Traffic Implications Report

MELVILLE DISTRICT CENTRE ACTIVITY CENTRE PLAN

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<th>Description</th>
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1. INTRODUCTION

Flyt Pty Ltd (Flyt) have been commissioned by the City of Melville (the City) to prepare a Traffic Implications Report for the area defined as the Melville District Centre Activity Centre Plan boundary (see Figure 1).

Flyt were engaged by the City in March 2016 to prepare a high-level Traffic Implications Report based on the information within and development allowed under the draft Melville District Centre Activity Centre Plan (the Plan).

It should be noted that the scope of works for this study specifically excluded detailed traffic modelling of the area/region (an overview of traffic movements across the wider City is covered in traffic modelling undertaken to inform the Melville City Centre Structure Plan Transport Report, November 2013), the scope excluded walking, cycling and public transport assessment (already completed by the City), and the scope also excluded car parking assessments and detailed investigations of particular issues or intersections.

1.1 Study Area

The Melville District Centre encompasses land in Attadale, Melville, Palmyra and Bicton, and is one of six strategically important District Centres in the City. The District Centres are the prime focus for population growth and redevelopment across the City.

The Melville District Centre is located on the major regional road corridor of Canning Highway and is well served by existing high frequency bus routes serving Fremantle to Canning Bridge and then onto Perth City via the Kwinana Freeway/Narrows Bridge or Victoria Park Transfer Station/Causeway.

Figure 1 shows the location of the Melville District Centre Activity Centre Plan.

*Figure 1 – Melville District Centre Activity Centre Plan Boundary (source: City of Melville)*
It should be noted that the Activity Centre Plan boundary as defined in Figure 1, is the area where the Plan will apply. Lots outside of this boundary will not be directly affected by the Plan. The Activity Centre Plan boundary will be refined if required based on feedback from the community through the public advertising phase, which is due to take place in mid-2016.

1.2 Context of Traffic Implications Report

The Melville District Centre is an activity centre identified in the Western Australian Planning Commission’s State Planning Policy 4.2 Activity Centres for Perth and Peel. It is one of the six important District Centres in the City.

The City’s Local Planning Strategy seeks to concentrate population growth and development in activity centres and along public transport routes, which provides for suburban areas to remain similar or the same as they are now.

The City is currently preparing an Activity Centre Plan for the Melville District Centre in accordance with the Planning and Development (Local Planning Schemes) regulations 2015. The production of this high-level Traffic Implications Report will provide a review of the traffic generation and impacts of the level of development allowed under the current draft Activity Centre Plan.

1.3 Structure of Traffic Implications Report

This introduction forms the first section of the Traffic Implications Report, of which there are a further four sections and appendices covering the following:

- Review of background documents, including:
  - Draft Melville District Centre Activity Centre Plan
  - Melville City Centre Structure Plan Transport Report
  - Main Roads WA Canning Highway concept design
- Existing conditions within Melville District Centre, covering:
  - Existing land use
  - Existing road layout
  - Existing access arrangements
  - Existing traffic volumes
  - Existing road network performance
- Future conditions within Melville District Centre, covering:
  - Future land use
  - Future road layout and access arrangements
  - Future traffic volumes
  - Future road network performance
- Conclusions
2. REVIEW OF BACKGROUND DOCUMENTS

2.1 Draft Melville District Centre Activity Centre Plan

For the purposes of the preparation of this Traffic Implications Report, the City of Melville made available to the Flyt Project Team a draft copy of the Melville District Centre Activity Centre Plan (draft March 2016). The City of Melville Officers indicated that the draft Activity Centre Plan is aligned to the recently amended City of Melville Local Planning Scheme No. 6 (LPS 6), which is currently under review by the Planning Minister for approval (the outcome of the Ministerial review process is expected during April 2016).

As indicated by the City of Melville Officers, the draft Activity Centre Plan does not substantially change the zoning, height, density or land uses for the Melville District Centre as proposed in LPS 6, but provides a streamlined, place specific plan for the anticipated outcomes for Melville District Centre.

The City of Melville Local Planning Strategy seeks to concentrate population growth and development in activity centres, which can be served by high frequency public transport services to reduce trips to/from the activity centre being reliant upon private motor vehicle access.

The place-based approach to be taken by the City in the Activity Centre Plan will result in different parts of the Melville District Centre being given different controls based on the vision for the future of the respective areas and streets. New development will be encouraged within the centre, but new development must improve the look and feel of the area and contribute to creating a vibrant, mixed use place.

LPS 6 and the City’s policies apply to development in this activity centre, unless specifically varied by the Activity Centre Plan. The main changes to the existing policy framework are in the area zoned Centre C2 R-AC0 and have been proposed to achieve specific design outcomes.

Building heights are proposed to be controlled by regulating storeys rather than a maximum height in metres. The proposed built height controls range from 3 to 5 storeys depending on the location. The proposed heights in the centre are essentially equivalent to or slightly lower than the surrounding buildings heights outside the centre as currently permitted in LPS 6. The expectations for the activity centre are summarised in the Table 1 below.

Table 1 – Draft Melville District Centre Activity Centre Plan – Proposed Zoning Characteristics (source: City of Melville)

<table>
<thead>
<tr>
<th>Zone in LPS 6</th>
<th>Density Coding</th>
<th>Character Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre C2</td>
<td>R-AC0</td>
<td>The mixed use core of the activity centre. Retail and commercial uses are envisaged on the ground floor, with residential and office uses on the upper floors.</td>
</tr>
<tr>
<td>Mixed Use</td>
<td>R-AC3</td>
<td>Provides a transition area between the core of the activity centre and surrounding medium density residential areas. Residential and compatible commercial uses are promoted. Unsuitable commercial uses such as Shops, Restaurant/Cafes, Liquor Stores, Small Bars and Taverns are not permitted in this zone as per the LPS 6 Zoning Table.</td>
</tr>
<tr>
<td>Residential</td>
<td>R60</td>
<td>Provides for medium density residential close to the Canning Highway public transport corridor.</td>
</tr>
<tr>
<td>Local Open Space</td>
<td>N/A</td>
<td>Provides for local and district recreational and sporting uses.</td>
</tr>
</tbody>
</table>
Figure 2 shows the proposed zoning of the activity centre, which the City hopes will create a vibrant, mixed use centre that is a great place to live, work, run a business, socialise, recreate and have fun. Figure 3 shows the corresponding zoning for the activity centre under LPS 6.

**Figure 2 – Draft Melville District Centre Activity Centre Plan – Proposed Zoning (source: City of Melville)**

**Figure 3 – Local Planning Scheme No. 6 – Zoning (source: City of Melville)**
Figure 4 shows the proposed permitted building heights across the activity centre. Figure 5 shows the corresponding zoning for the activity centre under LPS 6.

**Figure 4 – Draft Melville District Centre Activity Centre Plan – Proposed Permitted Building Heights (source: City of Melville)**

**Figure 5 – Local Planning Scheme No. 6 – Permitted Building Heights (source: City of Melville)**
The draft Activity Centre Plan has been developed to address the requirements of the Western Australian Planning Commission (WAPC) dwelling targets for the activity centre. The draft Plan targets a total of 500 dwellings in the centre by 2031, which would be an additional 354 dwellings over a 15-year period – an average linear development scenario of 24 new dwellings per year.

The draft Plan aims to achieve 31 dwellings per gross hectare by 2031, which slightly exceeds the desirable target of 30 dwellings per hectare listed for District Centres in the WAPC’s State Planning Policy 4.2: Activity Centres for Perth and Peel. This outcome would deliver on the expectations of Directions 2031 and Beyond and the City’s Local Planning Strategy. However, the transport and traffic implications of this level of development needs careful consideration.

2.2 Melville City Centre Structure Plan Transport Report

The Melville City Centre is the primary retail centre in the City and consists predominantly of the Garden City Shopping Centre and the City of Melville Council Offices, and is located approximately 4.5km to the east of the location of the Melville District Centre Activity Centre.

The Melville City Centre is expected to experience significant land use intensification, particularly additional retail development. In order to address future access requirements to the City Centre by all modes of transport, a Movement Strategy was developed in November 2013.

Like the Melville District Centre Activity Centre, the Melville City Centre is well-connected by road, with a network of roads of various classes providing access by private motor vehicle to the City Centre. However, access to the City Centre via public transport is far better served than the Melville District Activity Centre.

Booragoon Bus Station located on the corner of Marmion Street and Riseley Street is the major bus hub within the City (other than bus transfer facilities at Canning Bridge, Bull Creek and Murdoch train stations), and is served by a network of bus routes that provide direct access to central Perth, Fremantle, Cannington, as well as Canning Bridge, Bull Creek and Murdoch train stations – shown in Figure 6.

Peak headways for bus services at Booragoon Bus Station range from 5-20 minutes, however peak bus services align with commuter peak periods in the morning and late afternoon and provide a feeder service into the train network, and as such do not generally coincide with peak shopping hours for the Garden City Shopping Centre. This is similar to the bus routes that serve the Melville District Centre Activity Centre via the Canning Highway corridor.

The Movement Strategy recommends several transport related features to be installed when development within the Melville City Centre occurs. These include a cyclist end-of-trip facility and a fully managed parking system, as well recommending that the parking rate is less than the required rate when new development occurs across the Centre.

The current (2013) parking allocation at Garden City was 5.9 car bays per 100m² GLA. The Movement Strategy recommends that a ratio of 5.0 car bays per 100m², based on retail NLA of 120,000m², is the long term ratio to balance car parking availability versus supporting and encouraging access by non-car modes to the centre. This recommended ratio would result in a total of 6,000 car bays across Melville City Centre, which it is recommended should be part of a fully managed system providing forward information on car bay availability to drivers.
In order to support cycling to the centre it is recommended that at least one medium to large end-of-trip facility is provided in a central location in the City Centre, which should accommodate around 200 bikes plus showers, lockers and changing rooms.

*Figure 6 – Bus Routes to/from Booragoon Bus Station (source: Melville City Centre Structure Plan Transport Report, November 2013)*

2.3 Main Roads WA Canning Highway Concept Design

The WAPC is responsible for keeping the Metropolitan Region Scheme (MRS) under review and initializing changes where they are seen as necessary. The MRS sets out the broad pattern of land use for the whole Perth metropolitan region. The MRS is constantly under review to best reflect regional planning and development needs.

In 2004 the WAPC initiated MRS amendment 1100/33 for Canning Highway in the City, which dealt with the Primary Regional Road reserve for Canning Highway between Petra Street and Canning Bridge. The concept design (carriageway plans) for this amendment considered the corridor in two segments:
Riseley Street to Canning Bridge:
- Plans were drawn with continuous bus lanes in both directions.

Petra Street to Risley Street (note: the Melville District Centre Activity Centre is within this section):
- No continuous bus lane, but plans allow for bus queue jump lanes on approaches to the following key intersections:
  - Carrington Street
  - Stock Road
  - North Lake Road
  - Riseley Street

The MRS amendment process occurred between 2004-2009, at the time when Network City (2004) was the metropolitan planning strategy (superseded by Directions 2031), which identified Canning Highway as an Activity Corridor. This means that the aim was to development the corridor to be:

>`a place that accommodates all modes of transport and allows for a mix of land uses that maximises the community’s access to a variety of services and facilities, whilst minimising need for car travel. This is in order to ensure the creation of active, vibrant, safe and sustainable neighbourhoods (Network City, WAPC 2004).`

As an Activity Corridor, Canning Highway was planned to comprise several activity centres (including Melville District Centre), that would feature a concentrated mix of land uses and public transport facilities catered to the needs of the local population within an area covered approximately by an 800m radius from public transport stops.

These activity centres along the Canning Highway corridor are intended to become the focal points of the local communities by becoming places where local services are concentrated and at which public transport interchange occurs. These high intensity, mixed use activity centres will create what can best be described as 'peaks and troughs' of activity along the corridors.

The following are key objectives/targets that were designed to ensure the successful development of Canning Highway as an Activity Corridor:

1. The provision of excellent public transport along the entire length of the corridor that is accessible, regular and efficient, in order to provide a viable transport alternative to private vehicles.

2. The provision of excellent pedestrian and cyclist facilities along the entire length of the corridor in order to encourage walking and cycling as viable transport alternatives to vehicles.

3. The creation of activity centres that provide a range of mixed land uses (including residential) in order to encourage people to satisfy their needs locally, thus reducing travel demands.

4. The provision of predominantly residential, medium to high density development along the corridor, between activity centres to consolidate residential development, protect existing traditional suburban areas, provide a variety of housing types within local neighbourhoods and improve the feasibility of public transport.

5. The creation of appropriate street widths in order to minimise the divisive effect of the street and to ensure an appropriate setting for the creation of active, vibrant and safe ‘people-places’.

(MRS Amendment 1100/33, WAPC 2009)
As part of the background analysis to inform this high-level Traffic Implications Report, Main Roads WA (MRWA) Road Planning Branch confirmed that the following concept design (carriageway plan) developed as part of the 2004-2009 MRA amendment process remains the most recent planning for the Canning Highway corridor through the Melville District Centre Activity Centre area (drawing no. 60025763-SK-T002, dated December 2009).

Figures 7-9 show the typical cross-sections and carriageway pattern for the section of Canning Highway between Foss Street and Prinsep Road, which covers the entire section of Canning Highway that is within the Melville District Centre Activity Centre.

Figure 7 and Figure 8 show the typical cross-section for Canning Highway with and without bus queue jump lanes.

Figure 7 – Canning Highway Carriageway Pattern between Foss Street and Prinsep Road – Typical Cross-Section with Dual General Traffic Lanes plus Bus Queue Jump Lanes (source: MRS Amendment 1100/33, WAPC 2009)

Figure 8 – Canning Highway Carriageway Pattern between Foss Street and Prinsep Road – Typical Cross-Section with Dual General Traffic Lanes (source: MRS Amendment 1100/33, WAPC 2009)
Figure 9 shows the carriageway pattern for the section of Canning Highway between Foss Street and Prinsep Road. The carriageway pattern developed to support the MRS Amendment 1100/33 includes bus queue jump lanes along Canning Highway either side of the Stock Road intersection, other differences between the existing carriageway arrangement and this future arrangement impacting the Activity Centre include:

1. Murray Road / Canning Highway intersection
   - Existing right turn movement banned from Canning Hwy eastbound into Murray Rd southbound.
   - Right turn pocket installed for Canning Hwy westbound into Murray Rd northbound.

2. Hope Road / Canning Highway intersection
   - Right turn pocket installed for Canning Hwy eastbound into Hope Rd southbound.  
     *(Note: Hope Rd is a cul-de-sac 40m to the south of Canning Highway, this would have to be removed to warrant the introduction of a right turn pocket in this location).*

3. Access to commercial units on southern side of Canning Highway (between Hope Road and Waddell Road)
   - Left in/left out access only. Median island installed across Canning Hwy preventing right turns into and out of the car park.

4. Waddell Road / Canning Highway intersection
   - Right turn pocket installed for Canning Hwy eastbound into Waddell Rd southbound.  
     *(Note: Waddell Rd is a cul-de-sac 55m to the south of Canning Highway, this would have to be removed to warrant the introduction of a right turn pocket in this location).*

5. Stock Road / Canning Highway intersection
   - Left turn slip (under give-way control) installed from Canning Highway westbound into Stock Road southbound.

6. Moreing Road / Canning Highway intersection
   - Moreing Road closed and cul-de-sac prior to Canning Highway.

7. Prinsep Road / Canning Highway intersection
   - Right turn pocket installed for Canning Hwy eastbound into Prinsep Rd southbound.
   - Right turn pocket installed for Canning Hwy westbound into Prinsep Rd northbound.

8. Bus Queue Jump Lanes
   - Bus queue jump lanes installed eastbound and westbound on Canning Highway approaches to Stock Rd.
   - Eastbound: bus queue jump lane starts to the east of Murray Rd (immediately after the Dan Murphy's outlet) and runs up to the Stock Road intersection alongside the car parking for Melville Plaza. The bus lane ends prior to Prinsep Rd to the east of Stock Rd.
   - Westbound: bus queue jump lane starts to the west of Prinsep Rd (immediately after the Melville Recreation Centre) and runs up to the Stock Rd intersection alongside the car parking for Melville Recreation Centre. The bus lane ends prior to Waddell Rd to the west of Stock Rd.
Figure 9 – Canning Highway Carriageway Pattern between Foss Street and Prinsep Road (source: MRS Amendment 1100/33, WAPC 2009)
### 3. EXISTING CONDITIONS WITHIN MELVILLE DISTRICT CENTRE

#### 3.1 Existing Land Use

The Melville District Centre Activity Centre area encompasses some 20.41 hectares, with some of the major existing land uses in the centre including Melville Plaza Shopping Centre, LeisureFit Melville, A.H. Bracks Library, Melville Mazda and retail, office and commercial uses.

The centre is surrounded mainly by medium density residential (these areas have been coded R50 since 1999) and some low density residential with single dwellings.

Details of the existing non-residential floorspace in Melville District Centre Activity Centre is provided in Table 2. In addition, there are 196 existing residential dwellings in the Activity Centre.

**Table 2 – Existing Floorspace in Melville District Centre (source: City of Melville)**

<table>
<thead>
<tr>
<th>Planning Land Use Category (PLUC) (*)</th>
<th>Existing Floorspace 2016 Estimate (x)</th>
<th>Percentage of Total Floorspace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary / Rural</td>
<td>0m²</td>
<td>0%</td>
</tr>
<tr>
<td>Manufacturing / processing / fabrication</td>
<td>0m²</td>
<td>0%</td>
</tr>
<tr>
<td>Storage / distribution</td>
<td>0m²</td>
<td>0%</td>
</tr>
<tr>
<td>Service industry</td>
<td>650m²</td>
<td>3%</td>
</tr>
<tr>
<td>Shop / retail</td>
<td>9,470m²</td>
<td>39%</td>
</tr>
<tr>
<td>Other retail</td>
<td>1,248m²</td>
<td>5%</td>
</tr>
<tr>
<td>Office / business</td>
<td>2,200m²</td>
<td>9%</td>
</tr>
<tr>
<td>Health / welfare / community / services</td>
<td>650m²</td>
<td>3%</td>
</tr>
<tr>
<td>Entertainment / recreation / services</td>
<td>10,189m²</td>
<td>42%</td>
</tr>
<tr>
<td>Utilities / communications</td>
<td>62m²</td>
<td>0.25%</td>
</tr>
<tr>
<td>Residential (a)</td>
<td>0m²</td>
<td>0%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>24,469m²</td>
<td>100%</td>
</tr>
</tbody>
</table>

(*) Based on WAPC PLUC Codes.

(x) Existing floorspace estimates are based on the 2008 Land Use Survey undertaken by the Department of Planning, estimates of existing uses and recent development application information.

(a) Residential in the WAPC’s Commercial Land Use Survey does not typically include residential such as single, grouped or multiple dwelling on Residential Zone land. It aims to capture other residential uses such as aged, residential hotels, motels, other holiday housing, institutions and religious housing.

#### 3.2 Existing Road Layout

The Melville District Centre Activity Centre road network is dominated by the dual carriageway Canning Highway, which runs east-west through the Activity Centre and essentially splits the centre into two segments. In addition to the dual traffic lanes in both directions, additional turn pockets are provided at the Stock Road intersection for right turn movement from Canning Highway. A right turn pocket is also provided from Canning Highway westbound into Waddell Road northbound.

Figure 10 shows the existing carriageway pattern for the Canning Highway corridor between Murray Road and Stock Road. The local road network within and immediately adjacent to the Activity Centre is characterised by a grid network of local streets providing access to medium-low density residential properties.
Canning Highway is a Primary Distributor under MRWA’s road hierarchy, Stock Road south of Canning Highway is a Distributor A and Stock Road north of Canning Highway is a Local Distributor. All other roads within the Activity Centre are classified as Access Roads.

A description of each category of road previously mentioned is provided below (source: Main Roads WA). Table 3 provides further details on the criteria for each road classification within the hierarchy and Figure 11 shows the road hierarchy within and surrounding the Activity Centre.

- **Primary Distributors** (Canning Highway)
  Provide for major regional and inter-regional traffic movement and carry large volumes of generally fast moving traffic. Some are strategic freight routes and all are State Roads. They are managed by MRWA.

- **District Distributor A** (Stock Road south)
  Carry traffic between industrial, commercial and residential areas and generally connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining property. They are managed by local government.

- **Local Distributor** (Stock Road north)
  Roads that carry traffic within a cell and link District Distributors or Regional Distributors at the boundary, to access roads. The route of Local Distributors should discourage through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to, or serving the area. These roads should accommodate buses, but discourage trucks. They are managed by local government.

- **Access Roads:**
  Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by local government.
### Table 3 - MRWA Road Hierarchy Criteria (source: MRWA)

<table>
<thead>
<tr>
<th>CRITERIA AND ACTIVITY</th>
<th>PRIMARY DISTRIBUTOR</th>
<th>DISTRICT DISTRIBUTOR CATEGORY “A”</th>
<th>DISTRICT DISTRIBUTOR CATEGORY “B”</th>
<th>LOCAL DISTRIBUTOR/INDUSTRIAL ROAD</th>
<th>ACCESS ROAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predominant Activity</td>
<td>Major networks e.g. freeways</td>
<td>Important network</td>
<td>Less important network</td>
<td>Minor network</td>
<td>Limited access to traffic, forms part of local distribution network</td>
</tr>
<tr>
<td>Intersections</td>
<td>Controlled with appropriate measures e.g. grade separation, high speed traffic management measures</td>
<td>Controlled with appropriate measures, e.g. traffic signals</td>
<td>Controlled with appropriate Local Area Traffic Management</td>
<td>Controlled with minor Local Area Traffic Management</td>
<td>Self controlling with minor measures</td>
</tr>
<tr>
<td>Indicative Traffic Volume (except semirural areas)</td>
<td>Above 15 000 vehicles per day</td>
<td>Above 8000 vehicles per day</td>
<td>Above 6000 vehicles per day</td>
<td>Maximum desirable volume: 6000 vehicles per day</td>
<td>Maximum desirable volume: 3000 vehicles per day</td>
</tr>
<tr>
<td>Frontage Access Allowed</td>
<td>None on Controlled Access Hwys Limited on other routes</td>
<td>Prefer not to have residential access and limited commercial access, generally via service roads</td>
<td>Residential and commercial access due to historic status, Prefer to limit when and where possible</td>
<td>Yes, except at intersections where side entry is preferred and traffic signals are involved</td>
<td>Yes</td>
</tr>
<tr>
<td>Pedestrians Allowed</td>
<td>Preferably none at grade, Crossing should be controlled</td>
<td>With positive measures for control and safety, e.g. pedestrian signals</td>
<td>With appropriate measures for control and safety, e.g. median/lanes refuge</td>
<td>With minor safety measures</td>
<td>Yes</td>
</tr>
<tr>
<td>Recommended Operating Speed</td>
<td>60 – 110 km/h (depending on design characteristics)</td>
<td>60 – 70 km/h</td>
<td>50 – 60 km/h (desire speed)</td>
<td>50 km/h</td>
<td>30 km/h</td>
</tr>
<tr>
<td>Buses Allowed</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>If required</td>
</tr>
<tr>
<td>Parking Allowed</td>
<td>No</td>
<td>Generally no. Clearways where necessary</td>
<td>Not preferred. Clearways where necessary</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Truck Routes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Only to service properties</td>
<td>Only to service properties</td>
</tr>
<tr>
<td>Responsibility</td>
<td>Main Roads Western Australia</td>
<td>Local Government</td>
<td>Local Government</td>
<td>Local Government</td>
<td>Local Government</td>
</tr>
</tbody>
</table>

Ideally, every road should meet all the criteria of one RH type. However, many roads meet some of the criteria appropriate to different road types and are difficult to define. Where precise definition of the road type is difficult, comparison with roads of similar role in other local government areas may assist.

### Figure 11 – Road Hierarchy (source: Main Roads WA)
Figure 12 shows the posted speed limits of the road network within and surrounding the Activity Centre. Canning Highway has a posted speed limit of 60km/h, as does Stock Road south of Canning Highway. All other roads have a posted speed limit of 50km/h.

It should be noted that the black hatching on Figure 12 indicate the streets where 40km/h School Zone speed restrictions apply. These are on local streets around primary schools outside of the Activity Centre area and include: Bicton Primary School (to the west), Our Lady of Fatima Catholic Primary School (to the southwest) and Mel Maria Catholic Primary School (to the northeast).

*Figure 12 – Road Speed Limits (source: Main Roads WA)*

### 3.3 Existing Access Arrangements

#### 3.3.1 Canning Highway Corridor

The Melville District Centre Activity Centre area is typical of the Canning Highway corridor, with a combination of a single crossover for each individual residential dwelling directly onto Canning Highway and single or combined crossovers for commercial properties directly onto Canning Highway. Some of these residential and commercial crossovers are restricted to left-in/left-out movements only, whilst others allow for all movements to be made.

The minor roads that intersect with Canning Highway through the Activity Centre are typically uncontrolled (other than the traffic signal controlled intersection of Stock Road/Canning Highway). The majority of the uncontrolled intersections between Canning Highway and minor roads through the Activity Centre have a restriction on movements that can be made, see Section 4.2 for further details and Figure 13.
3.3.2 Local Road Network

Access arrangements across the local road network within the Melville District Centre Activity Centre area is characterised by standard single crossovers for each individual residential dwelling onto the local road network.

The two local roads of Hope Road and Waddell Road are both no through routes with bollards installed approx. 40m (Hope Road) and 55m (Waddell Road) south of the Canning Highway corridor. See Section 4.2 for further details.

3.4 Existing Traffic Volumes

Historic traffic count data was made available by the City. The majority of the data provided was from 2007-2008 with some data from 2002-2004. The traffic count data provided included average weekday two-way link volumes as well as 85th percentile vehicle speeds at the various count locations.

The count locations cover the major local streets within the Activity Centre under the control of the City and do not cover Canning Highway which is under the control of MRWA.

Figure 14 shows the locations where the historic traffic data was collected, and bullet points below Figure 14 highlight the keys aspects of this data.
Stock Road south of Canning Highway – District Distributor A road with 2007 daily traffic volumes at the upper end of the 8,000-15,000 vehicle per day range for this category of road with 14,988 vehicles per day recorded. Close to the level of traffic expected for a Primary Distributor road. The 85th percentile vehicle speed is 63km/h, slightly above the 60km/h posted speed limit.

Stock Road north of Canning Highway – Local Distributor road with 2002 daily traffic volumes at the upper end of the maximum desirable volume of 6,000 vehicles per day for this category of road with 5,283 vehicles per day recorded. The 85th percentile vehicle speed is 59km/h, which is above the 50km/h posted speed limit (which was enforced by law from December 1, 2001).

All other Local Roads – All other local roads shown in Figure 14 are categorised as Access Roads, and all have historic (2002-2008) daily traffic volumes well below the desirable maximum of 3,000 vehicles per day for this category of road. However, in the majority of cases the 85th percentile vehicle speed on these local roads is in excess of the 50km/h posted speed limit, with five of seven local road locations having an 85th percentile speed of between 56-61km/h.

Recent traffic volume data was requested from MRWA (collected by the automated SCATS system) for the Canning Highway and Stock Road intersection – this data is presented in Table 4.

In addition, link volume data was requested from MRWA (collected by the automated SCATS system) for the puffin crossing across Canning Highway opposite the pedestrian entrance to Melville Plaza Shopping Centre – this data is presented in Table 5.
### Table 4 – Traffic Volumes at the Canning Highway and Stock Road Intersection – 22-26 February 2016 (source: MRWA)

<table>
<thead>
<tr>
<th>Approach</th>
<th>Average Weekday Daily Volume</th>
<th>Average Weekday AM Peak Volume (0800-0900)</th>
<th>Average Weekday PM Peak Volume (1700-1800)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock Road north</td>
<td>3,608</td>
<td>357 (9.9%)</td>
<td>254 (7.0%)</td>
</tr>
<tr>
<td>Canning Highway east</td>
<td>12,498</td>
<td>919 (7.4%)</td>
<td>988 (7.9%)</td>
</tr>
<tr>
<td>Stock Road south</td>
<td>4,467</td>
<td>435 (9.7%)</td>
<td>367 (8.2%)</td>
</tr>
<tr>
<td>Canning Highway west</td>
<td>14,613</td>
<td>971 (6.6%)</td>
<td>1,156 (7.9%)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>35,187</strong></td>
<td><strong>2,682 (7.6%)</strong></td>
<td><strong>2,765 (7.9%)</strong></td>
</tr>
</tbody>
</table>

1. The percentages in columns number three and four indicate the percentage of average weekday traffic within the peak hour for each approach.

2. Typically, in the region of 10% of daily traffic travels through an intersection in the AM and PM peak hours. However, in the case of the Canning Highway and Stock Road intersection in the region of 8% of daily traffic travels through the intersection in the peak hours.

3. The lower percentage of daily traffic through the intersection during the peak hours reflects the nature of the Canning Highway corridor through the Melville District Center Activity Centre, with a consistently high volume of traffic through the intersection for the majority of the day, which reflects the volume of through traffic along the Canning Highway corridor.

4. Between 0700-1900 the total hourly traffic through the intersection is within the range of 2,050-2,750.

### Table 5 – Traffic Volumes at the Canning Highway Puffin Crossing opposite Melville Plaza Shopping Centre – 22-26 February 2016 (source: MRWA)

<table>
<thead>
<tr>
<th>Approach</th>
<th>Average Weekday Daily Volume</th>
<th>Average Weekday AM Peak Volume (0800-0900)</th>
<th>Average Weekday PM Peak Volume (1700-1800)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canning Highway east</td>
<td>13,427</td>
<td>1,025 (7.6%)</td>
<td>982 (7.3%)</td>
</tr>
<tr>
<td>Canning Highway west</td>
<td>13,785</td>
<td>960 (7.0%)</td>
<td>1,066 (7.7%)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>27,213</strong></td>
<td><strong>1,985 (7.3%)</strong></td>
<td><strong>2,048 (7.5%)</strong></td>
</tr>
</tbody>
</table>

1. The data shown in Table 5 (Canning Highway puffin crossing opposite Melville Plaza Shopping Centre) is consistent with the data shown in Table 4 (Canning Highway and Stock Road Intersection).

In addition to the above information, Flyt undertook peak hour observations at the puffin crossing to determine the number of times the facility was called and the number of pedestrians crossing in this location. This information is shown in Table 6 and Table 7.
Table 6 – Canning Highway Puffin Crossing – AM Peak Usage – 22 March 2016 (source: Flyt site observations)

<table>
<thead>
<tr>
<th>Time</th>
<th>Puffin Crossing Call Reference No.</th>
<th>Number of Pedestrians Crossing North to South</th>
<th>Number of Pedestrians Crossing South to North</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800-0814</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>0815-0829</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>0830-0844</td>
<td>7</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>0845-0859</td>
<td>10</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>12 Calls</td>
<td>11 Pedestrians 10 Pedestrians</td>
</tr>
</tbody>
</table>

During the AM peak hour the puffin crossing was called 12 times and catered for the movement of 21 pedestrians across Canning Highway.

Table 7 – Canning Highway Puffin Crossing – PM Peak Usage – 22 March 2016 (source: Flyt site observations)

<table>
<thead>
<tr>
<th>Time</th>
<th>Puffin Crossing Call Reference No.</th>
<th>Number of Pedestrians Crossing North to South</th>
<th>Number of Pedestrians Crossing South to North</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700-1714</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1715-1729</td>
<td>7</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1730-1744</td>
<td>13</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1745-1759</td>
<td>17</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>20 Calls</td>
<td>23 Pedestrians 31 Pedestrians</td>
</tr>
</tbody>
</table>

During the PM peak hour the puffin crossing was called 20 times and catered for the movement of 54 pedestrians across Canning Highway.
The greater use of the puffin crossing during the PM peak hour (compared to the AM peak hour) was associated with those walking to/from the shopping centre.

Figure 15 and Figure 16 show the profile of eastbound and westbound traffic crossing the Canning Highway puffin crossing opposite Melville Plaza Shopping Centre on both a weekday and a Saturday. The data shows that the weekday profile has an AM peak and PM peak, however traffic levels remain consistently high in both directions during the entire day between the two peak periods. Whereas the Saturday profile shows that traffic in both directions builds to a late morning/lunchtime peak before trailing off during the afternoon.

*Figure 15 – Profile of Average Weekday Traffic at the Canning Highway Puffin Crossing opposite Melville Plaza Shopping Centre – February 2016 (source: MRWA)*

*Figure 16 – Profile of Average Saturday Traffic at the Canning Highway Puffin Crossing opposite Melville Plaza Shopping Centre – February 2016 (source: MRWA)*
3.5 Existing Characteristics

General travel characteristics for travel in the area are recorded through the Census. 2011 Census statistics for the area indicate that there is a significantly lower proportion of households with 1 or more cars than the remainder of Perth or the City of Melville – as shown in Table 8. This is in part due to the presence of elderly housing options however given that housing stock is in situ and future agglomeration may occur, this trend is not likely to substantially be altered through the addition of more high density residential dwellings in the Activity Centre.

Table 8 - Census characteristics (source: CoM)

<table>
<thead>
<tr>
<th>Number of Cars per Household</th>
<th>Area</th>
<th>CoM</th>
<th>Perth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households without a car</td>
<td>10%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Households with 1 car</td>
<td>54%</td>
<td>32%</td>
<td>32%</td>
</tr>
<tr>
<td>Households with 2 or more cars</td>
<td>36%</td>
<td>59%</td>
<td>56%</td>
</tr>
</tbody>
</table>

3.6 Existing Road Network Performance

A range of measures and data was captured to understand the existing road network performance, as set out in the following sub sections.

3.6.1 Existing Traffic Conditions Measurement

In addition to the information available from MRWA and obtained during site observations (outlined in Section 3.4), typical traffic conditions were examined using the Google Traffic measurement tool. This provides an indication as to the typical traffic conditions using a range of GPS or Bluetooth recordings from hand held or in vehicle devices. Weekday AM and PM peak periods were examined to extract the “worst case” indicators of slow or peak traffic conditions. These heat maps are shown in Figure 17 for the AM peak and Figure 18 for the PM peak.

These plots indicate that there is a traffic build-up at the signalised intersection of Canning Highway and Stock Road during both peak periods, which would be considered a typical outcome for signalised intersections involving a Primary Distributor road.

In addition to these plots a site visit was conducted during the AM and PM peak periods on Tuesday 22 March 2016 to view the operation of the road network through the Activity Centre area. On-site observations in relation to queue lengths are provided below each of the Google Traffic figures as additional commentary in relation to the accuracy of the Google Traffic data.
In broad terms the Google Traffic measurement tool accurately reflects the areas of slow moving traffic through the Activity Centre observed during site visits in March 2016 during the AM peak hour.

**Stock Road southbound** – the measurement tool accurately reflects the slow moving or queued traffic witnessed during AM peak site observations.

**Canning Highway westbound** – the measurement tool accurately reflects the build-up of slow moving queued traffic on the approach to the Stock Road intersection, which extends back to adjacent to the Melville Recreation Centre. However, the westbound slow moving traffic shown in the figure above adjacent to Melville Plaza Shopping Centre was not witnessed during AM peak site observations (other than a minimal short term queue resulting from the activation of the puffin crossing facility).

**Stock Road northbound** – the measurement tool accurately reflects the slow moving or queued traffic witnessed during AM peak site observations.

**Canning Highway eastbound** – the measurement tool accurately reflects the slow moving or queued traffic witnessed during AM peak site observations.
In broad terms the Google Traffic measurement tool accurately reflects the areas of slow moving traffic through the Activity Centre observed during site visits in March 2016 during the PM peak hour.

- **Stock Road southbound** – the measurement tool accurately reflects the slow moving or queued traffic witnessed during PM peak site observations.
- **Canning Highway westbound** – the measurement tool accurately reflects the slow moving or queued traffic witnessed during PM peak site observations.
- **Stock Road northbound** – the measurement tool accurately reflects the slow moving or queued traffic witnessed during PM peak site observations.
- **Canning Highway eastbound** – the measurement tool accurately reflects the slow moving or queued traffic witnessed during PM peak site observations.

### 3.6.2 Existing SIDRA Intersection Modelling

Based on the 2016 traffic data obtained from MRWA and observations made during site visits, Flyt developed 2016 SIDRA intersection models for the Stock Road/Canning Highway intersection and Murray Road/Canning Highway intersection. These models give an indication of the existing operation of these intersections.
3.6.3 Stock Road/Canning Highway Intersection

Figure 19 shows the intersection layout as modelled in SIDRA and Figure 20 shows the AM peak (0800-0900) modelled results and Figure 21 shows the PM peak (1700-1800) modelled results.

*Figure 19 – Stock Road/Canning Highway Intersection SIDRA Model*
### Figure 20 – Stock Road/Canning Highway Intersection SIDRA Model Results – 2016 AM Peak 0800-0900

<table>
<thead>
<tr>
<th>Movement Performance - Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mov ID</strong></td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>South: Stock Road South</td>
</tr>
<tr>
<td>L2</td>
</tr>
<tr>
<td>T1</td>
</tr>
<tr>
<td>R2</td>
</tr>
<tr>
<td>Approach</td>
</tr>
<tr>
<td>East: Canning Hwy East</td>
</tr>
<tr>
<td>L2</td>
</tr>
<tr>
<td>T1</td>
</tr>
<tr>
<td>R2</td>
</tr>
<tr>
<td>Approach</td>
</tr>
<tr>
<td>North: Stock Rd North</td>
</tr>
<tr>
<td>L2</td>
</tr>
<tr>
<td>T1</td>
</tr>
<tr>
<td>R2</td>
</tr>
<tr>
<td>Approach</td>
</tr>
<tr>
<td>West: Canning Hwy West</td>
</tr>
<tr>
<td>L2</td>
</tr>
<tr>
<td>T1</td>
</tr>
<tr>
<td>R2</td>
</tr>
<tr>
<td>Approach</td>
</tr>
<tr>
<td>All Vehicles</td>
</tr>
</tbody>
</table>

### Figure 21 – Stock Road/Canning Highway Intersection SIDRA Model Results – 2016 PM Peak 1700-1800

<table>
<thead>
<tr>
<th>Movement Performance - Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mov ID</strong></td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>South: Stock Road South</td>
</tr>
<tr>
<td>L2</td>
</tr>
<tr>
<td>T1</td>
</tr>
<tr>
<td>R2</td>
</tr>
<tr>
<td>Approach</td>
</tr>
<tr>
<td>East: Canning Hwy East</td>
</tr>
<tr>
<td>L2</td>
</tr>
<tr>
<td>T1</td>
</tr>
<tr>
<td>R2</td>
</tr>
<tr>
<td>Approach</td>
</tr>
<tr>
<td>North: Stock Rd North</td>
</tr>
<tr>
<td>L2</td>
</tr>
<tr>
<td>T1</td>
</tr>
<tr>
<td>R2</td>
</tr>
<tr>
<td>Approach</td>
</tr>
<tr>
<td>West: Canning Hwy West</td>
</tr>
<tr>
<td>L2</td>
</tr>
<tr>
<td>T1</td>
</tr>
<tr>
<td>R2</td>
</tr>
<tr>
<td>Approach</td>
</tr>
<tr>
<td>All Vehicles</td>
</tr>
</tbody>
</table>
The AM peak and PM peak SIDRA results for the Stock Road/Canning Highway intersection are broadly representative of on-site observations of queuing.

The results show that both Stock Road north and Stock Road south experience delays and queuing for traffic seeking to access the regional road network (not necessarily associated with the Activity Centre itself) during the peak hours.

- **Stock Road north** – AM peak approach LOS F (approx. 135m queue) / PM peak approach LOS E (approx. 65m queue)
  - On-site observation corroborates this level of queuing.

- **Stock Road south** – AM Peak approach LOS F (approx. 215m queue) / PM peak approach LOS F (approx. 165m queue)
  - On-site observation corroborates this level of queuing.

### 3.6.4 Murray Road/Canning Highway Intersection

Figure 22 shows the intersection layout as modelled in SIDRA and Figure 23 shows the AM peak (0800-0900) modelled results and Figure 24 shows the PM peak (1700-1800) modelled results.

*Figure 22 – Murray Road/Canning Highway Intersection SIDRA Model*
The AM peak and PM peak SIDRA results for the Murray Road/Canning Highway intersection are broadly representative of on-site observations of minimal traffic delays.

The results show that all movements operate with a LOS C or better across both peak hours, with the majority of movements operating with a LOS A.
4. **FUTURE CONDITIONS WITHIN MELVILLE DISTRICT CENTRE**

4.1 **Future Land Use**

The City of Melville Local Planning Strategy seeks to concentrate population growth and development in activity centres, which can be served by high frequency public transport services to reduce the reliance upon trips to/from the activity centre being reliant upon private motor vehicle access.

It is anticipated that the Activity Centre could accommodate the following additional land use by 2031.

- 354 new dwellings (a total of 550 dwellings including the 196 existing dwellings);
- 7,370m² new commercial floorspace (a total of 21,000m² of commercial floorspace including the existing 13,630m²).

For the purposes of this high-level Traffic Implications Report a number of assumptions have been made in relation to the form and location of the additional land uses. These assumptions are set out in the following sections.

4.1.1 **New Residential Dwellings Assumptions**

**Form of Residential Dwellings**

- Existing residential development within the Activity Centre is typically set back from the Canning Highway corridor behind commercial land uses. A notable exception is the pocket of residential properties to the north of the corridor between Stock Road and Prinsep Road.
- The commercial land uses fronting the Canning Highway corridor are surrounded by medium density residential development with areas of low density/single dwellings.
- It is assumed that redevelopment of residential areas will occur over time as private Lots are redeveloped as well as consolidated and redeveloped, providing opportunities for higher density residential dwellings to be provided within the Activity Centre.

**Location of Residential Dwellings**

- It is assumed that residential development will continue to fringe commercial land uses.
- It is assumed that medium density housing could be provided at the fringes of the Activity Centre as redevelopment of single or multiple Lots occurs.
- It is assumed that higher density development on a larger scale would only be likely through the redevelopment of multiple Lots with a frontage with Canning Highway between Stock Road and Prinsep Road.

4.1.2 **New Commercial Floorspace Assumptions**

**Form of Commercial Land Use**

- It is assumed that the development of new commercial floorspace will take the form of an uplift in the existing commercial offer within the Activity Centre. As such the split between the various commercial land uses for the new floorspace would be consistent with the existing split as follows:
  - 73% - shop/retail
  - 10% - other retail
  - 17% - office/business
The above split in commercial floorspace would result in the following commercial offer within the Activity Centre in the future:

- 5,380m² of new 'shop/retail' floorspace
  - Total of 14,850m² of 'shop/retail' floorspace including the existing 9,470m²
- 737m² of new 'other retail' floorspace
  - Total of 1,985m² of 'other retail' floorspace including the existing 1,248m²
- 1,253m² of new 'office/business' floorspace
  - Total of 3,453m² of 'office/business' floorspace including the existing 2,200m²

**Location of Commercial Land Use**

Based upon the City of Melville Local Planning Strategy and the draft Melville District Centre Activity Centre Plan, it is assumed that new commercial land uses will be located adjacent to the Canning Highway corridor, as is the case at present.

It is assumed that the most likely scenario for additional commercial development across the Activity Centre is as follows:

- 'Shop/Retail' – to predominantly be delivered through the expansion or redevelopment of Melville Plaza Shopping Centre.
  - For the purpose of this study it has been assumed that all new 'shop/retail' commercial land use will be delivered within the existing Melville Plaza Shopping Centre site.
- 'Other Retail' – to be delivered through the redevelopment of existing commercial premises.
  - For the purpose of this study it has been assumed that all new 'other retail' commercial land use will be delivered along the southern side of the Canning Highway corridor.
- 'Office/Business' – to be delivered through the redevelopment of existing commercial premises.
  - For the purpose of this study it has been assumed that all new 'office/business' commercial land use will be delivered at prominent locations within the Activity Centre, including corner sites at the intersection of Canning Highway and Stock Road, Waddell Road (southern side of the corridor), Hope Road (southern side of the corridor), Murray Road (southern side of the corridor).

**4.2 Future Road Layout and Access Arrangements**

As discussed in Section 2.3, in 2004 the WAPC initiated MRS amendment 1100/33 for Canning Highway in the City, which dealt with the Primary Regional Road reserve for Canning Highway between Petra Street and Canning Bridge. The concept design (carriageway plans) for this amendment remains the most recent planning for the Canning Highway corridor through the Melville District Centre Activity Centre area.

Figure 9 shows the carriageway pattern for the section of Canning Highway between Foss Street and Prinsep Road. The carriageway pattern developed to support the MRS Amendment 1100/33 includes bus queue jump lanes along Canning Highway either side of the Stock Road intersection. Other differences between the existing carriageway arrangement and this future arrangement impacting the Activity Centre are discussed below with assumptions/commentary in red text regarding implementation of each aspect of the concept design in the future.
Murray Road / Canning Highway intersection (see Figure 25)
  o Existing right turn movement banned from Canning Hwy eastbound into Murray Rd southbound.
    ▪ At the Weld Rd/Canning Highway intersection (approx. 125m to the west of the Murray Rd/Canning Hwy intersection), the concept plan includes a right turn pocket from Canning Hwy eastbound into Weld Rd southbound. This would provide access for eastbound traffic on Canning Highway to access Murray Rd properties located between Canning Hwy and Boyd St.
  o Right turn pocket installed for Canning Hwy westbound into Murray Rd northbound.
    ▪ The introduction of a right turn pocket would improve the safety of the right turn movement from Canning Hwy westbound into Murray Rd northbound, as well as ensuring that right turning traffic does not impede the two through lanes on Canning Highway westbound.

Figure 25 – Canning Highway Carriageway Pattern between Weld Road and Murray Road (source: MRS Amendment 1100/33, WAPC 2009)

Hope Road / Canning Highway intersection (see Figure 26)
  o Right turn pocket installed for Canning Hwy eastbound into Hope Rd southbound.
    (Note: Hope Rd is a cul-de-sac 40m to the south of Canning Highway, this would have to be removed to warrant the introduction of a right turn pocket in this location).
    ▪ It appears from historical aerial photography that bollards were installed across Hope Rd approx. 40m to the south of Canning Highway in 2008. Unless required for local access or network operations reasons, then Hope Rd should continue to operate as a no through route. As such the right turn pocket into Hope Rd would not be required and a solid median island could be provided across Canning Hwy at this intersection.
Puffin Crossing opposite Melville Plaza Shopping Centre (see Figure 26)
  - It is unclear from the concept plan if the existing puffin crossing is to be retained or not. We would support the retention of this facility due to the key role it plays in providing a safe and convenient crossing of Canning Hwy between the northern and southern side of the Activity Centre with minimal impact on vehicle flows.

Access to Commercial units on southern side of Canning Highway (see Figure 26) (between Hope Road and Waddell Road)
  - Left in/left out access only. Median island installed across Canning Hwy preventing right turns into and out of the car park. See Waddell Road assumptions/commentary text below.

Waddell Road /Canning Highway intersection (see Figure 26)
  - Right turn pocket installed for Canning Hwy eastbound into Waddell Rd southbound. (Note: Waddell Rd is a cul-de-sac 55m to the south of Canning Highway, this would have to be removed to warrant the introduction of a right turn pocket in this location).
    - It is unclear from historical aerial photography (due to overhanging tree canopy) when the bollards were installed across Waddell Rd (approx. 55m to the south of Canning Highway). It is possible these were installed in 2008 at the same time as those across Hope Rd. Unless required for local access or network operations reasons, then Waddell Rd should continue to operate as a no through route. As such the right turn pocket into Waddell Rd would not be required and a solid median island could be provided across Canning Hwy at this intersection.
    - If the right turn pocket into Waddell Rd is not required in the future, it would be possible to retain the existing break in the median island to allow for the existing right turn movements out of the commercial units on the southern side of Canning Hwy. However, in order to rationalise traffic movements on the section of Canning Hwy between Hope Rd and Waddell Rd, it would be preferred to remove the right turn out from the commercial units and as redevelopment occurs over time, seek to rationalise a single left-in/left-out on Canning Hwy and provide crossover to developments from Hope Rd and Waddell Rd.

Figure 26 – Canning Highway Carriageway Pattern between Hope Road and Waddell Road (source: MRS Amendment 1100/33, WAPC 2009)
Stock Road / Canning Highway intersection (see Figure 27)
  - Left turn slip (under give-way control) installed from Canning Highway westbound into Stock Road southbound.
    - The introduction of a left turn slip under give-way control will improve the operation of the left turn movement. In addition, the left turn slip (as shown in the figure) can utilise the bus queue jump lane but still allow for bus priority at the stop line.

Moreing Road / Canning Highway intersection (see Figure 27)
  - Moreing Road closed and cul-de-sac prior to Canning Highway.
    - It is likely that the closure of Moreing Rd at the intersection with Canning Hwy would be required to facilitate bus priority through the Stock Road intersection. Without the closure of Moreing Rd the eastbound bus lane taper after the Stock Rd intersection could act as an informal de-acceleration and acceleration lane for left turning traffic into and out of Moreing Rd.
    - Access to properties along Moreing Rd between Canning Hwy and Swan Rd, could in the future be made via Stock Rd and Swan Rd.

Figure 27 – Canning Highway Carriageway Pattern between Stock Road and Moreing Road (source: MRS Amendment 1100/33, WAPC 2009)
Prinsep Road / Canning Highway intersection (see Figure 28)
- Right turn pocket installed for Canning Hwy eastbound into Prinsep Rd southbound.
- Right turn pocket installed for Canning Hwy westbound into Prinsep Rd northbound.
  - The introduction of the right turn pockets would improve the safety of the right turn movement from Canning Hwy into Prinsep Rd north and Prinsep Rd south, as well as ensuring that right turning traffic does not impede the two through lanes on Canning Highway.

*Figure 28 – Canning Highway Carriageway Pattern at Prinsep Road (source: MRS Amendment 1100/33, WAPC 2009)*

Bus Queue Jump Lanes (see Figure 26 and Figure 27)
- Bus queue jump lanes installed eastbound and westbound on Canning Highway approaches to Stock Rd.
- Eastbound: bus queue jump lane starts to the east of Murray Rd (immediately after the Dan Murphy’s outlet) and runs up to the Stock Road intersection alongside the car parking for Melville Plaza. The bus lane ends prior to Prinsep Rd to the east of Stock Rd.
- Westbound: bus queue jump lane starts to the west of Prinsep Rd (immediately after the Melville Recreation Centre) and runs up to the Stock Rd intersection alongside the car parking for Melville Recreation Centre. The bus lane ends prior to Waddell Rd to the west of Stock Rd.
The access arrangements at the Waddell Rd and Canning Hwy intersection would be complicated with the introduction of both the bus queue jump facility and right turn pocket into Waddell Rd south. The introduction of both of these would create an environment where right turning traffic from Waddell Rd north into Canning Hwy westbound would have to cross four lanes of eastbound traffic (a shared bus lane and left turn lane, two ahead lanes and the right turn pocket).

Our experience on other projects is that MRWA will no longer support uncontrolled right turn movements across more than two lanes, however if the third lane is a bus lane this may be supported.

As previously discussed in this section the requirement for the right turn pocket into Waddell Rd south, which is not currently a through route, is unlikely. Therefore, it may be possible in the longer term to retain the Waddell Rd and Canning Hwy intersection as uncontrolled and allowing right turn movements from Waddell Rd north into Canning Hwy westbound across three lanes (a shared bus lane and left turn lane and two ahead lanes).

Note: MRWA may still have concerns regarding the use of the bus lane by left turning general traffic, with the Concept Design appearing to enable left turning traffic wishing to access Stock Road north to move across into the shared bus lane/left turn lane prior to the Waddell Rd intersection and therefore creating a scenario where three lanes of general traffic would need to be crossed by right turning traffic from Waddell Rd north (notwithstanding the fact that road rules dictate that vehicles can only enter a bus lane to turn left within 100m of the intersection and for Stock Rd left turning traffic this would be after the Waddell Rd intersection).

4.3 Future Traffic Volumes

A primary source of traffic generation forecasts for new developments in Australia is the NSW Roads and Traffic Authority (RTA) Guide to Traffic Generating Developments published in October 2002. The Guide outlines all aspects of traffic generation relating to new developments that must be considered, and the information provided within the Guide gives background into the likely impacts of traffic from various types of developments. The Guide provides vehicle trips rates for various land uses, based on a series of traffic counts completed across a range of sites within NSW.

The RTA Guide has been used as a basis to determine the level of additional traffic that could be generated by the planned new development within the Melville District Centre Activity Centre. It should be noted that whilst new development will be facilitated within the Activity Centre through the redevelopment of existing Lots/amalgamation of Lots, the reduction in existing traffic generated by land uses occupying locations for future redevelopment have not been considered in this report.

This is due to the lack of detail relating to the precise location of anticipated new developments and the existing land use that would be replaced by a particular new development scheme. As such the potential additional traffic generation discussed within this report needs to consider the overall shift in trip generation within a higher density Activity Centre such as this area.
4.3.1 New Residential Dwellings Traffic Generation

It is anticipated that new residential development will be delivered within the Activity Centre in a form that is most closely aligned with 'Medium Density' residential development (as opposed to traffic generated by either 'Low Density Dwellings' or 'High Density Dwellings' – note: 'Low Density' refers to typical suburban subdivisions with limited PT connections and 'Higher Density' refers to typical apartment buildings greater than 6 stories not within Activity Centres such as this).

The traffic generation details for Medium Density residential development is provided below (source: RTA Guide to Traffic Generating Developments, October 2002).

- Smaller units and flats (up to two bedrooms)
  - Daily vehicle trips = 4.0-5.0 per dwelling
  - Weekday peak hour vehicle trips = 0.4-0.5 per dwelling

- Larger units and town houses (three or more bedrooms)
  - Daily vehicle trips = 5.0-6.5 per dwelling
  - Weekday peak hour vehicle trips = 0.5-0.65 per dwelling

For the purposes of this report it is assumed that of the 354 new dwellings that are planned to be provided within the Activity Centre, 50% are considered to be smaller units and flats, whilst 50% are considered to be larger units and town houses. In addition, for the purposes of this report it is assumed that vehicle trips generated by each type of dwelling are at the low end of the traffic generation range for smaller units (4 vehicle trips per day).

This is on the basis of Melville being a mixed use Activity Centre with high frequency public transport, the existing low proportion of multiple car ownership and other strategic levers (such as reduced retail land use parking rates) that are being introduced by the City of Melville.

As such the vehicle trip generation at full build out would be as follows:

- Total of 354 medium density dwellings
  - Total daily vehicle trips = 1,416 vehicle trips per day
  - Total weekday peak hour vehicle trips = 142 vehicle trips per weekday peak hour

4.3.2 New Commercial Floorspace Traffic Generation

It is anticipated that new commercial floorspace within the Activity Centre will be delivered through additional retail and office/business land uses. The City’s draft Melville District Centre Activity Centre Plan (March 2016), identifies that 7,370m² of new commercial floorspace could be provided within the Activity Centre, which would be a total of 21,000m² of commercial floorspace including the existing 13,630m².

The draft Activity Centre Plan suggests that the additional 7,370m² of new commercial floorspace could result in the following additional commercial offer within the Activity Centre in the future:

- 5,380m² of new ‘shop/retail’ floorspace
- 737m² of new ‘other retail’ floorspace
- 1,253m² of new ‘office/business’ floorspace
The traffic generation details for the additional commercial land uses is provided below (source: RTA Guide to Traffic Generating Developments, October 2002). Note: the trip rate used for ‘other retail’ is the same as for ‘shop/retail’, due to the lack of information available at present relating to the possible ‘other retail’ uses.

There is also a significant daily fluctuation and peak hour differential based on shopping patterns and also the impact of linked trips. The RTA Guide sets out the differences between Thursday PM Peak (considered to be the absolute peak of retail trip generation during the week), other days and also Saturdays. As shown in Figure 16, peak vehicle movements through the area are higher on a Saturday than weekdays, therefore this pattern alone corroborates with the RTA Guide.

In relation to linked trips, the RTA Guide states that this trip is "a trip taken as a side-track from another trip, for example, a person calling in to the centre on the way home from work". Manual observations indicated this was prevalent at this centre in the afternoon peak in particular. People were also observed undertaking multi-purpose trips (for example visiting one store for perishables and another for food/beverages).

Both of these types of vehicle trips have an impact on the total number of trips generated for the development in the future as both of these behaviours are likely to continue. The RTA suggests discounts of 20% of total vehicle trip generation to reflect the impact of these types of trips in the peak periods.

In addition to these forms of trips, fluctuations in weekdays and times of the year are also prevalent. For instance, the RTA guide states that Saturday vehicle trip generation is around 126% of that observed for Thursdays (again, as highlighted in Figure 15 and Figure 16 this can be corroborated from empirical data). There are also seasonal variations where higher volumes would be recorded – most noticeable around December and traditional school holiday periods of June/July.

For the purposes of this report, the peak volumes shown relate to Thursday PM peak periods. For the AM peak period, the RTA Guide and WAPC Guidelines set out that the peak hour vehicle trip generation for these sorts of centres are around a quarter of the PM peak primarily on the basis that many shops or offices are only just opening and people are not undertaking shopping trips at that time of day.

- **Retail – Shopping Centre (10,000m²-20,000m² Shopping Centre)**
  - Daily vehicle trips = 62 per 100m² GLFA
  - Weekday (Thursday PM Only) peak hour vehicle trips = 6.2 per 100m² GLFA

- **Office and Commercial (average of all possible office and commercial land uses)**
  - Daily vehicle trips = 10 per 100m² GFA
  - Weekday peak hour vehicle trips = 2 per 100m² GFA

As such the vehicle trip generation for the additional commercial land uses would be as follows:

- **Retail – Shopping Centre**
  - Daily vehicle trips (with 20% linked trip factor) = 2,668 vehicle trips per day
  - Weekday (Thursday PM only) peak hour vehicle trips (with 20% linked trip factor) = 267 vehicle trips per Thursday PM peak hour

- **Retail – Other Retail**
  - Daily vehicle trips (with 20% linked trip factor) = 366 vehicle trips per day
  - Weekday peak hour vehicle trips (with 20% linked trip factor) = 37 vehicle trips per weekday peak hour
Office and Commercial
- Daily vehicle trips = 125 vehicle trips per day
- Weekday peak hour vehicle trips = 13 vehicle trips per weekday peak hour

Total of 6,117m² of retail GFA and 1,253m² of office GFA
- Total daily vehicle trips = 3,159 vehicle trips per day
- Total Thursday PM peak hour vehicle trips = 316 vehicle trips per Thursday PM peak hour

As such the anticipated level of additional residential and commercial development within the Activity Centre could generate the following number of total new traffic movements at its peak period:

- Total daily vehicle trips = 4,575 vehicle trips per day
- Total Thursday PM weekday peak hour vehicle trips = 458 vehicle trips per weekday peak hour

This daily level reflects a peak on a Thursday afternoon at full build out of all land uses. As stated above, there would be expected peaks during certain times of the year associated with holiday periods. For instance, a typical AM peak period would have only 20% of the vehicle trips associated with retail and other retail land uses and be in the order of 215 vehicle trips for all land uses. Subject to more detailed design of access and site layouts, the addition of this volume of vehicles would have a limited impact on the overall surrounding street network. It represents an additional 4 vehicles per minute moving around the network per minute during the AM peak hour.

Total indicative vehicle trip generation for the Activity Centre is shown in Figure 29.

Figure 29 - Trip generation projections from additional development at Melville Activity Centre at full build out

As discussed at the beginning of Section 4.3, the above vehicle trip generation is also related to the anticipated new development within the Activity Centre. The vehicle trip generation does not take into
account existing land uses (and associated traffic), which would be removed (redeveloped) in order to deliver the new residential and commercial developments, nor does it take into consideration:

1. Existing and likely future travel characteristics of this area that already has a statistically lower than average car ownership than Perth averages;
2. The presence of high quality and frequent public transport services along Canning Highway;
3. Instigation of policies and strategies by the City of Melville that are aimed at travel demand management, including statutory enforcement of reduced parking rates in the Activity Centre; and
4. The development being in a mixed use Activity Centre where a range of trips that otherwise would be made by car could be made on foot – for instance leisure trips, retail trips, medical appointment trips, work trips and entertainment trips.

4.4 Future Road Network Performance

4.4.1 Location of New Development within the Activity Centre

As discussed in Section 4.1.1, it is assumed that residential development will continue to fringe commercial land uses. It is assumed that medium density housing could be provided at the fringes of the Activity Centre as redevelopment of single or multiple Lots occurs.

It is assumed that higher density development on a larger scale would only be likely through the redevelopment of multiple Lots with a frontage to Canning Highway between Stock Road and Prinsep Road although some development may occur west of Stock Road. In addition, it is assumed that both Hope Road and Waddell Road will continue to be closed to through traffic immediately south of Canning Highway.

As discussed in Section 4.1.2, it is assumed that new commercial land uses will be located adjacent to the Canning Highway corridor, as is the case at present. It is assumed that the most likely scenario for additional commercial development across the Activity Centre is as follows:

1. 'Shop/Retail' – to be delivered through the expansion or redevelopment of Melville Plaza Shopping Centre.
   - For the purpose of this study it has been assumed that all new ‘shop/retail’ commercial land use will be delivered within the existing Melville Plaza Shopping Centre site.
2. 'Other Retail' – to be delivered through the redevelopment of existing commercial premises.
   - For the purpose of this study it has been assumed that all new ‘other retail’ commercial land use will be delivered along the southern side of the Canning Highway corridor.
3. ‘Office/Business’ – to be delivered through the redevelopment of existing commercial premises.
   - For the purpose of this study it has been assumed that all new ‘office/business’ commercial land use will be delivered at prominent locations within the Activity Centre, including corner sites at the intersection of Canning Highway and Stock Road, Waddell Road (southern side of the corridor), Hope Road (southern side of the corridor), Murray Road (southern side of the corridor).

4.4.2 Traffic Impacts

Impacts South of the Canning Highway Corridor

It is assumed that the existing closure of Hope Road and Waddell Road (south), immediately to the south of Canning Highway will remain into the future, and as such access to/from the Canning Highway corridor for
traffic associated with the redevelopment of Lots within the Activity Centre to the south of the road closures will generally continue to access Canning Highway via Stock Road and Murray Road (south). Some access or revisions to the locations of the closures may facilitate development site access for better overall network outcomes.

If the existing road closures were to remain in place (with potential revisions to access locations), additional traffic generated by redevelopment within the Activity Centre to the south of Canning Highway could be expected to access the Canning Highway corridor via either Hope, Waddell, Stock Road or Murray Roads (south).

The existing configurations of the Stock Road and Murray Street (south) intersections with Canning Highway enable only left turns (uncontrolled) onto Canning Highway from Murray Street (south), and enable both left turns (uncontrolled) and right turns (traffic signal controlled) from Stock Road.

As such it could be expected that additional traffic (particularly right turning traffic) would be expected at the southern approach to the Stock Road and Canning Highway intersection. This would place additional pressure on an intersection (and approach to an intersection) that already experiences delays and queuing during the peak periods. Some of this impact may be ameliorated through use of Hope or Waddell Roads.

In broad terms it could be expected that 50% of the additional residential dwellings could be provided to the south of Canning Highway, as well as all ‘Other Retail’ and all ‘Office/Business’. As such in the order of 1,199 daily vehicle trips could be generated by new development to the south of Canning Highway, and in the order of 120 vehicle trips per Thursday PM weekday peak hour. This would equate to around 91 trips per AM peak day hour, as shown in Figure 30.

*Figure 30 - Trip generation projections from additional development at Melville Activity Centre at full build out (splits)*

Further detailed investigation would be required in order to determine the precise location of redevelopment and development opportunities, as well as traffic generation and distribution and subsequent impact on intersections within the Activity Centre.
**Impacts North of the Canning Highway Corridor**

In broad terms it could be expected that 50% of the additional residential dwellings could be provided to the north of Canning Highway, as well as all ‘Shop Retail’. As such in the order of 3,376 daily vehicle trips could be generated by new development to the north of Canning Highway, and in the order of 338 vehicle trips per Thursday weekday peak hour. As discussed in Section 4.3.2, due to the nature of the shopping retail development to the north of Canning Highway it could be expected that the majority of these trips would be during the weekday PM peak hour (rather than weekday AM peak hour), as well as the Saturday retail peak period. This volume would decrease to a projected 124 during the AM Peak, as shown in Figure 30.

It would be expected that the majority of new shopping retail development would be located on the site of the existing Melville Plaza Shopping Centre and the primary access to the centre would remain via Waddell Road (north). Due to the expected level of new retail development on the Melville Plaza site, it is unlikely that the existing uncontrolled intersection of Waddell Road (north) and Canning Highway would be sufficient to accommodate peak period traffic accessing the centre.

It is unlikely that MRWA would support the introduction of a traffic signal controlled intersection at the Waddell Road and Canning Highway intersection due to its proximity to the existing Stock Road and Canning Highway traffic signal controlled intersection. As such the Murray Road and Canning Highway intersection could be considered for an upgrade to a traffic signal controlled intersection and (subject to the layout of the redeveloped Shopping Centre), could be considered as an enhanced primary access to the Shopping Centre.

Any future signalisation of the Murray Road and Canning Highway intersection would likely result in an upgrade to the intersection to enable all movements to occur, which in turn could draw additional local traffic through the intersection based on the enhanced connectivity afforded by the provision for all movements to be made. Given the location of the development, and the potential future proximity of signalised intersections/access to the Shopping Centre, the existing signalised pedestrian crossing may be rationalized by MRWA.

The anticipated additional residential development along the fringe of the Activity Centre would likely result in additional traffic on the northern approach to Stock Road and as such this would place additional pressure on an intersection (and approach to an intersection) that already experiences delays and queuing during the peak periods.

Further detailed investigation would be required in order to determine the precise location of redevelopment and development opportunities, as well as traffic generation and distribution and subsequent impact on intersections within the Activity Centre.
5. CONCLUSIONS

The Melville District Centre Activity Centre area encompasses some 20.41 hectares, with some of the major existing land uses in the centre including Melville Plaza Shopping Centre, LeisureFit Melville, A.H. Bracks Library, Melville Mazda and retail, office and commercial uses. The centre is surrounded mainly by medium density residential and some low density residential with single dwellings.

The Activity Centre road network is dominated by the dual carriageway Canning Highway, which runs east-west through the Activity Centre and essentially splits the centre into two segments. The Activity Centre area is typical of the Canning Highway corridor, with a combination of a single crossover for each individual residential dwelling directly onto Canning Highway and single or combined crossovers for commercial properties directly onto Canning Highway. Some of these residential and commercial crossovers are restricted to left-in/left-out movements only, whilst others allow for all movements.

The existing traffic conditions (based on information available from MRWA, observations during site visits and analysis of the Google Traffic measurement tool), indicate that traffic build-up at the signalised intersection of Canning Highway and Stock Road during both peak periods (particularly on the Stock Road north and south approaches to the intersection), which would be considered a typical outcome for signalised intersections involving a Primary Distributor road.

The City of Melville’s LPS seeks to concentrate population growth and development in activity centres, which can be served by high frequency public transport services to reduce the reliance upon trips to/from the activity centre being reliant upon private motor vehicle access.

It is anticipated that the Melville District Centre Activity Centre could accommodate the following additional land use by 2031:

- 354 new dwellings (a total of 550 dwellings including the 196 existing dwellings);
- 7,370m$^2$ new commercial floorspace (a total of 21,000m$^2$ of commercial floorspace including the existing 13,630m$^2$).

In 2004 the WAPC initiated MRS amendment 1100/33 for Canning Highway in the City, which dealt with the Primary Regional Road reserve for Canning Highway between Petra Street and Canning Bridge. The concept design (carriageway plans) for this amendment remains the most recent planning for the Canning Highway corridor through the Melville District Centre Activity Centre area.

Aspects of the concept design are now considered to be out of date due to more recent changes to the local road network (including the closure of Hope Road and Waddell Road immediately to the south of Canning Highway).

It is anticipated that across the Activity Centre a total of 354 additional dwellings could be provided and these would generate in the order of the following number of trips:

- Total daily vehicle trips = 1,416 vehicle trips per day
- Total weekday peak hour vehicle trips = 142 vehicle trips per weekday peak hour
It is anticipated that across the Activity Centre a total of 7,370m² of additional commercial floorspace could be provided and this would generate in the order of the following number of trips:

1. Total daily vehicle trips = 3,159 vehicle trips per day
2. Total Thursday weekday PM peak hour vehicle trips = 316 vehicle trips per weekday peak hour

The volume of peak hour trips generated by the retail land uses would fluctuate during the week and during the year therefore the total additional trips set out above should be seen as high. The impact of new development would typically be much less in the AM peak hour.

Whilst this high-level Traffic Implications Report has discussed future road network performance in Section 4.4, further detailed investigation would be required in order to determine the precise location of redevelopment and development opportunities, as well as traffic generation and distribution and subsequent impact on intersections within the Activity Centre.

This further detailed assessment would be informed through the submission of development applications and associated transport reports. As set out in this Traffic Implications Report, the impact of trips associated with existing development (that would then be replaced) is not considered. This assessment would allow for the impact of replaced development to be understood.

Any detailed transport assessments associated with major development applications would then inform road and street network design in concert with inputs from other elements that have been examined by Council, including urban design, pedestrian and cycling connections and provision of parking.

In respect of indicative intersection performance, the intersection of Canning Highway and Stock Road is already experiencing performance issues in both peak hours examined in relation to traffic engineering metrics such as delay and degree of saturation.

Facilitation of development in this Activity Centre should consider the existing network conditions and promote development that is in keeping with relevant state and local planning policies and assist in reducing the volume of additional vehicle traffic through:

1. Including reduced levels of parking for any form of new development;
2. Providing development that reduces vehicle trips (higher density residential development);
3. Submitting transport assessments that include Travel Plans for major development sites;
4. Promote alternative transport modes through provision of excellent end of trip and storage facilities for bicycles;
5. Provide a mix of residential products that support reduced impact on existing transport networks; and
6. Work with the City of Melville to maximise the existing street network form and function rather than rely on street widening and provision of additional road network capacity or connections.