SHAWMAC

CONSULTING CIVIL & TRAFFIC ENGINEERS, RISK MANAGERS

Project: **Traffic Impact Assessment**

Kevo Place, Landsdale

Client: **City of Wanneroo**

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Date: 21st February 2017

Version 2

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Document Status

Version No.	Author	Reviewed by	Date	Document status	Signature	Date
1	P Nguyen	E Wilks	06/01/17	Client Review		06/01/17
2	P Nguyen	E Wilks	21/02/17	Final		21/02/17

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1. Introduction and Background

Shawmac has been engaged by the City of Wanneroo to undertake a Traffic Impact Assessment of Kevo Place Landsdale.

Kevo Place is a cul-de-sac which currently provides access to four properties. The connection of Kevo Place to East Landsdale was initially established as a temporary measure to allow access to Lot 48 Gnangara Road until the land and road network to the east of Lot 48 was developed.

The key objective is to demonstrate whether the Kevo Place road connection should be retained for vehicle access between East Wanneroo Cell 5 (Landsdale) and East Wanneroo Cell 9 (East Landsdale).

Kevo Place is located in Landsdale in the City of Wanneroo approximately 17km north of the Perth CBD as shown in **Figure 1**.

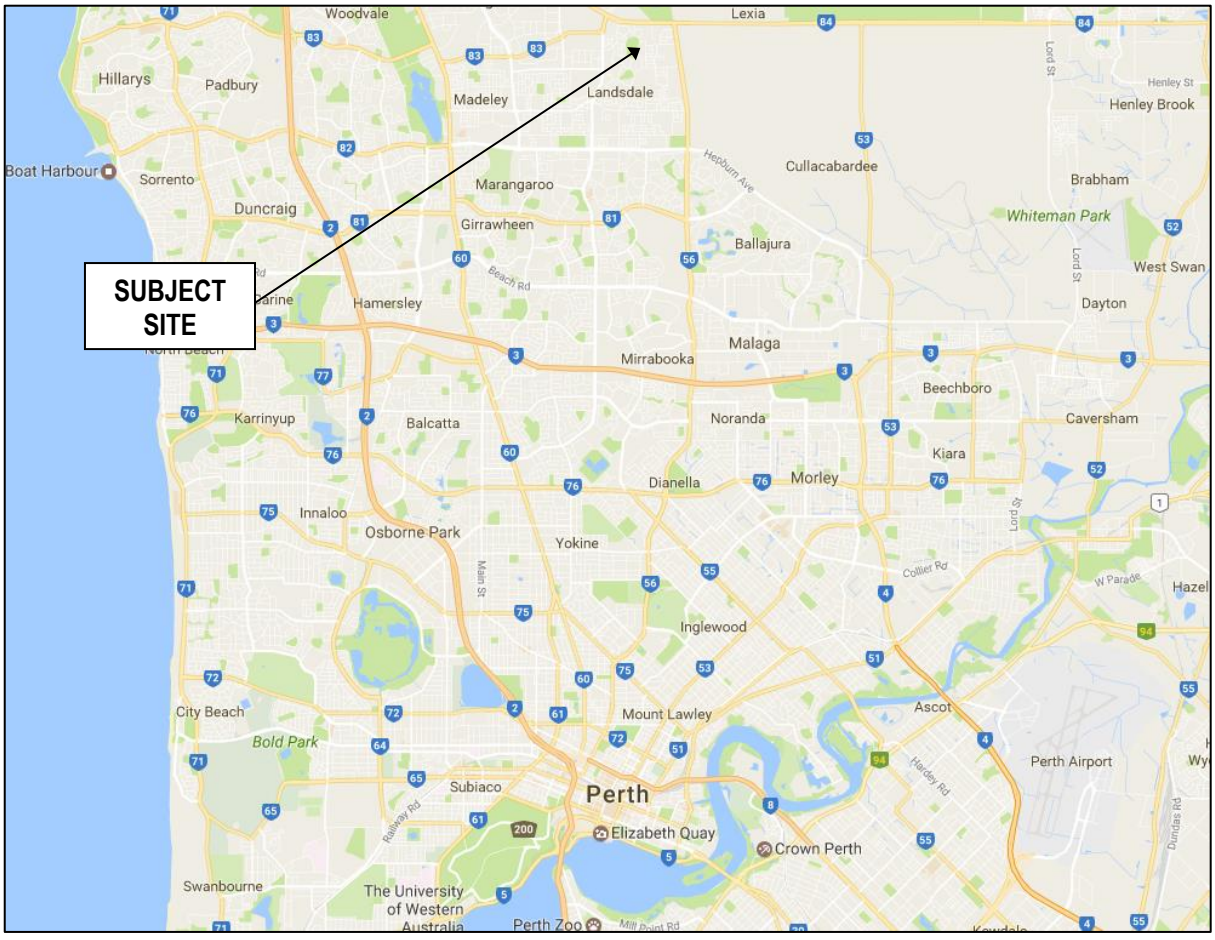

Figure 1: General Location

1.1. Previous Assessment

A Traffic Assessment was previously undertaken by Riley Consulting for the East Landsdale Cell 9 Local Structure Plan (LSP) in May 2008. This LSP indicates Kevo Place as a cul-de-sac with no connection through to East

Landsdale. A Saturn traffic model was used to distribute the total LSP generated traffic to the proposed road network. The traffic modelling was updated in June 2009 by Transcore to account for modifications to the LSP. An alternate scenario was also modelled as part of the update to assess the impact of including the Kevo Place road connection between Landsdale and East Landsdale. The results of this assessment estimated that Kevo Place would carry approximately 1,300 vehicles per day (vpd) and would reduce traffic flows on other roads in the area by several hundred vehicles per day. The results of the June 2009 traffic modelling without and with the Kevo Place road connection are attached in **Appendix A**.

2. Existing Situation

2.1. Road Network

Kevo Place currently connects Warradale Terrace (T-intersection) to the west to Raeside Drive and Anneen Link to the east (four-way roundabout). Its current function is to provide driveway access for four properties fronting Kevo Place and it is one of three east-west road links between the northern portions of Landsdale and East Landsdale. Kevo Place and the surrounding road network are shown in **Figures 2** and **3**.

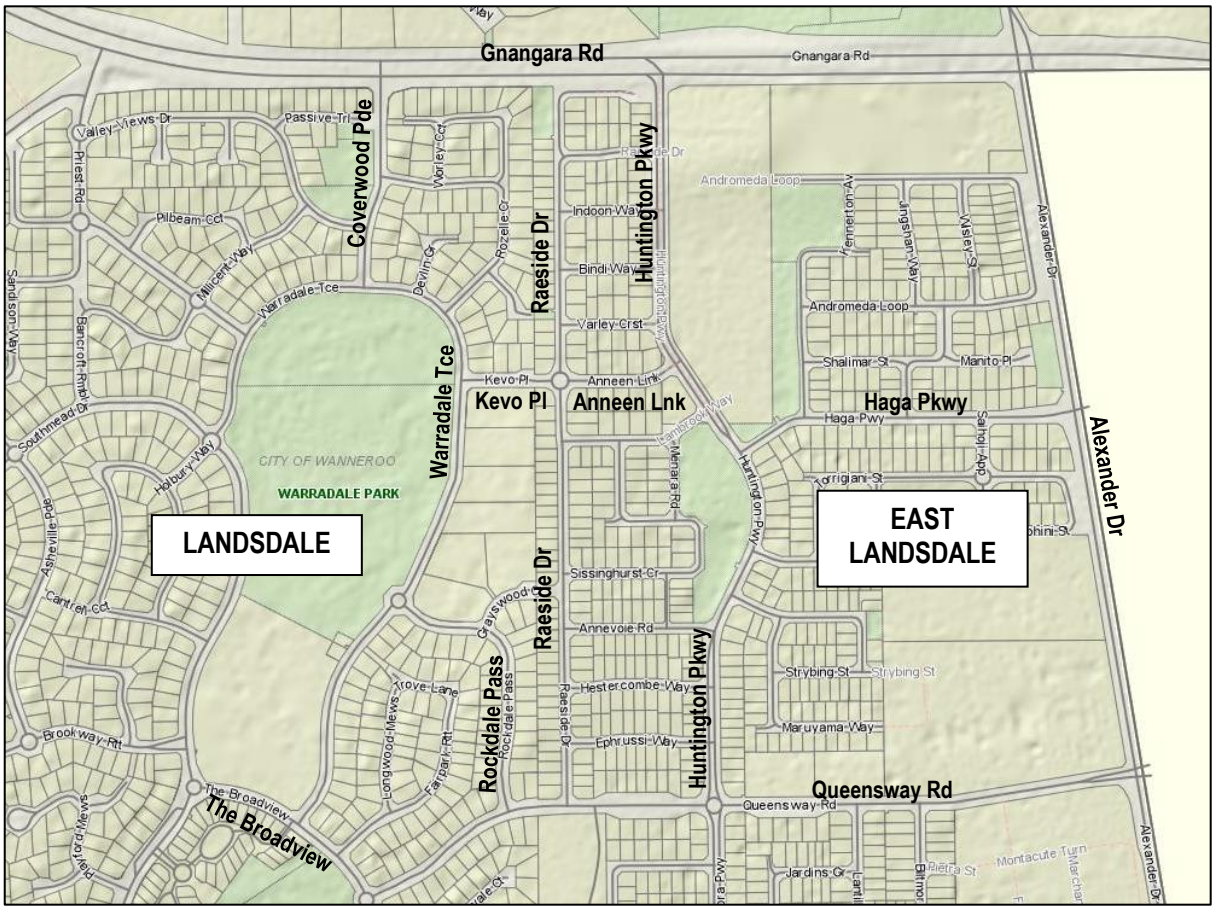

Figure 2: Surrounding Road Network

Figure 3: Kevo Place

Kevo Place is classified as an Access Road. The hierarchy of the surrounding road network is shown in **Figure 4** as extracted from the Main Roads Western Australia (MRWA) *Road Information Mapping System*.

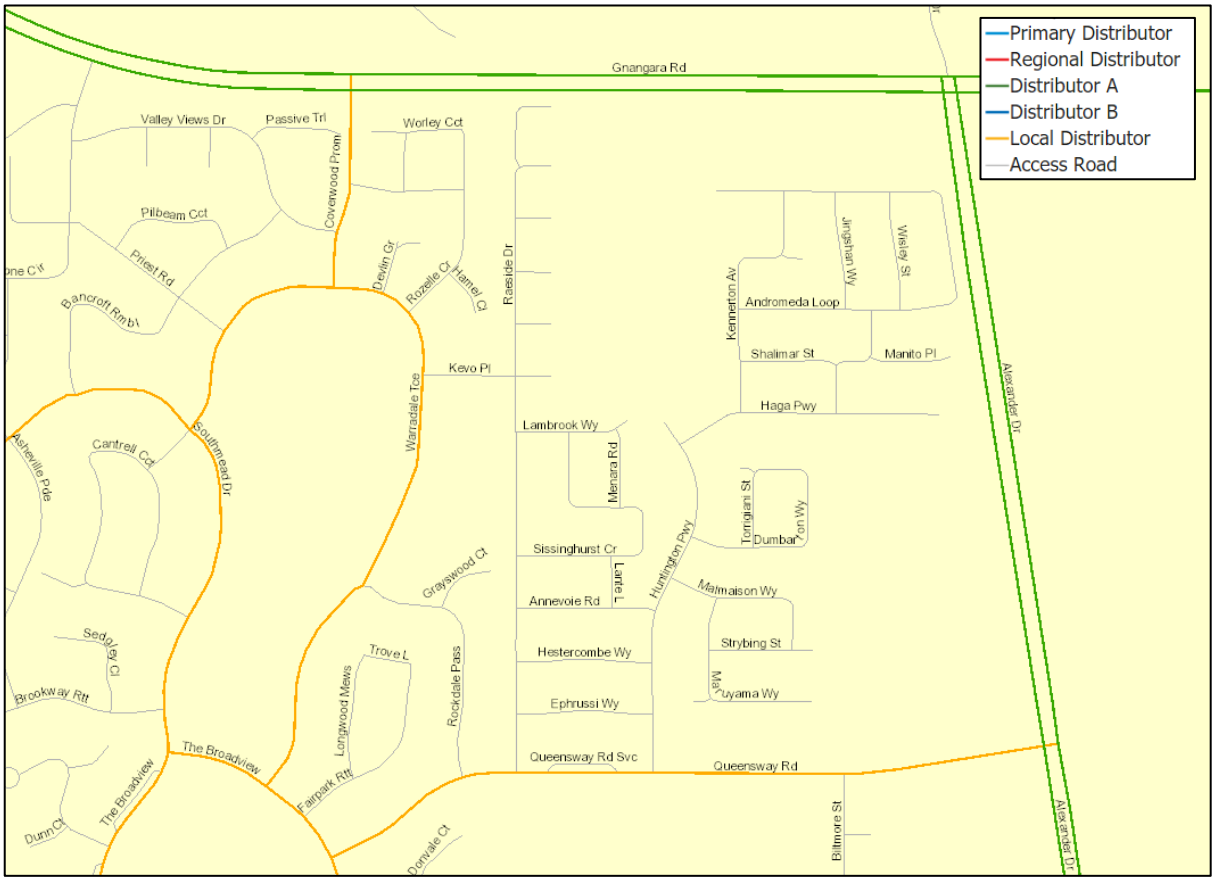

Figure 4: Current Road Hierarchy

It is noted that Huntington Parkway has been completed to its northern extent at Gnangara Road and currently functions as a Local Distributor road.

2.2. Traffic Counts

The latest available traffic data for the road network has been obtained from the City of Wanneroo, MRWA and from tube counters laid down in early December 2016. A summary of the existing average weekday daily traffic flows is illustrated in **Figure 5**.

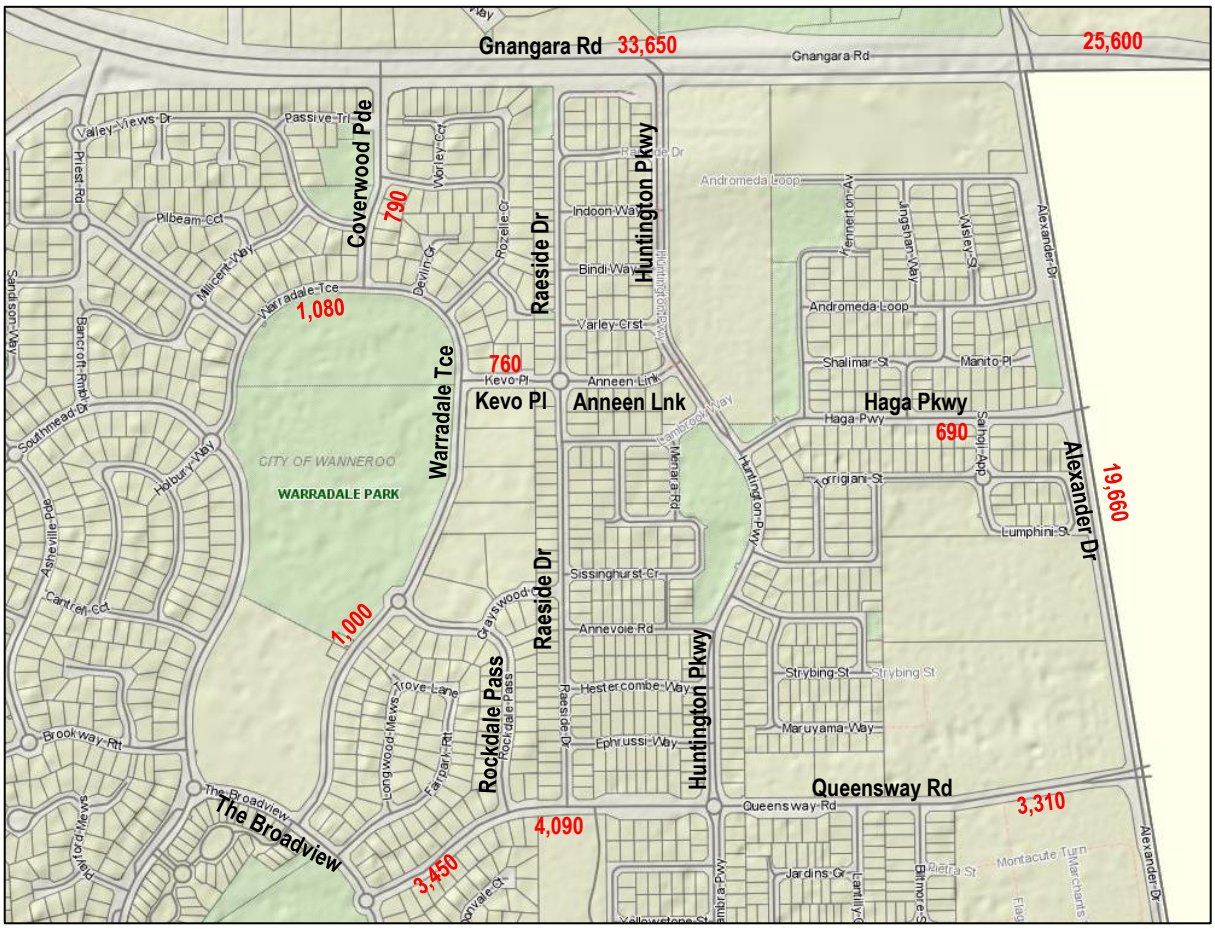

Figure 5: Existing Average Weekday Daily Traffic Flows

2.3. Existing Traffic Generation, Distribution and Modelling

2.3.1. Study Area

The study area has been limited to development considered to influence Kevo Place and the relevant adjacent roads including the northern portion of East Landsdale and the north-east quadrant of Landsdale. The study area included in the traffic model is illustrated in **Figure 6**.

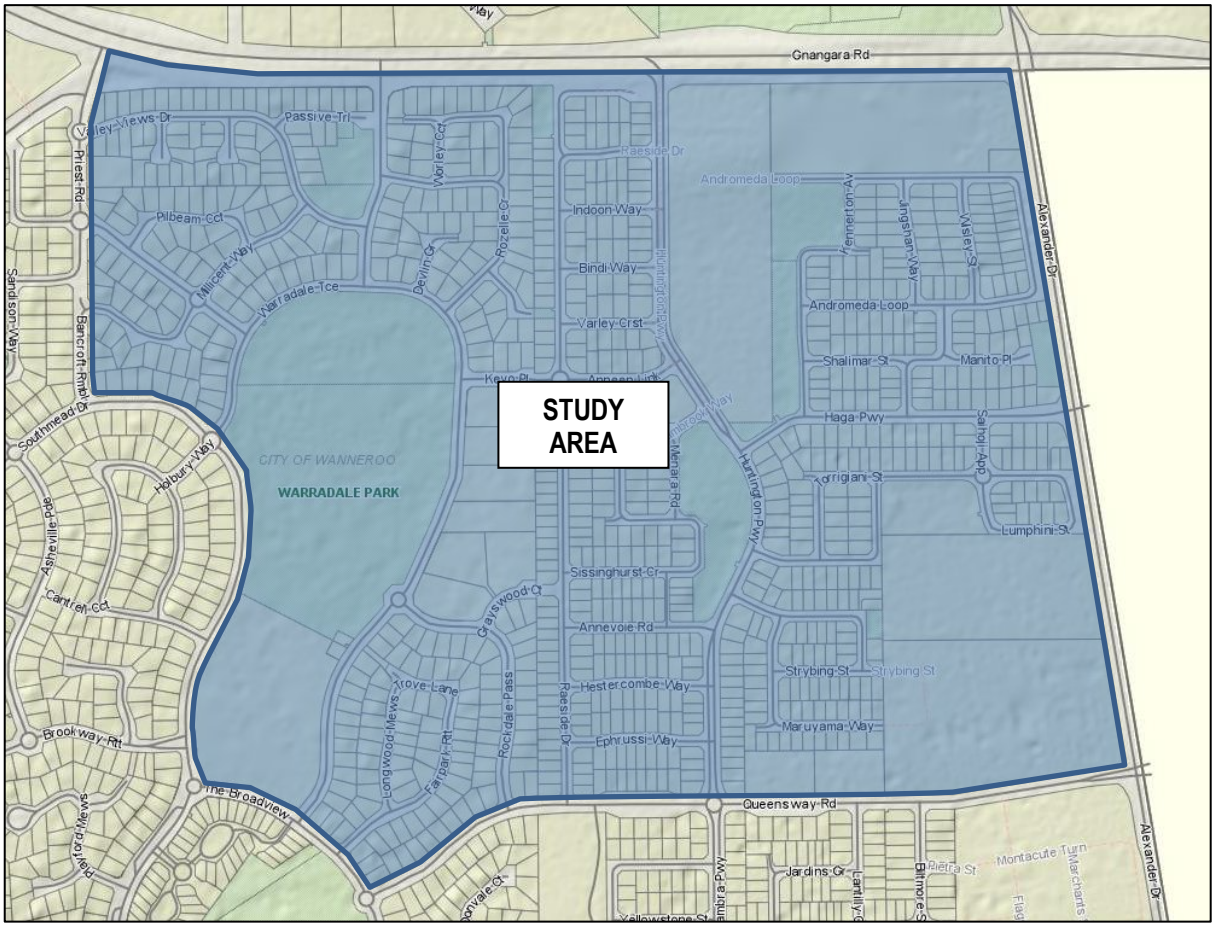

Figure 6: Traffic Model Study Area

2.3.2. Traffic Generation and Distribution

The study area currently includes only residential dwellings and Landsdale Primary School which currently has approximately 891 students. The traffic model used the same traffic generation rates used in the May 2008 and June 2009 traffic assessments which are considered to be consistent with current traffic generation rates. The residential traffic generation rate used is 10 vpd per dwelling and the primary school traffic generation rate used was 2 vpd per student.

The distribution of site generated traffic to external locations has been assumed based on the likely desire lines to external traffic attractors as follows:

- 40% to/from the west along Gnangara Road.
- 5% to/from the west along Southmead Drive.
- 53% to/from the south (33% via The Broadview, 5% via Alhambra Parkway and 15% via Alexander Drive).
- 2% to/from east along Gnangara Road.

2.3.3. QRS II Model

The existing scenario has been modelled using Quick Response System II (QRS II) software which is a strategic travel demand forecasting program. The road network is entered graphically into the General Network Editor (GNE) program and the traffic generation for each land use and the assumed distribution of traffic is input into the network. QRS II is then used to assign the traffic onto the modelled road network. The model is then calibrated using existing traffic data.

The modelled traffic volumes under the existing scenario are shown in **Figure 7**. The two numbers in black text indicate the directional traffic volumes.

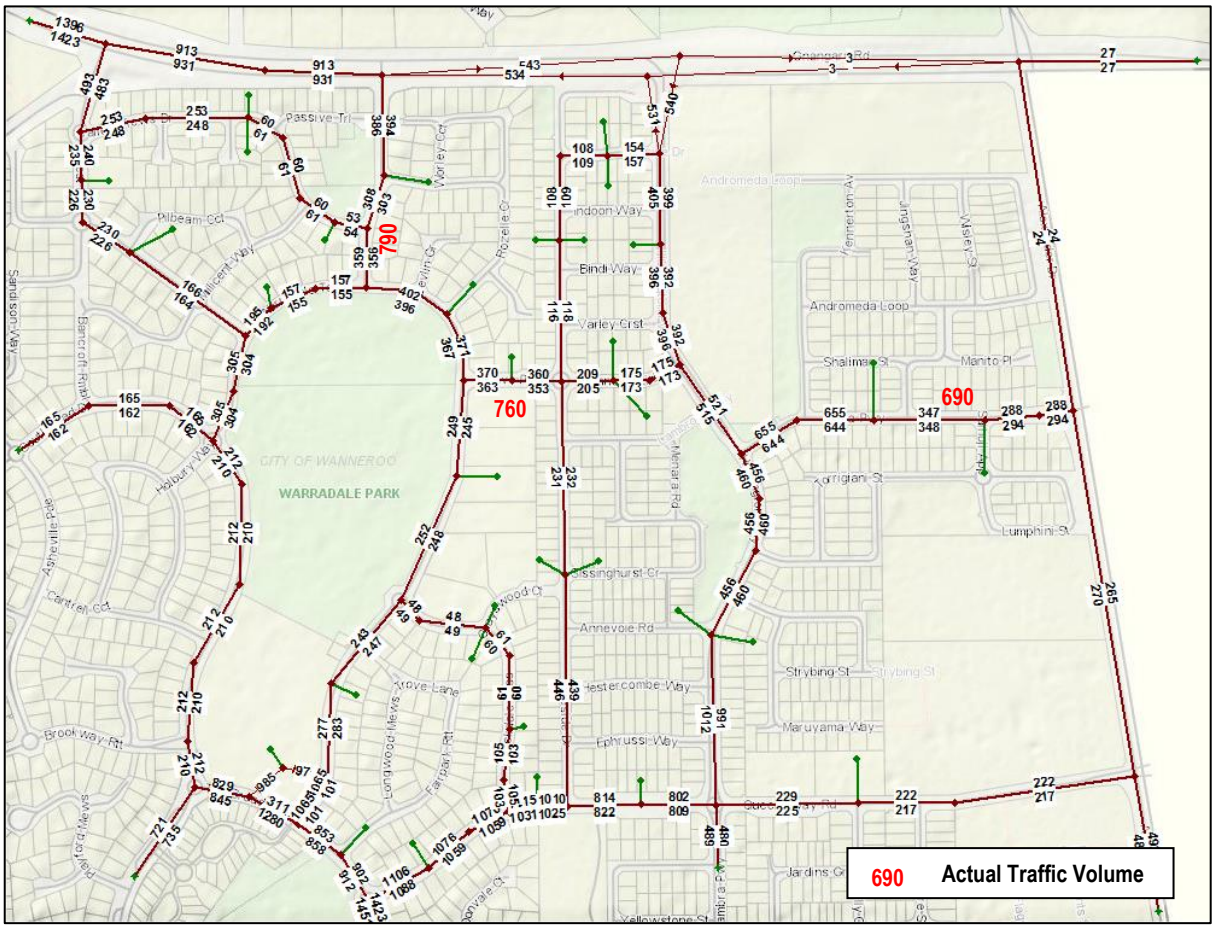

Figure 7: Existing Modelled Traffic Flows

3. Scenario 1 - Ultimate Development - With Kevo Place Connection

The base traffic model was then updated to represent the ultimate development of the study area which included additional dwellings within East Landsdale Cell 9 and the ultimate road network layout as per the East Landsdale Agreed Structure Plan (ASP) No. 57. The total number of future dwellings within the undeveloped areas has been

estimated based on a residential density of R20/R30 consistent with surrounding development. It is understood that the City has endorsed plans to rezone the seven Special Residential lots bound by Kevo Place, Warradale Terrace, Rockdale Pass and Grayswood Court to a residential density of R40 which would yield 106 dwellings. This area has therefore has been modelled based on the potential maximum 106 dwellings.

The ASP also indicates a commercial development on the corner of Gnangara Road and Alexander Drive which is likely to be a service station. Like to the Transcore traffic model, no traffic generation has been assigned to this site as the majority of trips associated with service stations are pass-by trips and the site will not generate a significant number of new vehicle trips. The modelled traffic volumes under this scenario are shown in **Figure 8**.

Figure 8: Scenario 1 - Ultimate Development - with Kevo Place Connection - Modelled Traffic Flows

After ultimate development, the following maximum traffic flow increases are predicted:

- Gnangara Road - west of Huntington Parkway +960 vpd
- Queensway Road +680 vpd
- Kevo Place +150 vpd
- Anneen Link +340 vpd
- Huntington Parkway - north of Anneen Link +690 vpd
- Warradale Terrace - south of Kevo Place +510 vpd

The traffic flows on all other roads are predicted to increase to a lesser extent or will decrease in volume due to new road connections.

Kevo Place is predicted to carry a maximum traffic flow of approximately 900 vpd. The typical capacity of Access Roads is approximately 3,000 vpd and therefore the future traffic flow on Kevo Place resulting from full development will not exceed the capacity of the road.

The traffic modelling undertaken by Transcore in June 2009 predicted a maximum traffic flow of 1,300 vpd along Kevo Place under the ultimate development scenario. The discrepancy is likely due to the difference between the numbers of dwellings used for assessment. The Transcore assessment was undertaken prior to any urban development within East Landsdale and therefore dwelling numbers were estimated. As the majority of development within the study area has occurred, the current assessment has been based on the actual number of developed dwellings with only minor assumptions being made for the remaining undeveloped areas.

4. Scenario 2 - Ultimate Development - Without Kevo Place Connection

The traffic model was then modified to remove the Kevo Place road connection to quantify the change in traffic flows on the surrounding road network, particularly the remaining east-west road links (Gnangara Road and Queensway Road). The modelled traffic volumes under this scenario are shown in **Figure 9**. The maximum increase in traffic flows (rounded to the nearest 10 vpd) resulting from the Kevo Road closure are also shown. Increases of less than 100 vpd or reductions in traffic flows were not included.

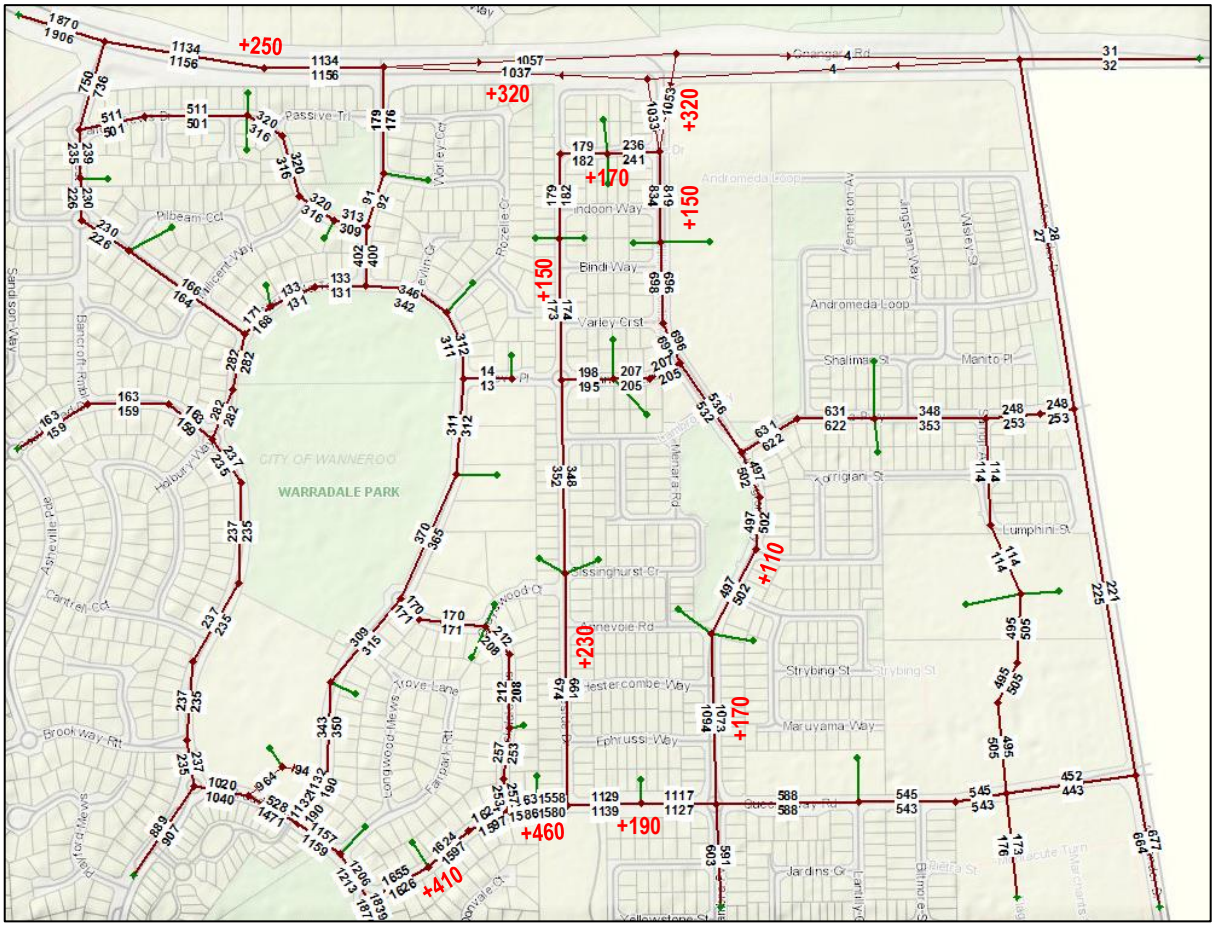

Figure 9: Scenario 2 - Ultimate Development - without Kevo Place Connection - Modelled Traffic Flows

As shown in **Figure 9**, the effect of closing the Kevo Place connection is limited to Huntington Parkway, Raeside Drive and relatively short sections of Gnangara Road and Queensway Road. The magnitude of traffic flow increase is relatively low with a maximum increase of 460 vpd on Queensway Road. The resulting traffic flows on all roads are predicted to remain within the indicative traffic volume ranges for their respective classification and function as recommended in the WAPC *Liveable Neighbourhoods* guidelines. Therefore if the Kevo Place connection is removed, the remaining road network will have sufficient capacity to accommodate the redistributed traffic flows.

5. Transport Impact Assessment

5.1. Traffic Capacity & Road Network Connectivity

Based on traffic capacity, the closure of the Kevo Place connection to vehicles will have minimal impact on the surrounding road network. As shown in the Scenario 2 traffic model, the effect of the closure is contained within a relatively small area and the magnitude of change in traffic flows on other roads is relatively low and can be

carried by the remaining road network.

Considering that the majority of existing and future development in the northern parts of Landsdale is residential, it is likely that most of the estimated 900 vpd along Kevo Place is either through traffic travelling to or coming from external locations or school trips to and from East Landsdale. It is unlikely that many of these trips are between the residential properties of the northern portion of the two cells.

If the City chooses to close the Kevo Place connection to vehicles, there are suitable alternative routes. School trips to and from East Landsdale can easily take Queensway Road and then Raeside Drive or Huntington Parkway. For the through traffic on Kevo Place, it is a better outcome to divert these trips onto the distributor/arterial road network instead of access roads.

The close proximity of alternate east-west links (Gnangara Road and Queensway Road) is such that there is minimal inconvenience to east-west traffic.

5.2. Other Considerations

5.2.1. Safety

The removal of the Kevo Place road connection will significantly reduce the volume of vehicular traffic along Kevo Place and therefore the risk of crashes will be very low. Notwithstanding this, no traffic incidents have been recorded along Kevo Place or at the intersection of Kevo Place with Warradale Terrace and Anneen Link/Raeside Drive within the five-year period between January 2011 and December 2015. This indicates that there is also minimal safety risk involved with keeping the connection.

5.2.2. Amenity

The primary function of Access Streets is to provide access to individual properties and the use of Access Streets for through traffic is discouraged. The closure of the Kevo Place connection to vehicles will limit the use of Kevo Place to local traffic only, reduce the vehicles speeds and therefore improve the amenity of the street.

5.2.3. Public Transport

Kevo Place is not currently part of a public transport route and there are no known plans to operate public transport along Kevo Place. Therefore this is no impact to public transport serviceability if the road connection is removed.

6. Conclusions and Recommendations

A detailed Traffic Impact Assessment of Kevo Place, Landsdale, in the City of Wanneroo has concluded that the Kevo Place road connection between Landsdale Cell 5 and East Landsdale Cell 9 is not necessary for vehicular purposes for the following reasons:

- A traffic model based on the full development of the surrounding area and road network indicated that the road network would have sufficient capacity to carry the redistributed traffic flows resulting from closure of the Kevo Place road connection.
- There is limited demand for local east-west traffic movements between Landsdale and East Landsdale and there are suitable alternative east-west road links within close proximity of Kevo Place (Gnangara Road and Queensway Road).
- The lack of traffic incidents along Kevo Place indicates that there are minimal safety issues with retaining the road connection. However, removal of the connection for vehicles will significantly reduce the volume of traffic along Kevo Place and therefore minimise the risk of future crashes.
- The closure of the Kevo Place road connection would also help to reduce vehicle speeds and therefore improve the amenity of the street.
- There are no existing or planned public transport services operating along Kevo Place and therefore the connection is not deemed necessary for this purpose.

Appendix A – East Landsdale LSP Transport Modelling Results (Transcore 2009)

FIGURE 4. DAILY TRAFFIC FLOWS GENERATED IN LANDSDALE WITH EAST LANDSDALE LOCAL STRUCTURE PLAN

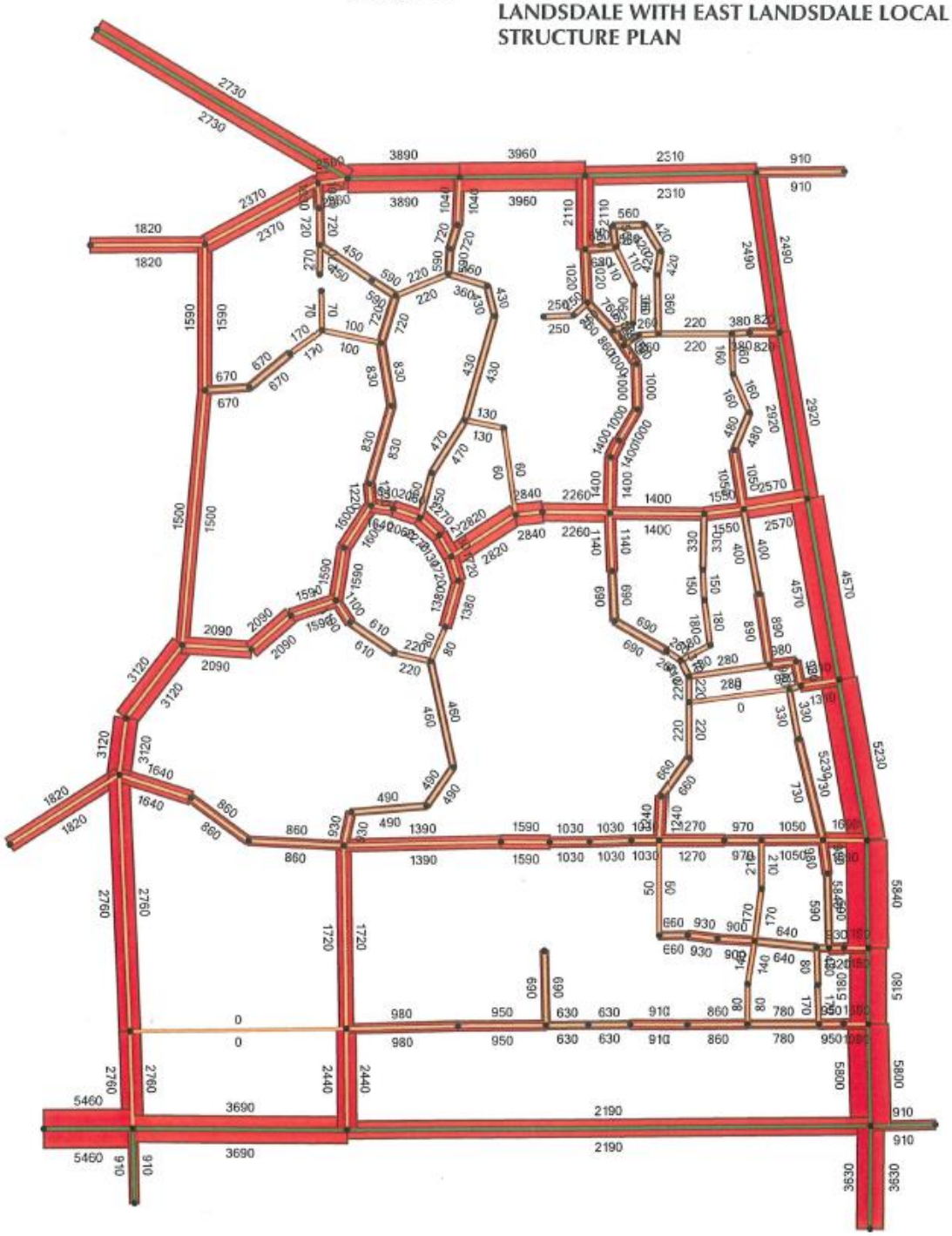

FIGURE 5. DAILY TRAFFIC FLOWS GENERATED IN LANDSDALE WITH EAST LANDSDALE L.S.P. WITH KEVO PLACE LINK