PROPOSED DISTRICT STRUCTURE PLAN, VARIOUS LOTS FOR NORTH ELLENBROOK WEST, CITY OF SWAN

DPLH COMMENT RESPONSES

TIA ADDENDUM 1

20.07.2022

1. INTRODUCTION

Parcel Property commissioned Donald Veal Consultants to prepare a Transport Impact Assessment report to support a District Structure Plan for a site known as North Ellenbrook West. Revision 1 of this report, dated 29.01.2021 was submitted to the DPLH for its review. This addendum to the TIA provides our response to each of the comments received.

2. TRAFFIC TO SCHOOLS

A query was raised regarding the trip-making to schools in the district structure plan (DSP) area and how traffic is addressed in the modelling.

Four schools are identified in the area; three primary schools and one high school. There is one primary school in each of the residential local structure plan areas (see **Figure 1**). The high school is in the north west local area (Zone 3).

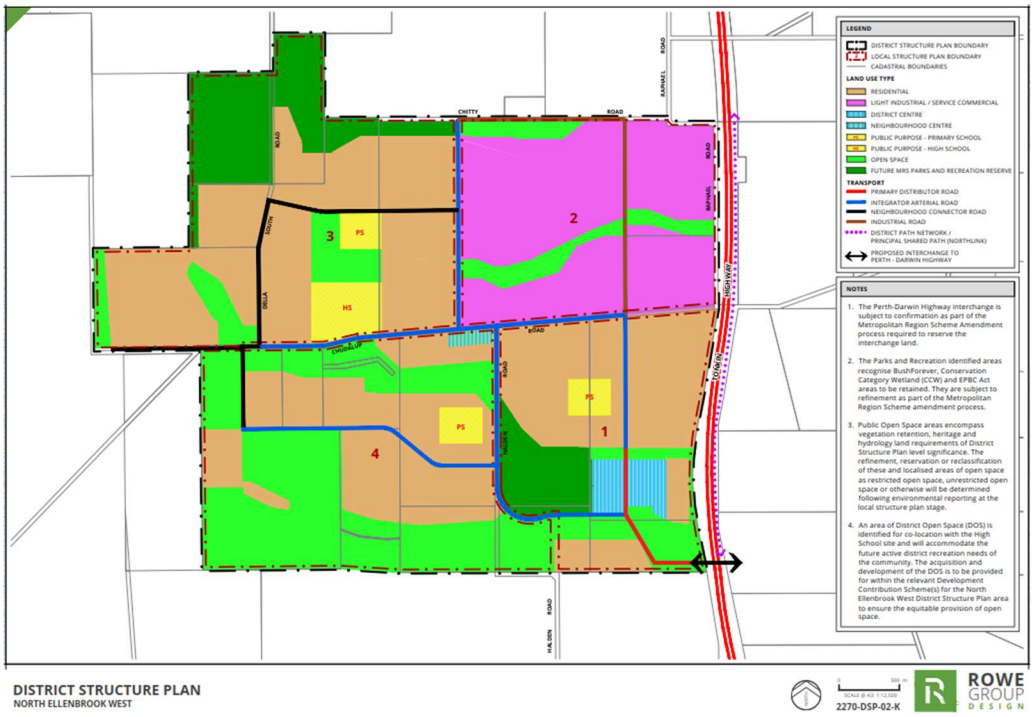

Figure 1: District Structure Plan

Traffic to schools in the TIA is not explicit but is contained within the trip generation assumptions. Residential trip rates are assumed as 9 vehicle trips per day per residence and includes trips to schools. Also, the modelling assumes that 55% of all residential trips remain within the structure plan area with 30% of these going to the industrial/commercial area, 60% to the district centre and 10% to the neighbourhood centres.

The impact of these assumptions is to overestimate traffic on the major roads, as some of the generated traffic would be local traffic to schools, traffic which in practice would use local roads (not included in the network); the modelling assumes that all traffic is assigned to the major road network. This is considered a conservative but appropriate approach when the network or zoning is not sufficiently refined to reflect the local catchment of each neighbourhood. This is especially true of primary schools which tend to have a very local catchment. In effect, the 55% of home-based trips which remain in the Structure Plan area would include local trips (including school trips). Similarly, the 45% of home-based trips which are assumed to leave/enter the area would include some school trips from outside the Structure Plan area, should the schools attract external students or staff. It is not possible at this stage of the planning process to identify if any of the schools are likely to have a broader catchment.

Another factor to remember when attempting to assess school traffic modelling at this scale is that school peaks do not typically coincide with commuter peak periods; in particular, the pm peaks differ. Road cross-sections with capacity to accommodate commuter traffic will usually have sufficient capacity to handle school traffic. Details of school planning are more appropriately addressed at the local structure plan stage when there is a refined plan for the area, within the context of a suitable major road network and a clearer understanding of the likely school layout and catchment.

DVC acknowledges the advice in draft Operational Policy 2.4 Section 3.5 Movement Network. DVC considers the current locations representative in that they occur in each of the four main local structure plans. Again, as more definition emerges with refined planning, the schools' locations will be reviewed and modified to ensure compliance with Policy 2.4.

3. ROAD DISCONTINUITY AT CHUDALUP ROAD

A comment was received that in order to discourage industrial and commercial traffic through the residential south of Chudalup Road, a stagger (discontinuity) should be introduced at Road 1 at Chudalup Road. Road 1 is the main north-south arterial linking the Tonkin Highway/Structure Plan area access at the south-east corner, through the district centre to the commercial/industrial precinct in the north.

DVC's modelling estimates that the industrial area could generate up to 40,000 vehicle trips per day (vpd) of which 6,750vpd are satisfied from within the DSP area. The remaining 33,250vpd would be attracted from areas external to the DSP and would have access via Stock/Cooper Rd interchange and the proposed new interchange. Of these, our model assumes approximately 21,000vpd using the southern interchange and 12,000vpd using the north. (By comparison residential trips (including trips to the retail centres) account for about 16,500vpd via the southern interchange and 7,000vpd via the north (a ratio of 70:30)).

DVC considers that the introduction of a discontinuity would have little positive effect in discouraging through-traffic and would simply add congestion, road safety concerns due to the left/right stagger and noise to the residential area south of Chudalup Road. Motorists from the south will in future select either the Halden Road interchange or the Stock Road interchange depending on where in the industrial area they are going and the perceived travel time to that destination. Some will perceive it quicker to travel further north to Stock Road by remaining on the faster Tonkin Highway than to exit at Halden Road and use the local roads. Others will do the opposite, depending on the location of their destination. DVC considers that a single discontinuity would have little influence on this decision, which would be largely determined by the overall perceived travel time of each route.

A more appropriate approach would be to ensure that speed limits, RAV network restrictions, intersection traffic management (roundabouts/signals) and visual restrictions are used along the Road 1 corridor to assist in managing traffic volumes and deterring industrial traffic through the district centre and adjacent residential areas. The perception that Road 1 is overall a slower alternative will be more effective than introducing a single discontinuity.

4. FURTHER COMPARISON OF ROM AND DVC MODELLING

A question was raised about the differences between the DVC modelling and ROM modelling. DVC was provided with the ROM24 (ROM) assignments for 2041 but no other details such as select link data. From the data available some obvious differences are apparent, i.e. the zoning system and road network are disaggregated and detailed in the DVC modelling. The trips generated in the area also differ, with the DVC model generating more trips. The following sections explain these differences and show how logical and reasonable adjustments to the DVC model could bring the outputs closer.

The ROM model adopts two zones for the area west of the Tonkin Highway: ROM Zone 1457 includes the area between Warbrook/Chudalup Rd and Stock Road. ROM Zone 1462 includes the area south of Chudalup Road (as shown in **Figure 2**). DVC modelling contains a more refined zoning system which includes only the land in the DSP i.e. not the whole of the Bullsbrook Industrial area west of Tonkin Highway.

The ROM information provided to DVC does not provide a breakdown of land use or O-D matrix information. However, based on zone connector volumes, a comparison of the trips generated by the two models is shown in **Table 1**.

Figure 2: Comparison of ROM and DVC Zoning

Table 1: Base Model Trip Generation Comparison

South of Chudalup Road		North of Chudalup Road		
Model	**Trips (vpd)**	**Model**	**Trips (vpd)**	**Total**
ROM Zone 1462	35,300	ROM Zone 1457	41,700	77,000
DVC Zones 7-10, 13	42,100	DVC Zones 1-6, 11	55,200	97,300
Difference	6,800 (+20%)		13,500 (+32%)	20,300 (26%)

Clearly the trip generation models are significantly different, as shown in **Table 1.** This could be attributed to the models being strategic vs a more localised model (which includes internal trips). Overall, the DVC model estimates approximately 26% more trips than the ROM model (with 20% more in the south and 32% more in the north). The difference in the northern section is especially notable as the DVC model represents only a part of the area north of Chudalup Road that is included in the ROM model.

If the zones north of Chudalup Road in the DVC model are assumed to represent the whole area of ROM zone 1457, it is possible to make some comparisons. The analysis below is based on this assumption.

A comparison of selected screen lines is shown in **Figure 3**. SC1 to the north compares well, as does SC4. These represent the key internal/external interfaces for the DVC model. The comparison differs markedly for the screen lines internal to the DVC model area. We are aware that the location of the District Centre will focus trips there in the DVC model. In the ROM model it is presumably included in Zone 1462. Also, we feel that access to the industrial zone will be from several east-west roads off Road 1. The location of the southerly zone connector in the ROM model is most-likely misplaced.

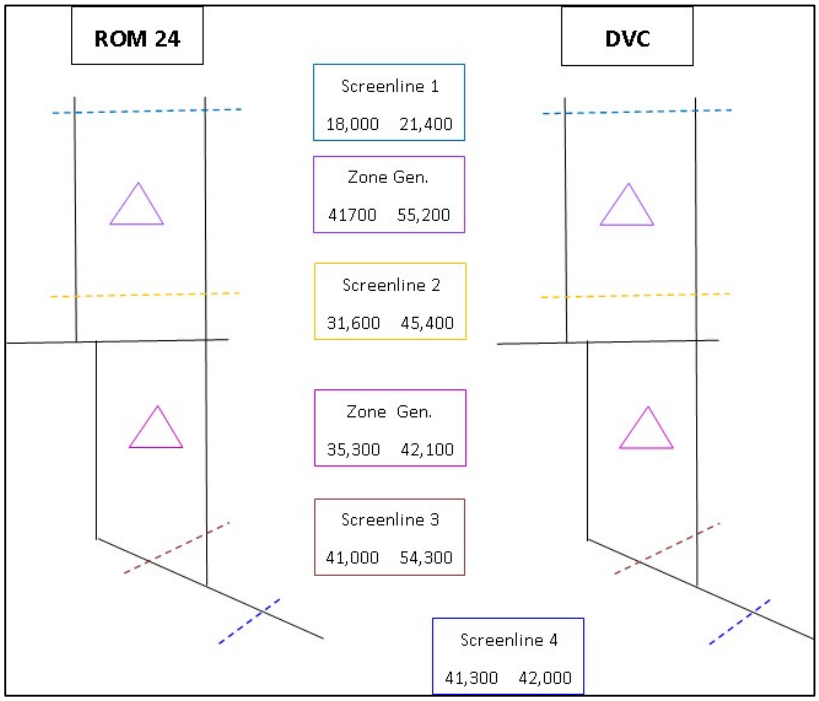

Figure 3: Base Model Screen Line Comparison

Nonetheless, a number of test changes were introduced progressively to the DVC model in an attempt to bring the models closer. A revised trip rate of 8 trips per residence was tested to reduce the number of trips generated. In addition, the GFA of the industrial and service commercial land use was reduced by about 23%, which limited trips generated to about 30,000vpd. These changes reduced the trips generated in the DVC model to about 83,700vpd (still 9% higher that ROM) as shown in **Table 2**. The screen line comparison for this modified version is shown in **Figure 4**.

Table 2: Modified DVC Trip Generation Model Comparison

South of Chudalup Road		North of Chudalup Road		
Model	**Trips (vpd)**	**Model**	**Trips (vpd)**	**Total**
ROM: Zone 1462	35,300	ROM: Zone 1457	41,700	77,000
DVC Modified: Zones 7-10, 13	39,400	DVC Modified: Zones 1-6, 11	44,300	83,700
Difference	4,100 (+12%)		2,600 (+6%)	6,700 (+9%)

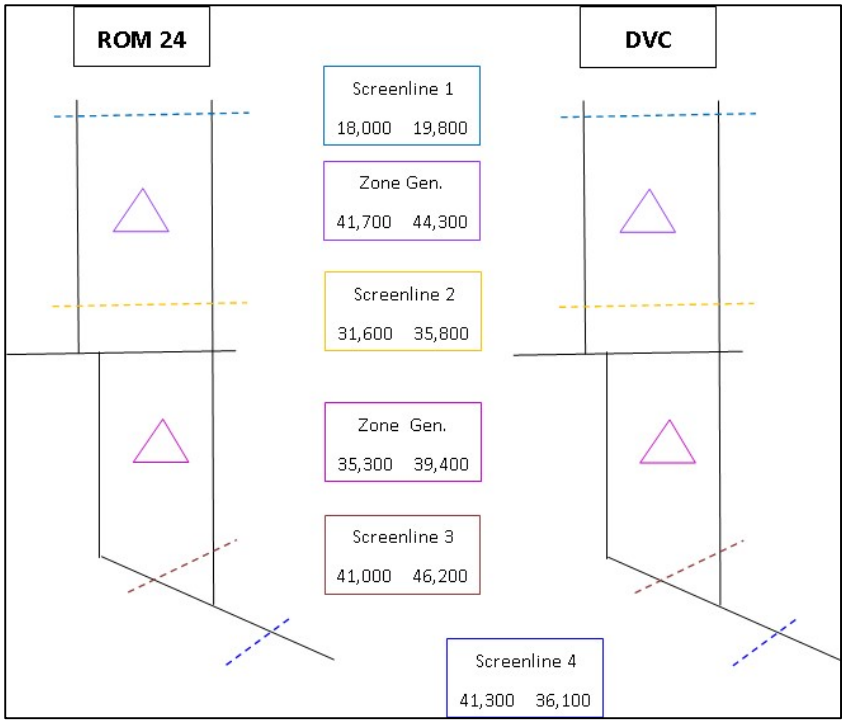

Figure 4: Modified DVC Model Comparison

The screen line comparison is generally closer apart from SC4 where there is a significantly lower DVC volume at the Halden Road interchange. DVC considers that these are within acceptable margins for structure plan modelling and could be accounted for by, for example, a small change to the assumed percentage of retail trips satisfied by internal and external generators.

In summary, it can be seen that if the trip generation in the DVC model is restricted to more closely reflect ROM, then a more favourable comparison of assigned trips is obtained. As the DVC network and zoning system is more refined than ROM it can be expected that the assignment will be more accurate, assuming that the comparison of generated trips as discussed above, is reasonable.

5. POTENTIAL IMPACT ON SURROUNDING ROADS

Related to the modelling comparison was a query raised about the volume of traffic leaving the district structure plan area with the potential to impact surrounding roads. We note that the district structure plan (DSP) area is entirely west of the Tonkin Highway with very limited access to the wider network to the east (north of the site only via the Stock Road interchange on Tonkin Highway and south only via the proposed new interchange). To the west there is even less accessibility although there may be potential to extend Stock Road to the west or north to connect with Neaves Road (see Figure 2.5 of the TIA: Perth at 3.5 million).

If the DVC model is constrained to more closely reflect ROM trip generation and it is assumed that the zoning systems are similar, then the DVC model predicts that approximately 20,000vpd will travel north to and from Stock Road (west of the Tonkin Highway). Of these about 16,600vpd (80%) are forecast to use Road 1. We assume that the majority of these would travel east to access the Tonkin Highway or further east to the Bullsbrook environs.

Clearly, the Halden Road interchange will attract the majority of traffic from the DSP area, nominally around 40,000vpd.

6. RECOMMENDED ROAD RESERVE WIDTHS

The revised structure plan road network for the Ellenbrook North West area is represented in **Figure 5**. The Department has also provided recommendations on the proposed road reserve widths. These recommendations have been adopted on the assumption that modelling and road reserve widths will be reviewed at subsequent stages of planning i.e. the local structure planning stage. Based on this and the revised assignment discussed above, the recommended road reserve widths are shown in **Table 3**.

Chitty Road lies on the northern boundary of the Structure Plan area and was not included in the TIA modelling. If it were included as part of future planning it is likely to function mainly as a connection between Road 1 and Road 2 and provide access to internal access roads. According to Development Control Policy 4.1 for industrial subdivision, highly trafficked industrial road carriageways should be 10m wide within a road reserve of 25m. The proposed 25m road reserve allows two 5m wide traffic lanes and 7.5m wide verges on each side.

Della South Road was also not extended further north in the Structure Planning area than shown in Figure 5 as this extension was not contemplated under the Bullsbrook Freight and Industrial Land Use Planning Strategy as part of the primary transport network. Also, the land directly north of Della South Road is a Bush Forever Reserve under the Metropolitan Region Scheme which does not provide a direct connection into the planned industrial area.

As agreed at the meeting of the Department and Consultants on 31st March 2022, the intent of the District Structure Planning is a strategic exercise to determine the major transport corridors within the Structure Plan area. As more detailed planning is undertaken, further refinement of the transport planning will follow, including analysis of key intersections using SIDRA to determine intersection controls lane configurations and local widening. Similarly, water sensitive design has to-date only been considered at a high level, and will be investigated further at subsequent planning stages. This is enforced by way of the WAPC's Better Urban Water Management Policy which outlines the various stages in which design criteria are to be considered.

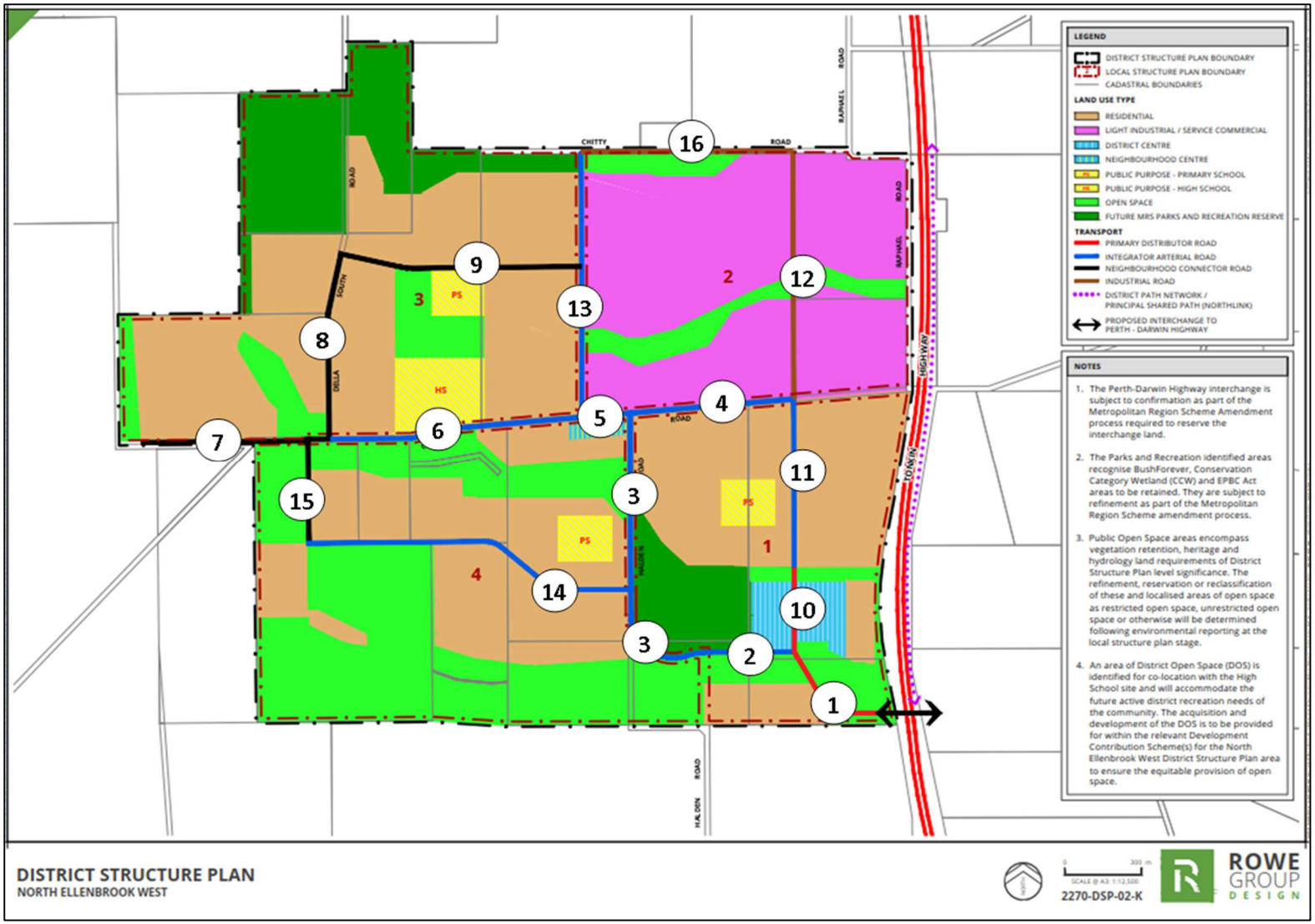

Figure 5: Proposed Road Hierarchy

Table 3: Proposed North Ellenbrook West Road Reserves

Road Section	Classification and Forecast Traffic Volume	Recommended Road Reserve Width	Proposed Lane Configuration	Notes
1. Halden Rd (West of Tonkin Hwy)	**6 Lane Primary Distributor** 36,000 to 42,000vpd	TBC	3x3.5m lanes (6 lanes) 7m median 2x6m verges	To be determined by MRWA. This section is through open space with no frontage access. Assumed PSP will be in the verge.
2. Halden Rd (Road 1 to Access Rd)	**Integrator A Centres** 21,000vpd	35.6m	2x6.7m - 4 traffic lanes 2x4m parking & bike lanes 6m median 2x4.1m verges	See Fig. 14 of Liveable Neighbourhoods. No frontage access permitted although access into District Centre likely.
3.Halden Rd (Access Rd to Chudalup Rd)	**Integrator B** 15,000 to 20,000vpd	29.2m	2x3.5m traffic lanes 2x1.5m bike lanes 6m median 2x2.5m parking lane 2x4.1m verges	Assumes no frontage access i.e no service lane. (Liveable Neighbourhoods Fig. 15 and Note 2.)
4. Chudalup Rd (Road 1 to Halden Rd)	**Integrator B** 7,000vpd	29.2m	2x3.5m traffic lanes 2x1.5m bike lanes 6.0m median 2x2.5m parking lane 2x4.1m verges	Servicing industrial/commercial land use on the northern side and residential to the south (Liveable Neighbourhoods Fig. 15)
5. Chudalup Rd Through local centre	**Integrator B** 16,000vpd	29.2m	2x3.5m traffic lanes 2x1.5m bike lanes 6.0m median 2x2.5m parking lane 2x4.1m verges	See Fig. 15 of Liveable Neighbourhoods. No frontage access permitted.
6. Chudalup Rd Through residential area	**Integrator B** 10,000vpd	29.2m	2x3.5m traffic lanes 2x1.5m bike lanes 6m median 2x2.5m parking lane 2x4.1m verges	See Fig. 15 of Liveable Neighbourhoods.

Road Section	Classification and Forecast Traffic Volume	Recommended Road Reserve Width	Proposed Lane Configuration	Notes
7. Chudalup Rd (Della South Rd to west)	**Neighbourhood B** 2,000vpd	20m	2x3.5 traffic lanes 2x2.3m parking lanes 2x4.2m verges	See Fig. 18 of Liveable Neighbourhoods.
8. Della South Rd	**Neighbourhood A** 1000-5000vpd	25m	2x3.5m traffic lanes 2x1.5m bike lanes 2m median 2x2.1m parking lanes 2x4.1m verges	See Fig. 17 of Liveable Neighbourhoods.
9. East West Connector	**Neighbourhood A** 1000-5000vpd	25m	2x3.5m traffic lanes 2x1.5m bike lanes 2m median 2x2.1m parking lanes 2x4.1m verges	See Fig. 17 of Liveable Neighbourhoods.
10. Road 1 (At District Centre)	**Primary Distributor** >35,000vpd	TBC	3x3.5m (6 traffic lanes) 6m median 2x1.5m bike lane 2x5m and verge	To be determined by MRWA. Adjacent to the District Centre with controlled access.
11. Road 1 (Central Section)	**Integrator A modified** 26,000 – 28,000vpd	35.6m	2x6.7m - 4 traffic lanes 2x1.5m bike lanes 6m median 2x5.6m verges	See Fig. 14 of Liveable Neighbourhoods. No parking or frontage access permitted.
12. Road 1 (Industrial Section)	**Industrial Road** 30,000vpd	35.6m	2x6.7m - 4 traffic lanes 2x1.5m bike lanes 6m median 2x5.6m verges	The proposed width is consistent with the road section further south and connects to the northern interchange via Cooper Road. No frontage access permitted.
13. Road 2	**Integrator B** >15,000vpd	29.2m	2x3.5m traffic lanes 2x1.5m bike lanes 6.0m median 2x2.5m parking lane 2x4.1m verges	Servicing industrial/commercial land use on the eastern side and residential to the south (Liveable Neighbourhoods Fig. 15). No frontage access permitted.

Road Section	Classification and Forecast Traffic Volume	Recommended Road Reserve Width	Proposed Lane Configuration	Notes
14. Road 4 (east)	**Integrator B** 12,000vpd	30m	2x3.5m traffic lanes 6m median 2x1.5m cycle lanes 2x2.5m parking lanes 2x 4m verges	See Fig. 15 of Liveable Neighbourhoods. No frontage access permitted.
15. Road 4 (west)	**Neighbourhood B** <3,000vpd	20m	2x3.5 traffic lanes 2x2.3m parking lanes 2x4.2m verges	See Fig 18 of Liveable Neighbourhoods.
16. Chitty Road	**Industrial Road**	25m	2x5m traffic lanes 2x7.5m verges	According to Section 3.5.6 of Development Control Policy 4.1 for industrial subdivisions.