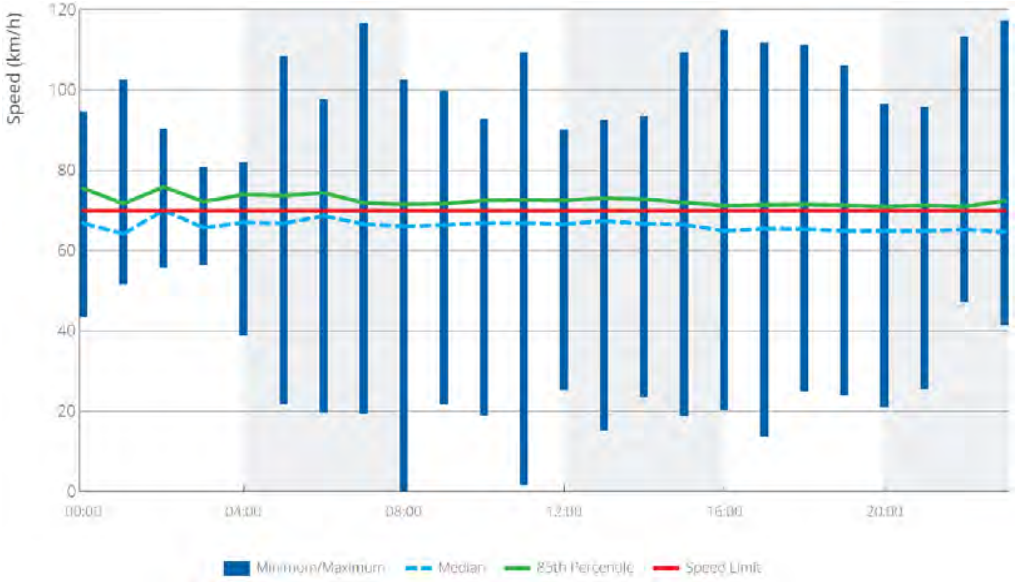


Figure 42 Speed profile Hayman Road south of South Terrace 2018

3.7.3 Hayman Road

Hayman Road is designed and operates as a controlled access distributor road – with no frontage for land uses and limited access points that have turning pockets included within their design that aide more consistent speeds along the corridor.

This is evident in Figure 42 where the 85th percentile and average speeds are very consistent throughout the day and night, with both being around the 70km/h posted speed limit.

What is noticeable for this section of road is the very consistent prevalence of highest maximum speeds of well over 100km/h reached during the day and night. 12 separate time periods saw high speed vehicle movements – some of which could be attributed to the proximity of the Kensington Fire Station and Police Station to this area. The grouping of vehicles exceeding 100 km/h between 3.00pm and 7.00pm is particularly noticeable.

3.7.4 Kent Street

The speed profile for Kent Street near the retail development at Karawara is shown in Figure 43. Both the 85th percentile and average speed recorded at this location is below the posted speed limit of 70km/h. This could be explained by the location of pedestrian signals being north of the site, and drivers entering and exiting the retail premises with lower speed profiles. This is noticeable through the more consistent lower speed minimums seen at Kent Street compared to Hayman Road in Figure 42.

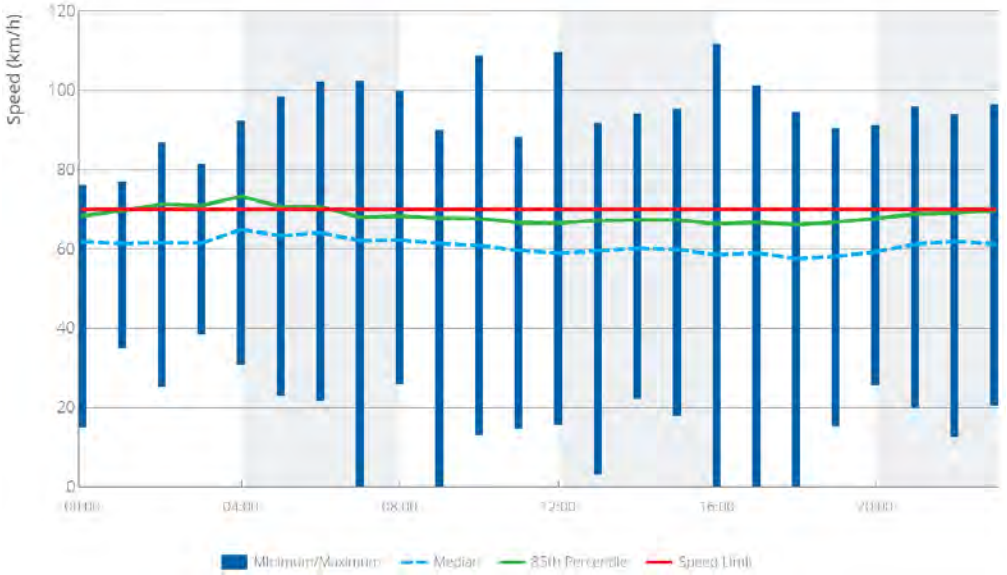


Figure 43 Speed profile Kent Street north of Manning Road 2018

3.7.5 Labouchere Road

Two survey sites were examined along Labouchere Road, one south of South Terrace (profile shown in Figure 44) and one near the Kwinana Freeway on-ramp at Judd Street, as shown in Figure 45. Both locations have posted speed limits of 60 km/h with both sites recording a consistent 85th percentile speed and average recorded speed under this limit during the day. Both sites also show a clear reduction in overall speed recorded during the morning peak period, which would be attributable to heavier flows of traffic recorded along the corridor.

The site at Judd Street has a generally lower average than the site near South Terrace and could be a product of queuing back to the site or the impact of turning traffic in the area. Along that section of Labouchere Road, there is also use of the kerb side lane for buses which could see a reduction in speed recorded along that area of Labouchere Road.

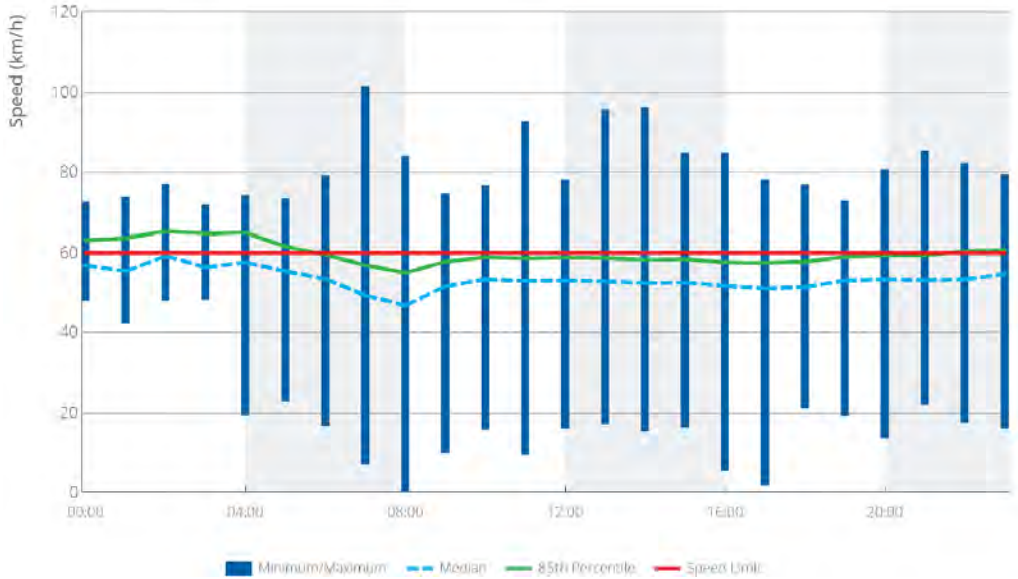


Figure 44 Speed profile Labouchere Road north of South Terrace 2018

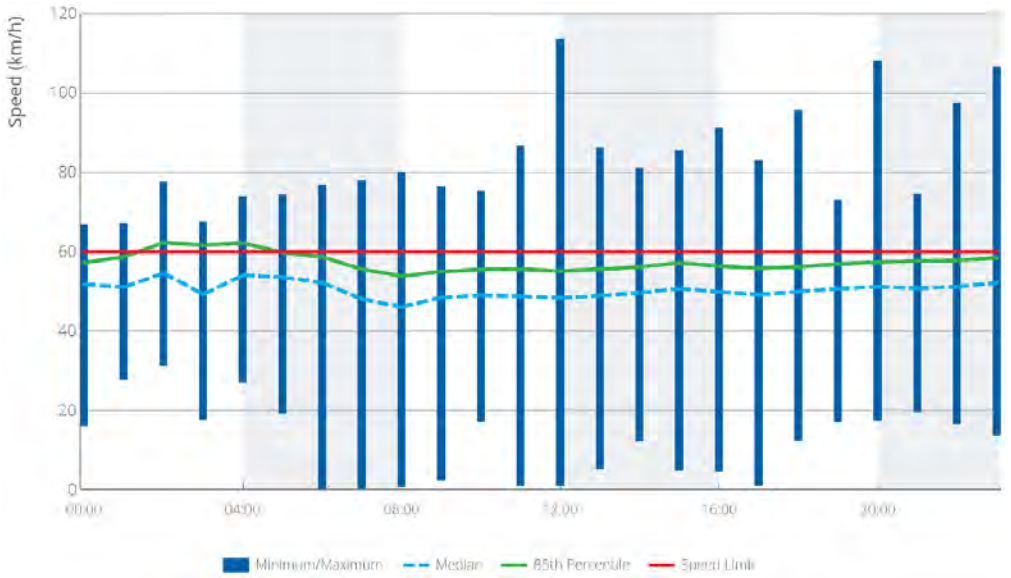


Figure 45 Speed profile Labouchere Road south of Judd Street 2018

3.7.6 Manning Road

As set out in section 3.2.5, Manning Road is the busiest distributor road on the overall City network and it provides a function connecting primary distributor roads and key activity centres at Bentley / Curtin and Canning Bridge. Three sites were examined for the purposes of this report. From west to east, the first site is near Ley Street (Figure 46), the second is to the east of Elderfield Road (Figure 47) and the most easterly site is near the intersection of Centenary Avenue (Figure 48). Both sites at Ley Street and Elderfield Road have an 85th percentile speed in excess of the posted speed limit – this indicates that there is a prevalence for speed and also that, when combined with the average speed recorded being close to the speed limit, there are a high number of vehicles that have a gap between vehicles to be recorded within the 85th percentile.

The median speed recording at Elderfield Road does reduce during peak times, which is likely associated with the turning movements into and out of Elderfield Road and the George Burnett Leisure Centre. Also noticeable at this location was a maximum speed recording in excess of 160km/h recorded late at night.

The recordings at Centenary Avenue indicate much higher flows of traffic and more congested conditions in the peak periods compared to the other two sites. Peak traffic flows record slower median and 85th percentile results, indicating slower moving vehicles through the network and drivers responding to turning movements and queuing. The afternoon peak movements are generally slower than the AM peak – this could be a product of the AM peak being shorter, with afternoon flows through the area being over a longer period of time and therefore subject to lower recordings.

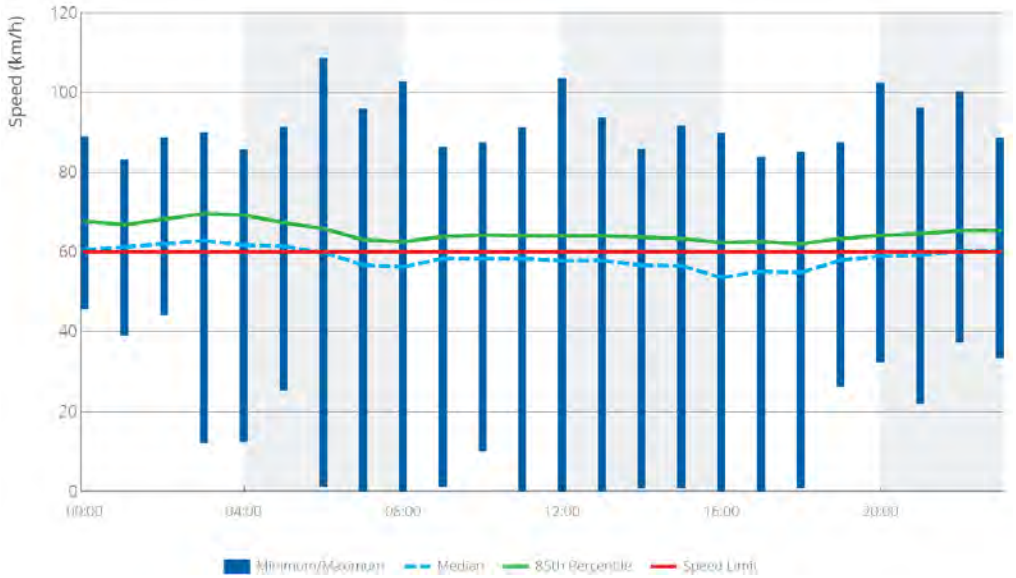


Figure 46 Speed profile Manning Road east of Ley Street 2018

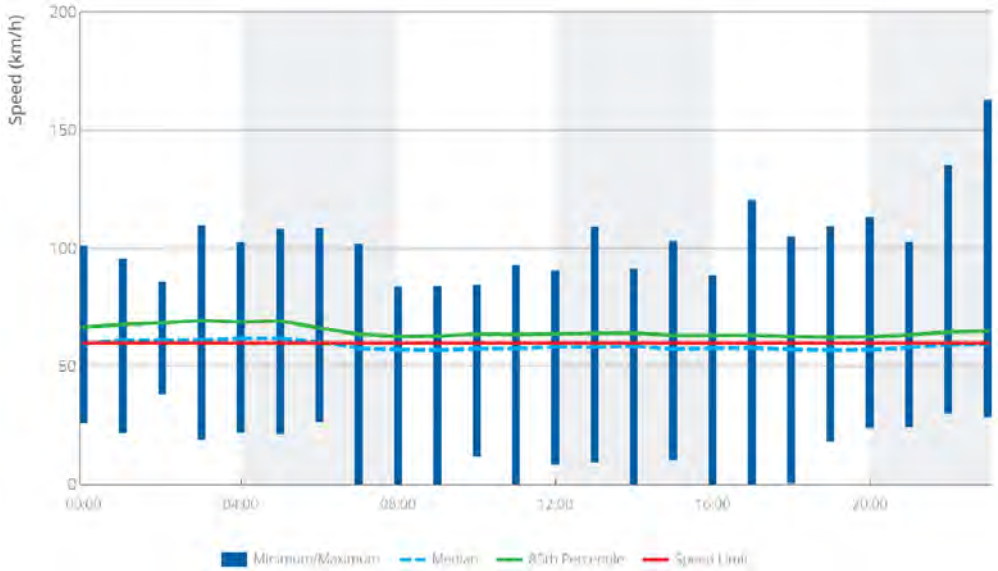


Figure 47 Speed profile Manning Road west of Elderfield Road 2018

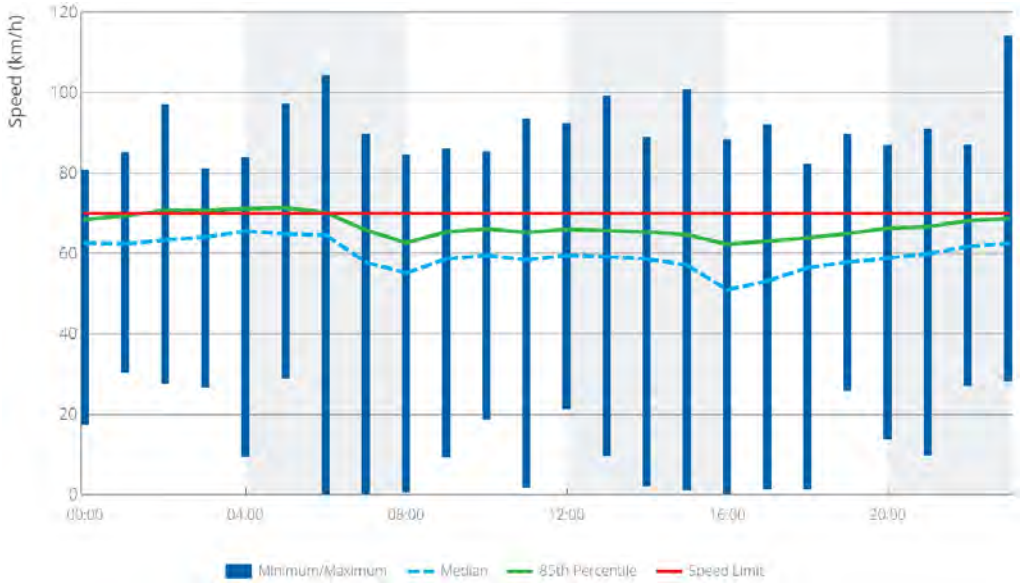


Figure 48 Speed profile Manning Road west of Centenary Avenue 2018

3.7.7 Mill Point Road

Mill Point Road is a key distributor road along the foreshore area of the City and provides a number of different roles. Three sites were examined, the western most being near Onslow Road (Figure 49), a central site near Douglas Avenue (Figure 50) and a site at the eastern end of the road, near the Way Road connection to Canning Highway (Figure 51).

The site at Onslow Road typically records both 85th percentile and median speed underneath the posted speed limit of 60km/h. There is a noticeable drop off in peak periods, associated with turning traffic movements, slower approach to the South Perth Activity Centre and Freeway access and other locational factors around Perth Zoo.

For the Douglas Avenue site, this is located adjacent to traffic signals and also a 40km/h school zone associated with Wesley College. The average speed during the morning peak period is reflective of this, and the generally busy nature of the intersection which has limited capacity owing to the tighter, urban nature of the area. This area is also noticeable for a much lower “maximum” speed recording when compared to most sites examined as part of this exercise.

The site at Way Road highlights the impact of the design of the sweeping connection around to Canning Highway and also the existing street management, pre-deflection with medians and other treatments. Both 85th percentile and average speed recordings are not reflective of the actual speeds recorded along this section of Mill Point Road and therefore the posted speed limit is more of a regulatory feature at this location than part of management control.

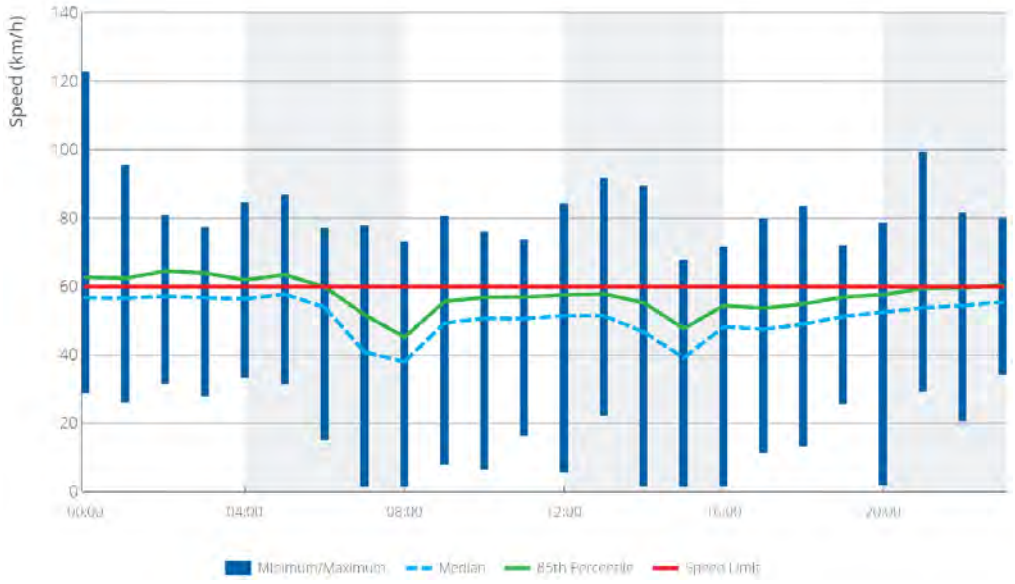


Figure 49 Speed profile Mill Point Road east of Onslow Street

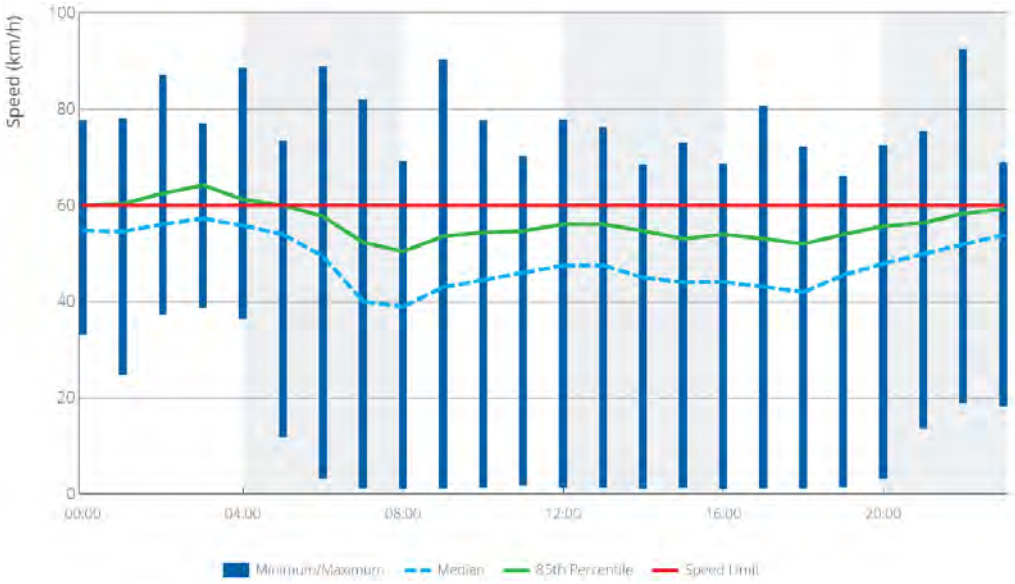


Figure 50 Speed profile Mill Point Road east of Douglas Avenue

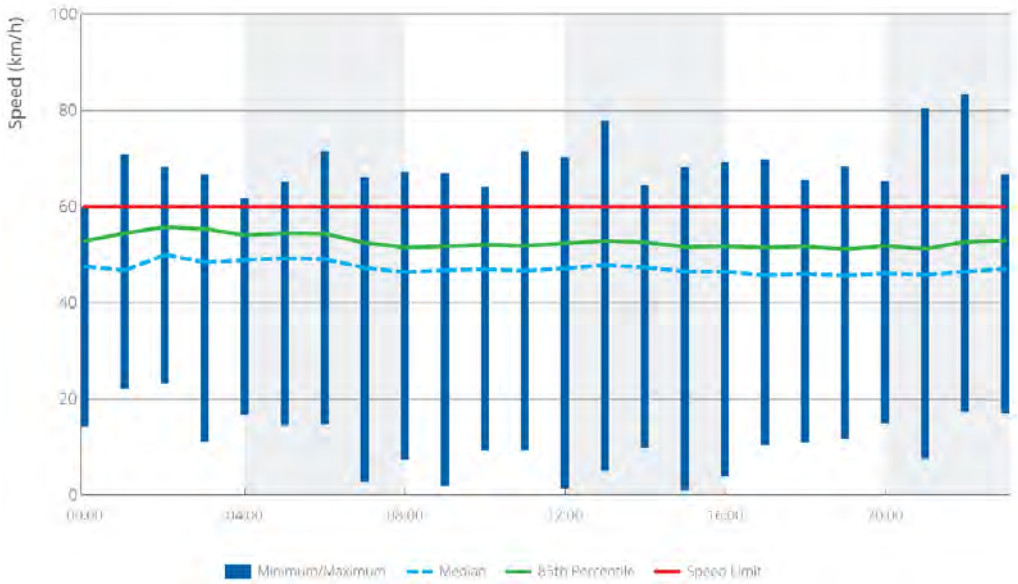


Figure 51 Speed profile Mill Point Road west of Way Road

3.7.8 South Terrace

South Terrace provides one of the main east-west connections across the City, including a route from Kwinana Freeway through to Bentley / Curtin Activity Centre. Three sites were examined, one east of Labouchere Road (Figure 52), one just to the east of the City administration centre near the intersection of Canning Highway (Figure 53) and the eastern most site near Hayman Road (Figure 54).

Consistently across all three sites, the 85th percentile and median speed recordings were below the posted speed limit. The impact of peak hour movements around the Canning Highway corridor are noticeable with the site near this intersection showing a noticeable reduction during peak periods, as well as low recordings for maximum speeds reached.

Towards the eastern end of the corridor, the speed recordings were more consistent which would indicate a steadier flow of traffic at most times. The overall lower median speed could also be a product of the gradient of South Terrace at the location of the survey.

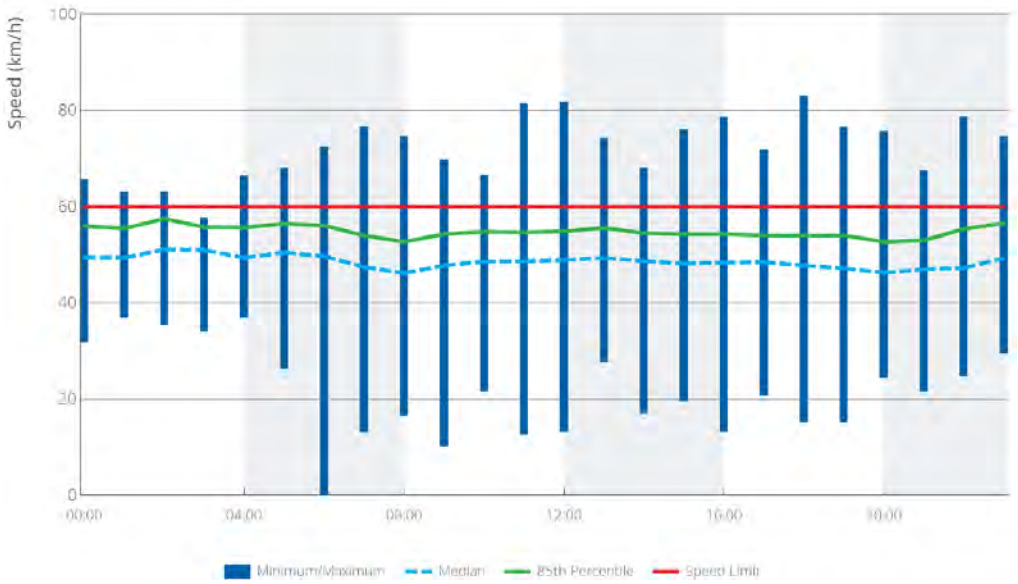


Figure 52 Speed profile South Terrace east of Labouchere Road

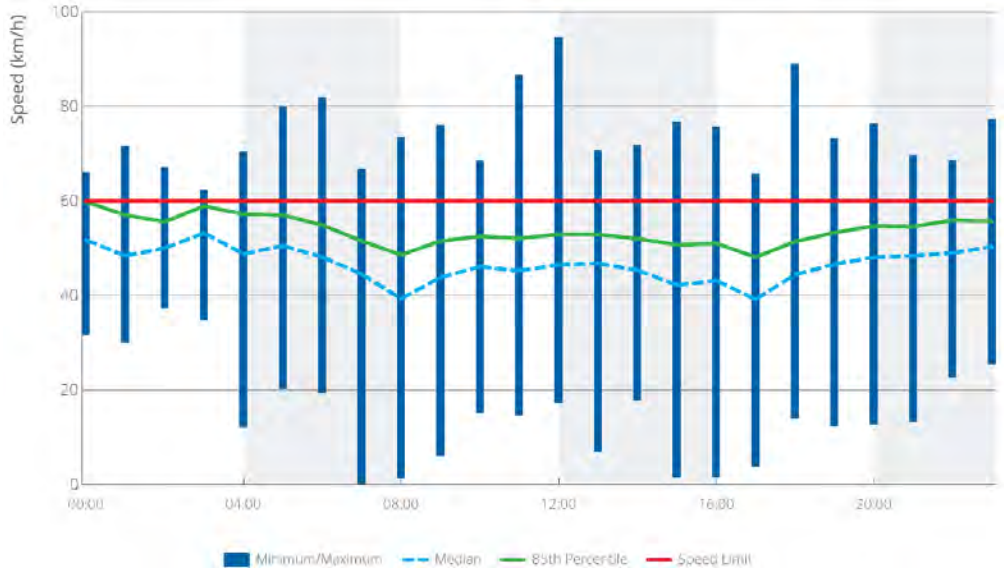


Figure 53 Speed profile South Terrace west of Canning Highway

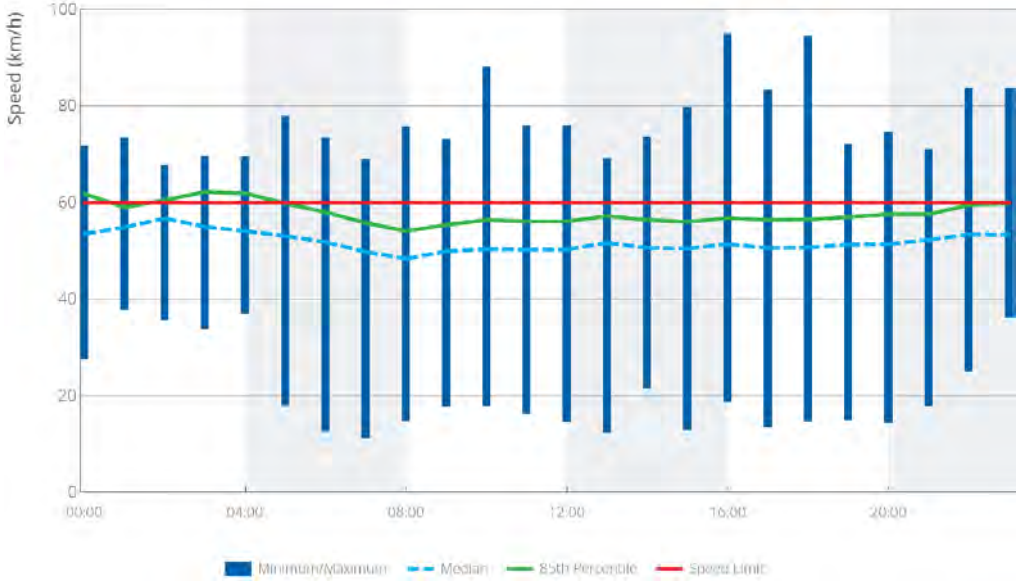


Figure 54 Speed profile South Terrace west of Hayman Road

3.7.9 Thelma Street

The profile of Thelma Street was examined to understand if there was any consistency with the on-site observations undertaken for this study, in particular the impact of the school speed zone near this site. The location of the survey point near the intersection of Canning Highway, alongside the sweeping bend of the road and traffic management measures in place, results in there being a flat speed profile outside of the peak periods, as evident in Figure 55.

The impact of the school zone is clear, with compliance of the speed reduction during operational times evident.

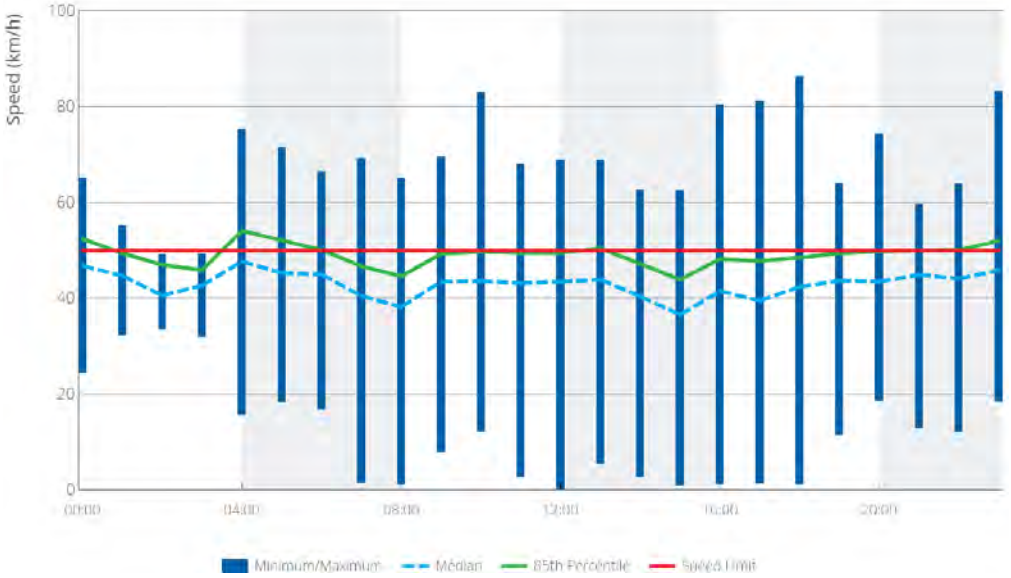


Figure 55 Speed profile Thelma Street west of Canning Highway

3.7.10 Waterford Avenue

Waterford Avenue is the only all movements intersection that provides a connection to Manning Road for the Waterford locality and therefore plays a key distributor link for this suburb. The design of the area contributes to the overall speed profile shown in Figure 56, with the median speed sitting on the posted speed limit of 50km/h, but the 85th percentile speed sitting consistently between 5-10km/h higher. Roads in the area would have been designed to accommodate higher speeds than those posted.

There is no discernible difference during the peak periods for either speed recording, indicating that there is no congestion, there is no queueing along this section of Waterford Avenue and there are no connections or land uses that would elicit driver behaviour to reduce speeds below the posted speed limit.

Figure 56 Speed profile Waterford Avenue south of Manning Road

3.8 Network Performance – Key Implications

The overall Distributor Road network within the City operates well given the volume of traffic moving into and through the City. There are noticeable fluctuations in volumes and speeds associated with peak periods that would be common place throughout similar locations around the Perth metropolitan area.

The morning peak period operates as a more point-to-point flow of movements associated with employment and education trips whilst the afternoon weekday peak is spread out over a longer period of timing which is associated with fluctuations in commuting patterns, linked trips to multiple destinations and trips being taken for non-employment reasons such as recreation trips or entertainment trips.

Whilst there are some obvious congested locations during weekday peak periods, none of those observed or historically apparent would be considered to be a wholesale failure of the network to cope or be a limiter in supporting strategic land use goals of the City. Most of these locations are associated with key intersections along the Canning Highway corridor or at the Kwinana Freeway interchanges at Mill Point Road and Canning Highway / Manning Road. These locations will continue to see the same sorts of conditions during peak periods for the future – this should be considered normal operation.

Results from the speed analysis highlight the importance of slower speed zones around key areas such as local centres and school zones. There is a relatively high level of compliance in terms of maintaining the posted speed limit on the Distributor Road network, with the exception of those roads that are purely designed for continuous flow with no urban frontage such as Hayman Road, Kent Street and some sections of Manning Road.

4. MILESTONE 1 - CRASH INFORMATION

4.1 Crash Reporting System

The reporting system for this analysis uses Main Roads WA Crash Summary for intersections from the last five years between 2015 and 2019. This reporting tool records the total number of aggregated crashes at a specified intersection and provides detail on crashes involving other vehicles, trucks, cyclists, and pedestrians. This information will identify the specific locations within the City where there is greatest conflict between vehicles and other modes of transport.

The crash statistics are collated for each suburb within the City and this is supplemented with information relating to existing bus routes, formal cycle plans and traffic management plans where available.

4.2 Crash Analysis Summary

There was a total of 1,264 intersection crashes recorded within the South Perth local government area on distributor roads between 2015 and 2019. The majority of recorded crashes occurred in Como and South Perth. Como recorded 46% (584) of all crashes and 35% (438) were in South Perth, 11% (137) in Karawara, 5% (59) in Manning, 3% (44) in Kensington, and 0.1% (1) in both Salter Point and Waterford.

572 of the 1,264 crashes occurred at intersections along Canning Highway and accounted for 56% of all crashes in Como and South Perth and 45% of all crashes in the whole of the City of South Perth. Kent Street accounted for 14% of all crashes and 8% occurred on Manning Road.

Cyclists were involved in 2% (30) and pedestrians were involved in 1% (13) of the total crashes.

The Western Australian Black Spot Program requires a minimum of 10 intersection crashes over five years on State roads such as Canning Highway and five crashes over five years on local roads to qualify for consideration. This would mean that 13 out of the 29 intersections along Canning Highway (State Road) and 28 of the 118 intersections on local and distributor roads would qualify for Black Spot Program based on crash volumes alone. The State road intersections crash history which would qualify for Black Spot Program are listed below, numbers 1 – 13, and the distributor and access roads are numbered 14-41 and are shown in Figure 57.

State roads:

1. Canning Highway and Preston Street
2. Canning Highway and Ryrie Avenue
3. Canning Highway, Barker Avenue and Thelma Street
4. Canning Highway and Alston Avenue
5. Canning Highway and Saunders Street
6. Canning Highway and Henley Street
7. Canning Highway and Kwinana Freeway Southbound off, on ramps bus lane to Canning Highway westbound
8. Canning Highway and ramp from Manning Road, Kwinana Freeway northbound bus lane to Canning Highway westbound
9. Canning Highway and Way Road
10. Canning Highway and Dyson Street
11. Canning Hwy and Collins Street
12. Canning Hwy and Douglas Avenue
13. Canning Hwy and South Terrace

Distributor and local access roads:

14. Edgecumbe Street and Paterson Street
15. Gillon Street and Walanna Drive
16. Hayman Rd and Thelma Street
17. Henley Street and Bruce Street
18. Kent Street and Curtin Uni Beazley Road
19. Kent Street and Hayman Road
20. Labouchere Road and Preston Street
21. Labouchere Road and Alston Avenue
22. Labouchere Road and South Terrace
23. Labouchere Road and Angelo Street
24. Labouchere Road and Mends Street
25. Labouchere Road and Richardson Street
26. Manning Road and Canavan Crescent
27. Manning Road and Clydesdale Street
28. Manning Road and Edgecumbe Street
29. Manning Road and Elderfield Road
30. Manning Road Rd and Gillon Street
31. Manning Road and Ley Street
32. Manning Road, Waterford Avenue and Kent Street
33. Manning Road and Welwyn Avenue
34. Mill Point Road and Mends Street
35. Mill Point Road and Forrest Street
36. Mill Point Road and Coode Street
37. Mill Point Road and Douglas Avenue
38. Mill Point Road and Way Road
39. Mill Point Road and Freeway north bound on ramp
40. South Terrace, Douglas Avenue, George Street and Hayman Road
41. South Terrace and Coode Street

Figure 57 displays a clear clustering of crashes at Mill Point Road, Mends Street, at the ramps onto the Kwinana Freeway, along Canning Highway, Manning Road, and at Manning Road and Edgecumbe Street.

Figure 57 Intersections with a record of five or more crashes and over five years

There is an even split of three and four way intersections (six and seven respectively on state roads and 14 each at the local and distributor roads) with no clear relationship to the type of intersection controls of either priority or traffic signal controlled. The only obvious common factor among these intersections is that they are located on roads which have high traffic volumes.

Table 4 is a summary of all intersection crashes on distributor roads within the City, identified by suburb between 2015 - 2019.

Table 4 Summary of Intersection Crashes per sub-area 2015 – 2019 (source: MRWA)

	Total Crashes	Fatal	Hospital	Medical	Truck	Motor Cycle	Pedestrian	Bike
South Perth	**1264**	**1**	**39**	**175**	**41**	**1**	**13**	**30**
Como	584	1	18	67	14	0	5	17
Karawara	137	0	15	72	16	1	6	7
Kensington	44	0	4	16	7	0	1	2
Manning	59	0	1	10	2	0	1	1
Salter Point	1	0	1	10	2	0	0	2
South Perth	438	0	0	0	0	0	0	1
Waterford	1	0	0	0	0	0	0	0
Como	584	1	18	67	14	0	5	17

4.2.1 Como

Como recorded the highest number of crashes within the City as a result of the Canning Highway corridor which has 29 intersections. The seven intersections which recorded the highest number of crashes are shown in Figure 58.

Within Como are the two intersections which recorded the highest number of crashes in the whole of the City, located at the Kwinana Freeway and Canning Highway interchange. 99 crashes were recorded at the Kwinana Freeway southbound off ramp, on the west bound bus lane to Canning Highway. Three crashes involved a truck, three involved a motorcycle and two involved a pedestrian. None of these crashes were fatal, three required hospital treatment and nine required medical treatment.

The second highest number of crashes occurred at the ramp from Manning Road to the Kwinana Freeway northbound ramp, on the west bound bus lane connection to Canning Highway. This intersection recorded 91 crashes, where one involved a truck and one involved a motorcycle. None of the crashes were fatal, one required hospital treatment and six required medical treatment.

Both intersections are signalised where 63,378 vehicles were recorded passing through in September 2020. These two intersections accommodate a complex system of bus priority as well as cyclists, signalised pedestrian crossing movements to Canning Bridge Station, and private vehicles entering and exiting the Freeway and merging onto Canning Highway.

74 crashes occurred at the Kent Street and Hayman Road multi-lane roundabout in the Como area. Of these crashes, three involved a cyclist and one involved a pedestrian. The Intersection Crash Ranking (Interactive Report) identifies that there is a higher than expected result for all crashes at this intersection where 11 occurred at night when visibility is low. No accidents were fatal, and seven required medical attention. This roundabout accommodates six bus routes, a shared path on the south eastern side and is identified as being on the South East Perth Bicycle Network route 16.

Within the Como area 17 crashes involved cyclists. Three occurred at the Kent Street and Hayman Road roundabout, two occurred the Hayman Road and Thelma Street roundabout and two occurred at the Mount Henry Road, Cloister Avenue and Gentilli Way roundabout. All intersections which recorded more than two crashes with cyclists were at a roundabout.

There was a total of five crashes involving pedestrians in Como, where two occurred on the Kwinana Freeway and Canning Highway interchange, two occurred on Labouchere Road and one occurred at the Kent Street and Hayman Road roundabout. The Labouchere Road and Comer Street intersection is priority controlled and recorded one bike and one pedestrian crash.

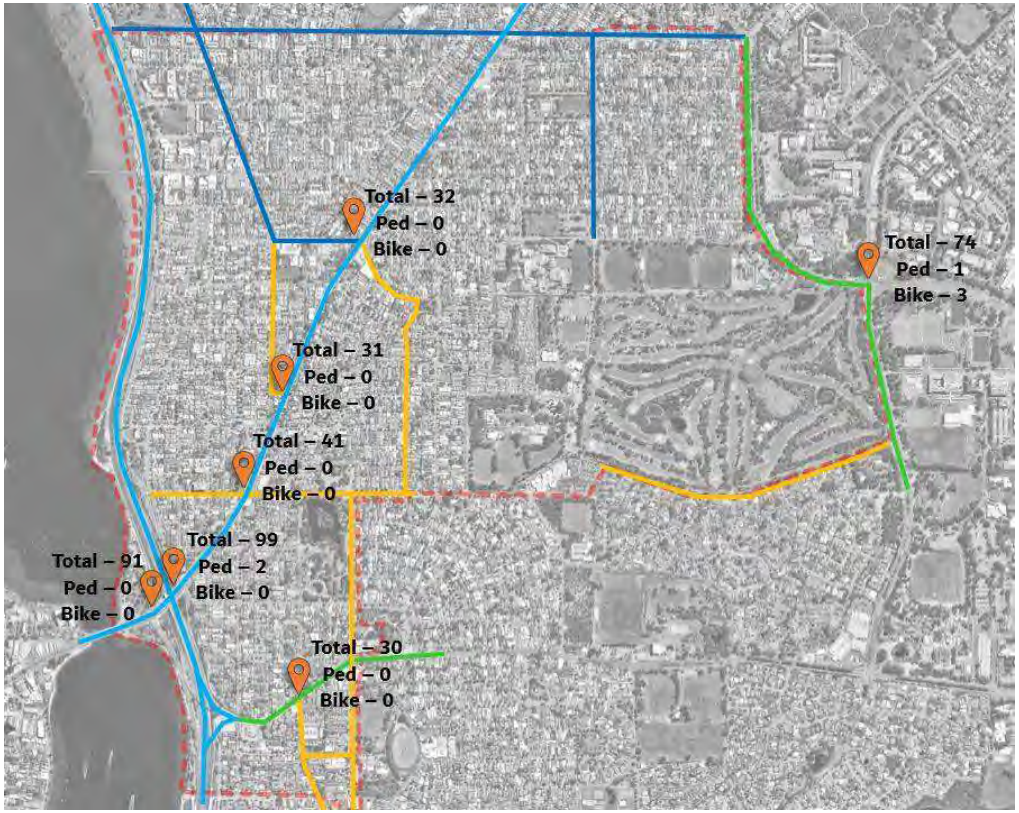


Figure 58 Highest 7 intersections crashes in Como

4.2.2 Karawara

Karawara recorded 11% of all intersection crashes, a total of 137. 80 of those crashes occurred at the signalised intersection of Manning Road, Waterford Avenue and Kent Street and represents 58% of crashes in Karawara. This intersection recorded the highest number of crashes aside from the Canning Highway and Kwinana Freeway interchange, with approximately half the number of vehicles passing through and a third of the number of bus routes.

Of those 80 crashes, 10 required medical treatment and one required hospital treatment, one involved a cyclist, one involved a pedestrian an 18 occurred at night when visibility is low. This intersection accommodates three bus routes and a combination of shared paths and bicycle lanes where Kent Street and Waterford Avenue form part of the South East Perth Bicycle Network route 33. This intersection recorded 35,371 vehicles on September 24, 2020. The location if this intersection is within the main route for people travelling north from Waterford, and accommodates trips to Curtin University, and the Waterford Plaza.

The give way priority controlled intersection of Manning Road and Gillon Street recorded 28 (20%) crashes where four required hospital treatment. None involved a cyclist or pedestrian. Kent Street and Beazley Avenue recorded 18 crashes, and none involved a pedestrian or cyclist.

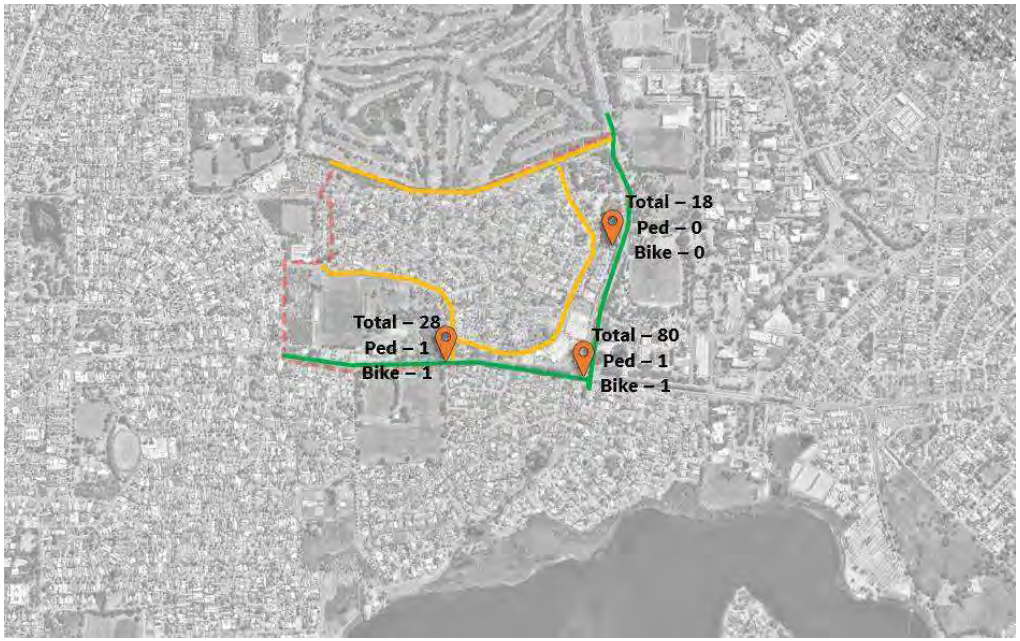


Figure 59 Highest 3 intersection crashes in Karawara

4.2.3 Manning

Manning recorded 5% of all intersection crashes, with a total of 59. Of these 59, 31 crashes (53%) occurred at the signalised intersection of Elderfield Street and Manning Road; six required medical treatment and six occurred at night. The northern exit of this intersection is the entrance to the George Burnett Leisure Centre and Park.

This intersection recorded one crash involving a cyclist and one with a pedestrian. The intersection recorded 35,999 vehicles on September 23, 2020. A shared path runs along the northern side of Manning Road and the intersection also accommodates three bus routes.

13 crashes were recorded at the signalised intersection of Manning Road and Welwyn Avenue where only one needed medical treatment, and five crashes were recorded at the Manning Road and Canavan Crescent intersection.

No other crashes involving cyclists or pedestrians were recorded in Manning.

Figure 60 Highest 3 intersection crashes in Manning

4.2.4 South Perth

South Perth recorded 35% of all intersection crashes in the City, a total of 438 crashes, as summarised in Figure 61. 53 of these occurred at the signalised four-way intersection of Canning Highway and Douglas Street. None of these were fatal, one required hospital treatment and nine required medical attention.

This intersection also recorded one crash with a cyclist and one crash with a pedestrian. Douglas Avenue is identified as being on the South East Perth Bicycle Network route 24 and is a popular route for cyclists as shown in Figure 65. The majority of crashes were rear end and only seven occurred at night when visibility is low.

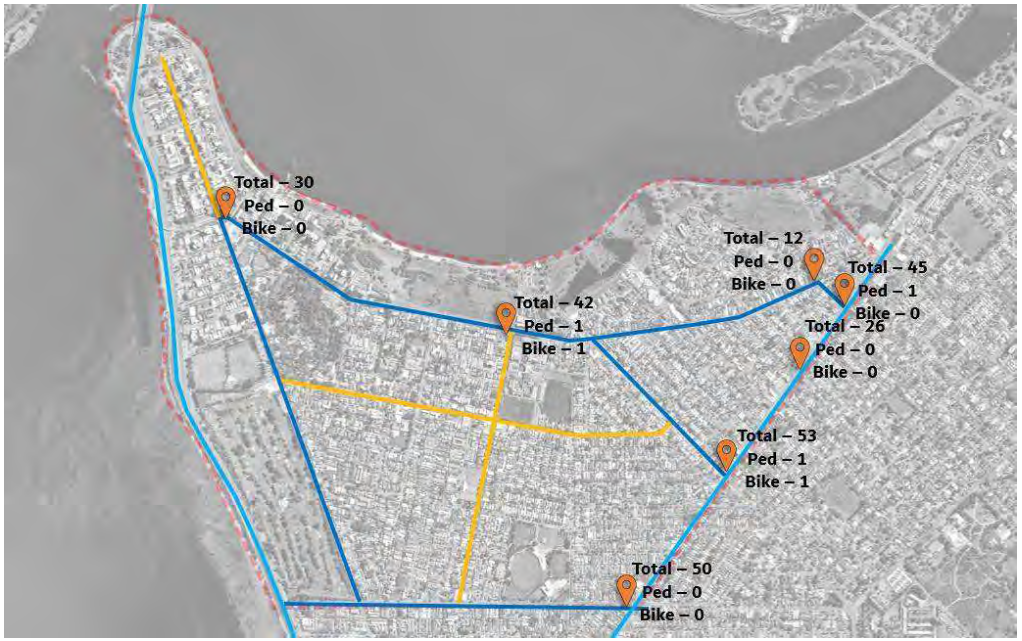


Figure 61 Highest 7 intersection crashes in South Perth

The signalised four-way intersection of South Terrace and Canning Highway recorded 50 crashes, where one required hospital treatment and 13 required medical treatment. None of these crashes involved a pedestrian or cyclist. This intersection accommodates two bus routes and does not have an identifiable cycle route aside from a sealed shoulder on South Terrace on the eastern side of Canning Highway. The majority of crashes were rear end and 13 occurred at night when visibility is low.

Mill Point Road and Coode Street intersection recorded 42 crashes over the five years. This intersection is four-way signal controlled and is a main entrance to the South Perth Foreshore for vehicles, cyclists and pedestrians. Of those 42 crashes, two required hospital treatment and eight required medical treatment, one involved a cyclist and one involved a pedestrian. This intersection accommodates one bus route and while there is no formal cycle infrastructure at the intersection, it provides a direct connection to the shared path on the South Perth Foreshore. This intersection carried 39,384 vehicles on September 23, 2020. 13 of the crashes were rear end and 13 occurred at night.

Funding for a signalised raised safety platform has been announced by the State Government in September 2020, for the Mill Point Road and Mends Street intersection. This will reduce speed through the intersection and improve pedestrian access.

Seven crashes in the South Perth area involved cyclists. Two of these crashes occurred at the roundabout intersection of Angelo and Addison Street.

Within South Perth, six crashes in total involved pedestrians and these were spread across the area with no intersection recording more than one pedestrian incident.

4.3 Crash Information – Key Implications

Given the overall volume of traffic experienced in the City on an average weekday and throughout the year, the volume of significant or major crashes recorded throughout a five year period does not suggest that there are any substantial issues apparent.

Crashes between motor vehicles will always be a factor in the City as no substantial urban road system or street network can deliver no accidents, injuries or fatalities. The mature state of the road network indicates that the majority of these crashes will continue to fit the profile of those recorded over the past five years – generally at the lower end of the scale and mainly due to driver inattention in fine, daylight conditions. Pedestrian accidents do not appear to be a specific issue however the City has a substantial off-street path network that provides a safe environment where vehicle interaction is minimal.

The Western Australian Black Spot Program requires a minimum of 10 intersection crashes over five years on State roads such as Canning Highway and five crashes over five years on local roads to qualify for consideration. This would mean that 13 out of the 29 intersections along Canning Highway (State Road) and 24 of the 118 intersections on local distributor roads would qualify for Black Spot Program based on crash volumes alone.

The City should continue to monitor these locations on Distributor Roads and address them on an ongoing basis. Above all, reducing speed within the higher activity centre areas will assist in reducing the level of crashes experienced and also support safer conditions for pedestrians and other vulnerable road users.

5. MILESTONE 1 - OTHER DATA

5.1 Public Transport Network

The City is serviced by a range of public transport options including two high frequency bus routes, ten standard bus routes, the Perth to Mandurah train line and the only public ferry service in Perth which runs between the South Perth Foreshore and Elizabeth Quay. Public transport patronage in the City is higher than the Perth average, where over 15% of residents use public transport for commuting. The public transport services provide essential connections between South Perth and Central Perth, Canning Bridge Station and Bus Station, Fremantle and Curtin University.

The South Perth Activity Centre Plan identifies the Activity Centre as a potential transit-oriented precinct. Long term planning objectives to shift mode usage and address congestion include bus priority treatments at the Mill Point Road, Labouchere Road and Judd Street intersection, enhanced bus services, progression of the South Perth Station and expansion of the ferry service.

The map in Figure 62 shows the existing public transport network.

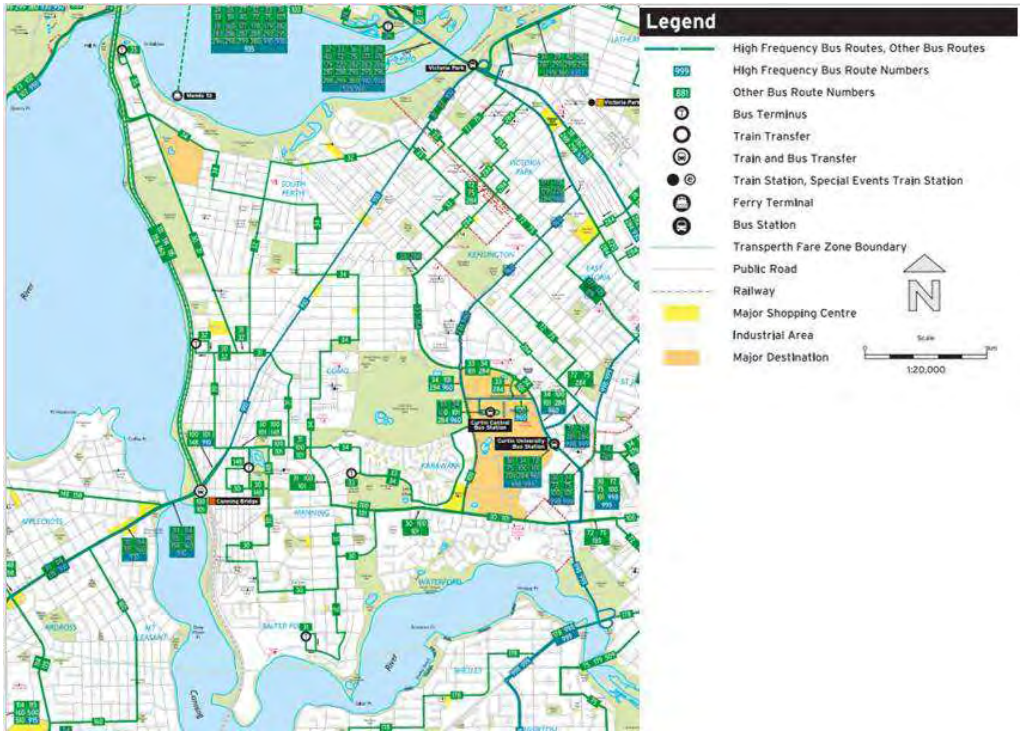


Figure 62 Public transport network (source: Transperth)

5.1.1 Canning Bridge Station

The Perth to Mandurah train line runs along the western boundary of the City and provides direct connections between Perth and Mandurah. It is located within Zone 1 and is 7km from Elizabeth Quay Station. Canning Bridge Station has no formal park and ride, meaning it is predominantly accessed by walking and bus transfers. Formalised areas for pick up and drop off activity have been created on Robert Street, where 4-hour parking is also permitted. This excludes peak hour commuting park and ride patterns but allows leisure trips to be made into Central Perth and commuting trips outside of peak times.

Canning Bridge Station is a critical component for development in the area where the densities and development opportunities identified in the Canning Bridge Activity Centre Plan are wholly reliant on the integrated transport node of the Station.

5.1.2 South Perth Train Station

South Perth has been identified as a potential location for a station since the opening of the Perth to Mandurah train line in 2007. In 2011, the City prepared the South Perth Station Precinct Plan which identified direct links to the Perth Zoo and increased development and employment opportunities within the City as a result of the proposed Station through development of the subsequent South Perth Activity Centre Plan. In 2017, the South Perth Station Precinct Plan was reviewed as part of the Place and Design Project which recommended that the study area be widened. While funding for the project is not secured, the overall intent of the Precinct Plan to encourage significant commercial and residential growth, is retained. This is discussed in more detail in section 7.2.

5.1.3 Bus Network

The bus network facilitates connections between the City to key destinations of Central Perth, Canning Bridge Station, Curtin University and Fremantle. Bus routes 30 - 35 currently by-pass Canning Bridge and travel directly to the Central Perth.

The Canning Bridge Bus Interchange is a bus to train transfer station and has four stands in a side platform configuration with stands provided in three separate locations. The Canning Bridge Bus Interchange accommodates three of the 12 bus services within the City with critical connections east to Curtin University and west to Fremantle.

A summary of the 12 bus services is listed in Table 5.

Table 5 Summary of Bus Routes (source: Transperth)

Number	Route	Weekday Summary		Saturday Summary	Sunday/ Public Holiday Summary
		No. Services	AM/ PM Peak Frequency		
30	Curtin University – Perth Bus Station	43 services 5:56am to 11.07pm	10-15 mins	21 services, 30 minute frequency	12 services, 60 minute frequency
31	Redmon Howard Parade – Perth Busport	31 services 5.40am to 7.00pm	15 minutes	13 services, 60 minute frequency	11 services, 60 minute frequency
32	Melville Parade/Thelma Street – Elizabeth Quay Bus Station	32 services 5.45am to 8.59pm	15 mins	15 services, 60 minute frequency	12 services, 60 minute frequency
33	Curtin Bus Station – Elizabeth Quay Bus Station	18 services 5.56am to 6.11pm	30 minutes	11 services, 60 minute frequency	9 services, 60 minute frequency
34	Cannington Station – Perth Busport	56 services 5.12am to 11.04pm	12 minutes	27 services, 30 minute frequency	23 services, 30 minute frequency
35	The Old Mill – Elizabeth Quay Bus Station	29 services 6.05 to 6.42pm	15 minutes	25 services, 30 minute frequency	10 services, 60 minute frequency
100	Cannington Station – Canning Bridge Station	71 services 5.52am to 10.09pm	10 minutes	26 services, 30-60 minute frequency	24 services, 30-60 minute frequency
101	Curtin University Bus Station – Canning Bridge Station	54 services 6.31am to 7.11pm	10 minutes	N/A	N/A
148	Elizabeth Quay Bus Station – Fremantle Station	12 services 6.02am to 3.56pm	30 minutes	8 services, 60-90 minute frequency	4 services, 60-120 minute frequency
284	Belmont Forum – Curtin University Bus Station	7 services 7.26am to 3.59pm	60 minutes	N/A	N/A
910	Fremantle Station – Perth Busport	88 services 4.47am to 11.53pm	7 minutes	64 services, 15 minute frequency	53 services, 15 minute frequency
960	Curtin University – Mirrabooka Bus Station	104 services 5.45am to 12.36pm	6 minutes	62 services, 15 minute frequency	57 services, 15 minute frequency

During peak travel times, bus travel times within City are found to be the highest of all modes including driving and cycling, reflecting the impact of bus stops, winding suburban routes and lack of priority at key intersections and corridors.

Bus priority lanes are found at either side of the Canning Bridge Bus Interchange including the westbound lanes on Canning Highway to the east of the Kwinana Freeway, and on the eastbound lanes on Canning Highway west of the Kwinana Freeway. These lanes benefit buses at the intersection to reduce delay times and ensure travel and transfer times are competitive or more efficient than private vehicle travel, especially at peak commuting times.

The South Perth Activity Centre Plan highlights the need for bus priority at the Mill Point Road and Labouchere Road intersection, and a dedicated bus lane on Labouchere Road between Judd Street and Lyall Street. Outside of the Activity Centre the need for bus priority measures have been highlighted along Canning Highway within the Canning Highway Road Reservation Review completed for the (then) Department of Planning.

5.1.4 Canning Bridge Bus Interchange

The future operation of the bus network in the City will be reliant on the outcomes from the proposed redevelopment of the Canning Bridge Bus Interchange. The hub and spoke operation of the existing interchange form an essential part of the Perth public transport network, and any changes will impact existing local and regional travel and transfer patterns. Upgrading the interchange to accommodate higher patronage will progress the public transport focus of the area. This is discussed in more detail in section 7.3.

5.2 Cycling

The City has access to a good level of cycle accessibility. The provision of cycling infrastructure identified in the City Joint Bike Plan 2018 essentially mirrors the information from the Department of Transport's Cycling Map for Perth, Fremantle and Stirling and this map is shown in Figure 63.

The City and Town of Victoria Park Joint Bike Plan identifies a number of projects to expand their bicycle network to increase safety and improve connections with direct and efficient routes, in order to make cycling a realistic and appealing transport option within and surrounding the City and their aspirational network is shown in Figure 64.

Since the implementation of the Joint Bike Plan in 2018, the Long Term Cycle Network (LTCN), a joint funding project with the Department of Transport, has been finalised where only minor changes are proposed to the aspirational network. The LTCN will progress a number of crucial cycling infrastructure projects within the City.

The Joint Bike Plan identified key project areas for improvements including the Freeway Off-Ramp/Mill Point Road intersection, Canning Bridge to Curtin Link, Manning Road modifications and Douglas Road improvements. The City committed to the following scheduled capital works for the 2020-2021 financial year:

- Douglas Avenue - Coode Street car park, South Perth - raised cycle plateaus
- Thelma Street investigation, Como
- Jackson to Murray Street, Como – new bike path
- Manning Road - Centenary Avenue to Drogheda Way, Manning - upgrade to bike path
- Welwyn Avenue Safe Active Street.

Figure 63 Department of Transport Bike Maps Facilities (source: Department of Transport)

Figure 64 Aspirational cycle network in the City (source: Joint Bike Plan 2018)

According to the online heat mapping tool Strava, main cycling routes within the City typically follow the distributor road network, with the highest north-south volumes along the Kwinana Freeway PSP, Melville Parade, Labouchere Road, Hayman Road/Douglas Avenue and to a lesser extent, Coode Street. The South Perth Esplanade PSP and Mill Point Road east of Coode Street are the only popular routes which accommodates east-west cycling. These are evident in Figure 65.

Figure 65 Strava heat mapping - City of South Perth (source: Strava)

Labouchere Road has 1.5m on road cycle lanes distinguishable by the red road base and white painted lines. The cycle lanes are shown to have priority across intersecting roads; however, the lanes disappear at signalised intersections. Northbound, Kent Street/Hayman Road has a 1.5m cycle lane distinguishable by the red road base and white painted lines. There is no on-road cycle lane to travel southbound however along the western side of Kent Street/Hayman Road, there is a 2.3m other shared path. The roundabouts are multi-lane and are considered a dangerous environment for cyclists. Avoiding the roundabouts requires a significant detour.

Mill Point Road has 1m cycle lanes on both sides distinguishable by the red road base and white painted lines. Mill Point Road also accommodates bus routes, high traffic volumes and regular residential crossovers, which means the cycling environment is constrained and safety for cyclists is reduced.

Coode Street has 1.5m cycle lanes on both sides with varying levels of protection. Some stretches, the lanes are protected by a kerb and other sections and through signalised intersections, the lanes disappear. The bike lanes are shared with bus stops and, in some sections, the bike lane is located between parked and moving vehicles.

Cyclist counts have been obtained from MRWA TrafficMap data in the locations shown in Figure 66. Not all sections of the distributor road network have data available, this section reports on the data available for the network

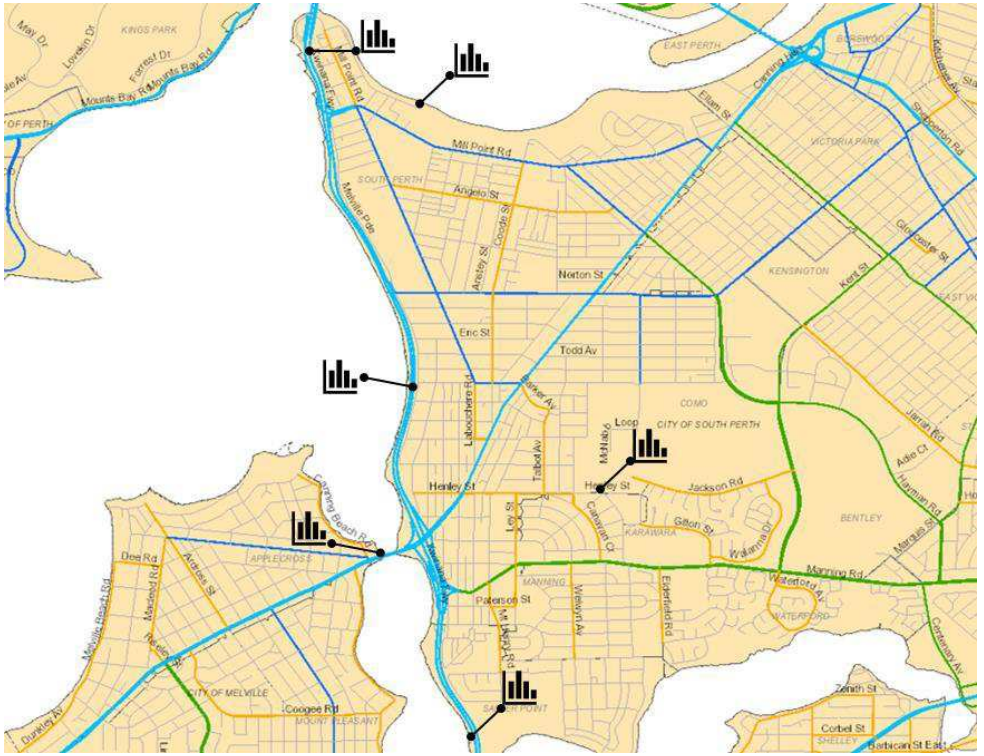


Figure 66 Locations of available cyclist data in City of South Perth

The Kwinana Freeway PSP at the Mount Henry Bridge and Narrows Bridge, the Canning Highway PSP and the South Perth Esplanade PSP all record high volumes of cyclists with clear commuting peaks across Monday to Friday. All four locations also showed a higher volume of cyclists across Saturday and Sunday, where riding for leisure and exercise are clearly popular activities.

According to the Kwinana Principal Shared Paths (PSP) at the Mount Henry Bridge, southbound travel is more common than northbound travel which points to the PSP being used by people living north of, and within, the City and travelling south, or that cyclists may avoid the PSP in the morning and use alternative routes to travel north but rely on the PSP for their return journey. This pattern of travel is reinforced along the South Perth Esplanade, where volumes are consistently higher for westbound travel towards the Narrows Bridge (Figure 68).

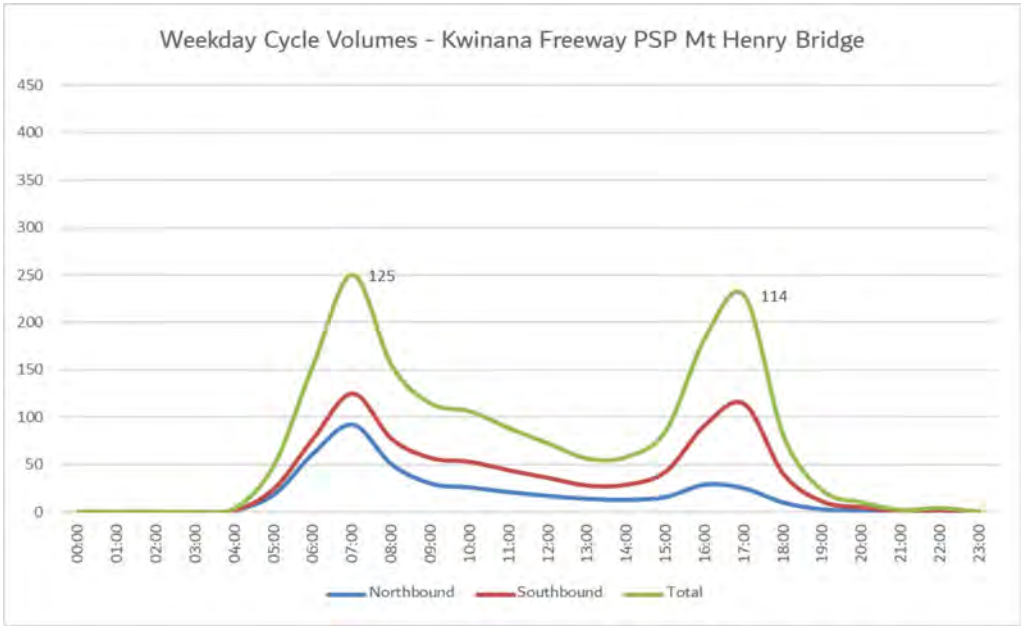


Figure 67 Weekday cycle volumes Kwinana Freeway PSP Mt Henry Bridge 2020/2021

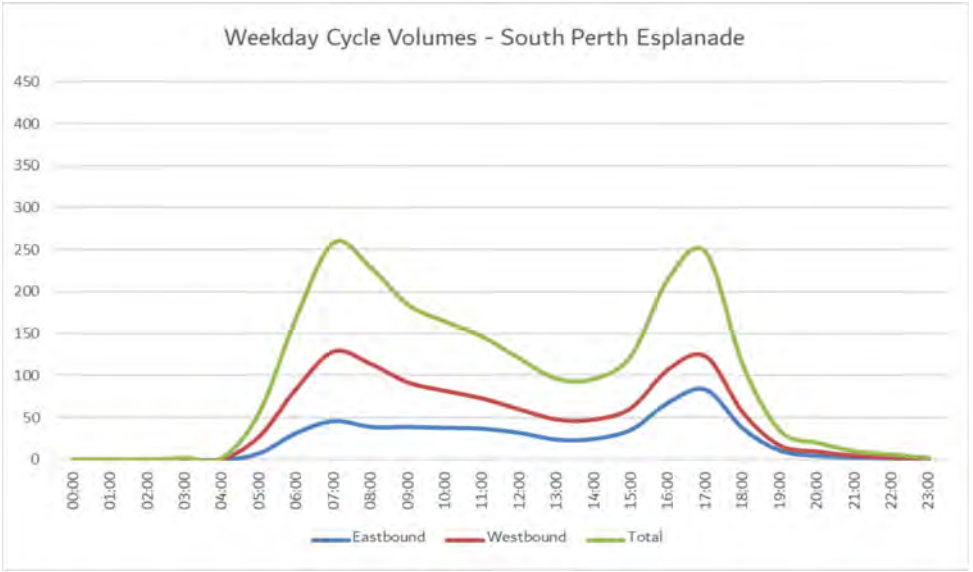


Figure 68 Weekday cycle volumes South Perth Esplanade 2020/2021

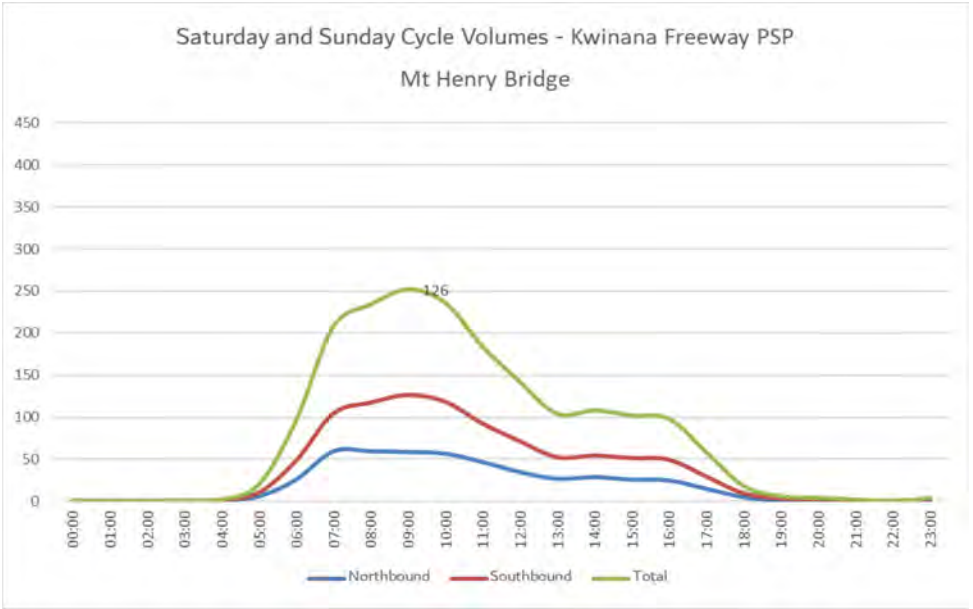


Figure 69 Weekend cycle volumes Kwinana Freeway PSP 2020/2021

A summary of cyclist volumes is shown below in Table 6 and in Figure 70 .

Table 6 Cyclist volumes in the City

	Monday to Friday			Weekend
Location	AM	PM	Total	Total
Kwinana Fwy PSP Mt Henry Bridge	125	114	862	932
Canning Hwy PSP	204	111	1,185	1,525
Kwinana Fwy PSP Narrows Bridge	199	183	1,064	647
Henley St Access Path	11	11	76	69
South Perth Esplanade	129	123	1,146	1,648

Figure 70 Weekday cycle volumes (source: MRWA TrafficMap)

During the week, cyclist volumes at the Canning Bridge PSP are the highest of all locations where 1,185 cyclists were recorded using this PSP on an average weekday in 2020/2021. On the weekend, the South Perth Esplanade recorded the highest volume of cyclists, with 1,648 recorded on an average weekend day in 2020/2021.

The Henley Street access path was constructed as part of the Curtin Cycle Link in 2012/2013 to provide direct and safe access between Canning Bridge Station and Curtin University. It has the lowest of all recorded volumes with peaks occurring at 8.00am and 5.00pm. The main direction of travel is westbound which confirms that this route is predominantly used to access Curtin University.

5.3 Pedestrian Counts

Walking in the City is supported by a number of attractive walking environments along the South Perth Foreshore, along the Swan River and throughout the leafy suburbs. The Department of Planning Lands and Heritage's Urban Tree Canopy Dashboard reveals that the City has a higher-than-average tree canopy of 13% of trees over 3m on street blocks (compared to the Perth average of 12%), and of 15% on roads (compared to the Perth average of 13%).

The City has committed to an ongoing program of works to improve existing pedestrian paths in 2020/2021, which progresses the City's commitment to increase the proportion of people walking as a transport mode. According to online heat mapping tool Strava, popular routes for people walking and running avoid the regional distributor routes and are more concentrated on local distributors including the northern end of Labouchere Road, Coode Street and Henley Avenue. Popular areas for walking and running mirror the access routes to specific destinations, including schools and Curtin University, parks and the foreshore, urban centres, community facilities, and the PSP to Canning Bridge Station.

Pedestrian counts have been obtained through Main Roads WA TrafficMap using the data from the Video Survey Footage. Not all sections of the distributor road network have data available, this section reports on the data available for the network. Pedestrian volumes are available between 6.30-9.30am and 4.00-7.00pm.

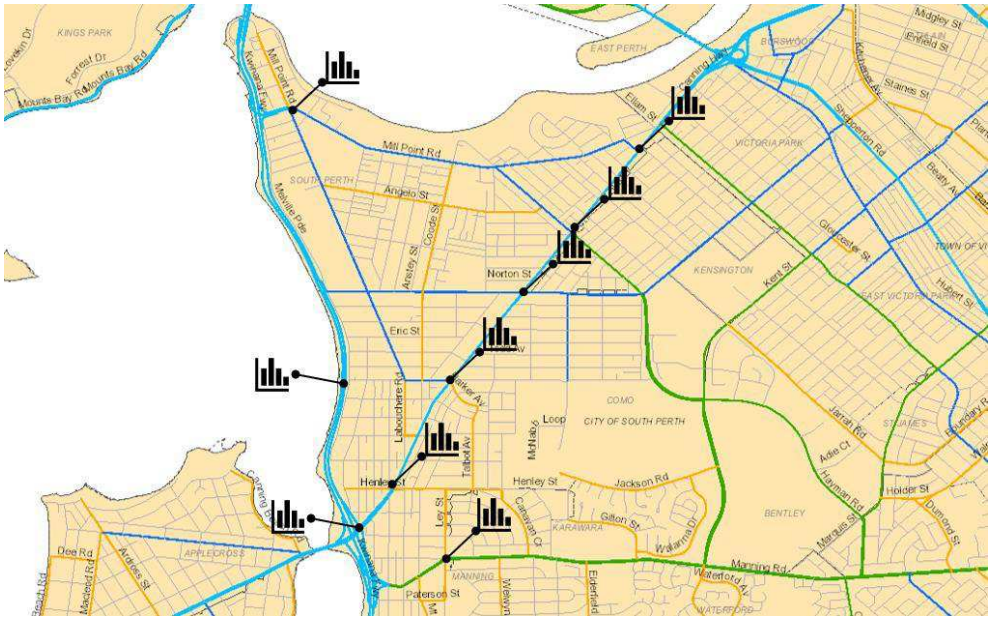


Figure 71 Locations of available pedestrian data on distributor road network in City of South Perth

Pedestrian volumes are highest at the entrance to the Canning Bridge Station on Canning Highway, east of the Kwinana Freeway. These counts are conducive to the high volumes of people who access the station by walking.

At the Manning Road and Ley Street intersection, pedestrian volumes in the PM peak occur outside typical commuting travel times, at 3.00-4.00pm. This is consistent with travel times for school drop offs and pick-ups and is supported by the location of two schools on Ley Street.

Table 7 shows the volumes of pedestrians at all locations and is displayed in Figure 72. Many of the pedestrian volumes were recorded over four years ago in 2016. Pedestrian volumes may have since changed as a result of recent high-density development facilitated by the Canning Bridge Activity Centre Plan and South Perth Activity Centre Plan.

Table 7 Pedestrian volumes

	Date	AM Peak	PM Peak	Daily Volume
Kwinana Freeway East	22/11/2016	337 (7.30-8.30)	318 (5.00-6.00)	1,319
Manning Road and Ley Street	23/07/2019	36 (8.00-9.00)	29 (3.00-4.00)	200
Canning Highway and Henley Street	22/11/2016	41 (7.45-8.45)	56 (5.00-6.00)	191
Canning Highway and Thelma Street	22/11/2016	54 (7.45-8.45)	33 (4.30-5.30)	167
Canning Highway and South Terrace	22/11/2016	30 (7.15-8.15)	28 (4.00-5.00)	116
Canning Highway and Douglas Avenue	22/11/2016	52 (8.00-9.00)	37 (4.00-5.00)	204
Canning Highway and Way Road	22/11/2016	13 (7.30-8.30)	18 (5.00-6.00)	59
Kwinana Freeway and Mill Point Road	30/08/2016	38 (7.45-8.45)	32 (4.15-5.15)	144

Figure 72 Pedestrian volumes (source: MRWA TrafficMap)

5.4 Other Data – Key Implications

The City has a substantial network of primary walking and cycling facilities along the Swan River foreshore, through Sir James Mitchell Park and along the Kwinana Freeway. These connections are some of the most popular walking and cycling routes in Perth. In addition, most areas of the city have a mature tree canopy that support walking trips and an extensive network of local street connections with footpaths.

In addition, the City has worked with the Town of Victoria Park to develop a bike plan that pre-empted the Long Term Cycle Network developed by the DoT. For there to be any substantial increase in cycling and walking in the City during the course of the ITP being in place, high quality segregated facilities need to be provided that connect up areas of activity along or adjacent to many distributor road corridors. This will have implications for street design, for use of existing road reserves, on-street parking and cost of developing and maintaining the network. Without a step change in infrastructure beyond what was envisaged with the Joint Bike Plan, cycle usage will stay at similar levels to today – a negligible contribution to overall movement patterns.

The City has a bus network with a number of high frequency services that connect major interchanges with Activity Centres. It is also unique in that the City has the only passenger terminal for the Ferry network outside of Perth CBD. This facility is a key drawcard for visitors to the City and in particular the foreshore area and the Zoo.

The local bus routes provide lower frequency connections between the City and Perth CBD. This network is primarily aimed at commuting movements.

Canning Bridge Station is a key interchange on the overall network and on the Perth to Mandurah line. It supports the movement of people between the rail network and Curtin University and also underpins the development proposed for the Canning Bridge Activity Centre. For many years, the case has been progressed with State Government for the construction of a new station at South Perth, however this has been overlooked for other outer suburban low density commuter belt locations along the Perth to Mandurah line such as Aubin Grove, Karnup and Lakelands. . The City should continue to proactively lobby for the South Perth train station with the State, focussing on the delivery of meeting housing density targets and potential increased public transport patronage in and around the South Perth station precinct.

For public transport to increase in usage and be more attractive, not only does the reconfiguration of Canning Bridge Station and the development of South Perth Station by the Public Transport Authority (PTA) need to occur, the City will need to be proactive in supporting and assisting in the delivery of priority on-street bus lanes where and when it is required. This is particularly important to Canning Bridge, the connection to Curtin University and through the South Perth Activity Centre.

6. MILESTONE 2 - TRAFFIC AND CONGESTION FORECAST

6.1 Introduction

Milestone 2 analyses and sets out the forecast year changes that are predicted on the Distributor Road network. The changes consider a range of data sources that have been provided specifically for this ITP. This section presents the data, analysis and potential impacts on the road network.

6.2 Information Utilised

The following data has been utilised for the analysis of the forecast years 2021, 2031 and 2041:

- Dwelling and population forecasts for the City of South Perth Community Profile (https://profile.id.com.au/south-perth)
- Main Roads WA – ROM24 model outputs
- Historic and local count data.

The data has been analysed to understand the potential changes that may eventuate from the present year into a series of forecast years. It should be noted that specific modelling has not been undertaken, rather, data and model outputs that have been made available have been interpreted and discussed.

6.3 Dwelling and Population Forecasts

Data for each of the suburbs within the City has been extracted from https://profile.id.com.au/south-perth. At the city level, the population is set to increase from 2016 to 2041 by an average growth rate of 1.67% per year; a total population increase of 21,742 between these years. Table 8 and Figure 73 sets out the 5 year forecast periods' population changes and average calculated annual percentage increase for each of the suburbs within the City of South Perth.

Table 8 Forecast population change

	2016	2021	2026	2031	2036	2041	Total change	Avg. % change
City of South Perth	**44,100**	**46,703**	**49,134**	**54,282**	**60,107**	**65,842**	**+21,742**	**1.6**
Como	15,098	15,623	16,835	18,899	21,088	23,385	+8,287	1.8
Karawara	2,151	2,073	2,069	2,086	2,124	2,185	+34	0.1
Kensington	4,455	4,477	4,580	5,147	6,063	7,228	+2,773	2.0
Manning	4,142	4,307	4,495	4,695	4,925	5,161	+1,019	0.9
Salter Point	3,011	3,190	3,244	3,395	3,474	3,562	+551	0.7
South Perth	12,857	14,313	15,001	16,517	18,408	20,331	+7,474	1.8
Waterford	2,387	2,719	2,911	3,543	4,025	3,990	+1,603	2.1

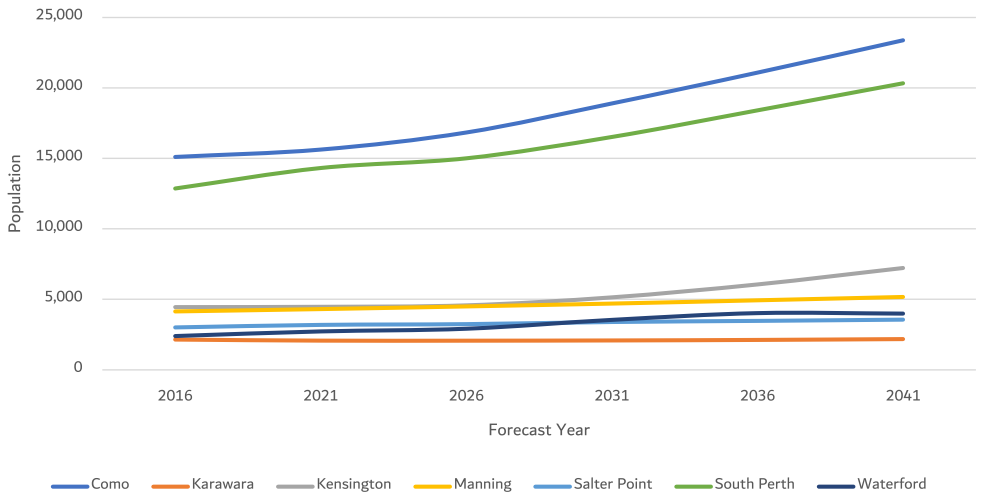


Figure 73 Forecast Population Change

The forecast population chart clearly demonstrates Como and South Perth areas consistently housing the larger population for the City between 2016 and 2041. The average annual percentage change sits between 1% and 2% for all areas with the exception of Karawara that experiences very little population change. The five year change periods are reasonably consistent in their average growth rate although Waterford is suggested to increase by 4.34% per year between 2026 and 2031. Kensington is also predicted to increase by 3.7% per year between 2031 and 2041.

The percentage of population within each suburb is set to remain consistent between forecast years despite the growth to each separate suburb. Figure 74 shows the 2021 and 2041 population for each suburb to demonstrate this.

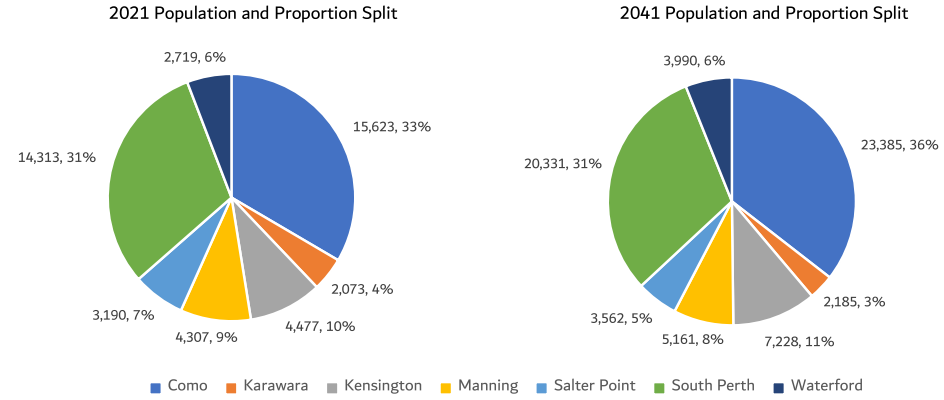


Figure 74 2021 and 2041 Population and proportion split comparison

6.4 ROM24 Outputs

Main Roads Western Australia (MRWA) provided ROM24 model outputs for use in the Integrated Transport Plan. The outputs were provided on an all-day (24 hour) basis, as Link Volume Plots and a set of subarea matrices for the cordoned network. The subarea from the ROM24 model output is shown in Figure 75 and covers the City of South Perth as well as the wider surrounding network. This was requested to understand the broader movement of vehicles to, from, or through the City, and outputs have been provided for 2016, 2021, 2031 and 2041.

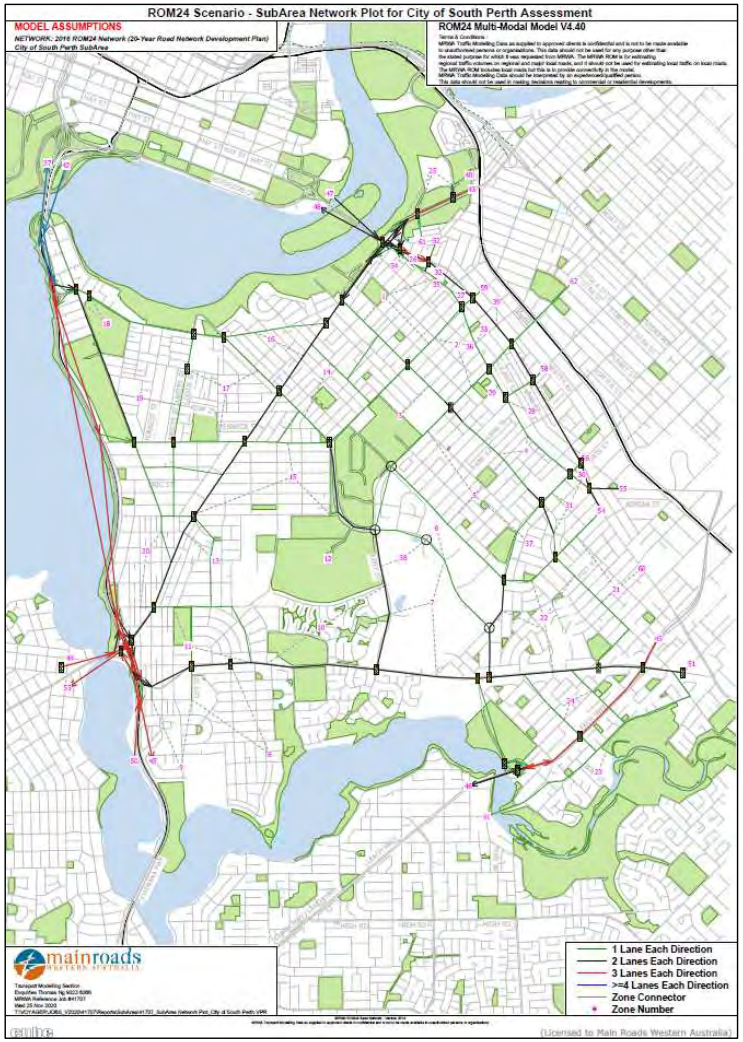


Figure 75 ROM24 subarea network extents

6.4.1 Sector Analysis

The ROM24 subarea matrices (zone to zone vehicle demand volumes) have been aggregated into sectors to allow an analysis of trip patterns and distribution at a broader level to be calculated. The ROM24 zones have been aggregated into "External" and "Internal" sectors based on the suburb boundaries from ProfileID:

- External (everything outside the City – Town of Victoria Park, City of Canning, Kwinana Freeway etc.)

- Internal – Como, Karawara, Kensington, Manning, Salter Point, South Perth, and Waterford.

ROM24 is a strategic, macroscopic model that does not model every road within an area, and the zoning is by its nature, often large. This results in some of the suburbs within the City being represented by only a single ROM24 zone, or centroid connector that loads vehicle trips onto the road network.

This is particularly prominent for Manning, Salter Point and Waterford. Waterford suburb does not contain a zone or connector in ROM24 and for this analysis, the zone and loading point south of Manning Road that surrounds Welwyn Avenue has been allocated to represent Waterford with Manning then covered by a ROM24 zone that is north of Manning Road. This does not impact the analysis at a sector level where these areas are all consolidated to an "internal" area.

The proportion of vehicle trips from ROM24 remain consistent between the years 2016 and 2041 with the dominant number of daily trips (approximately 75%) being between External and External zones. These trips could travel through the City; a vehicle travelling from Burswood Park to the Kwinana Freeway southbound, or may never enter the City network; Leach Highway south of Manning Road through to the City of Canning.

External to Internal, and Internal to External trips account for 10-11% of the daily vehicle trips extracted from ROM24, while the Internal to Internal trips are comprised of approximately 3%. This sector-based distribution analysis is summarised for 2041 in Figure 76.

Figure 76 2041 ROM24 sector trip distribution

6.4.2 Internal Trip Distribution

Considering the approximately 3% of subarea demand matrices trips from ROM24 further, we can analyse the movements between individual suburbs within the City. Similarly to the successive forecast year sector outputs being reasonably consistent, the distribution of internal trips from 2016 to 2041 does not change significantly. The largest internal movement of vehicles in 2041 between suburbs occurs from:

- South Perth to South Perth – 13%
- South Perth to Como – 10%
- Como to South Perth – 10%
- Como to Como – 9%.

The movements between other suburbs account for the remaining internal trip distribution. All internal trip distribution proportions for 2041 are shown in Figure 77, and also demonstrates South Perth and Como as the more dominant trip producers and attractors.

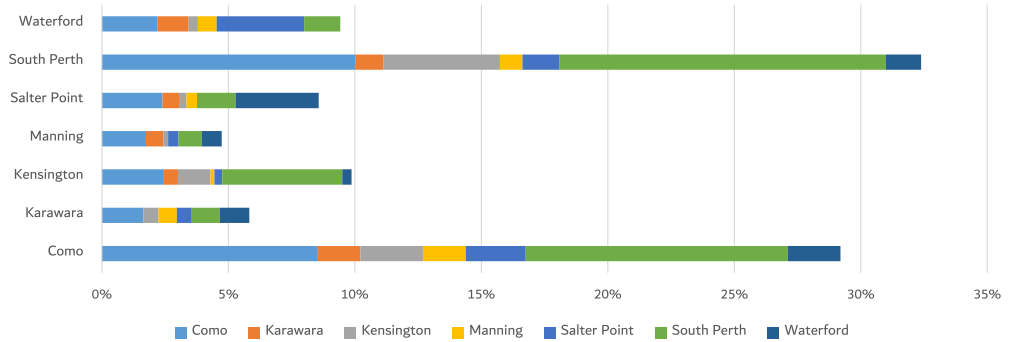


Figure 77 2041 Internal trip distribution

6.4.3 ROM24 Demand Growth

Where ROM24 outputs have been provided for several forecast years, analysis can also be undertaken on the potential growth in vehicle volumes that are modelled on the road network. The vehicles that are generated in ROM24 are directly related to a number of criteria and parameters within the model; land use, households, car ownership etc. This data within ROM24 is provided directly from the Metropolitan Land Use Forecasting System (MLUFS) maintained by the Department of Planning Lands and Heritage, and should therefore generally reflect the suburb data from ProfileID.

Differences will exist between the ROM24 vehicle trip demand output changes and the population/dwelling forecast changes where car ownership and different trip purposes can vary, but also where the ROM24 zoning is not reflective of the physical suburb boundaries. Nonetheless, the forecast changes in vehicle trip demands are presented in Table 9 and Table 10 separately for inbound and outbound trips. "Inbound" trips cover all daily modelled vehicle trips from ALL areas (internal and external) in the sub-area network TO the City zones, while "outbound" trips represent trips FROM the City zones to all areas in the sub-area network.

Table 9 Inbound daily trip forecasts

Inbound Daily Trips	2016	2021	2031	2041	2016 – 2041 Total change	Avg. Annual % change
Internal	**87,905**	**91,118**	**110,292**	**126,374**	**38,469**	**1.43%**
Como	*25,554*	*26,368*	*31,536*	*36,708*	*11,154*	*1.41%*
Karawara	*5,361*	*5,588*	*6,629*	*7,333*	*1,971*	*1.26%*
Kensington	*9,230*	*9,237*	*10,826*	*12,016*	*2,786*	*0.94%*
Manning	*3,062*	*3,336*	*4,364*	*4,616*	*1,555*	*1.82%*
Salter Point	*6,841*	*6,778*	*8,550*	*10,001*	*3,160*	*1.38%*
South Perth	*30,865*	*32,757*	*39,493*	*46,249*	*15,384*	*1.66%*
Waterford	*6,992*	*7,053*	*8,894*	*9,451*	*2,459*	*1.14%*

Table 10 Outbound daily trip forecasts

Outbound Daily Trips	2016	2021	2031	2041	2016 – 2041 Total change	Avg. Annual % change
Internal	**87,571**	**90,966**	**110,269**	**126,260**	**38,689**	**1.45%**
Como	*25,507*	*26,053*	*31,314*	*36,409*	*10,902*	*1.36%*
Karawara	*5,418*	*5,552*	*6,669*	*7,456*	*2,037*	*1.23%*
Kensington	*9,151*	*9,303*	*10,788*	*12,030*	*2,878*	*1.03%*
Manning	*3,018*	*3,331*	*4,391*	*4,525*	*1,507*	*1.85%*
Salter Point	*6,784*	*6,870*	*8,513*	*10,048*	*3,264*	*1.48%*
South Perth	*30,767*	*32,866*	*39,677*	*46,386*	*15,618*	*1.71%*
Waterford	*6,925*	*6,991*	*8,917*	*9,407*	*2,481*	*1.16%*

These tables demonstrate the greatest forecast year increase to vehicle trips is experienced for Como and South Perth, although their annual average percentage increase is reasonably consistent with neighbouring suburbs. The dominance of these two suburbs and their related vehicle trips is consistent with the population and household data changes previously referenced in Section 6.3.

The overall annual average growth increase in vehicle trips for the City is 1.44%.

6.5 Mid Block Capacity Assessment

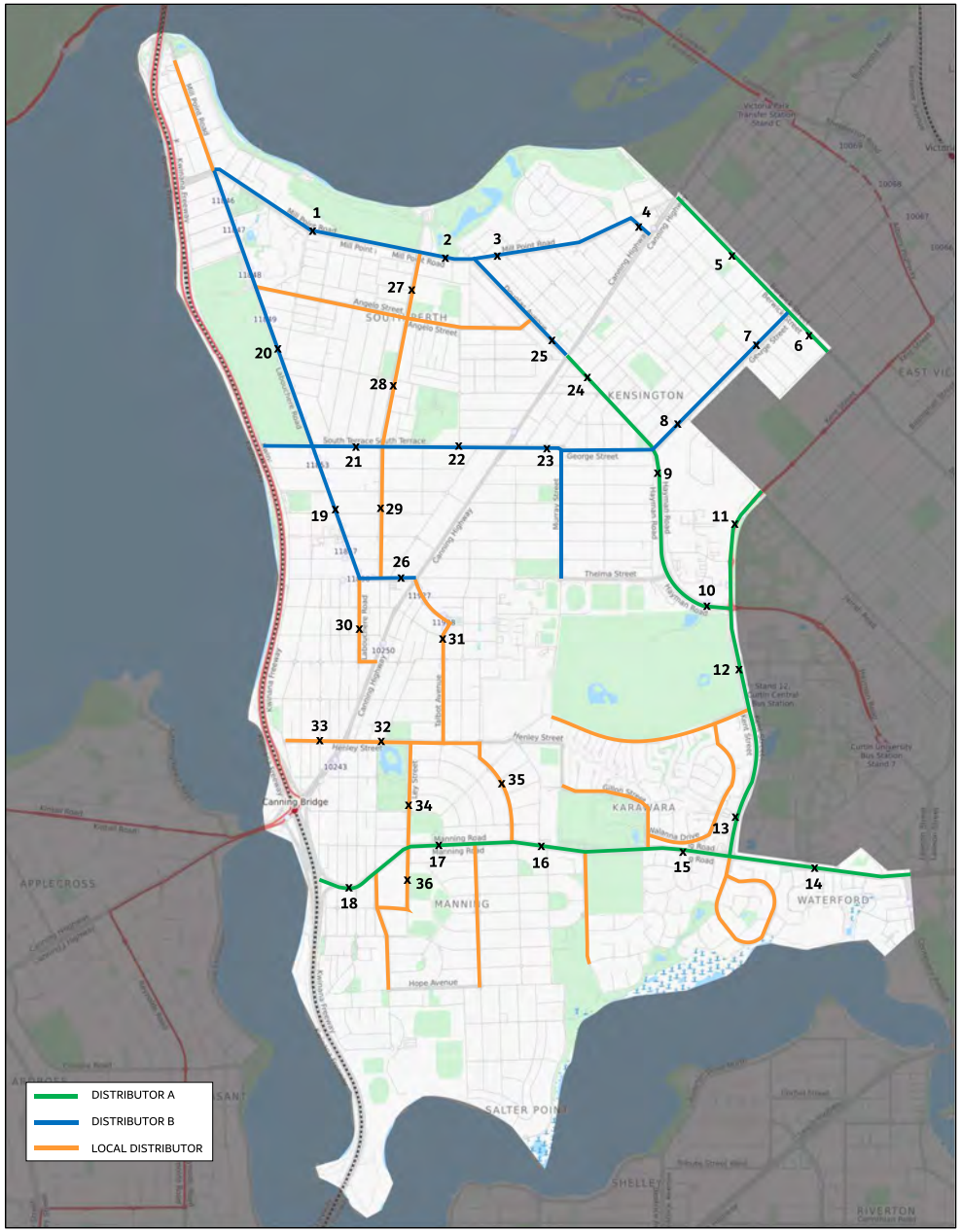
In addition to the vehicle trip demands that were provided, MRWA have also produced Link Volume Plots (LVP) for analysis. These plots show the daily modelled volumes that have been assigned to the modelled road network within the requested area, for a series of forecast years (2021, 2031, and 2041). These allow an interrogation to be undertaken of the change in vehicle volumes through the years as a result of the land use and population changes that have been previously discussed. It should be noted that the primary focus of strategic, macroscopic models is the representation of the Primary and Distributor A and B roads. These roads are usually included within the model, but there is a sparser representation of local distributor roads and vehicle trips can often be loaded directly onto the main network. This often results in vehicle volumes on local roads that are not wholly reflective, however, can still help to demonstrate an understanding of modelled changes.

The Distributor A and B, and Local Distributor road network within the City has been mapped to allow the corresponding ROM24 LVP's to be tabulated at key locations. The location plan is shown as Figure 78 with the **daily, two-way combined vehicle volumes** for each year tabulated.

Table 11 Distributor A ROM24 daily volumes

Location	Description	2021	2031	2041	2021 – 2041 Total change	Avg. Annual % change
5	Berwick Street	14,700	15,500	17,700	3,000	0.98%
6	Berwick Street south of George St	16,100	19,800	23,400	7,300	2.06%
9	Hayman Road	19,900	23,400	27,800	7,900	1.82%
10	Hayman Road west of Kent St	23,900	28,600	35,400	11,500	2.17%
11	Kent Street north of Hayman Rd	10,400	13,800	17,600	7,200	3.01%
12	Kent Street north of Jackson Ave	20,300	25,000	29,600	9,300	2.08%
13	Kent Street north of Manning Rd	18,800	24,400	29,000	10,200	2.43%
14	Manning Road east of Kent St	31,000	37,600	42,300	11,300	1.69%
15	Manning Road west of Kent St	36,400	45,500	51,800	15,400	1.94%
16	Manning Road east of Canavan Cres	40,600	51,000	57,900	17,300	1.96%
17	Manning Road east of Ley St	23,700	29,600	33,700	10,000	1.94%
18	Manning Road east of Freeway	27,600	35,600	40,900	13,300	2.19%
24	Douglas Avenue east of Canning Hwy	13,400	15,700	18,200	4,800	1.65%

The most significant vehicle volume increases across the Distributor A road network are naturally focused along Manning Road, although their annual average percentage increase is reasonably consistent with the remaining Distributor A network at approximately 2%.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DISTRIBUTOR B
LOCAL DISTRIBUTOR
SOUTH PERTH
KENSINGTON
KARAWARA
MANNING
WATERFORD
APPLECROSS
SALTER POINT
SHELLEY
RIVERTON
Canning Bridge
George Street
Thelma Street
Henley Street
Manning Road
Hope Avenue

Figure 78 Distributor network plan - ROM24 links

Table 12 Distributor B ROM24 daily volumes

Location	Description	2021	2031	2041	2021 – 2041 Total change	Avg. Annual % change
1	Mill Point Road	17,200	19,700	22,800	5,600	1.51%
2	Mill Point Road east of Coode St	16,100	19,100	21,900	5,800	1.66%
3	Mill Point Road east of Douglas Ave	11,500	14,200	16,300	4,800	1.91%
4	Way Road	8,300	10,900	12,700	4,400	2.39%
7	George Street south of Berwick St	15,300	18,800	21,400	6,100	1.84%
8	George Street north of Douglas Ave	13,900	17,700	20,600	6,700	2.19%
19	Labouchere Road south of South Tce	19,500	20,000	22,800	3,300	0.83%
20	Labouchere Road north of South Tce	21,300	20,900	25,800	4,500	1.08%
21	South Terrace east of Labouchere Rd	7,700	9,300	11,400	3,700	2.17%
22	South Terrace west of Canning Hwy	10,800	13,200	15,800	5,000	2.10%
23	South Terrace east of Canning Hwy	14,500	18,200	20,900	6,400	2.02%
25	Douglas Avenue west of Canning Hwy	9,600	10,800	12,700	3,100	1.50%
26	Thelma Street west of Canning Hwy	7,200	9,000	11,300	4,100	2.53%

The total daily modelled volume increase across the Distributor B road network is shown to be between 3,000 and 7,000 vehicles across the 20 year period. While these increases could be considered large, if the change is calculated down to an hourly increase, by individual direction it is less significant.

For example, Mill Point Road total increase in two-way daily volume over the 20 year period is shown as 5,600 vehicles, or 280 vehicles per year. This daily 280 vehicles is shared across both directions of travel, which, if split based on existing proportions is then 143 vehicles westbound, and 136 vehicles eastbound. The peak hour increase during the AM and PM would represent approximately 8% of these volumes which equates to approximately 11 vehicles per peak hour in each direction.

While the increase in modelled vehicle volumes can be shown to not be considered too onerous, it is recognised that many of the Distributor B roads carry a significantly greater volume than the Road Hierarchy might dictate as between 6,000 and 8,000 vehicles per day.

Further discrepancies also exist when comparing the actual observed daily volumes with the modelled 2021 volumes; it is also not possible to conclude that the modelled volumes are always higher than the actual observed volumes when differences exist both ways. For example:

- Mill Point Road – Observed 2018/19 20,090 vs. ROM24 2021 17,200
- George Street north of Douglas Ave – Observed 2018/19 9,669 vs. ROM24 2021 13,900

Table 13 Local distributor ROM24 daily volumes

Location	Description	2021	2031	2041	2021 – 2041 Total change	Avg. Annual % change
27	Coode Street north of Angelo St	4,000	4,700	5,300	1,300	1.51%
28	Coode Street south of Angelo St	2,400	3,000	3,400	1,000	1.92%
29	Coode Street south of South Tce	2,900	3,600	5,300	2,400	3.57%
30	Labouchere Rd south of Thelma S	12,800	10,600	12,500	-300	0.04%
31	Talbot Avenue south of Canning Hwy	8,800	10,800	14,300	5,500	2.76%
32	Henley Street east of Canning Hwy	15,900	20,800	23,200	7,300	2.12%
33	Henley Street west of Canning Hwy	12,600	15,600	17,300	4,700	1.74%
34	Ley Street north of Manning Rd	5,100	7,700	10,800	5,700	4.56%
35	Canavan Crescent	12,900	16,300	19,000	6,100	2.15%
36	Ley Street south of Manning Rd	8,900	11,100	12,400	3,500	1.82%

The local distributor modelled vehicle volume changes should be treated with caution where the role of the strategic model cannot accurately account for these roads. The most significant average annual percentage increase is modelled for Ley Street north of Manning Road at 4.56%.

The majority of the modelled local distributor road network are shown to carry more than the suggested 6,000 vehicles per day by 2041. Again, these volumes would most likely be spread across a number of parallel roads that exist, although are not included in the ROM24 model.

6.6 Modelling Output Results

The forecast year changes to population and households are reasonably consistent with the modelled increases to vehicle volumes on the City road network. The total proportion of vehicle trips particular to the City is small when compared against the movements through the City or around (and not interacting with) the local road network.

The more significant vehicle volume increases that have been modelled in ROM24 are contained to the Distributor A road network, although if the daily volumes are proportioned to separate directions and across available road capacity (lanes), they are somewhat ameliorated.

Considering the ROM24 outputs further, and to provide some context to the forecast year model outputs, we have looked back through the historic count data at points along Canning Highway and Manning Road where there are several successive recordings.

The following table shows the recorded daily, two-way volumes between 2009 and 2020.

Table 14 Historic count data

	Manning Road		Canning Highway		
Year	East of Kent St	West of Elderfield Rd	South of Henley St	South of South St	South of Berwick St
2009/10		29500			
2010/11					
2011/12	26270	30970	37460	30970	42130
2012/13		32290			
2013/14	31800	31840	43840	34660	47360
2014/15			46420		47690
2015/16		31175	44334		48873
2016/17				33733	
2017/18	32447	33425	42918	31797	42619
2018/19	32728	32781	42266	29884	42516
2019/20		26291			
2020/21	33721	31763			
ROM 2021	31000	36400	52800	35200	42700
ROM 2031	37600	45500	67700	49400	48600
ROM 2041	42300	51800	75800	54400	64000

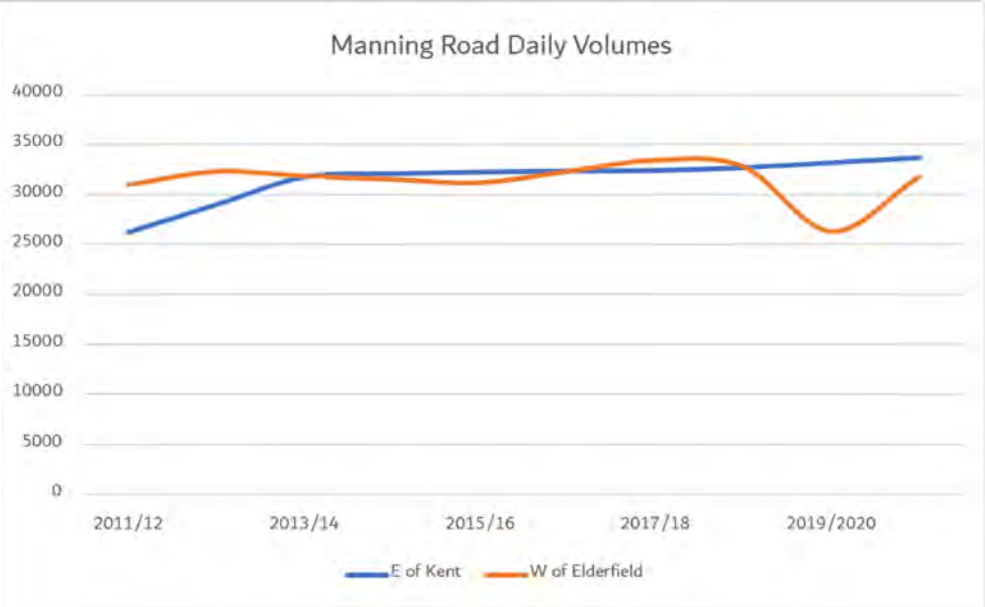


Figure 79 - Manning Road historic count data

These recorded volumes can also be charted (infilling the missing years with approximations) as shown in Figure 79 and Figure 80. The locations along Canning Highway show a clear increase in volumes from 2011 to the peak in 2014/2015, but then a decline in volumes to the present day. These two distinct patterns can be summarised as an annual average increase in volumes along Canning Highway as 5.5%, although an average decrease of 3.5% per year for the second half of the data. This results in the volumes from 2011 being very similar to the most recent recorded volumes in 2019, suggesting that the road network is continuing to function at capacity or that while demand along the corridor may have increased, a mode shift may have facilitated the ability for the corridor to continue to process the same volumes.

Manning Road (west of Elderfield) benefits from a comprehensive set of historic data. Here, a similar level of consistency occurs where there has only been an increase of 2, 300 vehicles in 11 years. The noticeable dip in 2019 was believed to be as a result of road works associated with a number of projects including the Manning Road southbound freeway ramp and Smart Freeways.

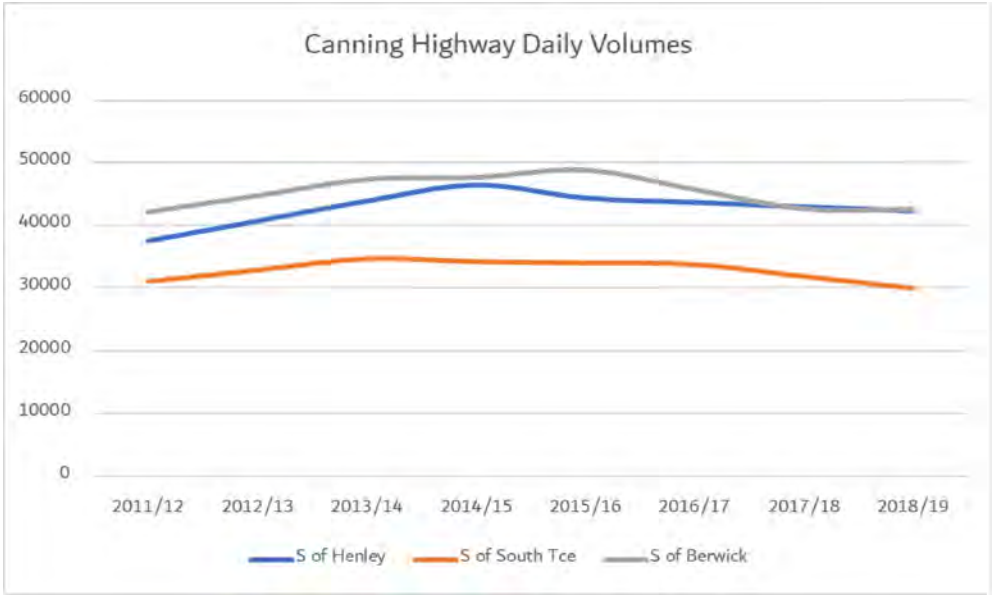


Figure 80 - Canning Highway historic count data

For both Canning Highway and Manning Road, the forecast year ROM24 model outputs have also been tabulated. Differently to the historic data, the modelled outputs suggest a consistent growth of between 1.8% and 2.3% per year between 2021 and 2041. If the demonstrated historic growth along these roads continues to eventuate, then the ROM24 outputs can be seen as an overestimation of demands.

To provide further context of the larger ROM24 output without any adjustment to account for the historic growth patterns, the Canning Highway daily combined two-way volume (75,800) can be disaggregated across direction and peak hours using existing data to calculate the following:

- Eastbound 08:00 2041 volume – 2,762 (2019 volume = 1,540)
- Westbound 08:00 2041 volume – 3,095 (2019 volume = 1,726)
- Eastbound 17:00 2041 volume – 3,373 (2019 volume = 1,881)
- Westbound 17:00 2041 volume – 3,242 (2019 volume = 1,809).

While the volumes are clearly shown to increase, this is a forecast change over a 22 year timeframe. At a midblock level the volumes per lane do not appear significant (less than 1800 vehicles per lane), although the capacity along these corridors will be reduced by the number of signalised intersections. It is also likely that signal timings would adjust to the benefit of the dominant vehicle demand which could further impact on queuing side roads within the City.

This calculation assumes that there is a reliance in the ROM24 modelled outputs. A different approach would be to use ROM24 to consider the forecast year change in demands (again, assuming that there is an increase rather than the demonstrated historic outputs being static) and apply that growth to the existing vehicle demands. Using the same location on Canning Highway south of Henley Street, the ROM24 change in vehicle volumes between 2021 and 2041 is shown as 23000, or 1,150 per year. This annual daily increase can be split directionally and against the daily profile of volumes to approximately 50 vehicles during the peak hours.

- Eastbound 08:00 annual increase – 42 (2019 volume = 1,540)
- Westbound 08:00 annual increase – 47 (2019 volume = 1,726)
- Eastbound 17:00 2041 annual increase – 51 (2019 volume = 1,881)
- Westbound 17:00 2041 annual increase – 49 (2019 volume = 1,809).

6.7 Traffic Forecast – Key Implications

Information that is taken from macroscopic, or metropolitan wide, traffic models is dependent on the inputs used to inform the model and the parameters or assumptions that are made in constructing the model. Although the City has no control over the Metropolitan wide models, the quality of data flowing into the model can be influenced by the City. To ensure that there is a more accurate representation of the potential impacts within the City, a review of the network, links and employment and housing inputs into ROM24 would be helpful in addressing some of the existing deficiencies.

Ultimately, the outputs from ROM24 cannot be relied on for assessing more localised impacts and it is not designed to achieve that task at any rate. The lack of constraint within the strategic model limits its applicability in understanding impacts in the City or defining impacts on the distributor road network. As illustrated, many major roads in the City have not seen growth over a decade but all are forecast to grow in volumes over the next 10-20 years.

Given the City has an existing operational model that allows for assessment of development impacts and other traffic management measures already is a diligent approach. Although that model was not assessed for this project and therefore could not be vouched for, it covers a large part of the City that is subject to development pressures and is an appropriate tool.

The traffic forecast review highlights the volume of traffic that passes through the City without having an internal purpose. This through traffic is largely contained on the Kwinana Freeway and Canning Highway corridors, however its impact is obvious around the peak hour congestion or queueing on approach to interchanges and also at points where the local distributor road network intersects with Canning Highway.

This situation will not change and it is an accepted reality of how the transport network of an inner city area functions. Perth has been planned for accommodating and encouraging the predominance of private vehicle movement and nothing at a strategic level will change that situation within the life of the ITP.

For the Canning Highway corridor, the operational focus of Main Roads WA will be to maintain travel times for the higher flows and volumes along the entirety of the corridor between Canning Bridge and the Causeway. There are a range of complexities along this corridor and Main Roads WA have indicated that they are seeking to improve the operational flow of traffic volumes during peak periods. The form of these controls are not yet evident.

Canning Highway has a range of complexities for a Primary Regional Road. It has a substantial number of intersecting side roads that facilitate turning movements that may not be considered safe and would be contributing to the crash statistics set out in section 4.2. It has generally poor pedestrian and cycling amenity – along its length and across the corridor. It provides direct access to individual properties and commercial sites.

The complete realignment of Canning Highway would also have complexities in terms of land assembly, form of the corridor and cost. There would also be implications for general amenity if improvements were designed specifically to improve capacity. To facilitate future improvement in both the transport function of the corridor and support land use outcomes, the City could examine options that include:

- Review of access arrangements for side roads to understand if any alterations could be considered in the short term to reduce turning movements into or from Canning Highway. Those streets highlighted in the Canning Highway Road Reservation Review as being closed or with a cul-de-sac configuration should be focussed on as a priority.
- Assessing the potential for land assembly or access to or from sites via existing side streets and ROW? to facilitate future development outcomes. Understand the implications of future redevelopment through the operational model by assessing yield propositions.
- Review of side street road reserves highlighting those areas where pinch-point changes could be made to facilitate vehicle movements, safer pedestrian and cycling connections and overall streetscape improvements. This could include concept designs for changing lane allocation and provision of turning pockets for specific movements. This work could be undertaken in conjunction with Main Roads WA. The City could undertake an initial high level review of all signalised intersections along the corridor to determine feasible options for reconfiguration based on space within the road reserves.
- Seek input into the operation of the intersections along the corridor with Main Roads WA to inform future planning outcomes.

7. MILESTONE 2 - IMPACTS OF MAJOR PROJECTS

7.1 Introduction

There are a range of projects with the City that are either planned for, have some form of commitment or are seen as a strategically important transport project to pursue. Seven projects were listed by the City for comment in the context of this stage of the ITP project. These are dealt with in the following sections.

7.2 South Perth Train Station

The potential for a station at South Perth, supporting the Activity Centre and the wide range of land uses in proximity to the area, was underlined through the inclusion of a station footprint area when the Perth to Mandurah rail line was constructed. The proposed location of the station site, in relation to existing public transport interchanges within and near to the City, is shown in Figure 81. In relation to the station, the South Perth Activity Centre Plan noted:

"*The development of South Perth Train Station has been incorporated into strategic and land use planning for the (Activity Centre Plan) ACP area since the construction of the Perth to Mandurah line in 2007. Longer term development within the ACP area will support the addition of this station to the overall network.*

It is estimated that a baseline daily boarding in 2026 of between 4,365 to 5,447 could be expected for the South Perth station. If the higher end projections were to come to fruition, it would be 30% higher than the boardings expected at the Redcliffe Station in 2031 (which has been included in the under-construction airport line) and be similar in boarding levels to Rockingham, Midland, Leederville and Subiaco. With the progression of planning for the Cockburn to Thornlie Line link, the addition of South Perth Station need not result in impacts to overall operations of the network. A decision by the State Government on a future South Perth station has not been made yet, however there would appear to be a strong business case justification for the station to be established".

Whilst there has been a substantial amount of work undertaken from the City and planning authorities on land use planning in the area over the past decade, there has been no progression on the technical work required to design the station or its interface with the Activity Centre.

Discussions have progressed with the PTA, as set out in the stakeholder engagement section of this report in section 8.3.1.

The development of the station is pivotal for the peninsula area in that it will:

- Support development propositions within the Activity Centre
- Support growth of public transport patronage for land uses already in the Activity Centre
- Increase public transport accessibility to and from the Activity Centre to destinations across the rail and bus network
- Consolidate the position of the South Perth Activity Centre as a location that can compete with other similar locations such as Subiaco, West Perth and Stirling
- Deliver on the strategic transport outcomes which have underlined planning for both the Activity Centre but also the Perth to Mandurah Rail Line when it was conceived
- Provide for resilience in the public transport network as a destination point proximate to Central Perth.

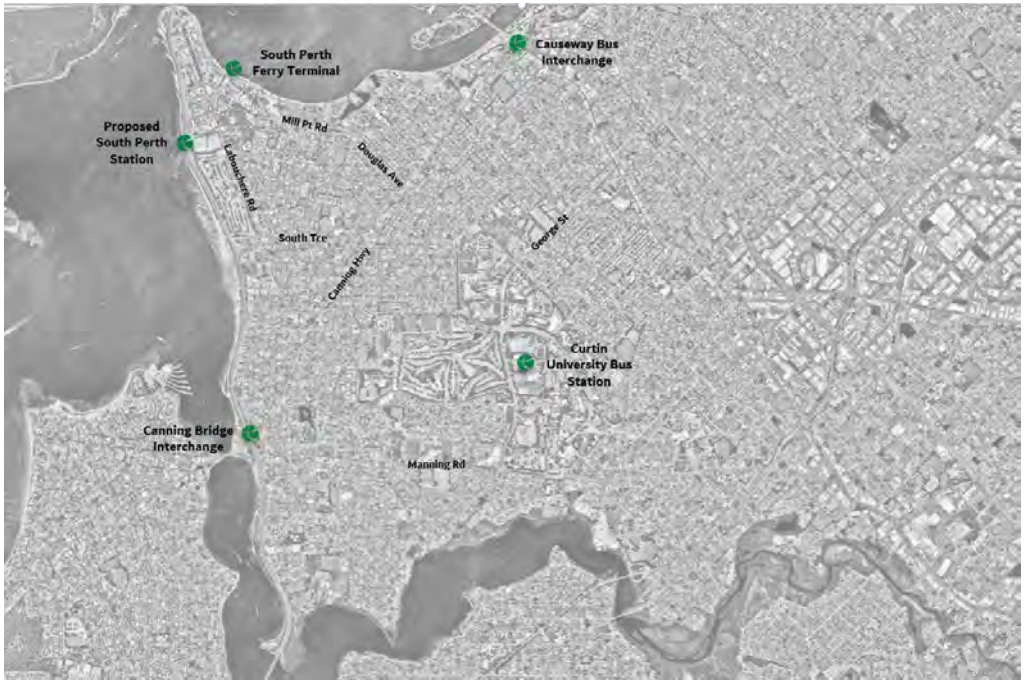


Figure 81 Location of proposed South Perth Train Station

The development of the station within the next decade will result in a number of transport opportunities and implications, including:

- The ability to deliver on the outcomes promoted within the Activity Centre
- Potential to reduce the overall mode share of private vehicle use to and from the Activity Centre by residents, workers and visitors
- The opportunity to refocus the internal bus network within the City and provide a benefit to the Activity Centre by allowing for trips to be taken by bus to either the train station or the Activity Centre
- The means to deliver a Principal Shared Path on the eastern side of the freeway corridor including a connection at the station
- The ability to reduce the dependence of private vehicle trips to and from Perth Zoo and therefore reduce the impact on the local and distributor road network
- The potential to deliver changes along the Labouchere Road corridor, including signalisation of the Richardson Street intersection
- Increase the walkability of the Activity Centre and promote non-vehicle modes.

7.3 Canning Bridge Bus Interchange

As set out on the Infrastructure Australia website:

"*Canning Bridge is an important interchange for bus and rail services, which is forecast to become capacity constrained in the longer term. In March 2018, a peak month for boardings among students, there were approximately 4,000 average weekday train boardings (of whom over 2,800 transferred from buses).*

The current alignment of the bus station also causes road congestion. Buses travelling east along the Canning Highway block a traffic lane when stopping at the bus station, interrupting other vehicles travelling along the Canning Highway. Similarly, buses stopping at the bus station during peak periods can block the northbound Kwinana Freeway bus lane access ramp. Along the Canning Highway, there is only one dedicated bus bay, which is in the westbound direction, close to the bus station.

Customer experience at the bus station is also poor, with limited pedestrian and cycling access from all approaches, and no dedicated parking or drop-off facilities. Some passengers are required to cross surface roads when interchanging between bus and rail, and there are no toilet facilities at the station".

More recently, $75m in funding has been secured for the project through the Federal Government. The progresion of the project was discussed with PTA Officers as part of developing this report. The full approved minutes from that meeting are included in Appendix A.

The implications for the development of the Canning Bridge Bus Interchange for the City are substantial. They include:

- Delivery of an upgraded, purpose built bus to train interchange facility
- Improved accessibility to the Canning Bridge Activity Centre from the train and bus stations
- Reconfiguration of the approach to the stations along Canning Highway
- Substantial alterations to the feeder bus network, including the increase in frequecy of buses and services feeding South Perth as a whole. This would be brought about through the reconfiguration of the overall bus network in the area and a reshuffling of service kilometres available for the area due to the fact that buses would no longer run from Canning Bridge to Central Perth
- Improved pedestrian and cycling connections
- Potential to see an escalation in development activity around the stations, with improved accessibility being a key outcome
- Potential to accelerate a higher order transit connection between Curtin University and Canning Bridge
- Potential to implement some of the recommendations of the Joint Bike Plan.

During the construction stages of the project, there would be substanial impacts that would likely result in local network issues for around two years. The design of the interchange will progress through the next year, with a number of options being examined. Within one of the options, a bus bridge connection between the interchange and Cassey Street is being considered. If this option were progressed, there would be significant future implications for that corridor.

If the interchange is more closely aligned to Canning Highway and does not require the Cassey Street connection, there would be less impact on the network in the Activity Centre in terms of bus movements and an opportunity to examine the ultimate design of that connection.

7.4 Manning Road On-Ramp

The Manning Road southbound on ramp to Kwinana Freeway was opened to traffic in 2020. The configuration of the ramp, as shown in Figure 82, allows for southbound movements to be accommodated directly from Manning Road, removing the need for vehicles having to use the Canning Bridge interchange. The constructed state of the ramp is shown in Figure 83.

Figure 82 Final design plan (source Main Roads WA)

Figure 83 Aerial image of new southbound ramp (source: Nearmap)

As set out on the Main Roads WA website, the purpose of the ramp was to:

- "*Provide a new route for road users wishing to travel south on Kwinana Freeway from Manning Road*
- *Reduce travel time and rat running through the local area*
- *Improve access to commercial centres and residential areas*
- *Reduce congestion and improve safety at the Canning Bridge and Kwinana Freeway interchange.*".

The opening of the ramp would be expected to generate more vehicles through this corridor as it would provide a shorter more direct route for motorists heading south on the Freeway from localities such as Waterford, Karawara, Manning and Salter Point. The ramp was forecast to see 7,000 vehicles per day heading southbound. Those drivers who would have already used Canning Highway or the Manning Road to Canning Highway loop would be expected to take the more direct route.

Outcomes from the wider network impacts would be discussed with Main Roads WA.

7.5 Smart Freeways project

The Smart Freeway section of the Kwinana Freeway between Roe Highway and Narrows Bridge was opened in August 2020, which included converting the emergency breakdown lane between Canning Bridge and the Narrows Bridge to provide for greater vehicle capacity. The corridor extent is shown in Figure 84 and includes the Canning Bridge interchange. As set out on Main Roads WA website:

"*Smart Freeways are used successfully around the world to manage congestion, improve safety and get the most out of existing freeway infrastructure.*

Using Intelligent Transport Systems (ITS), traffic conditions can be monitored and adjusted to reduce congestion by changing speed limits when needed, using ramp signals to make merging easier and opening and closing lanes in the event of an incident".

The operation of the Smart Freeways system is designed to smooth traffic flows on approach and within Freeway lanes so that there is more efficient use of the capacity available along the corridor. Combined with the south bound Manning Road Ramp opening (as discussed in section 7.4), there was expected to be an immediate improvement in the function of the Canning Bridge interchange during peak periods.

Main Roads WA are presently evaluating the impact of the project on the surrounding road network and overall corridor. Discussions with Main Roads WA indicate the positive impact of the project on the overall road network during the peak periods. Ongoing monitoring of the impacts as presented to the City indicate that the project is supporting more consistent traffic flows and volumes along the corridor. This project is now being rolled out to parts of the Mitchell Freeway.

There is a plan to extend the Kwinana Freeway Smart Freeways configuration to the southbound movements between the Narrows Bridge and Roe Highway however this would be dependent on changes made to the running and operation of the network through Central Perth. That project would be expected to be delivered within the next five years however that is reliant on approval of funding at State and Federal levels.

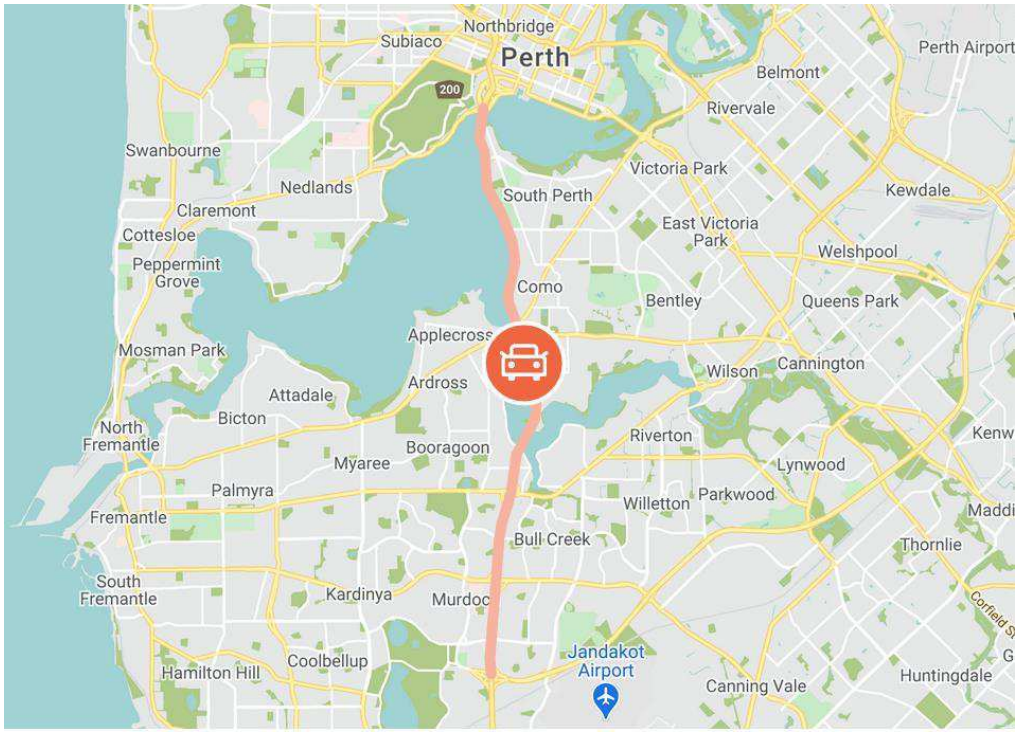


Figure 84 Extent of Smart Freeway corridor (source: www.buildingfortomorrow.wa.gov.au)

7.6 South Perth CAT Bus Service

As set out in the Movement Network summary for the South Perth Activity Centre:

"*Overall use of public transport is low, including use of the existing ferry service for commuting trips.*".

Indeed, within the Activity Centre, overall use of public transport had decreased over an eight year period, a trend that was also evident elsewhere on the network. This is primarily due to the dominance of private vehicle use for trips in Perth that is facilitated and encouraged through decades of land use planning and infrastructure delivery decisions.

Within the Activity Centre, the primacy of the ferry operation was evident, with large portions of the boardings and alightings relating to non-commuting trips, such as those to Perth Zoo, which is in easy walking distance to the ferry terminal. The overall weekday and weekend volumes in the Activity Centre are shown in Figure 85.

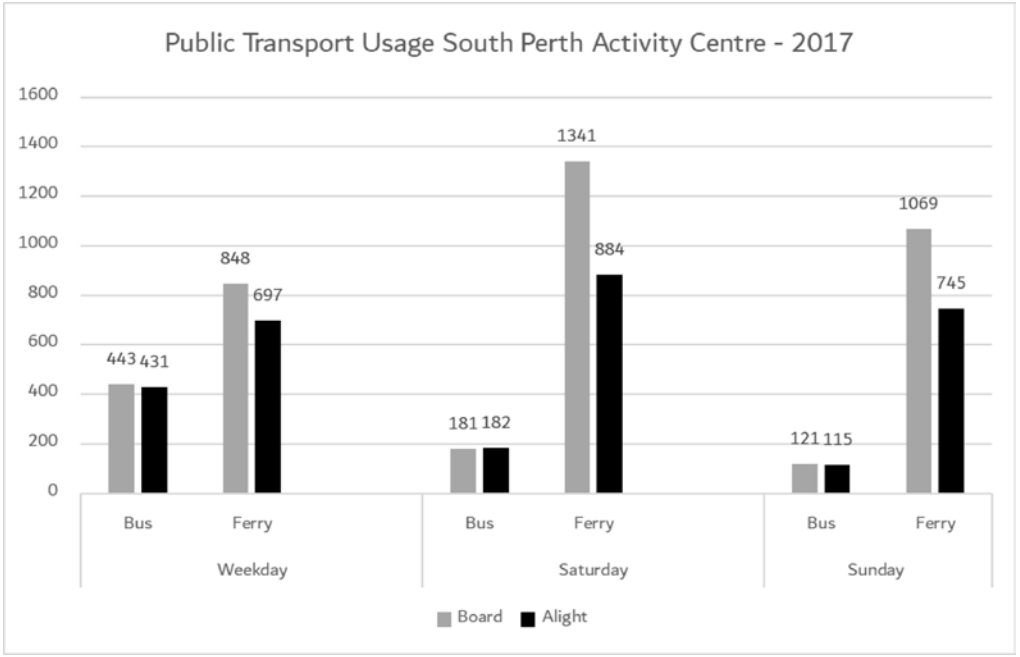


Figure 85 Use of public transport modes - South Perth Activity Centre Movement Network

There are a number of locations where CAT style buses operate – or free bus services. These include Joondalup and Fremantle. In addition, some other locations introduced funded free loop buses for specific areas or reasons. The Town of Cambridge has a summer shuttle bus that connects suburbs in the east of the LGA to City Beach during summer. In the City of Belmont, a shuttle service operates around the Business and Industrial Park during lunchtime to connect workers to Belmont Forum.

Most visible are the Central Perth CAT buses which have four separate routes connecting locations around Central Perth, East Perth, West Perth and Leederville. These buses are funded through the Perth Parking Management Act 1999 mechanisms and are very successful and popular. Other local services have or had shared funding arrangements with Local Government or specific land uses – for instance UWA and QEII alongside Local Governments funded the Subiaco Shuttle (route 97 bus), a high-frequency local bus service that connects Subiaco Train Station, QEII Medical Centre and The University of Western Australia. The Subiaco Shuttle runs every 15 minutes from 6.43am to 6.30pm on weekdays.

The City of Subiaco funding for that service was around $100,000 to $120,000 per annum.

For a CAT style service to be developed for the City, there would be a funding impost, with the value of the funding being commensurate with the overall operational costs incurred by Transperth. It would be subject to negotiation with Transperth and would also involve costs relating to bus stop infrastructure.

Should a service be introduced, the purpose of the service would be required. For instance:

- In Subiaco, the 97 service provides a connection between a train station (Subiaco but also previously Leederville on the Joondalup Line), the main Activity Centre (Rokeby Road), the main hospital precinct (QEII) and the University of Western Australia. Its transport role not only provides connections but also allows for modal interchanges between train and bus.
- In Joondalup, the three Joondalup CAT bus routes play a role in distributing passengers around the City area to and from Joondalup Station. This service provides connections to ECU, TAFE, the Police Academy and a range of other land uses. Joondalup also supports a substantial suburban feeder bus network with the CAT buses not competing with those routes.
- In Fremantle, the Fremantle CAT again provides a loop service from a train station to South Fremantle and also has functionality in connecting tourists to key locations in the City, such as Victoria Quay. Fremantle also supports a substantial suburban feeder bus network to the south and east with the CAT buses not competing with those routes.

Taking these points into consideration, the key terminal point for the Activity Centre would be the Ferry Terminal. Figure 86 sets out separate potential configurations of the routes that could service the key land uses in the area – the Terminal, Perth Zoo, Sir James Mitchell Park, the Old Mill, South Perth Activity Centre Area and Civic Heart.

Figure 86 Potential CAT bus routes and stops

To progress this concept, planning would need to consider the role of the CAT, stop location and purpose, the role of other routes (for example, Route 35 becomes redundant to a degree with the transfer point being to the ferry) and the impact on other modes.

7.7 Travel Demands - Curtin University

The expansion of the Bentley-Curtin Activity Centre area is underpinned by the Curtin Town Master Plan and the overall intent of the University to move from a campus styled land use layout to a multi-purpose mixed use precinct. Planning for the area has been substantial between both the Master Plan developed for Curtin University and the Bentley-Curtin Specialised Activity Centre Plan

completed by the (then) Department of Planning. Within that Structure Plan, the following potential development quantum was set out:

"*Short-term – In addition to existing development*

- *Retail uses – up to 5,000m² gross floor area.*
- *Commercial office development - up to 25,000m² to 35,000m² net lettable area, subject to market requirements.*
- *Residential uses – 500 to 600 dwellings including medium-density and multi-storey private residential dwellings.*
- *Complementary infrastructure and public realm upgrades including parks, transport network and communications infrastructure.*

Medium-term – In addition to short term

- *Retail uses – up to 5,000m² gross floor area.*
- *Commercial office development – up to 40,000m² to 50,000m² net lettable area, subject to market requirements.*
- *Residential uses – up to 900 to 1000 dwellings including medium-density and multi-storey private residential dwellings.*
- *Potential for complementary uses such as hotel accommodation, health facilities and conference and event facilities.*

Long-term – In addition to short and medium term

- *Commercial office development – up to 40,000m² to 50,000m² net lettable area, subject to market requirements.*
- *Residential uses – up to 900 to 1,000 dwellings.*
- *Additional public transport infrastructure such as bus network or light rail for increased residential, worker and student population.*".

Although some of these indicative targets and timeframes may have altered within the current post-COVID climate, the form of the Structure Plan (shown in Figure 87) would remain.

The Structure Plan was subject to a detailed transport assessment and the Master Plan also includes substantial assessment on the internal and external transport network connections. The key implications for the City to consider are:

- The public transport connection between Canning Bridge Station and Curtin University is the key route for students and staff. This connection needs to be clear, direct and time effective
- The interface of Curtin University with the regional road network and the implications for the existing intersections on Kent Street and Manning Road
- The increased traffic generation from the Campus which will occur even with high volumes of public transport or active mode trips to and from the Activity Centre. The key corridors for these movements are Manning Road, Kent Street and then Hayman Road to Canning Highway and South Terrace from Kwinana Freeway through to Hayman Road. All of these corridors would be expected to see growth commensurate with the levels discussed in section 6
- Active transport corridors should be segregated and cater for all users to get from other primary routes (such as the PSP) to and from the Activity Centre. Providing lower order connections or no infrastructure at all will penalise those trips to the degree that most people would not see them as being attractive
- Parking management in Karawara and Waterford. With more defined management in Curtin University of parking, some off-site locations may be subject to opportunistic parking from students and staff. This would need to be monitored and acted upon.

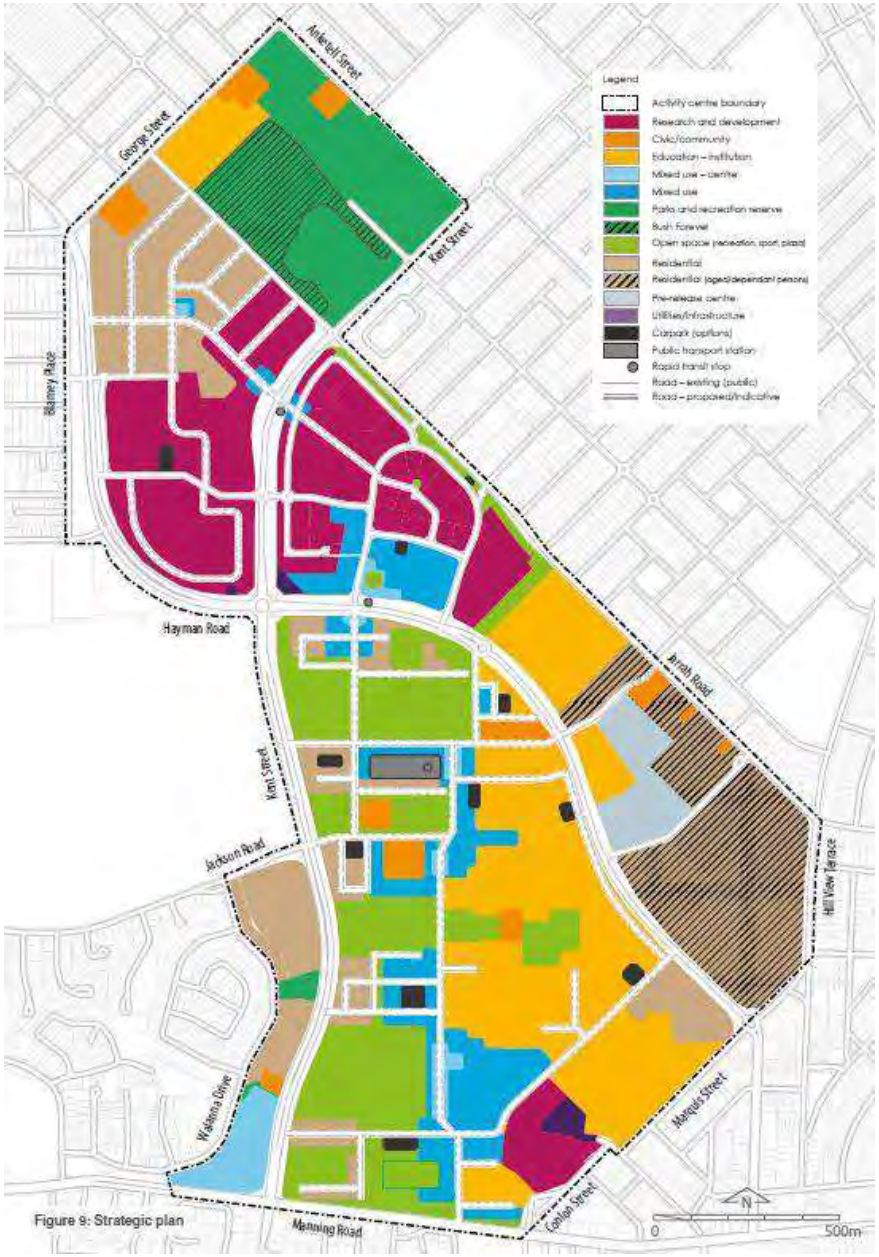


Figure 87 Bentley-Curtin Activity Centre Structure Plan

7.8 Long Term Cycle Network / City's Joint Bike Plan.

The proposed Long Term Cycle Network (LTCN) is discussed in section 5.2 and the aspirational network is shown in Figure 64. The seven key projects to be delivered in the City in the first stage of the project are shown in Figure 88.

The evolution of the LTCN, which has taken into consideration the Joint Bike Plan, has a focus on the secondary and primary networks consisting of segregated infrastructure.

The expectation would be that delivery of these links below would result in an uptake in cycling and an increase in the movement of cyclists to and through the City. For the ITP, the proposed infrastructure outcomes of the Joint Bike Plan should be audited against the requirements of the LTCN and funding frameworks for secondary and primary routes. Local improvements should be the focus of the ITP in support of the wider area infrastructure.

Figure 88 Joint Bike Plan - 5 year action plan (source: City)

7.9 Other Projects – Key Implications

For the other projects examined in this section of the report, the City has primary carriage of the implementation of the Joint Bike Plan and in particular the ability to deliver outcomes on the local street network and on distributor roads. All other projects are reliant on State Government agency lead or delivery. The key implication for the City is that they must therefore take an exceptionally proactive and positive approach to engagement and supporting outcomes that are beneficial to the City.

The ITP must set out the importance of the major projects being delivered and how the City can undertake supplementary or complementary projects or capital works.

8. MILESTONE 2 - ENGAGEMENT

8.1 Introduction

Engagement for the initial stage of the ITP was focussed on key transport agencies, given the much broader engagement process that the City would undertake during the production of the ITP and associated planning strategy documents planned for 2021. As such, engagement was to be focussed on Main Roads WA and the Public Transport Authority (PTA).

8.2 Main Roads WA

Discussions were held with the operational division of Main Roads WA in January 2021 to discuss the implications of Smart Freeways and also the outcomes from the introduction of the Manning Road southbound ramp to the Kwinana Freeway. The overall outcome from the introduction of Smart Freeways had seen measurable reduction in travel time along the northbound corridor of the Freeway between Roe Highway and the Narrows for peak periods. Main Roads WA acknowledged that this is tempered somewhat in that the project also included the introduction of an additional lane, with the kerb side breakdown lane removed for a through running lane.

The Manning Road southbound on-ramp had provided some relief to turning movements at the Canning Highway Interchange and therefore had assisted in contributing to the overall function of the network in the area.

The form of Canning Highway between Henley Street and the Causeway had been set in an earlier study completed by the DoT in 2012/13. That study was confirmed as being the most current configuration of plans associated with Canning Highway through the City. Minutes of the meeting with Main Roads WA operational team are included within Appendix A.

8.3 Public Transport Authority

The focus of the PTA in relation to the ITP was on the station precincts within the City, the existing station at Canning Bridge and plans for the upgrade of the interchange, and the planned station at South Perth to service the expanding Activity Centre and existing land uses in the area.

A meeting was held with the PTA in early December at the City to discuss these projects. Staff from the planning and infrastructure teams were present, alongside engagement staff. Minutes of the meeting are included within Appendix A of this report.

8.3.1 South Perth Station Precinct

The City has undertaken a range of assessments and planning studies relating to both the station precinct (and South Perth Activity Centre) and the station itself, as discussed in section 5.1.1. At the time of producing this report, the future planned station was still very much in a preliminary stage with only historical planning and schematic designs being completed by the PTA.

The City executive and Mayor had met with the PTA earlier in 2020 to discuss the potential delivery of the station. The PTA had put forward a planning framework for the station which included a development led approach that would warrant the project progressing when boarding and alighting demands were high enough to overcome operational and travel time penalties to existing Mandurah Line users.

In addition to the patronage framework, the PTA had noted some technical issues for design and operation that would need to be addressed within the envelope of the railway. The existing area set aside for the station construction may need to be reviewed based on platform length requirements which had evolved since the commissioning of the Mandurah Line in 2007. Constructability of a station that would cater for both operational and passenger requirements would be a detailed exercise that would need to be considered.

Whilst there is no priority for the delivery of the station by the PTA, nor are there any funding or political commitments for the project in the short term, the fact that there is a framework and that spatially the site is catered for, points to the longer term construction of the station. The City have been progressing the land use planning framework to support development in the Activity Centre, and this is starting to result in development on the ground, such as the Civic Heart.

8.3.2 Canning Bridge Station

The proposed reconfiguration of Canning Bridge Station has been a very high priority for the PTA for a number of years. This has been reflected in strategic planning documents, the Canning Bridge Activity Centre Structure Plan and Infrastructure Australia annual reporting.

The PTA are progressing with the assessment of multiple designs for the interchange, including station design work and traffic modelling. This work is proposed to be progressed so that a decision can be made at the end of the 2020/21 financial year to secure State Government funding to complement existing Federal Government funding.

Substantial design, feasibility, construction and operational issues are required to be resolved. Key for the City will be the implications for the local street network around the Activity Centre and the improvements to accessing the station. With the improved interchange, changes would also be made to the local bus network which would likely benefit the City through an increase in frequency of buses within the Labouchere Road corridor.

It is expected that the design and assessment work at the interchange will progress throughout 2021 and form a key component of the ITP.

9. MILESTONE 3

9.1 Introduction

The recommendations and strategies within this report are high level and designed to provide a framework from which the City can progress the development of the ITP throughout 2021. The ultimate recommendations of the ITP will be subject to a substantial filtering and technical review process that will be informed by an engagement process to be led by the City Officers.

The recommendations have been informed by the Traffic and Congestion Forecast Report completed for the City, as well as review of the strategic planning documents relevant to this exercise. The city-wide recommendations have been designed to address wider issues that cross over all or multiple locations. Some would be a continuation of existing practice in place by Council, others would be aimed at shaping the ITP and their outcomes.

9.2 Smart Goals

The recommendations were required to give consideration to SMART goals (i.e., Specific, Measurable, Achievable, Relevant, and Time-Bound). We have used these measures within the recommendations table to mean:

- Specific (simple, sensible, significant)
- Measurable (meaningful, motivating)
- Achievable (agreed, attainable)
- Relevant (reasonable, realistic and resourced, results-based)
- Time bound (time-based, time limited, time/cost limited, timely, time-sensitive).

9.3 City Wide Recommendations

Broad level City-Wide recommendations that are specific to the ITP are set out in Table 15, in no order or priority. These recommendations are designed to form a framework to deal with key modal issues, address items which were evident in the initial stage of this review and provide the City with a basis from which to support delivery of outcomes in the ITP.

Table 15 City wide recommendations

No.	Recommendation	Specific	Measurable	Achievable	Relevant	Time-bound
CW1	Establish specific objectives for the ITP set against Strategic Plan	Ensures ITP is linked to achieving specific goals	Outcomes can be measured by achievement against objectives	Yes, by City of South Perth	Yes, key to delivering ITP	Prior to ITP drafting
CW 2	Establish working group for ITP with key Government Agencies	Allows for two-way engagement and ownership of ITP outcomes	Yes	Yes, requires other stakeholders	Yes	Throughout ITP process and potentially beyond, given the outcomes sought
CW 3	Work with PTA to deliver South Perth Train Station as part of next METRONET stage	Would assist in developing case for Station and resolving technical issues	Yes, planning and delivery of Station	Yes, strategic planning framework in place, public transport network expansion key policy of Government	Yes, priority project for Activity Centre and ITP	Establish framework of goals and requirements with PTA
CW 4	Extend City-wide model to cover Curtin University area	Would allow for assessment of impacts along Manning Road and Douglas Ave corridors	Yes	Yes by City of South Perth	Yes	Within next 2 years
CW 5	Include City data on Intramaps website on traffic volume, crash statistics and other data as available	Allows for transparency of information, data sharing	Yes	Yes by City of South Perth	Yes	As part of ITP process
CW 6	Support redevelopment of Canning Bridge Train Station and Bus Interchange and work with PTA and stakeholders to achieve outcome	Supports integration of public transport network and Activity Centre	Yes	Yes requires other stakeholders	Yes, to both ITP and Activity Centre Plan	Within next year.
CW 7	Implement recommendations of the Joint Bike Plan	Yes, Joint Bike Plan delivered, recommendations included, specific to increasing non-vehicle mode transport trips	Yes, through the delivery of projects set out	Yes requires other stakeholders	Yes	Yes, timeframes included in plan
CW 8	Investigate bus network planning alterations with Transperth linked to changes at Canning Bridge	Allows for planning around public transport corridors and inputs into Strategic Plan	Yes	Yes, form working group with Transperth to work through proposed changes and the impacts of the network changing	Yes, addressing issues now would contribute to strategic plan if the Canning Bridge Station is delivered in next 2-3 years	Yes, should be examined to fit in with Canning Bridge Station works
CW 9	Plan for implementation of Smart Freeway southbound works	Yes, specific to distributor road network connecting to Freeway south	Yes	Yes led by MRWA	Yes, already implemented northbound, southbound in planning	Dependent on progress of MRWA works and overall project
CW 10	Examine implications for transferal of Manning Road corridor to Main Roads WA, including MRS amendment	Yes, specific to regional road network and asset management responsibilities of Council	Yes	Yes, would require support of MRWA and WAPC	Yes	Time frame would likely be dictated by process, MRS amendment progression and completion of a range of technical studies in support of process

No.	Recommendation	Specific	Measurable	Achievable	Relevant	Time-bound
CW 11	Review recommendations from Parking Strategy	Yes, specific to ITP	Yes	Yes, within the remit of the ITP and within first year of delivery of plan	Yes, to ITP and Activity Centres as well as emerging areas with parking issues	Yes, in initial stage after delivery of ITP
CW 12	Investigate issues associated with introduction of CAT styled bus service in South Perth	Yes, encourages visitation and use of public transport modes	Yes	Yes, would require funding avenues to be assessed with other stakeholders	Yes, other examples exist for City of South Perth to benchmark	Examine within ITP process, include as part of CW 8
CW 13	Implement movement network proposals in South Perth Activity Centre Plan	Yes, specific to delivering Activity Centre Plan and supporting CW 3, CW 7, CW 8, CW 11 and CW 12	Yes	Yes, within Activity Centre Plan. Requires other stakeholders	Yes, specific to Activity Centre Plan	Yes, as Activity Centre develops. Would be assisted through development of delivery or implementation plan
CW 14	Monitor overall traffic volumes and speed profile on Distributor Road network	Yes, specific to ITP and overall network	Yes, on a yearly basis	Yes, would use City of South Perth and available data from MRWA	Yes	Yes, annual basis
CW 15	Monitor crash statistics on annual basis to support resolution and funding of problem areas	Yes, supports delivery of safe network for all users	Yes, on annual basis	Yes, through monitoring programme of City of South Perth	Yes	Yes, on an annual basis
CW 16	Work with PTA and other stakeholders to resolve alignment of future public transport connection between Canning Bridge and Curtin University	Yes, could form part of SW 4, CW6 and CW 10	Yes	Would require substantial inputs from other stakeholders and engagement	Yes, corridor between interchange and Curtin University critical from overall regional network performance	Longer term.

9.4 Distributor Road Specific Recommendations

The recommendations in this section are specific to the Distributor Road network within the City, defined in Figure 1, Table 1 and Table 2.

Figure 89 Distributor road network (source: Main Roads WA)

Table 16 District distributor roads in City of South Perth

Type	Road	Suburb
District Distributor A	Centenary Ave	Waterford
District Distributor A	Manning Road	Waterford - Manning
District Distributor A	Kent Street	Como-Bentley
District Distributor A & B	Douglas Ave - Hayman Road	Como-Kensington
District Distributor B	South Terrace – George Street	South Perth - Kensington
District Distributor B	Labouchere Road	South Perth - Como
District Distributor B	Murray Street	Como
District Distributor B	Thelma Street	Como
District Distributor B	Mill Point Road - Way Road	South Perth

Table 17 Local distributor road network

Type	Road	Suburb
Local Distributor	Mill Point Road	South Perth
Local Distributor	Angelo Street	South Perth
Local Distributor	Coode Street	South Perth – Como
Local Distributor	Labouchere Road - Saunders Street	Como
Local Distributor	Barker Avenue – Talbot Avenue	Como
Local Distributor	Henley Street	Como
Local Distributor	Ley Street	Como - Manning
Local Distributor	Canavan Crescent – Bruce Street	Como
Local Distributor	Mt Henry Road – Clydesdale Street	Salter Point – Manning
Local Distributor	Welwyn Avenue	Manning
Local Distributor	Elderfield Road	Manning – Waterford
Local Distributor	Waterford Avenue	Waterford
Local Distributor	Gillon Street	Karawara
Local Distributor	Jackson Road	Karawara
Local Distributor	Walanna Drive	Karawara

The recommendations are based on the outcomes of the initial stage of the project, and the feedback received from the City and MRWA. These recommendations would form the basis of an initial corridor or place based approach from the City in delivering the ITP. Some of the wider area recommendations, such as those around Manning Road or those relating to network performance, have been addressed already and not repeated or replicated in this section.

Table 18 Distributor Road recommendations

No.	Recommendation	Specific	Measurable	Achievable	Relevant	Time-bound
DR1	Undertake Movement and Place framework review of all Distributor road corridors using DPLH guidance	Provides more appropriate framework to understand relationship between land use and transport network	Yes	Would require assistance from DPLH / DoT in undertaking study	Yes	Can be achieved within the delivery of the ITP
DR2	Review form of local distributor road network against wider hierarchy framework and determine relevance of classification	Yes, covers road hierarchy of roads in City of South Perth	Yes	Yes, can be undertaken by City of South Perth	Determines distributor road format	Can be achieved within delivery of ITP
DR3	Review any other road connections which may be included within distributor road network in the future, alter designation	Yes	Yes	Yes, can be undertaken by City of South Perth	Yes	Can be achieved within delivery of ITP
DR4	Undertake access study for properties along Manning Road corridor to understand and quantify impact on potential reclassification	Yes, specific to regional road connections	Yes	Yes, can be undertaken by City of South Perth	Yes, connects with recommendation CW 10	Can be achieved prior to the progression of discussions with MRWA and WAPC on the future classification of Manning Road
DR5	For all intersections of District Distributor Roads, undertake a review of reserve widths and property impacts at intersections to understand all locations where any capacity increases could be realistically achieved	Yes, provides an understanding of which intersections could accommodate any works within the reserves that would allow for widening or lengthening of turn pockets. Would also rule out widening at other locations on costs or impacts basis	Yes, should cover all intersections with criteria	Yes, can be undertaken by City of South Perth	Would inform community and Councillor discussion on potential for any widening if seen as a palatable objective of the ITP	Can be achieved within the delivery of the ITP
DR6	For all District Distributor B roads, undertake a review of all on-street parking provision to understand approach	Yes, will allow for consistency in application of on-street parking along Distributor Road network	Yes	Yes, can be undertaken by City of South Perth	Will allow for the City of South Perth to compare importance of on-street parking along District Distributors to be set against public transport provision and carriageway provision	Can be achieved within the delivery of the ITP
DR7	Monitor performance of side-road congestion levels on Distributor Roads connecting with Canning Highway corridor	Allows for the City to discuss impacts on side-roads with MRWA	Yes, can be monitored on an annual basis	Yes, can be undertaken by City of South Perth	Supports discussions with MRWA on impacts of traffic signals and also impacts on local movements including pedestrians	Can be ongoing, with baseline information included in the ITP

No.	Recommendation	Specific	Measurable	Achievable	Relevant	Time-bound
DR8	Establish average travel times along key Distributor road network routes	Allows for annual reporting on overall conditions of the network and reality on travel times to inform discussions with Council and other stakeholders	Yes, quantitative	Yes, can be undertaken by City of South Perth	Yes	Can be ongoing, with baseline information included in the ITP
DR9	Map bus network and boarding/alighting data along Distributor roads	Allows for information to be relevant in support of strategic plans along corridors where buses run	Yes, quantitative measure	Would require inputs from Transperth under agreement	Yes	Can be ongoing, with baseline information included in the ITP

9.5 Council Presentation

Information gathered for the Traffic and Congestion Forecast was presented to the City of South Perth Councillors and Senior Executive Team by Flyt on February 2, 2021. That presentation is included in its entirety in Appendix B.

APPENDIX A

Meeting Minutes

Meeting Minutes	30 November 2020	**Attendees**	
Project	South Perth ITP	Flyt, City of South Perth (City), PTA	
Document Ref	81113-576-FLYT-MOM-0008		

Item	Discussion	Action
1	Introductions and Project Scope - Round table introduction of attendees. - City provided a summary of the project and the overall ITP process. - Flyt provided background on the specifics of Canning Bridge Station as part of the ITP as well as the technical work that had been completed prior to this project.	
2	South Perth Station - Flyt noted future South Perth Station was one of the projects for comment. - PTA raised meeting with the City CEO and Mayor in August. PTA put forward that the progress of the station was to be a development led initiative. As a connection based purely on transport outcomes, South Perth is not required for overall network. Peninsula can be serviced by other modes given the low patronage levels the PTA has calculated for the site. Some improvement to buses can be made through the progression of the Canning Bridge interchange that could cater for public transport needs. PTA would want to see a development outcome in the Activity Centre with order of magnitude 1500-2000 movements per day. - Reason for framework around the volume of boardings is for operational performance of Mandurah Line and impact on travel time of people coming from further south. PTA won't pursue progression of South Perth Station actively at present. - Some technical issues for design and operation would also have to be addressed within the envelope of the railway – the existing area set aside for the station construction may need to be reviewed based on platform length requirements.	
3	Canning Bridge Station - PTA requested opportunity to redevelop interchange – $150m estimated costs currently funded half by the Federal Government. Have applied for matched funding from the State Government. - PTA sees project as a key priority for the entire operation of the network. Canning Bridge seen as a priority. Hub and spoke at the interchange is important, especially for bus to train transfers which would be a forced transfer. - Present work is that some money would be used to assess relevant design and impact issues and be in a position to deliver it for the next financial year. - PTA noted that the project doesn't have delivery funding. Because of the complexities of getting the design in place, PTA is looking to have design reviewed by end of this financial to seek funding for the site. Governance to be ramped up which would include inputs from the City. - PTA noted that the project would include modelling of the area to address issues relating to the function of Canning Highway corridor and interchange with Kwinana Freeway. - PTA noted a number of issues which were being worked through with Main Roads WA. This included performance of the intersections either side and how buses enter and exit the facility either side of the interchange. MRWA favour designs that wholly separate bus movements into and out of the interchange as per BGE design. MRWA focussing on grade separated freeway styled corridor through City of Melville or what is known as "ultimate MRWA design". - PTA noted that the reference design includes the Cassey Street bus link – this would potential cater for 60 buses in and out along that corridor in peak hours. The PTA would like to keep buses on Canning Highway either side of the bridge. - PTA asked if the City sign off on having buses through the Cassey Street area. City– is included in the Activity Centre plan as a link but City noted that it is not wedded to this outcome, indeed some development outcomes at Roberts Street may preclude it. - City asked if there were any interim proposals? PTA – no, would result in development of interchange as an outcome. - PTA stated that pedestrian and cycle connections are included in the scope. - For the reference case, PTA have specific issues with the interchange itself, the segregation between bus and train platforms is a 300m walk. Given that the network would change with buses in the area really forcing a transfer, this disconnection is an unacceptable penalty. - Safety issues on Canning Highway itself with Kiss and Ride. There are ways to adapt the design that the PTA are looking at. - The alternative design is another structure adjacent to the existing Canning Highway to the north with buses segregated allowing for direct transfers to and from the train platforms. - First option allows for the full ultimate connections within the MRWA plans from both sides of the river, including Cassey Street. - Discussion on Kiss and Ride – PTA stated this activity would still be an informal one, not formalised one given its location. - City – will the project also include the route development or formalisation of the route to and from Curtin University (Jackson Ave corridor)? - PTA don't envisage anything other than bus along this route. Any other mode or transit is out of the scope of the project. - PTA noted that it was not a design requirement to include LRT. Train replacement is an issue as well. - PTA – if prioritised Public Transport through to Curtin is included in ITP that would be a useful to support a connection through the area.	

- Discussion on MRWA plans and approach. Planning Control Area (PCA) covers part of the area. Covers an area of importance for the road corridor, primarily on City of Melville side of Canning River. Discussion on land owners adjacent to the station and potential location of the station structure in the City.
- Flyt raised issue of walk catchment – to request use of Station Access Strategy plans in engagement with Councillors via MR.
- PTA noted the project would be a two year build and there would likely be construction impacts in the area.
- Outcomes are common in terms of activating the Activity Centre area and consolidating bus network with improvements through South Perth – reporting to Councillors in Feb – reduce the disbenefits.
- Can possibly show some of the options for Councillors in Feb – Flyt to contact PTA in early 2020 to see if schematic locations can be shown to Councillors.
- City – Labouchere Rd – the City is undertaking a 3 to 5 year construction programme through the Activity Centre in conjunction with the Civic Heart. If there are diversions related to Canning Bridge in at the same time, there would be implications for public transport movements. City enquired on who in the PTA to talk to for bus stops and revisions to the network.
- Flyt committed to providing minutes for review by PTA and the City.

Meeting Minutes	21 January 2021	**Attendees**	
Project	South Perth ITP	Flyt, City of South Perth (City), MRWA	
Document Ref	81113-576-FLYT-MOM-0015		

Item	Discussion	Action
1	Introductions and Project Scope • Round table introduction of attendees. • Flyt provided a summary of the project and the overall ITP process. • Set out the projects specific to MRWA operations team – impacts of introduction of Smart Freeways and Manning Road southbound ramp.	
2	Smart Freeways • MRWA introduced the project and the broad impacts. Volumes on freeway had increased with introduction of additional lane. • Noticeable outcomes from introduction of scheme across length of controlled corridor – Roe Hwy to Narrows. General journey times reduced. • Some impacts on surrounding Distributor Road network. City noted changes in area as a result of more consistent travel times on freeway. • MRWA stated that the overall project and potential future introduction of Smart Freeways southbound was set out in Transforming Perth Freeways – Main Roads WA strategic plan for reconfiguration of freeway network. Five stages in project, with the work in the City delivered as part of Stage 1. Stages 2 and 3 were submitted to IA – Stage 2 has been funded with no impacts in the City. Other projects sought to be delivered up to 2026 include Smart Freeways southbound through the City and works in Central Perth. All projects designed to increase throughput on freeway network. The delivery of these would be entirely dependent on funding. • MRWA happy to provide outputs from data collected as a result of the Smart Freeways introduction. Flyt to submit request through MRWA and City with locations.	
3	Manning Road Southbound Ramp introduction • Discussion on the introduction of the ramps and changes in volumes. Discussion on the Canning Bridge interchange and noted that the City team had already met with PTA on the project. Understood that there were a range of issues that have to be addressed for the design to accommodate all strategic requirements. • Flyt to submit request through MRWA and City with locations of data if available. • City noted that the other works in that area would also allow for the consolidation of public transport links between Canning Bridge and Curtin University. • City noted issue of potentially ceding the control of Manning Road to Main Roads WA. • MRWA stated that Operational Team addressed function of the network, Planning Team through should be consulted for any potential changes to Canning Highway through the City. Flyt to contact to discuss. • MRWA noted that Main Roads WA had submitted a request for additional operational measures along Canning Highway through Como/Kensington. • Future plans for network also included additional lane on Mt Henry Bridge at the southern boundary of the City.	

APPENDIX B

Council Presentation

City of South Perth

Integrated Transport Plan – Traffic and Congestion Forecast 2 February 2021

flyt

Integrated Transport Plan – Traffic and Congestion Forecast

- Introduction, Purpose and Objectives
- Scope
- Milestones
- Recommendations

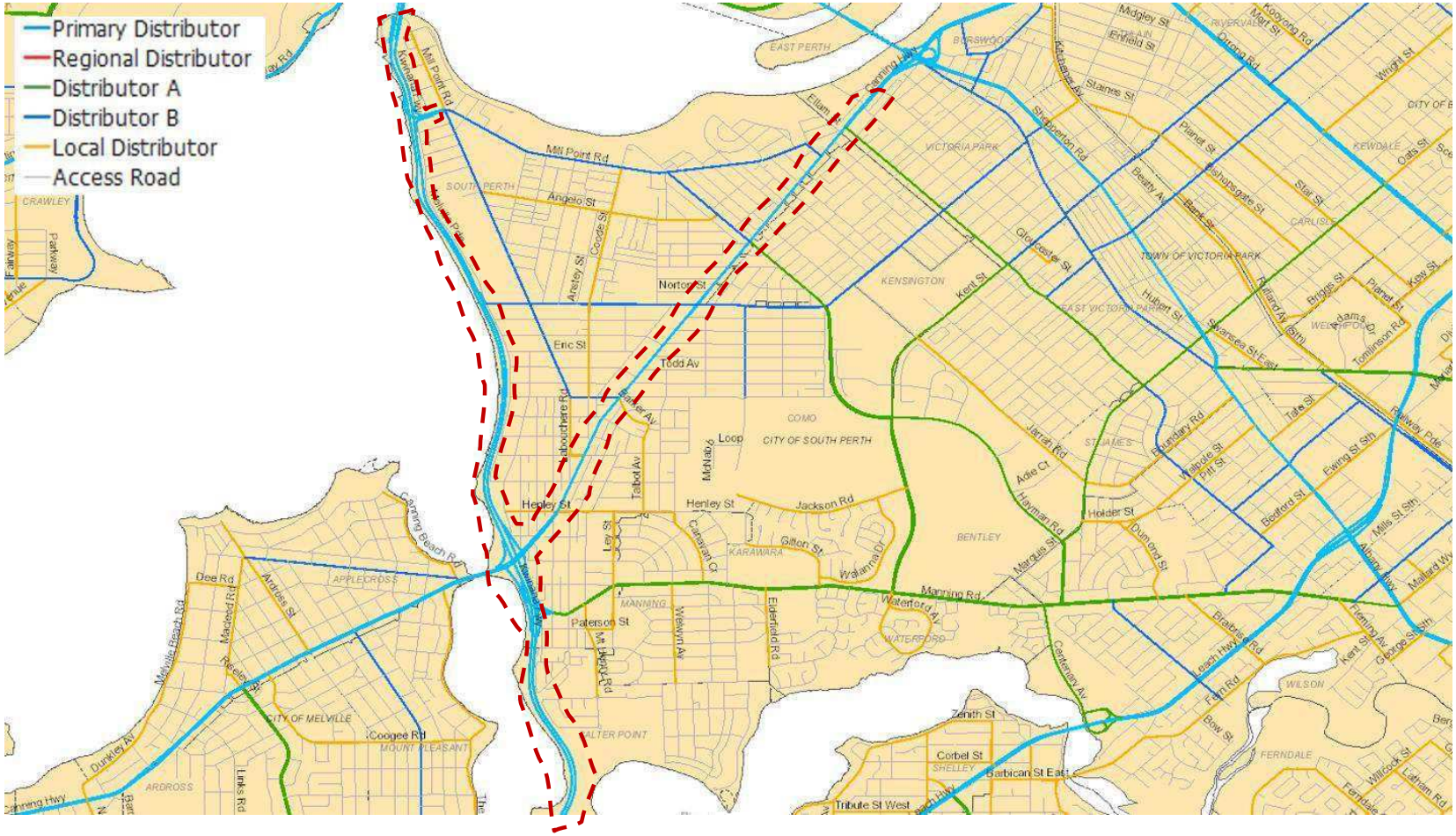
Integrated Transport Plan – Purpose

- The City is preparing an Integrated Transport Plan (ITP), which will set out an integrated approach to transport planning to support future population growth across the City.
- Existing mobility plans, including parking and bicycle strategies, will be built upon to improve existing infrastructure and address future trends.

Traffic and Congestion Forecast - Objectives

- The objectives of the traffic and congestion forecast are to:
  - Understand existing traffic volumes and congestion locations
  - Identify locations with elevated potential for conflict between road users and different transport modes
  - Identify likely future traffic volumes and congestion locations with consideration of the expected growth of the City (as detailed in the City's Draft Local Planning Strategy)
  - Determine priority areas of the road network for intervention to manage identified issues
  - Recommend strategies to address identified priority areas and issues

Distributor Road Network



City of South Perth

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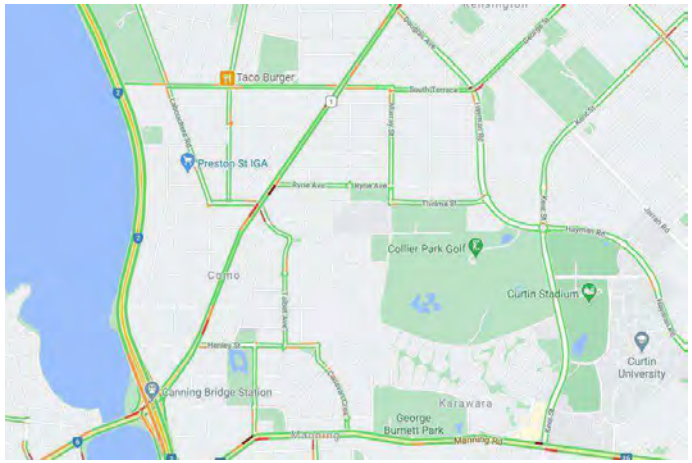
Traffic and Congestion Forecast - Scope

- The project comprised three separate Milestones:
  - Milestone 1: Current situation
  - Milestone 2: Traffic and congestion forecast
  - Milestone 3: Recommendations and Council Briefing.

Traffic and Congestion Forecast – Milestone 1

Illustrate using maps, and described by text:

existing traffic volumes on the City's distributor roads, including typical traffic speeds



areas where and when (i.e. time, day and duration) congestion typically occurs

locations where there is evidence of higher rates of crashes and/or conflict between different transport modes, including pedestrians

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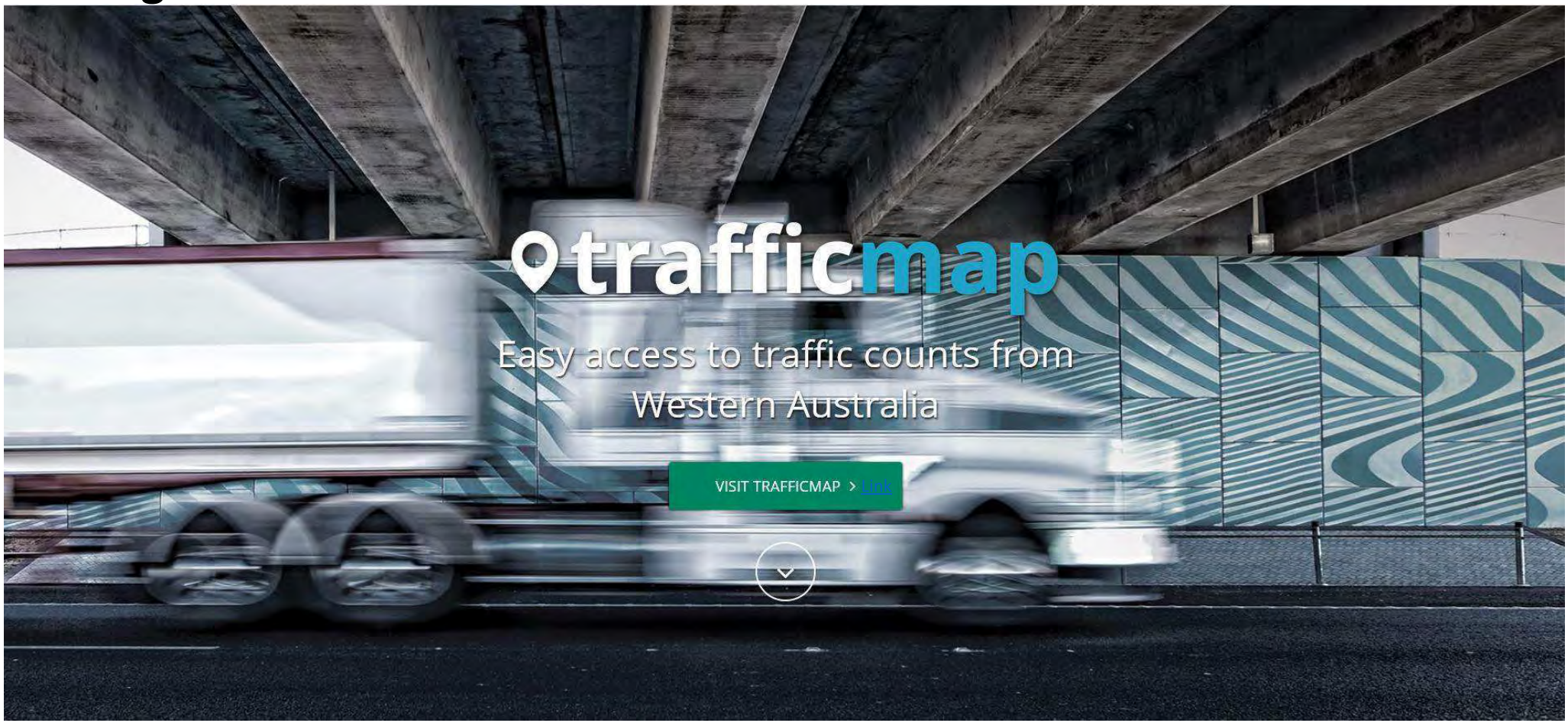
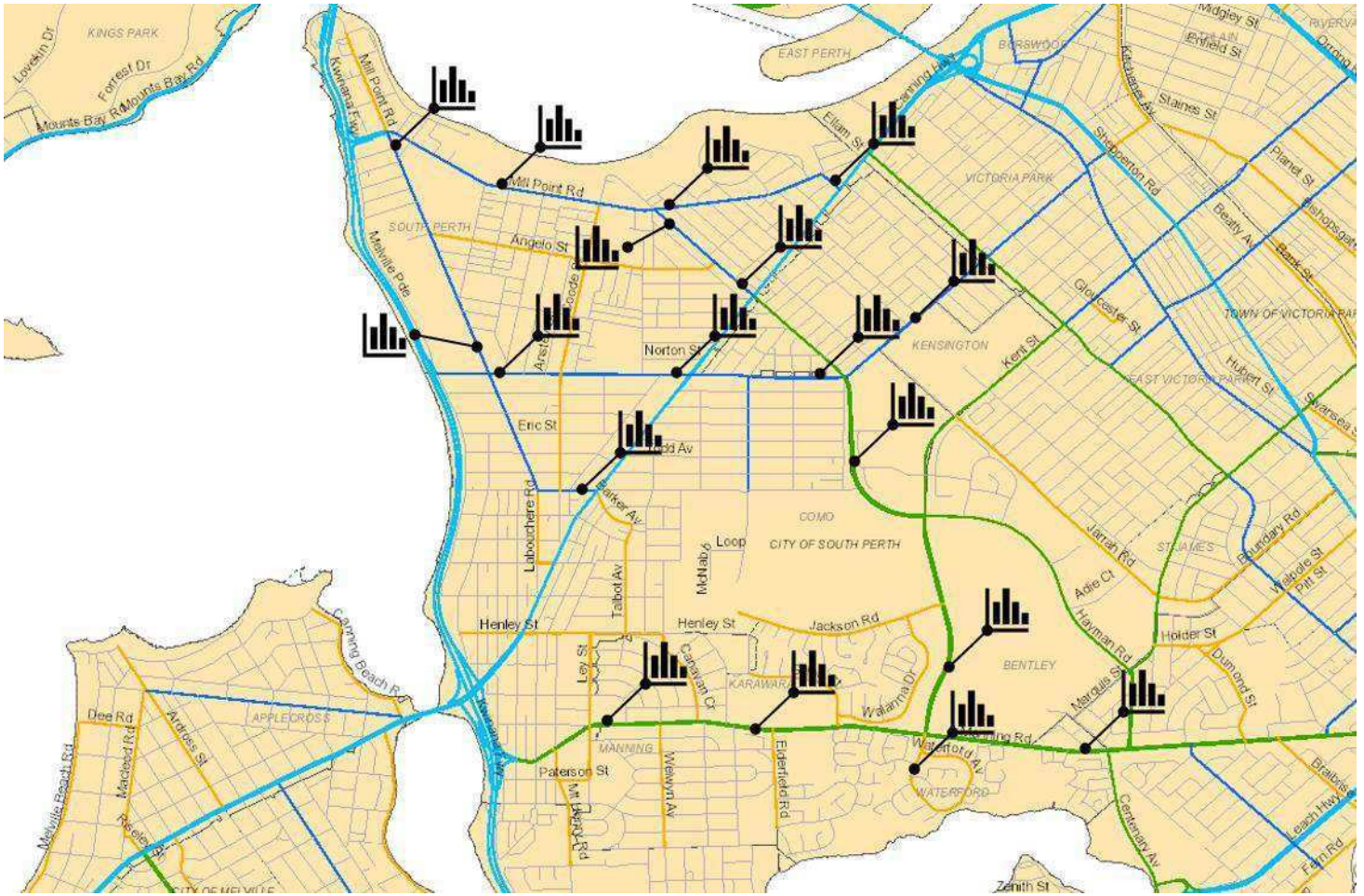
Existing Traffic Volumes



Existing Traffic Speeds



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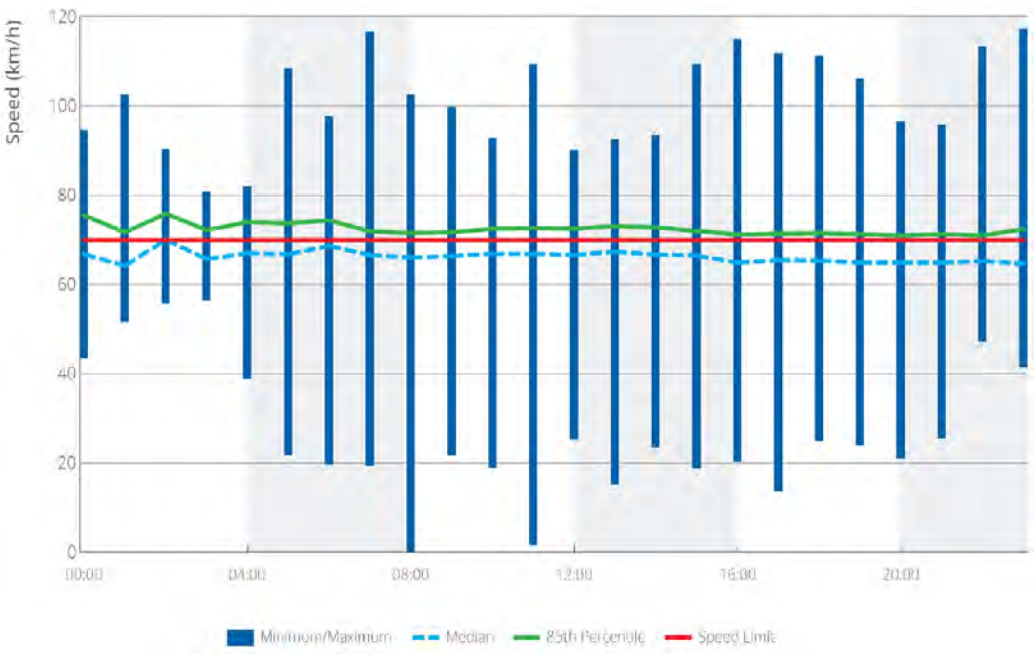
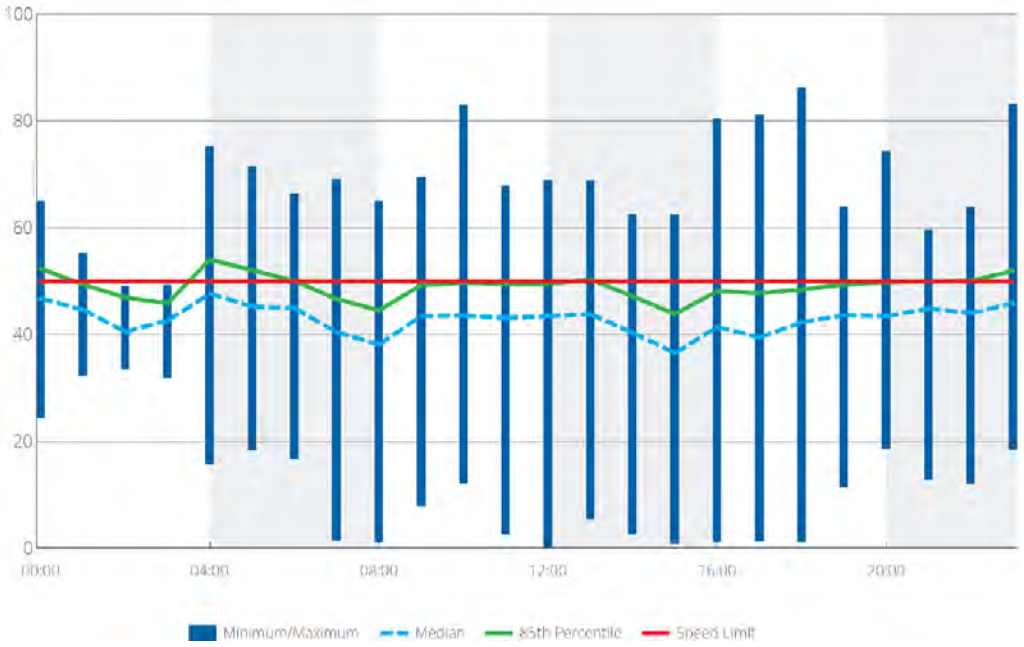
Traffic Speed Measurement

- Two main measurements:
  - 85th percentile, as per Australian Standards 1742.4 is defined as the speed at or below which 85% of all vehicles are observed to travel under free-flowing conditions past a nominated point.
  - Median speeds – or the midpoint value of all speeds recorded on that section of road.

Existing Traffic Speeds



Hayman Road



Thelma Street, west of Canning Highway

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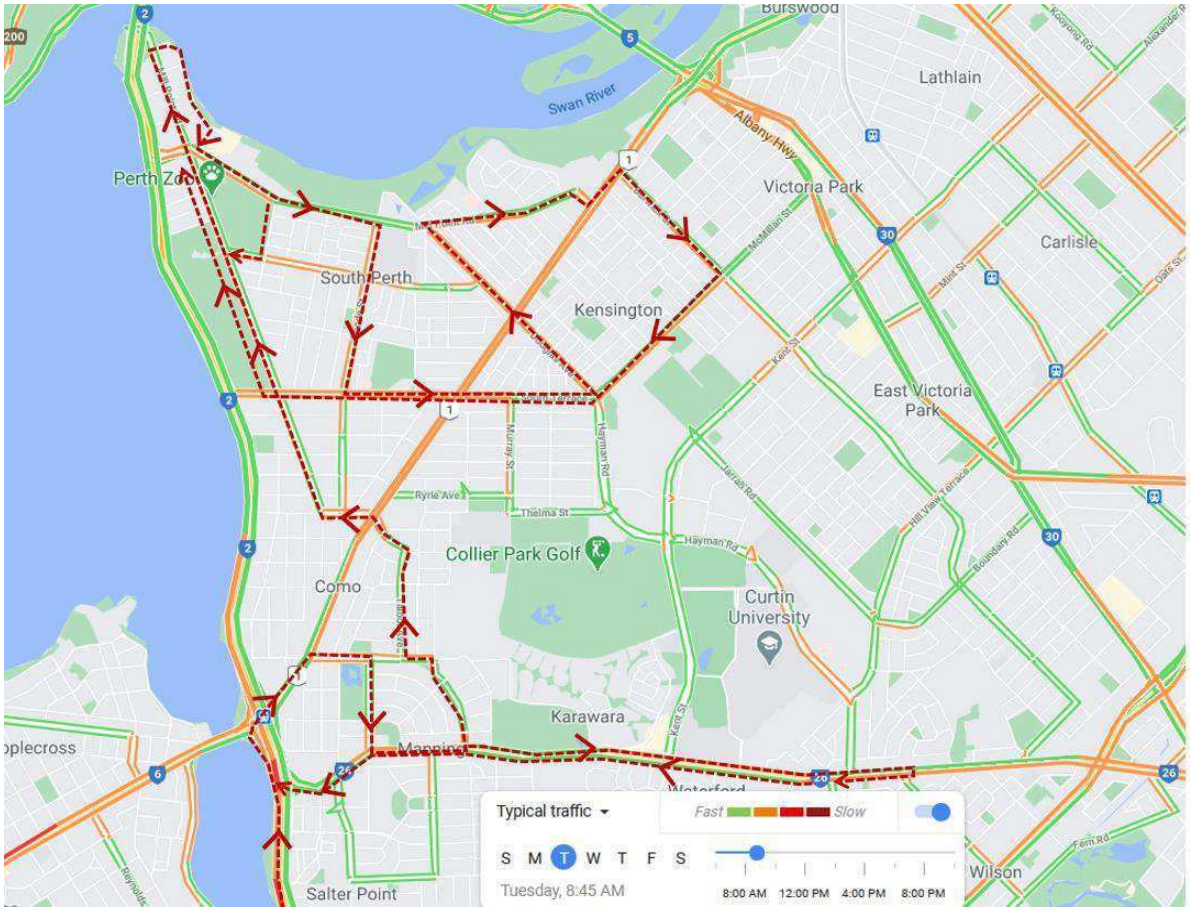
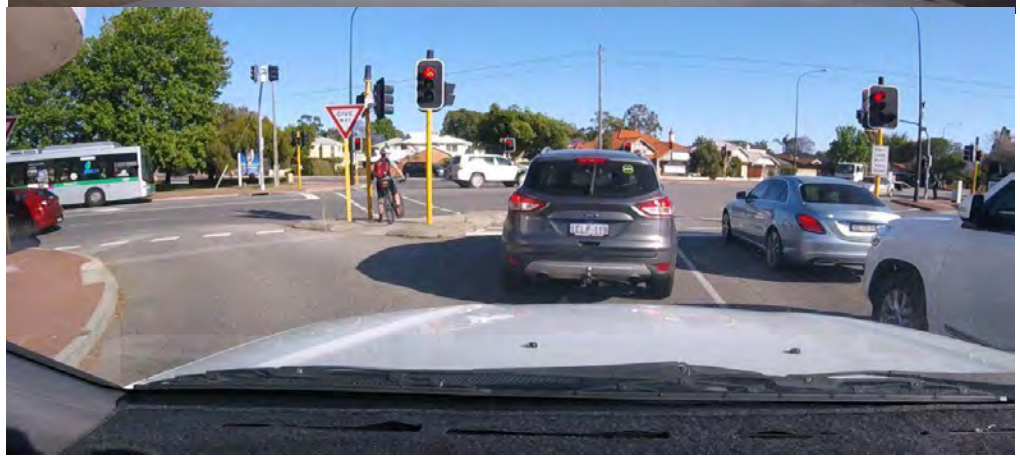
Network Review - Congestion



Network Review



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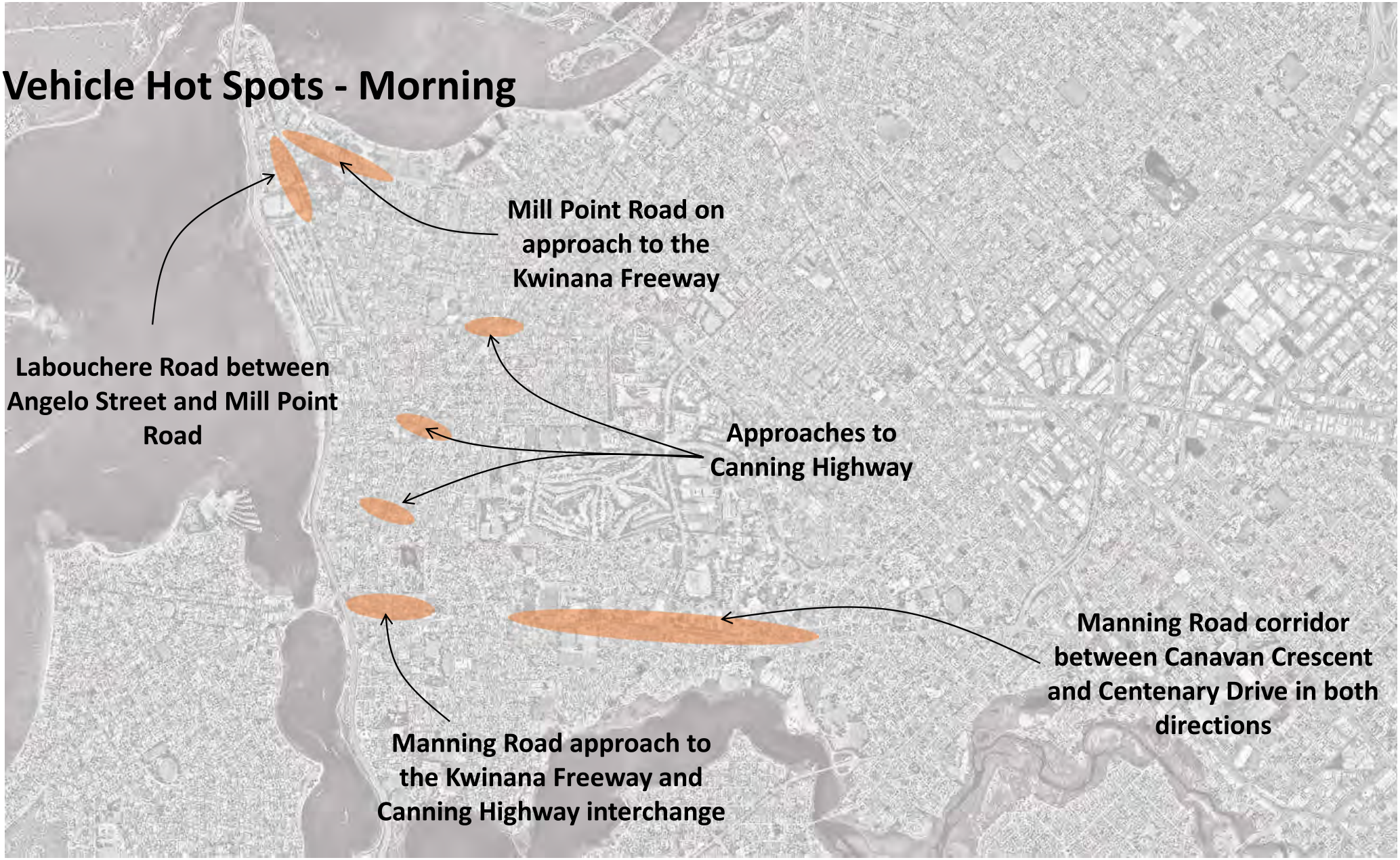
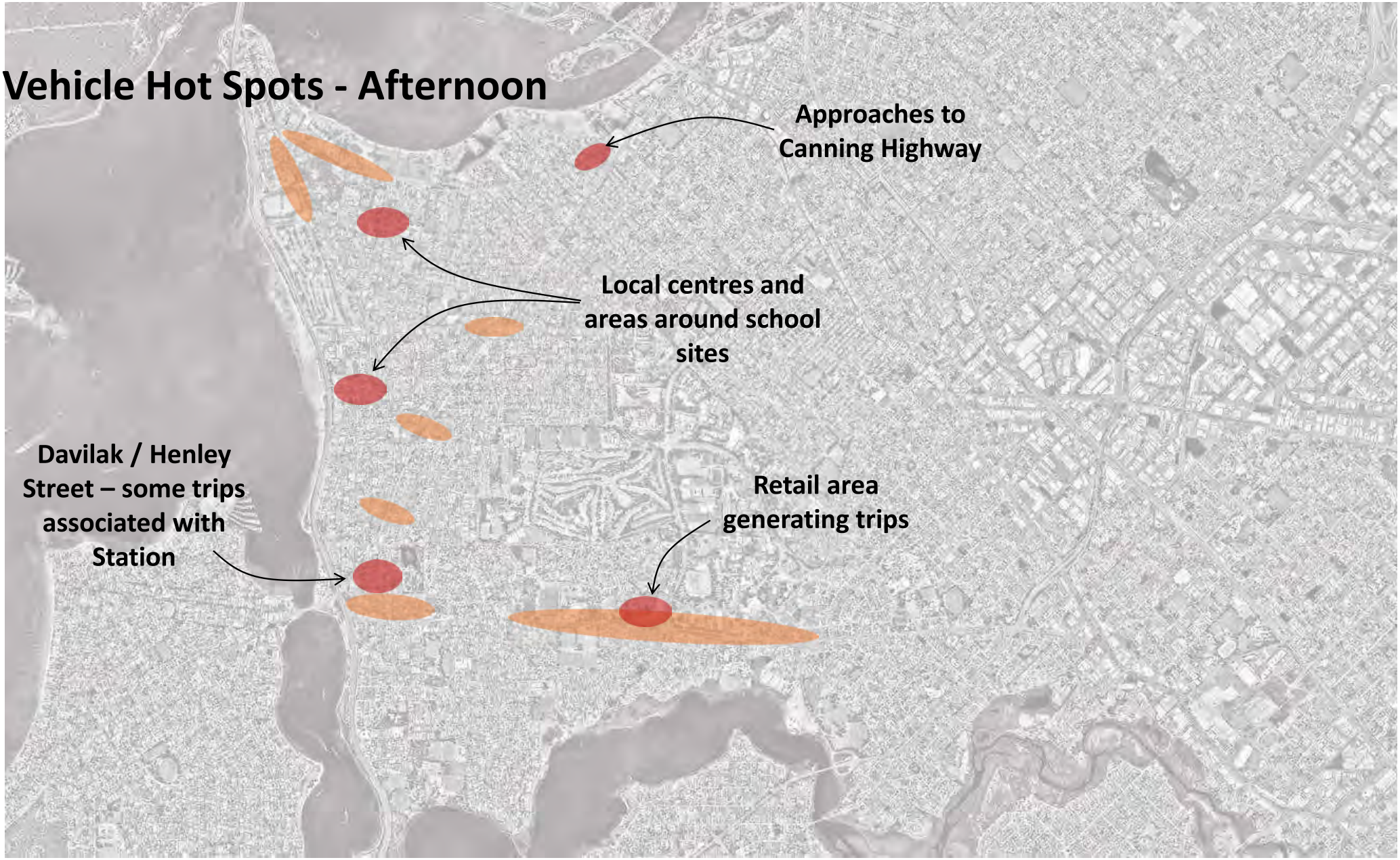
Vehicle Hot Spots - Morning



Vehicle Hot Spots - Afternoon



Crash Information

- There was a total of **1,264 intersection crashes** recorded within the South Perth local government area on distributor roads between 2015 and 2019.
- The majority of recorded crashes occurred in Como and South Perth.
- 572 of the 1,264 crashes occurred at intersections along Canning Highway and accounted for 56% of all crashes in Como and South Perth and 45% of all crashes in the whole of the City of South Perth.
- Kent Street accounted for 14% of all crashes and 8% occurred on Manning Road.

Traffic and Congestion Forecast – Milestone 2

Provide a forecast of congestion locations for the years 2025 and 2030 based on the City's population forecast and traffic modelling

Analyse and discuss the likely impacts of significant transport projects

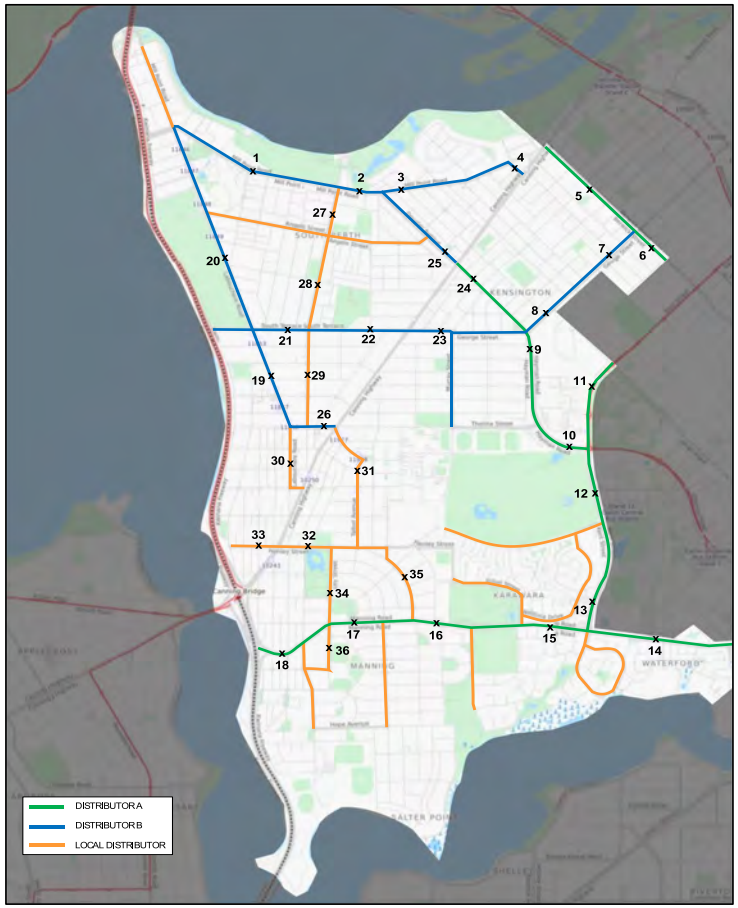
City of South Perth

flyt

Traffic Modelling

- Information was taken from:
  - Main Roads WA ROM24 Model (and Metropolitan Land Use Forecast System inputs from DPLH)
  - Population and Census data, including Activity Centre projections
  - Model outputs provided by CoSP
  - Traffic information collected for Milestone 1.

ROM24



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ROM24


External - External
External - Internal
Internal - External
Internal - Internal
76.9%
10.0%
10.0%
3.1%

ROM24 – Growth and Mid-Block Capacity

- The overall annual average forecast growth increase in vehicle trips for the CoSP is 1.44%.

Inbound Daily Trips	2016	2021	2031	2041	2016 – 2041 Total change	Avg. Annual % change
Internal	**87,905**	**91,118**	**110,292**	**126,374**	**38,469**	**1.43%**
Como	*25,554*	*26,368*	*31,536*	*36,708*	*11,154*	*1.41%*
Karawara	*5,361*	*5,588*	*6,629*	*7,333*	*1,971*	*1.26%*
Kensington	*9,230*	*9,237*	*10,826*	*12,016*	*2,786*	*0.94%*
Manning	*3,062*	*3,336*	*4,364*	*4,616*	*1,555*	*1.82%*
Salter Point	*6,841*	*6,778*	*8,550*	*10,001*	*3,160*	*1.38%*
South Perth	*30,865*	*32,757*	*39,493*	*46,249*	*15,384*	*1.66%*
Waterford	*6,992*	*7,053*	*8,894*	*9,451*	*2,459*	*1.14%*

Location	Description	2021	2031	2041	2021 – 2041 Total change	Avg. Annual % change
5	Berwick Street	14,700	15,500	17,700	3,000	0.98%
6	Berwick Street south of George St	16,100	19,800	23,400	7,300	2.06%
9	Hayman Road	19,900	23,400	27,800	7,900	1.82%
10	Hayman Road west of Kent St	23,900	28,600	35,400	11,500	2.17%
11	Kent Street north of Hayman Rd	10,400	13,800	17,600	7,200	3.01%
12	Kent Street north of Jackson Ave	20,300	25,000	29,600	9,300	2.08%
13	Kent Street north of Manning Rd	18,800	24,400	29,000	10,200	2.43%
14	Manning Road east of Kent St	31,000	37,600	42,300	11,300	1.69%
15	Manning Road west of Kent St	36,400	45,500	51,800	15,400	1.94%
16	Manning Road east of Canavan Cres	40,600	51,000	57,900	17,300	1.96%
17	Manning Road east of Ley St	23,700	29,600	33,700	10,000	1.94%
18	Manning Road east of Freeway	27,600	35,600	40,900	13,300	2.19%
24	Douglas Avenue east of Canning Hwy	13,400	15,700	18,200	4,800	1.65%

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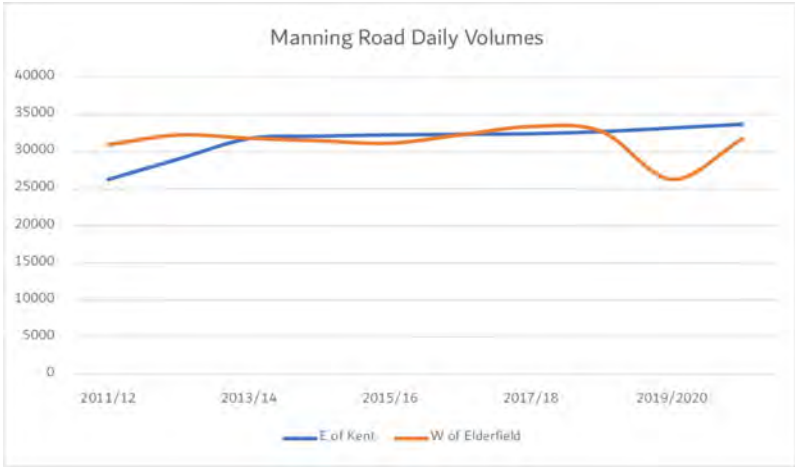
Growth Example – Mill Point Road

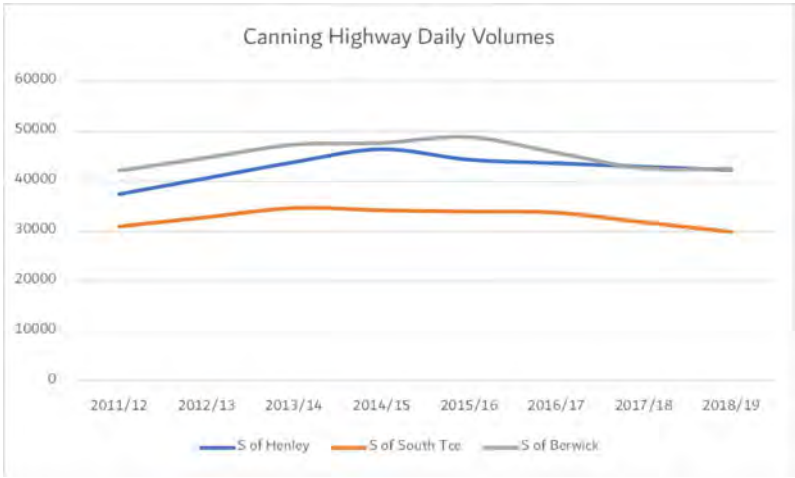
Location	Description	2021	2031	2041	2021 – 2041 Total change	Avg. Annual % change
1	Mill Point Road	17,200	19,700	22,800	5,600	1.51%

- 5,600 vehicles forecast growth over 20 years
- Average of 280 vehicles per year
- Two-directional volumes
- Based on existing patterns, 143 westbound, 137 eastbound
- Peak hour = 8% of daily volumes
- Equal to 11 vehicles in each direction

Traffic Modelling – How Accurate?

	Manning Road		Canning Highway		
Year	East of Kent St	West of Elderfield Rd	South of Henley St	South of South St	South of Berwick St
2009/ 10		29500			
2010/ 11					
2011/ 12	26270	30970	37460	30970	42130
2012/ 13		32290			
2013/ 14	31800	31840	43840	34660	47360
2014/ 15			46420		47690
2015/ 16		31175	44334		48873
2016/ 17				33733	
2017/ 18	32447	33425	42918	31797	42619
2018/ 19	32728	32781	42266	29884	42516
2019/ 20		26291			
2020/ 21	33721	31763			
ROM 2021	31000	36400	52800	35200	42700
ROM 2031	37600	45500	67700	49400	48600
ROM 2041	42300	51800	75800	54400	64000





Major Projects

- Impact of following major projects:
  - Canning Bridge Interchange
  - South Perth Train Station
  - Manning Road on-ramp
  - Smart Freeways project
  - A local CAT bus service
  - Increasing traffic movements to and from Curtin University
  - Long Term Cycle Network and implementation of the City's Joint Bike Plan.

Canning Bridge Interchange

Transport portfolio, led by PTA and MRWA working on assessing configuration and ultimate configuration.

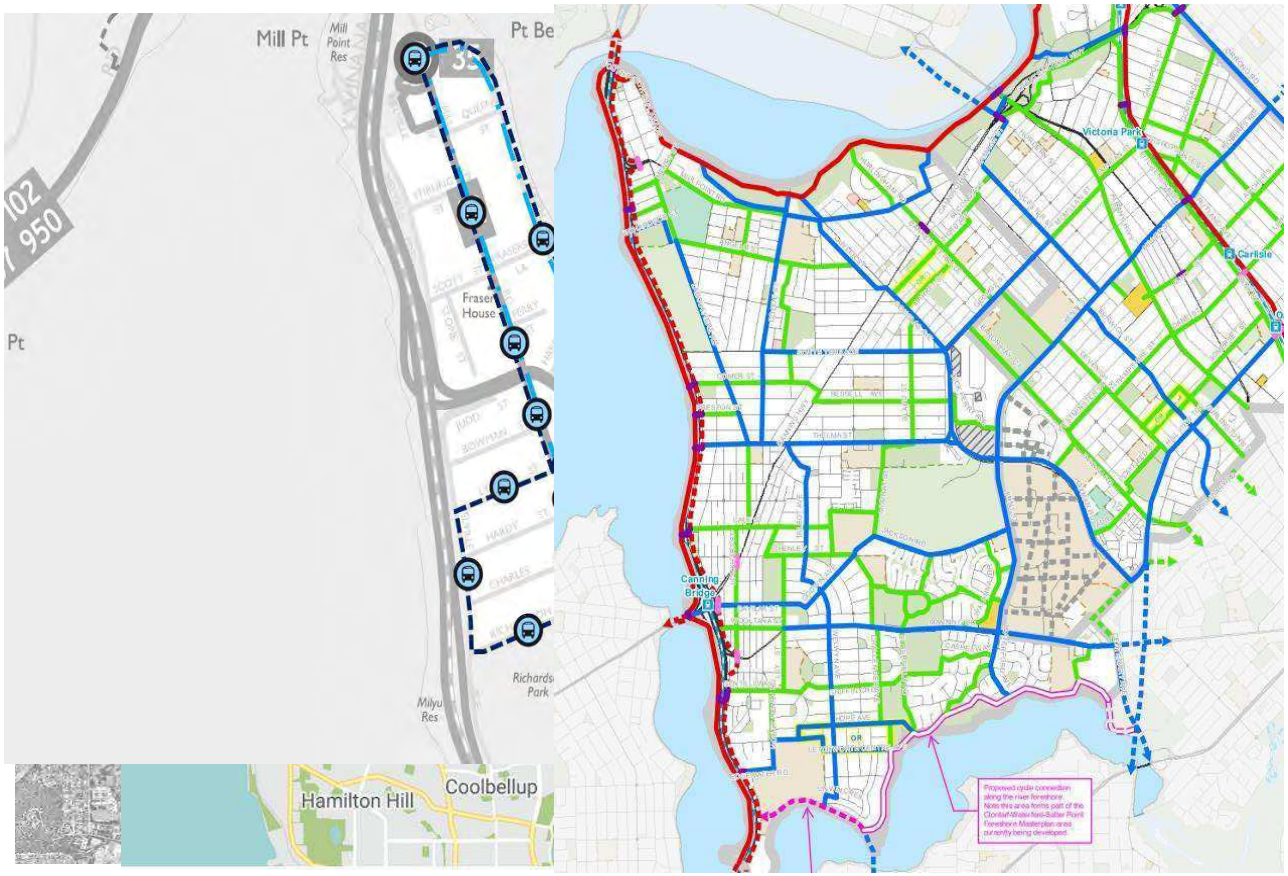
Two separate locations being examined throughout 2021.

Funding secured, must progress through business case process.

Implications for Activity Centre.

Projects Examined

- South Perth Train Station
- Manning Road Southbound
- Smart Freeways Project
- Local CAT Bus
- Curtin University Master Plan
- Long Term Cycle Network



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Traffic and Congestion Forecast – Milestone 3

Recommend strategies and innovations that the City can employ to reduce and manage the impact of congestion on the transport network. The measures should give consideration to SMART goals (i.e. Specific, Measurable, Achievable, Relevant, and Time-Bound)

Council Briefing

Recommendations

- 16 City wide recommendations on:
  - Function of the ITP
  - Engagement with State Government agencies on elements such as South Perth Train Station, Canning Bridge, Smart Freeways
  - Investigations into key areas that the City can deliver – CAT Buses, Parking Strategy being implanted, Activity Centre outcomes and review of cycle connections
  - Investigating future of Manning Road designation.

Recommendations

- 9 specific recommendations on the distributor road network:
  - Reviewing the overall network and how it is designated
  - Undertaking analysis of Movement and Place proposals by DoT and DPLH
  - Review widths of Distributor Road network near intersections to understand where any alterations could be made within reserves
  - Review locations for on-street parking
  - Range of monitoring and data availability.

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