

# Technical Memorandum

<b>Title</b>	<b>74 Mill Point Road Development – Micro Simulation Modelling Results</b>		
	<b>Micro Simulation Modelling</b>		
<b>Client</b>	City of South Perth	<b>Project No</b>	CW961800
<b>Date</b>	3/11/2016	<b>Status</b>	Rev G
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## Introduction

Cardno have been engaged by the City of South Perth to utilise and update the existing 2021 Station Precinct Micro-Simulation Model (Version 1.4) to evaluate intersection delay at the intersection of Mill Point Road / Labouchere Road and Mill Point Road / Mends Street as a result of the proposed development at 74 Mill Point Road.

The models have previously been developed for the AM and PM peak hour periods, defined as:

- Weekday AM peak hour: 07:30 – 08:30
- Weekday PM peak hour: 16:30 – 17:30

## 74 Mill Point Road

As described in the Transport Assessment for 74 Mill Point Road (dated 29 August 2016), the proposed development is to include the following yields:

- 104 Serviced apartments
- 288 m<sup>2</sup> café
- 71 m<sup>2</sup> Commercial (community centre)
- 54 residential apartments (1-2 bedrooms)
- 25 residential apartments (2+ bedrooms)

## Traffic Generation

Based on surveys and research undertaken for similar developments in similar locations, the following trip generation rates summarised in **Table 1** have been adopted for the purpose of this study.

**Table 1 Adopted Trip Generation Rates**

Land Use	AM Generation Rate		PM Generation Rate	
	City	Developer	City	Developer
Serviced Apartments	0.30 trips / apartment	0.45 trips / apartments	0.30 trips / apartment	0.45 trips / apartments
Café	8.68 trips / 100 m <sup>2</sup>	5 trips / 100 m <sup>2</sup>	8.23 trips / 100 m <sup>2</sup>	5 trips / 100 m <sup>2</sup>
Commercial / Office	1.38 trips / 100 m <sup>2</sup> GFA	2 trips / 100 m <sup>2</sup> GFA	1.33 trips / 100 m <sup>2</sup> GFA	2 trips / 100 m <sup>2</sup> GFA
Residential Apartments (1-2 bedrooms)	0.28 trips / apartment	0.45 trips / apartment	0.39 trips / apartment	0.45 trips / apartment
Residential Apartments (2-3 bedrooms)		0.60 trips / apartment		0.60 trips / apartment

## Comments on IDM Data

Intersection Diagnostics Monitor (IDM) data can be collected by any signalised intersection controlled by the Sydney Coordinated Adaptive Traffic System (SCATS) and includes information pertaining to signal phasing and timing.

As westbound vehicles (to the Kwinana Freeway) that originate to the north of Mill Point Road can only reach the Kwinana Freeway by turning right at either of the 2 signalised intersections, limited route choice is available for these vehicles.

A summary of the average cycle times for these signalised intersections is shown in **Table 2**, along with information pertaining to the relevant phase lengths. It is noted that advice from Main Roads WA indicates that any increase to the amount of green time allocated to these phases will not be supported by Main Roads WA.

**Table 2 Intersection Cycle Times and Phase Lengths**

Intersection	Average Cycle Time (s)		Average Right-Turn Phase Time (Northern Approach) (s)	
	AM	PM	AM	PM
Mill Point Road / Labouchere Road	120	130	22	22*
Mill Point Road / Mends Street	120	126	23	30*

\* Filtered right turn; no right turn arrow

## Model Scenarios

As part of this modelling exercise, the following scenarios have been modelled:

- Base 2021 (including all approved / committed developments, excluding 74 Mill Point Road)
- 2021 with development at 74 Mill Point Road

It is noted that both 2021 scenarios do not assume any changes to the existing road network within the study area.

## Approved / Committed Developments

The following committed or approved developments have been accounted for in the Base 2021 model demands:

- 12-16 Charles Street
- 7 Lyall Street
- One Richardson (1-3 Richardson Street)
- 6 Lyall Street
- Pinnacles South Perth (30-34 Charles Street)
- South Bank (98 Mill Point Road)
- Southstone Apartments (1 Stone Street)
- Aurelia (96 Mill Point Road)
- 14-18 Hardy Street
- Glasshouse (31 Labouchere Road and 24 Lyall Street)
- 13 Stone Street
- Civic Heart
- Echelon (77-79 South Perth Esplanade)
- 5-7 Harper Terrace
- 26-28A Charles Street
- 2 Harper Terrace
- 152B Mill Point Road
- Millstream Arcade (21 – 23 Mends Street)
- 19 Labouchere Road
- 11 Melville Parade

## Model Results

Model outputs, in terms of Link Volume Plots (LVPs) and Link Delay Plots (LDPs) are have been extracted and shown in **Figure 1 - Figure 4** for the 2021 AM scenarios and in **Figure 5 - Figure 8** for the 2021 PM scenarios.

It is noted that as the models have been set up to allow for dynamic feedback intervals every 15 minutes, increases in model demands can potentially result in localised improvements at some network locations (e.g. northbound on Harper Road) as the travel times for different routes are updated several times over the model period. It is therefore emphasised that the LDPs should be interpreted in conjunction with the LVPs to identify where the overall network times have been impacted by the proposed development.

**Figure 1** 2021 AM Link Delay Plot (seconds) – Committed Developments Only (Excluding 74 Mill Point Road)



**Figure 2 2021 AM Link Delay Plot (seconds) – Committed Developments and 74 Mill Point Road**



**Figure 3 2021 AM Link Volume Plot (vehicles) – Committed Developments Only (Excluding 74 Mill Point Road)**





Figure 4 2021 AM Link Volume Plot (vehicles) – Committed Developments and 74 Mill Point Road





**Figure 5 2021 PM Link Delay Plot (seconds) – Committed Developments Only (Excluding 74 Mill Point Road)**



Figure 6 2021 PM Link Delay Plot (seconds) – Committed Developments and 74 Mill Point Road



**Figure 7 2021 PM Link Volume Plot (vehicles) – Committed Developments Only (Excluding 74 Mill Point Road)**



Figure 8 2021 PM Link Volume Plot (vehicles) – Committed Developments and 74 Mill Point Road



**Table 3 Intersection Average Delays – 2021**

Scenario			Southbound Delay (s)	
			Mill Point Road / Labouchere Road	Mill Point Road / Mends Street
2021 Developments (excluding 74 MPR)	Committed Only	AM	86	322*
		PM	64	325*
2021 Developments including 74 MPR	Committed	AM	97	320*
		PM	74	417*

\* Queue lengths occasionally extending to South Perth Esplanade and therefore exceed the delay times in the above table

## Queue Lengths

The maximum modelled southbound queue lengths for the 2021 scenarios for the intersections of Mill Point Road / Labouchere Road and Mill Point Road / Mends Street are summarised in **Table 4**.

**Table 4 Intersection Maximum Queue Lengths – 2021**

Scenario			Maximum Queue Length (vehicles)	
			Mill Point Road / Labouchere Road	Mill Point Road / Mends Street
2021 Developments (excluding 74 MPR)	Committed Only	AM	19	27*
		PM	14	27*
2021 Developments including 74 MPR	Committed	AM	22	27*
		PM	19	27*

\* Queue lengths occasionally extending to South Perth Esplanade and therefore exceed the delay times in the above table

## Discussion of Results

The increase in traffic volumes within the study area due to the proposed development of 74 Mill Point Road were found to have an impact on queues and delays on the southbound intersection approach for the intersection of Mill Point Road / Labouchere Road due to the limited opportunities for these vehicles to get to the Kwinana Freeway. While the intersection of Mill Point Road / Mends Street is also impacted, this intersection is not impacted to the same extent of the intersection of Mill Point Road / Labouchere Road.

It is noted that the link volume plots do not show a substantial increase in traffic on South Perth Esplanade and Mends Street. This indicates that traffic from 74 Mill Point Road is not likely to use South Perth Esplanade, primarily due to a substantial volume of traffic generated by other developments to the north of Mill Point Road that are 'forced' to use South Perth Esplanade and Mends Street to get to the Kwinana Freeway.



## Conclusion

The impact of the proposed 74 Mill Point Road development was primarily found to be at the intersection of Mill Point Road / Labouchere Road and to a lesser extent at the intersection of Mill Point Road / Mends Street.

Due to the cumulative traffic impacts by the proposed developments in the 2021 Scenarios on the key intersections within the study area and the constrained nature of the area, it is not considered feasible to adequately increase the capacity of the key intersections within the study area. It is instead recommended that the development of an area-wide Development Contribution Plan (DCP) be undertaken to include funding for the following (but not limited to) potential items:

- > Promotion of alternate transport modes and provision of additional pedestrian and cycling infrastructure
- > Increase frequencies of key public transport services within the study area (including ferries)
- > Undertake a parking study to ensure appropriate (reduced) parking requirements are promoted for the area
- > Undertake area-wide transport study to maximise connectivity and safety for local residents and visitors to pass through and walk/cycle around the Precinct.
- > Capital works as required in the immediate area.