Lot 306 McDonald Road, Baldivis Local Structure Plan

Transport Assessment

PREPARED FOR:
Spatial Property Group

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Document history and status

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Author: Mohammad Rasouli

Project manager: Behnam Bordbar

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1.0 Introduction

This revised Traffic Assessment (TA) report has been prepared by Transcore on behalf of Spatial Property Group with regard to the proposed Local Structure Plan (LSP) for Portion Lot 306 McDonald Road, in Baldivis. This revised TA addresses the comment provided by Western Australian Planning Commission (WAPC) with respect to the classification of the development northern boundary road.

The proposed land uses for the LSP are residential, as shown in **Figure 1** in relation to the various zones and reservations of the Metropolitan Region Scheme (MRS).

This revised TA will investigate the traffic generation and distribution of the proposed LSP and will assess the impact of the development traffic on the surrounding roads and intersections.

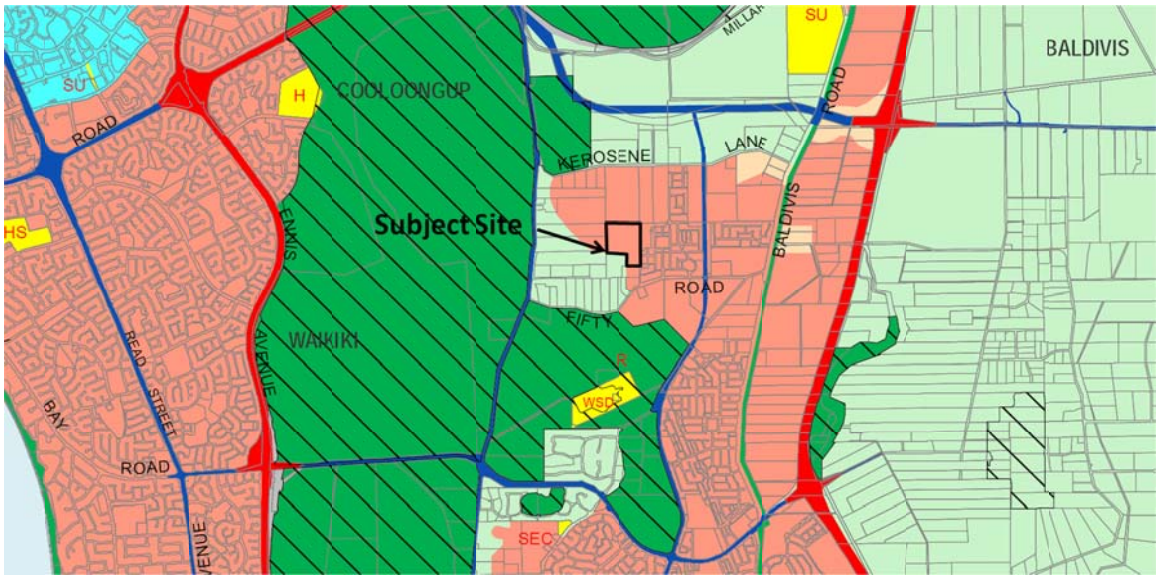

Figure 1: Location of the Subject Site

2.0 Proposed Local Structure Plan

The proposed Local Structure Plan (LSP) is shown in **Figure 2**. A total of approximately 202 residential lots are planned for the LSP area. There is a proposed primary school site outside of the LSP area (to the north-eastern corner of the LSP area), within adjacent lot 299 (120) Kerosene Lane.

Figure 2: Proposed Local Structure Plan

3.0 Existing Situation

3.1 Existing Land Use

The subject site currently is vacant land. Adjacent land uses to the north and south are also rural in nature with few residential dwellings. There is an existing Spud Shed located further north of the subject site along Kerosene Lane. There is currently a development application with City of Rockingham for the expansion of this Spud Shed. Existing residential dwellings are located to the east and west of the LSP area.

3.2 Existing Road Network

McDonald Road reservation is located at the eastern boundary of the proposed LSP area and provides a north -south linkage between Kerosene Lane and Fifty Road. The northern section of McDonald Road between Elderberry Drive and Kerosene Lane is not constructed yet. McDonald Road connects to Fifty Road at its southern end at a basic priority controlled T-intersection with no turn lanes on Fifty Road.

The constructed section of McDonald Road is of single carriageway, two-lane road standard with a 7.2m paved carriageway. There is a 2.5m shared path along the eastern side of the McDonald Road but there are no paths along its western side.

3.3 Public Transport

There are no bus routes in the vicinity of the LSP area. The closest existing bus route to the LSP area is Bus Route No. 568 from Warnbro Train Station, which currently terminates at Nairn Drive / Kingaroy Drive, as shown in Figure 3. The closest bus stops are located about 1.5km to the south of the LSP area.

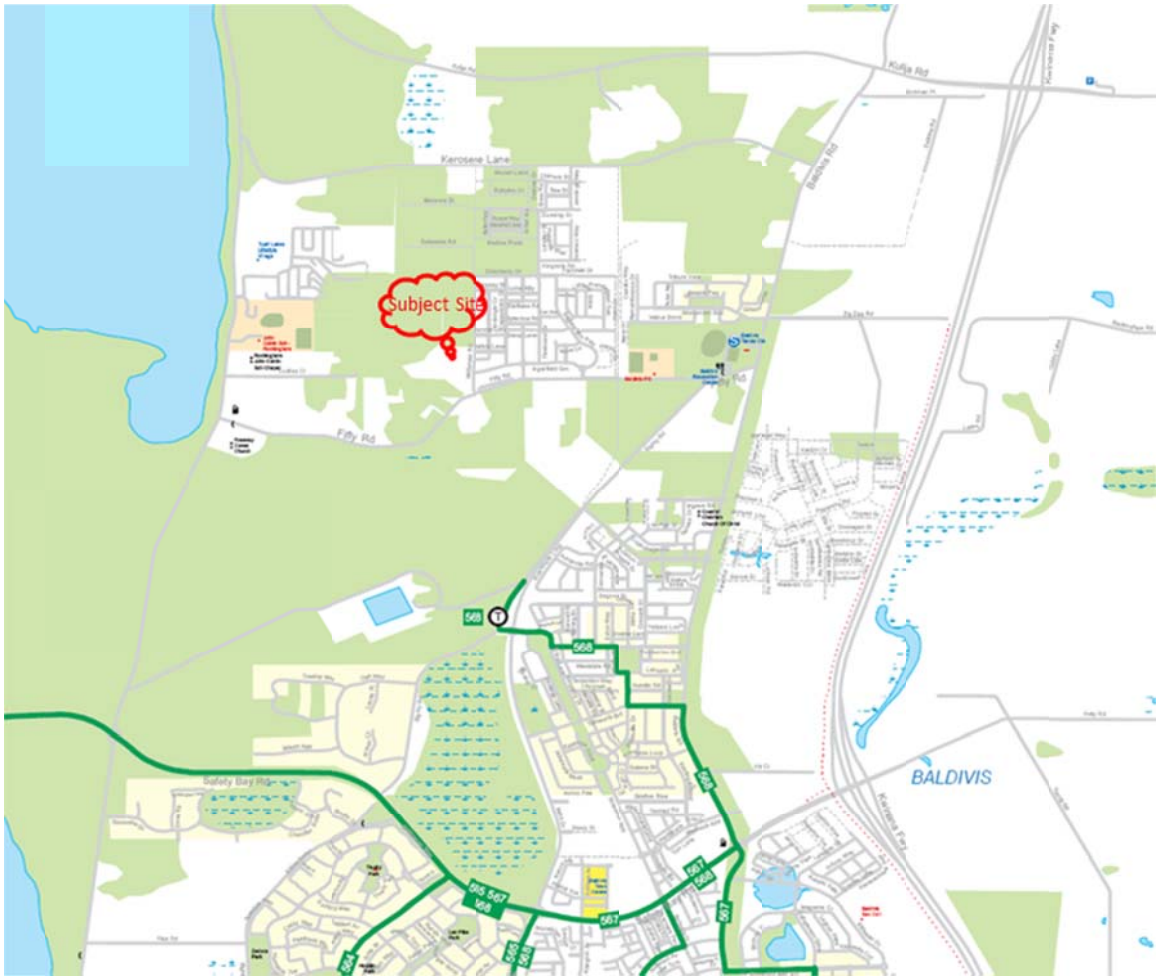

Figure 3: Existing Bus Routes

3.4 Pedestrian and Cyclist Facilities

There is a 2.5m wide shared path on the eastern side of McDonald Road. The Department of Transport's Perth Bike Map series (see **Figure 4**) shows that Kerosene Lane and Fifty Road in the vicinity of the proposed LSP area provide good road riding environments.

Figure 4: Bike Map

3.5 Changes to the Surrounding Road Network

Long-term road network planning for this part of the Metropolitan Region includes the future extension of Nairn Drive as the main north-south district distributor road through Baldivis and Karnup. The alignment of this planned Other Regional Road (also referred to as a blue road) in the Metropolitan Region Scheme (MRS) is shown in Figure 1.

McDonald Road is also planned to be extended north connecting to Kerosene Lane.

3.6 Public Transport Network Planning

According to the other works undertaken by Transcore within this area and based on liaison with Public Transport Authority, it is expected that two bus routes would serve North Baldivis area. These routes are shown in **Figure 5**.

The 'Western Route' is expected to run along McDonald Road and Fifty Road as well as along one of the Neighbourhood Connectors located between Nairn Drive and Baldivis Road. The outer terminus would probably be in the vicinity of the District Centre at the corner of Safety Bay Road and Nairn Drive.

The 'Eastern Route' is expected to run along Kerosene Lane and a (yet to be identified) Neighbourhood Connector running parallel to and to the east of Baldivis Road. This route will probably terminate in the vicinity of the proposed Baldivis District Centre at the shared terminus with the Western Route.

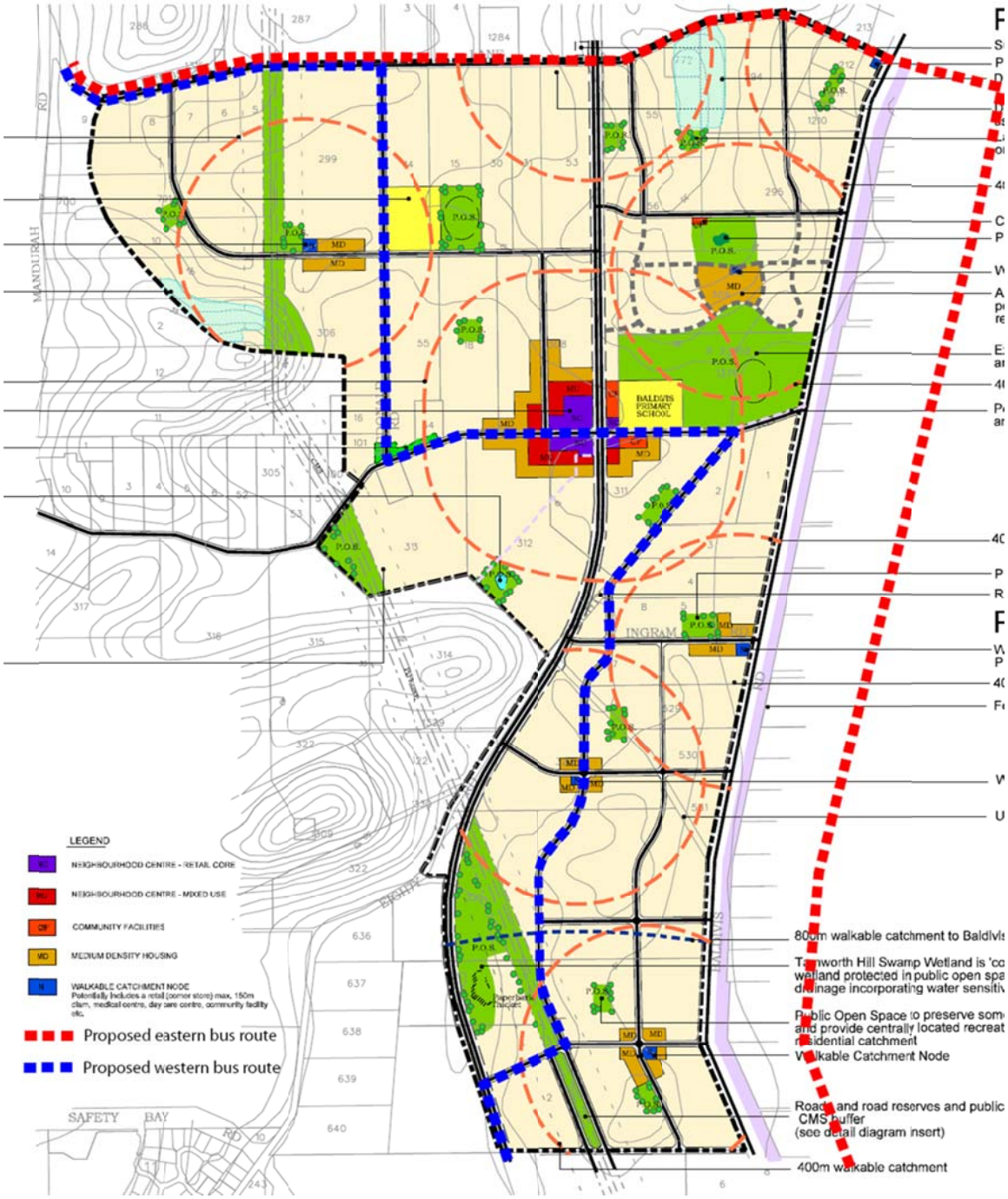

Figure 5: Proposed Bus Routes Plan

4.0 Proposed Transport Network

4.1 Road Hierarchy

The proposed hierarchy of roads within the LSP area is illustrated in **Figure 6** using the road hierarchy classification from Liveable Neighbourhoods (2007). This hierarchy has been developed based on traffic modelling undertaken for the LSP (refer section 5.0 of this report) and consistency with other work undertaken in the area.

Figure 6: Proposed Road Hierarchy

Some key characteristics of the relevant road classifications have been summarised in Table 1. These are generally based on Liveable Neighbourhoods guidelines although the proposed widths would vary slightly from the standard Liveable Neighbourhoods cross-section diagrams.

Table 1: Key Characteristics for the Proposed LSP Road Classifications

Road Classification	Indicative upper volume (vpd)	Indicative road reserve width (m)	Indicative road pavement width (m)
Neighbourhood Connector B	3,000	18m	7.4m and embayed parking
Access Street D	1,000	15m	6m
Laneway	300	6m	6m typical

It should be noted that these reserve widths are indicative only and are subject to further adjustment in consultation with the Department of Planning and City of Rockingham during detailed subdivision design.

Neighbourhood Connectors

McDonald Road is expected to carry between 1,000vpd to 3,000vpd and provides a north south connection between Kerosene Lane and Fifty Road and therefore is appropriate to be classified as Neighbourhood Connector B Road.

Access Streets

The basic standard of Access Street D roads within the LSP area is a 6m wide carriageway in a 15m road reserve. This Access Street D results in 4.5m verges on both sides, with embayed parking accommodated in the verges where required, such as to provide visitor parking for lots serviced by rear laneways. This road standard is proposed where the future total traffic volumes are less than 1000vpd. It is anticipated that all of the access streets shown in the LSP would be of this category.

The northern boundary of the site which is the continuation of Elderberry Drive carries about 500vpd to 800vpd and is classified as "Access Street D" Road.

Laneways

The proposed reserve width of the laneways is 6.0 metres. These would typically be designed with flush kerbing and central drainage, and can accommodate two-way vehicle movements and service vehicles. Details relating to the design of the laneways will be addressed during the subdivision design stages.

4.2 Public Transport

Existing bus services in this area are described in section 3.3 of this report and current planning by the Public Transport Authority is discussed in section 3.6. McDonald Road running north south along eastern side of the LSP area is

constructed to adequate standard to accommodate a bus service in this area in future.

4.3 Pedestrian and Cyclist Facilities

A highly permeable road network within the LSP area creates excellent opportunities for the provision of good pedestrian and cyclist facilities that maximise use of non-motorised transport modes.

Figure 7 outlines the proposed pedestrian and cyclist network for the LSP area.

In accordance with current practice adopted by the City of Rockingham it is proposed to construct all paths to a minimum width of 2.0 metres so that they can all be designated as shared paths for pedestrians and cyclists. A 2.5m width would be required in high pedestrian-traffic locations such as adjacent to the schools. Paths will be provided on at least one side of all roads. Laneway lots are to have footpath access to visitor parking bays provided in a nearby road reserve.

Accordingly shared paths are proposed along west side of McDonald Road and South side of the northern boundary Road (continuation of Elderberry Road). An existing shared path is in place to the east side of McDonald Road and south side of Elderberry Road and it is recommended that the same standard be provided for the proposed shared paths along west side of McDonald Road and South side of northern boundary Road (continuation of Elderberry Road).

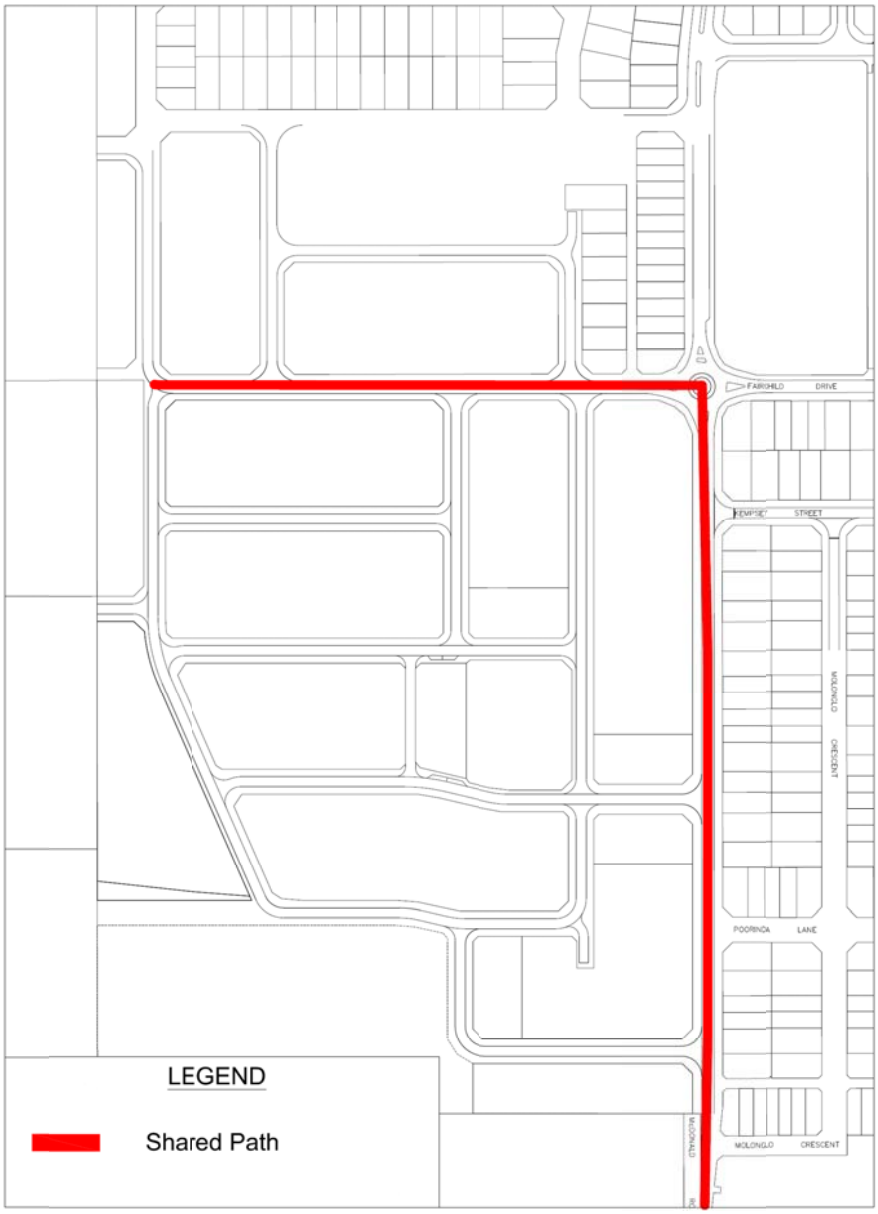

Figure 7: Proposed Pedestrian and Cyclist Road Network

4.4 Integration with Surrounding Area

The proposed land uses for the LSP area are residential dwellings which are in line with the surrounding existing and proposed land uses in this area.

The road network of the LSP area will connect to the surrounding road network at a number of locations. This will include two intersections onto McDonald Road. To the north there will be also three connections to the extension of Fairchild Drive/ elderberry Drive.

5.0 Analysis of the Transport Network

5.1 Assessment Period

The assessment year that has been adopted for this analysis is 2031, with full development of Baldivis as envisaged in the Western Australian Planning Commission's *Directions 2031 and Beyond* planning framework (Aug 2010) and *Outer Metropolitan Perth and Peel Sub-regional Strategy* (draft, Aug 2010).

5.2 Traffic generation and distribution

Transcore has developed a subregional traffic model of weekday traffic flows for the Mandurah-Rockingham area using the EMME transport modelling software package. This model has been developed in more detail for various projects in the Karnup-Baldivis area including this proposed LSP. Overall, the future scenario modelled in this area reflects the land use aspirations of *Directions 2031* as detailed in the *Outer Metropolitan Perth and Peel Sub-regional Strategy*.

The daily traffic generation rate used in the LSP area for this transport assessment is 8 vehicle trips per day (vpd) per dwelling, which corresponds to peak hour trip generation rates recommended in the Western Australian Planning Commission (WAPC) *Transport Assessment Guidelines for Development* (2006).

The anticipated yield of up to 202 dwellings in the LSP area will therefore generate approximately 1,616vpd.

The distribution of these trips is determined by the traffic model in proportion to the location of trip productions and attractors for work trips, education trips and other trips (shopping, social, recreational, etc.) among all the land uses in the traffic model.

5.3 Traffic Flow Forecasts

Figure 8 illustrates future total daily traffic flows estimated for the road network of the LSP area.

The future total daily traffic flows on the road network in and around the LSP area has been modelled for the future scenario of full development of this area as discussed above.

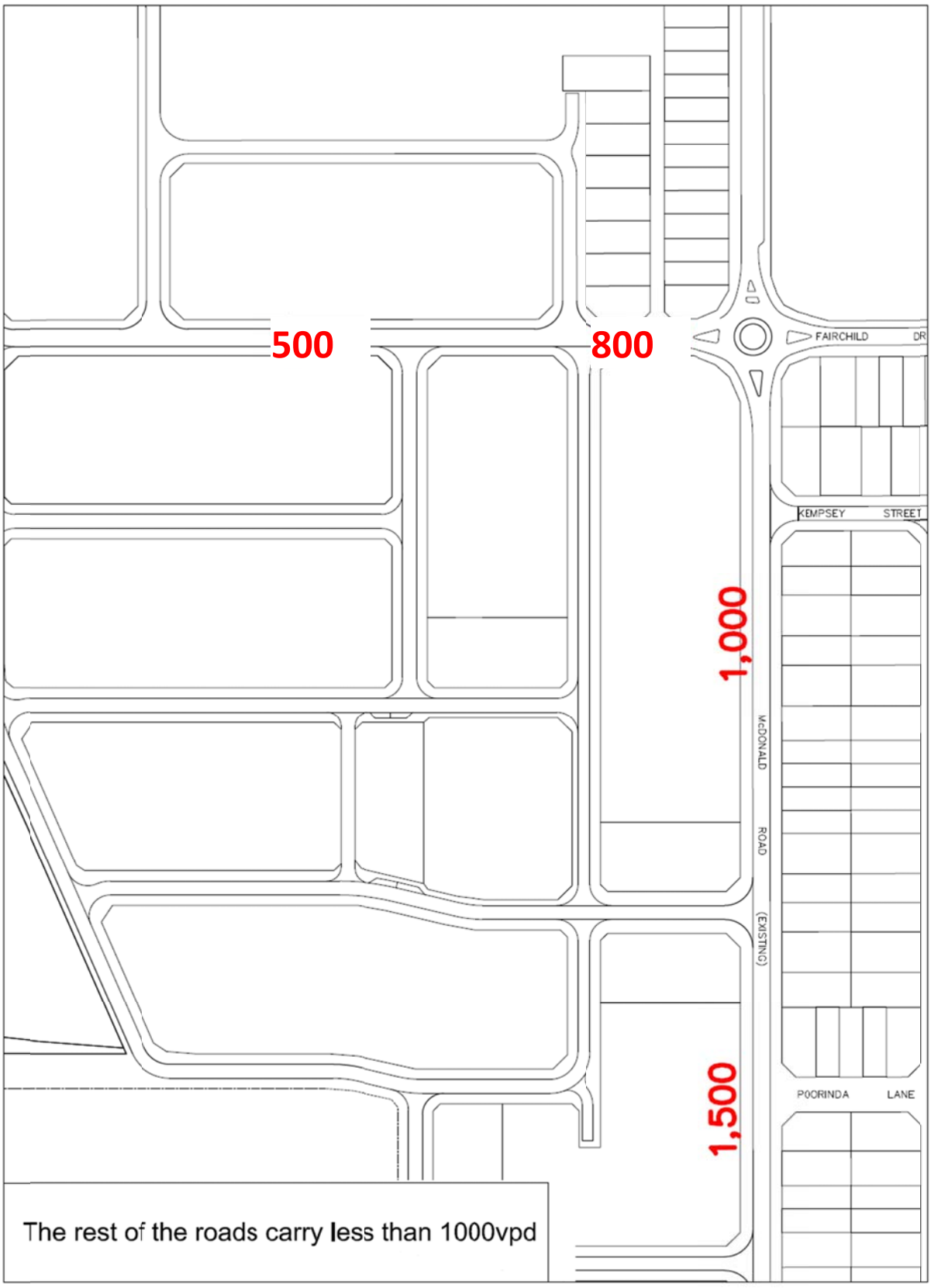

Figure 8: Projected Daily Traffic Volumes

5.4 Roads and Intersections

The proposed road network to accommodate these traffic volumes has been discussed in section 4 of this report, including the details of the proposed road hierarchy in section 4.1.

Figure 9 details the proposed controls for intersections within the LSP area.

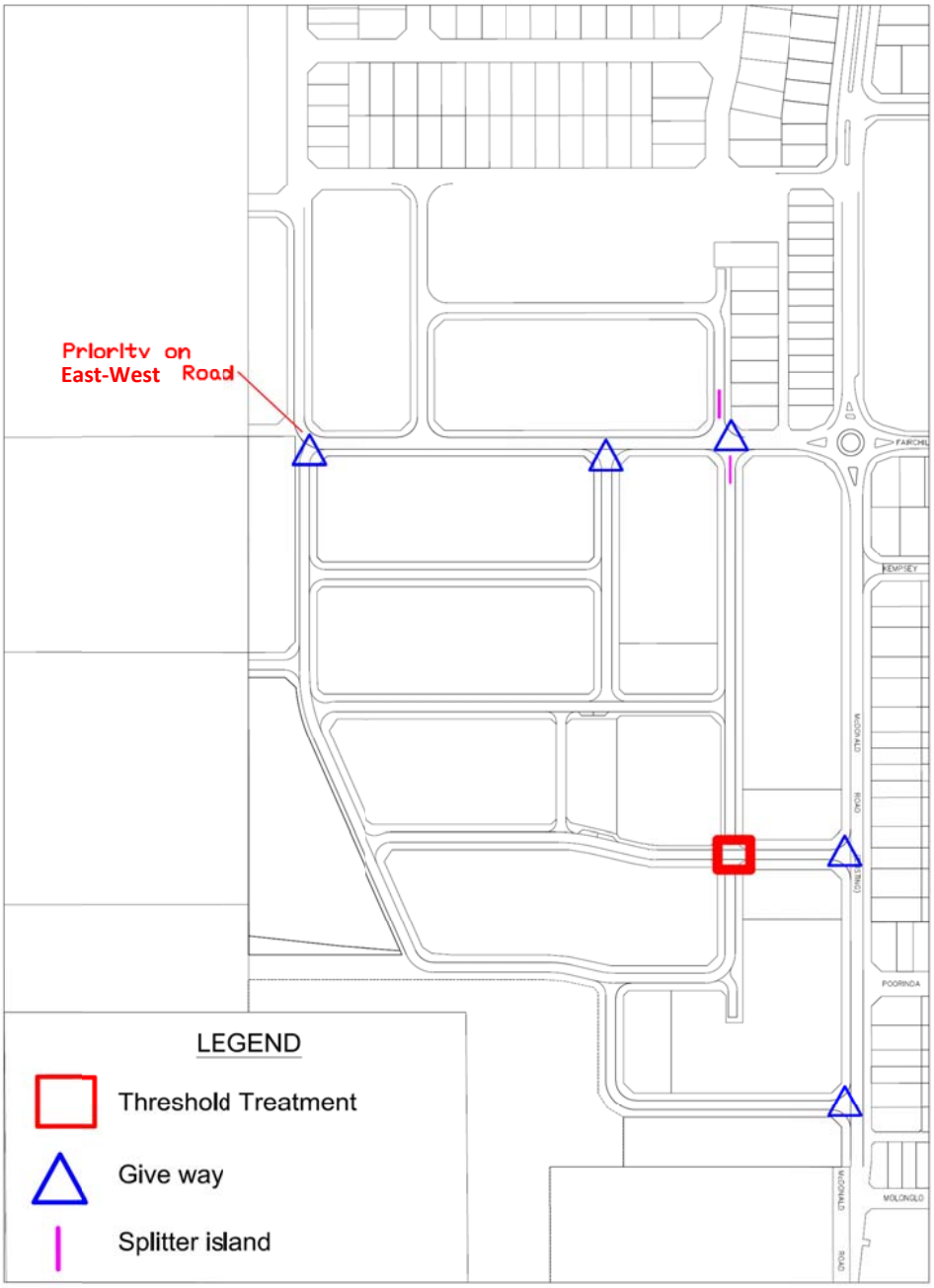

Figure 9: Intersection treatments

A roundabout is proposed at the intersection of McDonald Road and Elderberry Road at the south west corner of the proposed Primary school at the adjacent lot. This roundabout will help manage turning traffic flows (including U-turns for parents

parking on-street alongside the primary school) and assist with speed management on McDonald Road.

An staggered T-intersection is proposed along the proposed Access Road forming the northern boundary of the LSP area with spacing less than 20m between the staggered T-intersections. Liveable Neighbourhoods normally requires 20m intersection spacing on this category of road. This requirement is related to the potential problem of drivers 'cutting the corner' when crossing from one side street to the second one, potentially creating a conflict situation by driving on the wrong side of the road as they turn into the second side road. One way to remedy this potential safety issue (if the 20m intersection spacing cannot be achieved) is to provide splitter islands on both side roads, as shown in Figure 9, to enforce correct lane discipline. Details of the intersection treatment will be determined in consultation with the City of Rockingham at subdivision design stage.

There is a four-way intersection within the LSP area on low-traffic-volume access streets. This intersection is recommended to be designed as priority-controlled intersections with Give Way controls on the minor road approaches as suggested in Liveable Neighbourhoods (LN Element 2 pages 31-33). Appropriate entry treatments are proposed on the side/minor roads to help alert drivers to the presence of the intersections and that traffic on the major road has priority. Details of the intersection treatment will be determined in consultation with the City of Rockingham at subdivision design stage.

5.5 Intersection Analysis

The proposed LSP provides two and three priority controlled T-intersections on McDonald Road and the proposed northern boundary Road. The projected traffic volumes on the side roads are not significant due to the relatively low traffic generation of the proposed LSP area which will be distributed through several intersections along McDonald Road and the proposed northern boundary Road. Therefore it is expected that the proposed intersections would work satisfactorily and within capacity.

5.6 Access to Frontage Properties

The WAPC *Liveable Neighbourhoods* policy requires that "Development along integrator B and neighbourhood connector streets with ultimate vehicle volumes over 5000 vehicles per day should be designed either so vehicles entering the street can do so travelling forward, or are provided with alternative forms of vehicle access. Wider lots with paired driveways and protected reversing areas in the parking lane may be used on streets with up to 7000 vehicles per day."

All of the roads in the LSP area are estimated to carry less than 5,000 vpd, so no restriction on vehicular access is required.

5.7 Pedestrian / Cycle Networks

The proposed network of shared paths for pedestrians and cyclists is described in section 4.3 of this report. This network of paths will provide good level of accessibility and permeability for pedestrians and cyclists within the LSP area, and connections to neighbouring precincts at strategic locations.

5.8 Access to Public Transport

At this stage of the structure planning process neither bus stop locations nor subdivision lot layouts are known. However, in these circumstances the WAPC *Transport Assessment Guidelines for Developments* (2006) suggest that it is desirable for at least 90 per cent of dwellings to be within 400m straight line distance of a bus route. The potential future bus route along McDonald Road will satisfy this requirement.

6.0 Conclusions

The proposed LSP is anticipated to accommodate approximately 202 dwellings which are expected to generate traffic flows of about 1,616vpd.

The road network of the LSP area is proposed to be designed based on WAPC Liveable Neighbourhoods guidelines to accommodate the future traffic flows that will be generated in this area.

The projected traffic volumes on the LSP road network are not significant due to the relatively low overall traffic generation of the proposed LSP. The LSP traffic will be distributed through several intersections along McDonald Road and the proposed northern boundary Road. Therefore it is expected that the proposed LSP intersections would work satisfactorily and within capacity

The proposed LSP also provides for a network of shared paths and footpaths to encourage and facilitate non-motorised travel as well. In order to provide a safe and convenient pedestrian access to the proposed Primary School at the north east corner of the LSP area, shared paths are proposed along west side of McDonald Road and South side of the northern boundary Road (continuation of Elderberry Road).

The potential future bus route along McDonald Road will satisfy the WAPC *Transport Assessment Guidelines for Developments* (2006) requirement that suggests it is desirable for at least 90 per cent of dwellings to be within 400m straight line distance of a bus route.