

**SPECIAL COUNCIL MEETING 27 AUGUST 2019**

**ATTACHMENT 11**

**REPORT 6.1**

**4 PAGES**

Our Ref: CW10373:jm  
Contact: Jacob Martin/Ray Cook

1 August 2019

Shire of Mundaring  
7000 Great Eastern Highway  
Mundaring WA 6073

Attention: Angus Money, Manager Planning and Environment

Dear Angus

### **Mundaring Townsites District Transport Study Functional Impact Assessment**

Cardno has been commissioned by the Shire of Mundaring to undertake a *District Transport Study* (DTS) for the sub-area comprising the development areas of Stoneville and North Stoneville, Mundaring, Parkerville and North Parkerville Townsites (the District).

The objective of the study is to determine the sufficiency of the existing road network and the network upgrades necessary to support development growth across the District. In particular, the DTS investigations consider the appropriate form and function of intersections and corridors within the boundary formed by Great Eastern Highway, Toodyay Road, Brooking Road and Stoneville Road.

The investigations so far consider the potential impact of a particular development and network scenario, but it must be acknowledged that the specific impacts of traffic may vary depending on the staging and timing of development and strategic road upgrades. Cardno understands that the DTS is on hold because at this point in time, there is no agreement across key stakeholders on what regional upgrades should be pursued.

The following *Functional Impact Assessment* represents a summary of the investigations to date, to be read in the context of the Shire's planning assessment regarding the Structure Plan Application for North Stoneville.

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### Development Potential and Traffic Growth

The potential development areas of North Parkerville and North Stoneville together comprise approximately 2,000 additional dwellings, with a corresponding traffic generation of over 16,000 vehicles per day (vpd).

**Table 1 Proposed Development Yield and Traffic Generation**

Area	Additional Dwellings	Traffic Generation (vpd)
North Parkerville and Hovea	640	5,120vpd
North Stoneville	1,400	11,200vpd

While a portion of this traffic will remain within the District Area, particularly those trips associated with local school travel, internal trips to Neighbourhood Centres and short-distance trips to the Mundaring Town Centre, a substantial majority of traffic movements can be expected to require access to the strategic road network.

This strategic road network is characterised by two east-west Primary Roads: Great Eastern Highway and Toodyay Road, with the majority of trips headed west, towards Roe Highway and beyond.

### Existing Network Constraints

Cardno has employed Main Roads WA's ROM24 modelling outputs to distribute the traffic from the proposed full-buildout scenario, and to incorporate the anticipated growth for the broader Region.

This modelling anticipates that traffic volumes along the two Primary Roads would increase as follows, for the existing network (i.e. no network improvements).

**Table 2 Regional Traffic Growth (Existing Network – MRWA ROM24)**

Road Corridor	Existing Traffic Volumes	Projected Traffic Volumes @ 2031 (including development)
Great Eastern Highway (west of Seaborne Street)	33,200vpd	35,000vpd
Great Eastern Highway (east of Stoneville Road)	23,700vpd	37,300vpd
Toodyay Road (west of Roland Road)	17,200vpd	25,900vpd
Toodyay Road (east of Stoneville Road)	12,500vpd	17,500vpd

ROM24 applies capacity constraints only to road links, with static delays imposed at intersections based on turning movements and intersection form. This is consistent with the strategic purpose of the ROM24 model, but does not represent a realistic outcome in this application due to the substantial delays projected for turning traffic.

To address this limitation, an AIMSUN mesoscopic traffic model has been constructed to interrogate the local impacts of traffic along significant roads within the Study area. This analysis shows that there is insufficient capacity at critical intersections along Great Eastern Highway to accommodate significant additional traffic volumes.

Preliminary SIDRA assessment using 2018 traffic volumes indicates that there may be sufficient remaining capacity at Great Eastern Highway/Seaborne Street and Great Eastern Highway/Brooking Street for a maximum of 70 additional dwellings. Anticipated background traffic growth along the corridor will further exacerbate capacity and safety issues.

### Impacts of Regional Network Upgrades

Main Roads WA (MRWA) has provided updated 2031 ROM24 model outputs which include the upgraded Eastlink, located to the north of the Study Area. Cardno has evaluated the network through the AIMSUN mesoscopic model, using the ROM24 distribution to investigate the impacts of this regional network upgrade.

Based on an evaluation of the two iterations of ROM24 for 2031 (with and without Eastlink), the effect of the Eastlink upgrade would be to redirect approximately 50% of development traffic within the District Study Area away from Great Eastern Highway. This reflects the increased attractiveness of the Eastlink corridor if constructed as a 'freeway standard' road.

However, even considering this effect on distribution, there remains insufficient capacity at the Great Eastern Highway/Seaborne Street or Great Eastern Highway/Brooking Road intersections in their current form to accommodate the projected development growth. Upgrade of one of these intersections is therefore a necessary condition to allow for adequate access by development traffic to Great Eastern Highway.

Main Roads WA has indicated that it has no plans to upgrade GEH and would not support conversion of either of these intersections to a roundabout form, due to topographic issues and the impacts on heavy freight movements. Doubt has also been raised about whether Main Roads WA would entertain traffic lights, given the potential impact on freight movement. Notwithstanding the current position of stakeholders, an option has been tested, consisting of signalisation of Brooking Road and the retention of Seaborne Street as a priority intersection, and assuming that the majority of right-turning District traffic will redirect to the Brooking Road signalised intersection given the opportunity. This scenario, which involves linking Roland Road and North Brooking Road has been foreshadowed within the Shire's adopted Local Planning Strategy.

SIDRA analysis shows that traffic signals at Brooking Road/GEH intersection could provide sufficient capacity for the critical right-turning movement, and create gaps for traffic at the downstream Seaborne Street priority intersection, when combined with the effects of Eastlink. The precise geometry and signal phasing for a potential signalised intersection would require further design development and approval from Main Roads WA.

### Corridor Upgrade Requirements

The *Main Roads Functional Hierarchy* (MRFH) defines traffic volumes above 3,000vpd as an appropriate threshold for a Distributor Road. This threshold is considered reasonable to require upgrade of District road infrastructure to a higher standard.

The MRFH identifies a different standard for roads in 'Built Up' areas than 'Non Built Up' areas. These requirements are based on the following definition:

- > Residential localities which have lots with areas less than 0.45 ha; and,
- > Road sections connecting two Built Up areas less than 300m apart.

Built Up Areas can be expected to be constructed with asphalt construction, kerbing and underground drainage, street lighting and paths, all to an appropriate standard as defined by Austroads' *Guidelines*. It does not necessitate a doubling from two to four lanes along Roland Road or Stoneville Road, however localised improvements to provide an appropriate speed environment and widening near intersections and turning lanes would need to be considered.

Non Built Up areas require a lesser standard, consisting of sealed construction with kerbing and street lighting at intersections, as well as sealed shoulders. Localised improvements to provide an appropriate speed environment and safe movement at intersections would also need to be considered

### Impact Summary for Existing Network

Based on district traffic analysis undertaken so far, the following observations and recommendations are made:

1. Investigations undertaken on the cumulative impact of development growth within the District (including SP34), and background traffic growth along Great Eastern Highway suggest that there is insufficient capacity to accommodate the proposed development. The assertion in the Transcore Traffic Impact Assessment that SP34 has no material impact on the system cannot be supported in this context.
2. Preliminary analysis suggests that the existing intersections along Great Eastern Highway have sufficient capacity to accommodate a maximum of 70 more dwellings.
3. Any further development within the District would therefore need to be supported by improved connections to Great Eastern Highway, potentially in the form of signalisation.
4. The construction of both Eastlink and the improved connection to Great Eastern Highway would be required to accommodate the development build-out scenario.
5. Distributor Road corridors within the District would also require upgrade to support their intended function.

Yours faithfully



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