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Traffic Impact Statement

(March, 2014)

March 2014

Final Issue 3

Lots 635, 739 And 740, Baldivis Road
Local Structure Plan

Prepared For:
Novalee Nominees Pty. Ltd. &
Estates 77 Pty. Ltd.

Transport Impact Statement
Report

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1. INTRODUCTION

Novalee Nominees Pty. Ltd. and Estates 77 Pty. Ltd. have commissioned Donald Veal Consultants to undertake a detailed Transport Assessment for a Local Structure Plan located on Lots 635, 739 and 740, Baldvis Road, Baldvis in the City of Rockingham. The Local Structure Plan has been developed to guide the development of the land parcel bounded by Baldvis Road to the east; existing residential development to the west and north; and rural residential/agricultural uses to the south.

Two major access points to the primary boundary road system are proposed to serve the Local Structure Plan, which consists of the following:

- A full movements Main East-West Access Road central to the Local Structure Plan area to connect with the west side of Baldvis Road at a single circulating roundabout; and
- A full movements unsignalised T-intersection near the south-eastern end of the Local Structure Plan area where it intersects with the west side of Baldvis Road.

A series of local access roads are also proposed at the north, south and western boundaries of the Local Structure Plan to connect with existing and proposed urban development to the north, south and west.

A Transport Impact Assessment was submitted as part of the Structure Plan process and was reviewed by the City of Rockingham Technical Services Department. Subsequent to receipt of comments from staff and the recommendations outlined in a Council report dated 7 July 2010, the Transport Impact Assessment has since been modified to incorporate the recommendations associated with the movement network. This revised assessment has also considered the proposed access scenarios, as discussed with the City of Rockingham, through liaison with Technical Services staff as well as the consideration of long-term traffic volume projections developed by Main Roads Western Australia (MRWA) with respect to access to Baldvis Road.

Earlier revisions to the Transport Impact Assessment report were prepared based upon feedback received from the City of Rockingham between July 2010, July 2011 and November 2011, to address these key technical issues.

This current version of the report includes consideration of traffic noise and whether the likely traffic volumes forecast on Baldvis Road give any cause to warrant further investigation based on WAPC State Planning Policy 5.4. Otherwise, the report remains materially unchanged.

This report has been prepared in a format suitable for submission to the City of Rockingham and the Western Australian Planning Commission for review and comment.

2. EXISTING SITUATION AND TRANSPORT NETWORK

The subject lands are located within Baldvis on the west side of Baldvis Road, south of Safety Bay Road, and generally opposite the existing intersection of Baldvis Road/Serpentine Road. The Local Structure Plan area is bounded by Baldvis Road to the east; existing residential uses to the north and west; and existing rural residential/agricultural uses to the south. Baldvis Road via Safety Bay Road provides direct access to the Kwinana Freeway, to the north of the subject lands.

Figure 2.1 shows the location of the structure planning area.



Figure 2.1: Locality Plan

The existing boundary road network consists of the following:

- Baldvis Road is a two-lane undivided rural standard carriageway and has been classified as a *District Distributor B* road with a posted speed limit of 70 km/h in the vicinity of the subject lands. According to traffic data volume projections sourced from MRWA, this road is anticipated to carry up to approximately 10,000 vehicles per day (vpd) under year 2031 operating conditions. It is operated and maintained under the jurisdiction of the City of Rockingham. No footpaths are currently in place on either side of Baldvis Road.
- Serpentine Road is located to the south of the proposed Southern Access Road/Baldvis Road intersection. It is classified as an *Access Road* and provides local access to abutting rural residential and agricultural properties to the east of the subject lands. The posted speed limit along Serpentine

Road varies from 70 km/h in the vicinity of the intersection of Baldivis Road to 80 km/h further east of the intersection. Existing traffic volumes were not available for Serpentine Road but it has been assumed, based upon traffic surveys undertaken by Donald Veal Consultants at the intersection of Baldivis Road/Serpentine Road during the a.m. and p.m. weekday roadway peak periods, that typical weekday daily traffic volumes would be less than 1,000 vpd. The intersection of Baldivis Road/Serpentine Road operates under Give Way Control on the Serpentine Road approach. It is operated and maintained by the City of Rockingham. No footpaths or dual use paths are in place along Serpentine Road.

The MRWA document “Metropolitan Functional Road Hierarchy” defines road classifications in the Perth Metropolitan Area. However, based upon information contained in the document, both Baldivis Road and Serpentine Road and the road classifications have been defined as follows:

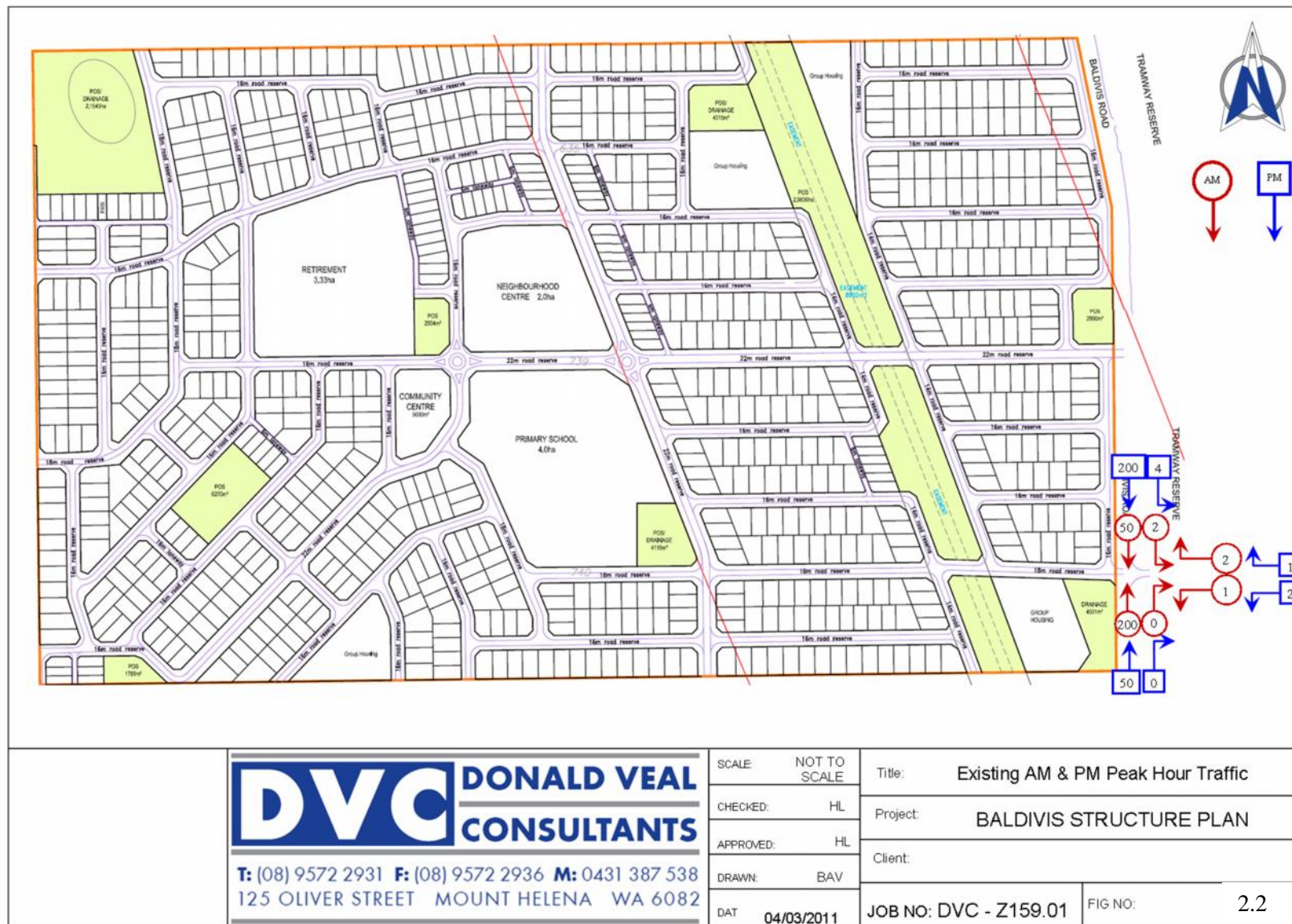
- *District Distributor B*: Perform a similar function to District Distributor A roads but with reduced capacity due to flow restrictions caused by access to and roadside parking alongside adjoining property. These are often older roads with a traffic demand in excess of that originally intended. District Distributor A and B roads run between land use cells and generally not through them, forming a grid which would ideally space them around 1.5 kilometres apart. They are managed by Local Government.
- *Access Road*: 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.

In order to review the existing traffic operations at the Baldivis Road/Serpentine Road intersection, Donald Veal Consultants conducted site-specific traffic counts at this intersection on Thursday 13 May 2010 during the a.m. (7:00 to 9:00 a.m.) and p.m. (4:00 to 6:00 p.m.) roadway peak periods. Based upon a review of the entering and exiting traffic volumes at this location, a detailed SIDRA analysis was not undertaken for existing operations at this location as only less than 20 vehicles were observed turning into and out of the Serpentine Road approach during the a.m. and p.m. peak periods, with no delay to both vehicles travelling on Baldivis Road and to vehicles exiting Serpentine Road observed during these periods. **Figure 2.2** demonstrates the observed a.m. and p.m. weekday peak hour observed traffic volumes at this location.

A review of the projected traffic volumes prepared by MRWA for Baldivis Road for the 2031 horizon planning year and the *Baldivis Roads Needs Study: Traffic Infrastructure Report* (WorleyParsons, 2005) indicate that the ultimate function and road classification of Baldivis Road along the eastern boundary of the Local Structure Plan area would be downgraded from *District Distributor B* classification to a *Neighbourhood Connector A* (or *Local Distributor*) standard with an upgraded divided carriageway to an urban standard consisting of two-3.5 metre lanes, and a dual use path/shared path along one side of the road. For the purposes of assessment of proposed intersections to Baldivis Road from the Local Structure Plan area, it has been assumed that the maximum daily traffic volumes

along Baldivis Road in this section would range between 7,000 and 10,000 vpd, which are consistent with the proposed road classification.

Existing public transport services to the general area are limited to Route 564 (Baldivis –Warnbro Railway Station) which provides 20-minute service during the a.m. and p.m. weekday roadway peak periods and hourly service during the midday weekday peak period. However, this existing bus routes services only the existing established areas of Baldivis to the north of Local Structure Plan area, namely the Settlers Hill development, the existing Coles/Stockland Shopping Centre and the local schools in the area. It is expected that as urban development continues south of these areas that local bus services will be extended.



3. PROPOSED LOCAL STRUCTURE PLAN USES

The land uses proposed for development in the context of the Local Structure Plan consist of approximately 815 single family residential dwelling units, three group housing sites, a retirement village, a community centre, a neighbourhood retail centre and a primary school. The area is proposed to be served by two connections to the primary road system at Baldivis Road and as outlined as follows:

Two major access points to the primary boundary road system are proposed to serve the Local Structure Plan which would consist of the following:

- A full movements Main East-West Access Road central to the Local Structure Plan area to connect with the west side of Baldivis Road at a single circulating roundabout; and
- A full movements unsignalised T-junction near the south-eastern end of the Local Structure intersection with the west side of Baldivis Road.

A series of local access roads are also proposed at the north, south and western boundaries of the Local Structure Plan are to connect with existing and proposed urban development. Internal to the Local Structure Plan, the proposed layout of the road system will consist of several *Neighbourhood Connector B* roads and a series of *Access Roads* arranged in a permeable grid fashion to allow for maximal efficient distribution of locally-generated traffic. Several laneways are also proposed for residential dwelling units which are proposed to have frontage onto public open space.

The proposed revised Local Structure Plan been documented in **Appendix A**.

4. TRANSPORT IMPACT ASSESSMENT

In order to estimate the traffic that would be generated by the proposed uses detailed in the Local Structure Plan, a traffic generation and distribution exercise was undertaken for both the interim and ultimate scenarios. The aim of this exercise was to establish the traffic volumes on both the surrounding and proposed internal road network to ensure that both would operate satisfactorily.

4.1 TRIP GENERATION

To establish the traffic generation rates and directional splits for the plan were obtained from the “*Trip Generation 7th Edition*” (Institute of Transportation Engineering, 2003) and the RTA *Guide to Trip Generating Developments*. It has therefore been estimated that the proposed land uses would generate in the order of 10,000 vpd on a typical weekday, with approximately 1,200 vehicle trips during both the a.m. and p.m. weekday peak hours. It has been assumed that the proposed siting of a neighbourhood centre and primary school within the Local Structure Plan area would result in a 25% reduction in trips to and from the boundary road system and to and from neighbouring residential localities.

4.2 TRIP DISTRIBUTION AND ASSIGNMENT

Based on the layout and connectivity of the surrounding road network, the spatial distribution of abutting land uses and existing travel patterns on the boundary road network, the following assumptions have been made for the distribution of the site-generated traffic:

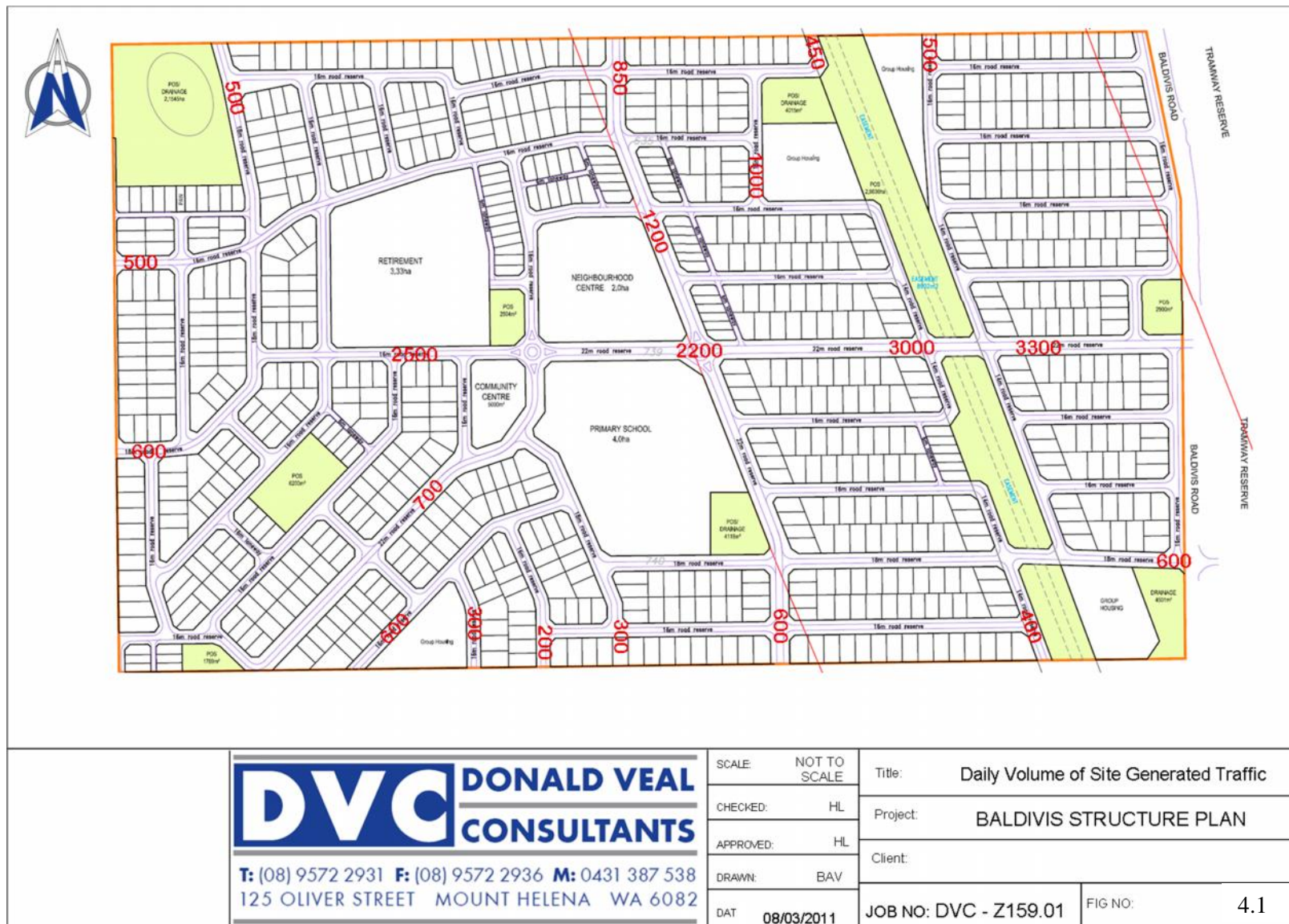
- 50% of trips enter and exit the lands from and to the east;
- 20% of trips enter and exit the lands from and to the south;
- 20% of trips enter and exit the lands from and to the north; and
- 10 % of trips enter and exit the lands from and to the west.

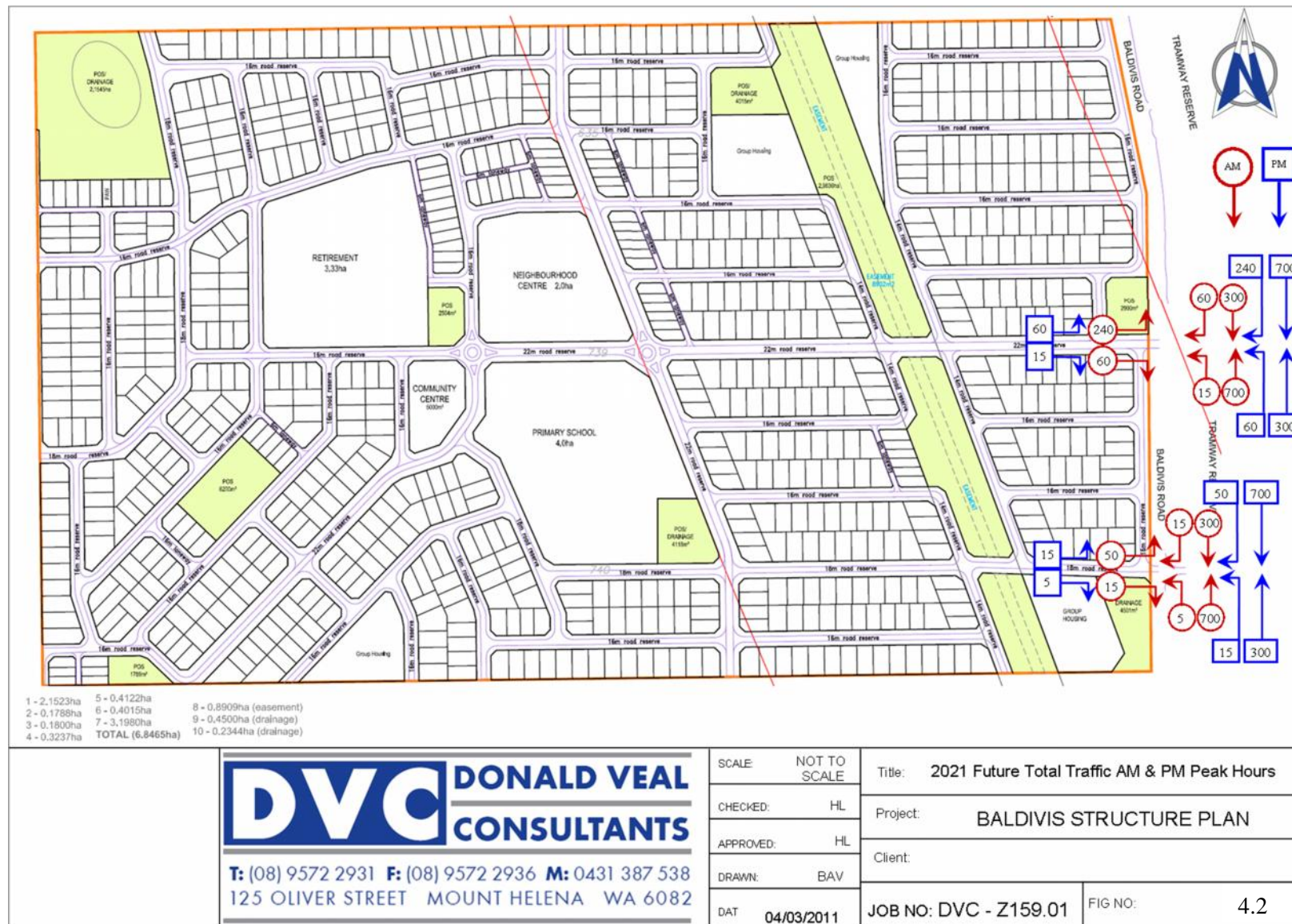
It should be noted that anticipated trip distribution and assignment, as noted above, applies only to externally-generated trips and that the balance of trips which are generated internally and remain within the Local Structure Plan area have been distributed according to the spatial distribution of the proposed location of the primary school, community centre and neighbourhood centre and have been reflected in the anticipated daily volumes shown in **Figure 4.1**. The assignment of this traffic onto the road network has been made based upon the assumption that drivers will take a path that is likely to minimize their travel time. Total daily traffic volumes within the Structure Plan area have also accounted for externally-generated traffic from outside the immediate area.

Figure 4.2 shows future total traffic (site-generated traffic + background traffic) to the proposed Baldivis Road intersections during the a.m. and p.m. weekday roadway peak hours under 2031 traffic conditions.

Client: Novalee Nominees Pty. Ltd. And Estates 77 Pty. Ltd.

Project: Lots 635, 739 and 740, Baldvis Road Structure Plan Transport Assessment





4.3 INTERSECTION ANALYSIS

As indicated in Section 2 of this report, the volume of existing traffic movements at the Baldivis Road/Serpentine Road intersection was deemed to be low to be assessed using the SIDRA analysis program and was observed to be operating at very good Levels of Service during the weekday a.m. and p.m. peak periods with no delays to inbound and outbound traffic movements from and to Baldivis Road at this location. Therefore, background traffic used for the purposes of this assessment has been based upon the MRWA 2031 traffic projections for the road network in the area and proposed road classifications and road cross-sections distilled from the *Baldivis Road Needs Study: Traffic and Infrastructure Report* (WorleyParsons, 2005). The future traffic operations at the proposed intersections to Baldivis Road have been therefore based upon the ultimate base road volumes in the area and an upgraded urban cross-section on Baldivis Road using the SIDRA computer package. A SIDRA analysis was undertaken for two access scenarios at the Baldivis Road/Main East-West Access Road intersection (single circulating roundabout and a T-intersection) and for a T-intersection configuration at the Baldivis Road/Southern Access Road intersection.

The SIDRA package is a commonly used intersection-modelling tool by traffic engineers for all types of intersections. Outputs are presented in the form of degree of saturation, level of service, average delay and 95% queue. These outputs are defined as follows:

- **Degree of Saturation (DOS):** is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The Degree of Saturation ranges from close to zero for varied traffic flow up to one for saturated flow or capacity.
- **Level of Service (LOS):** is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. In general, there are 6 levels of services, designated from A to F, with Level of Service A representing the best operating condition (i.e. free flow) and Level of Service F the worst (i.e. forced or breakdown flow).
- **Average Delay:** is the average of all travel time delays for vehicles through the intersection.
- **95% Queue:** is the queue length below which 95% of all observed queue lengths fall.

The results of the SIDRA assessment for the existing boundary road intersections and the proposed new road connections have been documented in **Tables 4.1 and 4.2**.

The SIDRA results for the Baldivis Road/Main East-West Access Road intersection indicate that the traffic operations under the scenario whereby a single circulating roundabout is implemented at this location (as preferred by the City of Rockingham) would result in longer 95th percentile queuing during both weekday peak periods; however, the intersection is anticipated to operate at an overall Level of Service A during the a.m. and p.m. weekday roadway peak hours resulting in minimal delays on all approaches to the intersection. The results of the SIDRA assessment for the Baldivis Road/Southern Access Road intersection indicate that this intersection will operate an overall acceptable Level of Service and should be constructed with a dedicated southbound right-turn pocket on Baldivis Road to minimise

delays to southbound through traffic. The location of this proposed intersection close to the Baldivis Road/Serpentine Road intersection is not anticipated to result in adverse conflict with existing traffic using Serpentine Road. However, details associated with the design of the new intersection and the transition with Serpentine Road will be addressed during the subdivision design stages of development.

The WAPC State Planning Policy 5.4 sets out requirements for determining whether an assessment is required for considering noise abatement measures resulting from road and rail transport sources

4.4 ROAD TRANSPORT NOISE CONSIDERATIONS

The WAPC State Planning Policy 5.4 sets out requirements for determining whether an assessment is required for considering noise abatement measures resulting from road and rail transport sources. It defines major roads for the purpose of applying the policy including '*other urban roads carrying more than 20,000 vehicles per day*' (section 5.2.2).

In the context of this Local Structure Plan, the major road in the vicinity of the site will remain Baldivis Road, which is forecast by MRWA to carry some 10,000 vpd by the year 2031. Therefore there is no requirement to consider a noise assessment for this Local Structure Plan under WAPC State Planning Policy 5.4.

Client: Novalee Nominees Pty. Ltd. And Estates 77 Pty. Ltd.

Project: Lots 635, 739 and 740, Baldvis Road Structure Plan Transport Assessment

Table 4.1: Results of SIDRA Analysis – Baldvis Road/Main East-West Access Road

		Single Circulating Roundabout				T-Intersection			
Approach	Movement	DOS	Ave Delay (Sec)	95 th Percentile Queue (m)	LOS	DOS	Ave Delay (Sec)	95 th Percentile Queue	LOS
Baldvis Road (Northbound)	A.M. Peak Hour								
	L	0.638	7.2	59	A	0.478	7.4	0	A
	T	0.644	6.3	59	A	0.482	0	0	A
Baldvis Road (Southbound)	T	0.375	6.0	27	A	0.223	0	0	A
	R	0.374	11.6	27	B	0.148	13.5	5	B
Main East-West Access Road (Eastbound)	L	0.721	22.9	73	C	0.826	32.6	55	D
	R	0.720	27.3	73	C	0.794	77.4	29	F
Overall Intersection		0.722	10.5	73	B	0.826	10.2	55	N/A
Baldvis Road (Northbound)	P.M. Peak Hour								
	L	0.430	8.8	26	A	0.232	7.4	0	A
	T	0.430	7.9	26	A	0.232	0	0	A
Baldvis Road (Southbound)	T	0.725	5.7	90	A	0.446	0	0	A
	R	0.724	11.3	90	B	0.289	9.6	12	A
Main East-West Access Road (Eastbound)	L	0.109	6.4	6	A	0.089	12.0	3	B
	R	0.109	10.7	6	B	0.277	59.4	7	F
Overall Intersection		0.725	7.5	90	A	0.446	3.6	12	N/A

Client: Novalee Nominees Pty. Ltd. And Estates 77 Pty. Ltd.

Project: Lots 635, 739 and 740, Baldivis Road Structure Plan Transport Assessment

Table 4.2: Results of SIDRA Analysis – Baldivis Road/Southern Access Road Intersection

		Interim			
Approach	Movement	DOS	Ave Delay (Sec)	Queuing (m)	LOS
AM Peak Hour					
Baldivis Road (Northbound)	L	0.439	7.4	0	A
	T	0.449	0	0	A
Baldivis Road (Southbound)	T	0.284	7.4	38	A
	R	0.282	15.2	38	C
Southern Access Road (Eastbound)	L	0.280	22.7	9	C
	R	0.282	22.6	9	C
Intersection		0.449	4.0	38	N/A
PM Peak Hour					
Baldivis Road (Northbound)	L	0.232	7.4	0	A
	T	0.231	0	0	A
Baldivis Road (Southbound)	T	0.479	3.9	60	A
	R	0.478	11.6	60	B
Southern Access Road (Eastbound)	L	0.056	17.6	1.5	C
	R	.0056	17.4	1.5	C
Intersection		0.479	3.3	60	N/A

5. LOCALISED ROAD IMPROVEMENTS

Based upon the results of the detailed traffic operations assessment at the two Baldivis Road intersections, the following localised road improvements are recommended:

- The construction of a single circulating roundabout at the intersection of Baldivis Road/Main East-West Access road, subject to review by the City of Rockingham.
- The construction of a dedicated southbound right-turn pocket on Baldivis Road at the proposed intersection with the Southern Access Road and the eastbound approach to this intersection (Southern Access Road approach) to consist of a single shared left- and right-turning lane and a single inbound lane.
- Both intersections to incorporate a minimum 1.8 metre pedestrian splitter island on the approach legs to Baldivis Road to accommodate pedestrian movements, in accordance with Austroads standards.

No other intersection improvements will be required. The abovementioned intersection improvements will be considered in further detail during the detailed subdivision design process, in consultation with the City of Rockingham. The specific details relating to rubbish truck and internal circulation issues as well as manoeuvring in the context of laneway access, on-street car parking and design of 4-way intersections will also be addressed during the detailed subdivision design process.

6. STRUCTURE PLAN MOVEMENT NETWORK

6.1 INTERSECTION AND LANE TREATMENTS

All internal intersections of the subdivision area will be basic priority-controlled T-intersections because of the relatively low traffic volumes.

While it is recognised that internal local road traffic volumes along the internal road network are relatively low, in order to minimise conflict and maximise safety within the proposed development, Local Area Traffic Management measures will be implemented. Details relating to line marking, intersection control and local area traffic management measures will be addressed during the detailed subdivision design process.

6.2 PEDESTRIAN AND CYCLIST FACILITIES

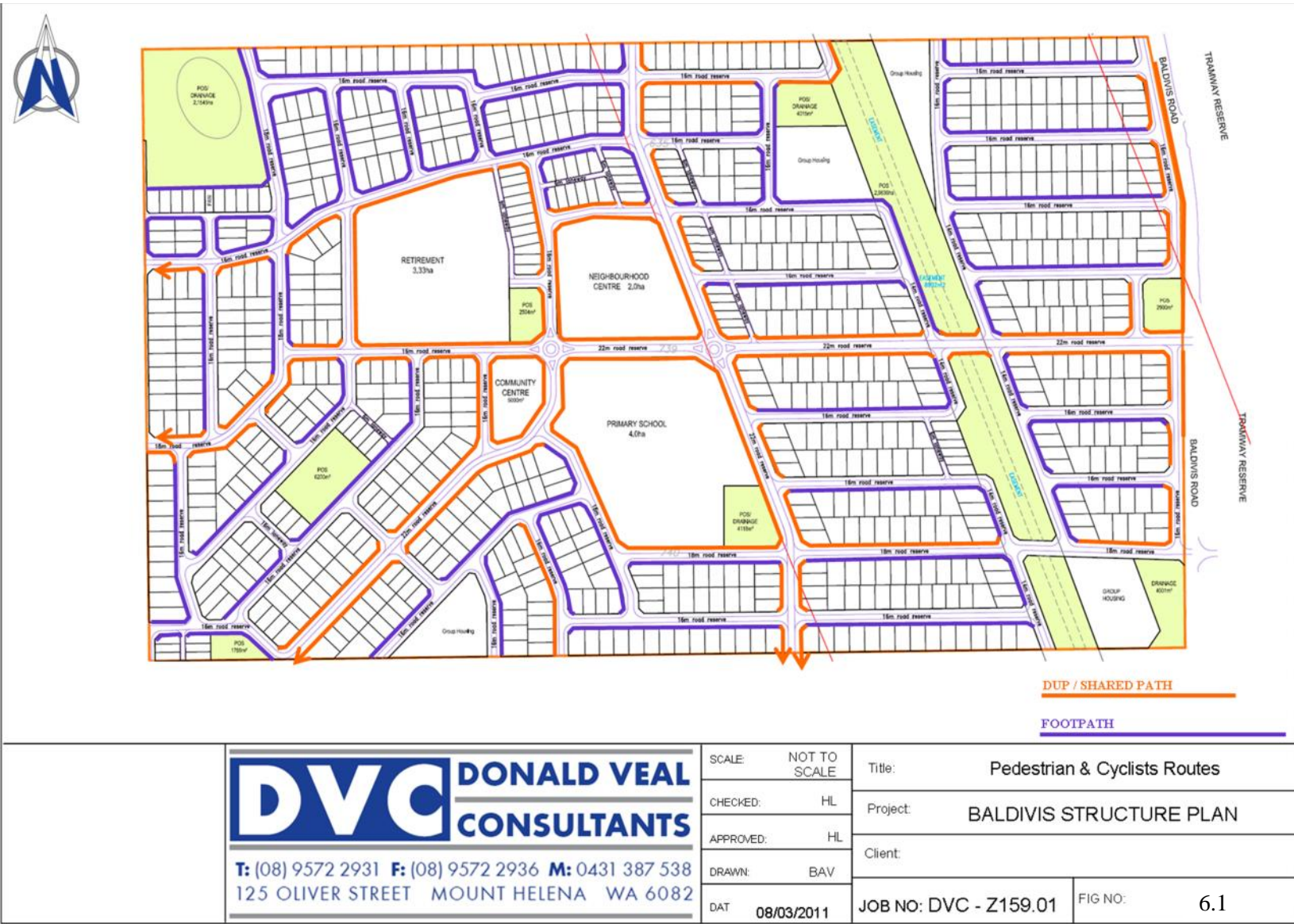
Figure 6.1 outlines the proposed pedestrian and cyclist network for the structure plan area.

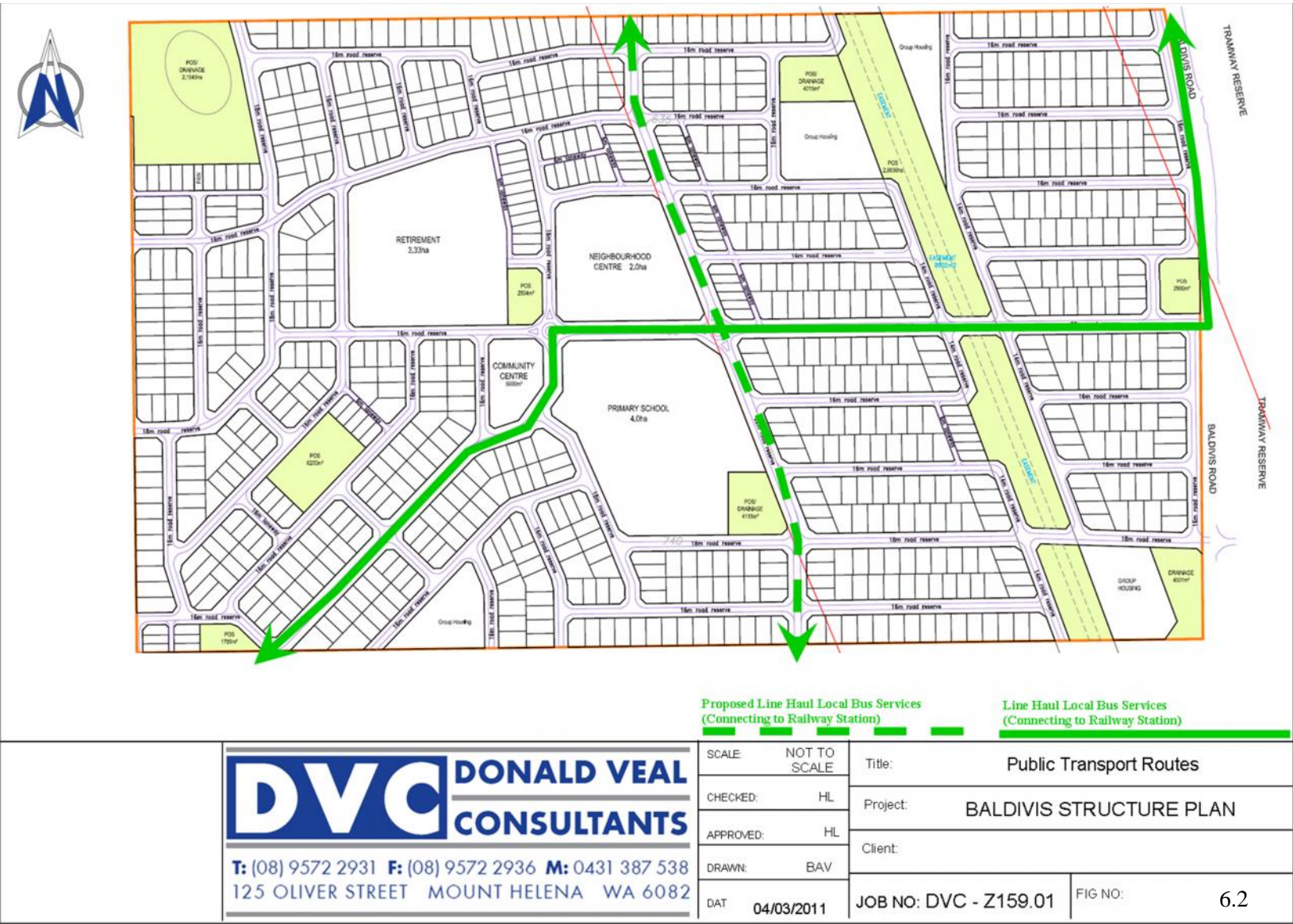
It is proposed to provide a dual use path/shared path on the west side (near side) of Baldivis Road flanking the eastern boundary of the area which will allow for safe travel by pedestrians and cyclists north towards the Baldivis Town Centre. All of the roads abutting public open space, the community centre, the neighbourhood centre, grouped housing, retirement village and the primary school and bus routes are generally proposed to have a dual use path/shared path on one or both sides of the road with the balance of the local roads in the area to have at least a footpath on one side of the road.

6.3 PUBLIC TRANSPORT

As outlined in Section 2 of this report, the existing local bus service (Route 564 – Warnbro Station to Baldivis) currently provides service to the established areas of Baldivis to the north and west of the Local Structure Plan area. A review of the *Baldivis Road Needs Study: Traffic and Infrastructure Report* (WorleyParsons, 2005) indicates that this bus service is proposed to be extended in the future to service the Baldivis South areas. This recommendation has been reflected in Figure 6 which outlines the proposed public transport services for the Local Structure Plan area. It is also recommended that an additional local line haul service be provided internal to the area to provide access to and from the proposed neighbourhood centre, community centre and primary school from adjacent residential communities to the north.

The proposed bus routes are illustrated in **Figure 6.2**.





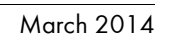
6.4 ROAD HIERARCHY AND RESERVES

Based on the estimated daily traffic volumes and the anticipated function of the roads, **Figures 4.1 and 6.3** illustrate these anticipated internal daily traffic volumes and the resultant proposed road classifications for the structure plan road network.

For this purpose, the road hierarchy as defined in *the Liveable Neighbourhoods – Edition 3* (2004) document has been sourced for the roads within the structure plan area, including the established internal roads, as well as the Metropolitan Region Scheme.

With the exception of the Main East-West Access Road and the two main north-south roads within the Local Structure Plan area which have been designated as *Neighbourhood Connector B* roads, the balance of the roads have been designated as *Access Road A* and *C/D* roads.

For a *Neighbourhood Connector B* road, a road reservation of 22 metres has been proposed which would accommodate two 3.5 metre travel lanes, two 4.5 metre verges with a 2.5 metre dual use path/shared path and a 1.5 metre footpath incorporated on each side and 2.5 metre indented car parking lanes on both sides along with a flush 1.0 metre central median.. The *Access Road A* classification is proposed to have a minimum reservation of 18 metres which would accommodate a carriageway width of 8.0 m, (to incorporate on-street parking on one side) plus a flush 2.0 m median to allow for simultaneous passing of two vehicles and on-road cycling plus two verges of 4.0 metres in width to accommodate a footpath on one side of the road and a dual use path/shared path on the other, if required, for roads generally abutting non-residential uses the community centre, primary school and neighbourhood centre. *Access Roads D*, which provide direct local access to the residential catchments within the structure plan are proposed to have a 16 metre road reservation (*Access Road C*), with a minimum 7 metre seal, which allows for on-street parking at least on one side, and two 4.5 metre verges on either side in which a 1.5 metre footpath will be incorporated on at least one side. The roads abutting the linear easement corridor within the eastern half of the structure plan area are proposed to have a 14 metre road reservation which is considered sufficient as local roads abutting this easement will be only single loaded with residential uses.



7. SUMMARY AND CONCLUSIONS

This section outlines a series of conclusions in relation to the existing transport system in the vicinity of the revised Local Structure Plan area.

This Revised Transport Assessment has addressed the proposed development of a Local Structure Plan on Lots 635, 739 and 740, Baldivis Road, Baldivis, in the City of Rockingham which is to consist of approximately 810 single family residential dwelling units, three grouped housing site, a retirement village, a neighbourhood centre, a community centre and a primary school. The results of the detailed traffic analysis indicate that the proposed access arrangements to the external road system on Baldivis Road should consist of a single circulating roundabout at the intersection of Baldivis Road/Main East-West Access Road and a stop controlled T-intersection with a dedicated southbound right-turn pocket on Baldivis Road at the Southern Access Road. These improvements will result in anticipated very good Levels of Service during the a.m. and p.m. weekday roadway peak periods under the 2031 total traffic scenario (2031 base traffic + 100% build-out of the area). The proposed layout of the local road system and associated road hierarchy/road reservations within the Local Structure Plan area, along with these improvements, will satisfactorily accommodate the anticipated peak hour and daily site-generated traffic in an efficient and safe manner.

A detailed review of the required internal road reservations, pedestrian and cyclist facilities and public transport infrastructure was also undertaken for the Local Structure Plan area. The details relating to these infrastructure requirements have been detailed in Section 6 of this report.

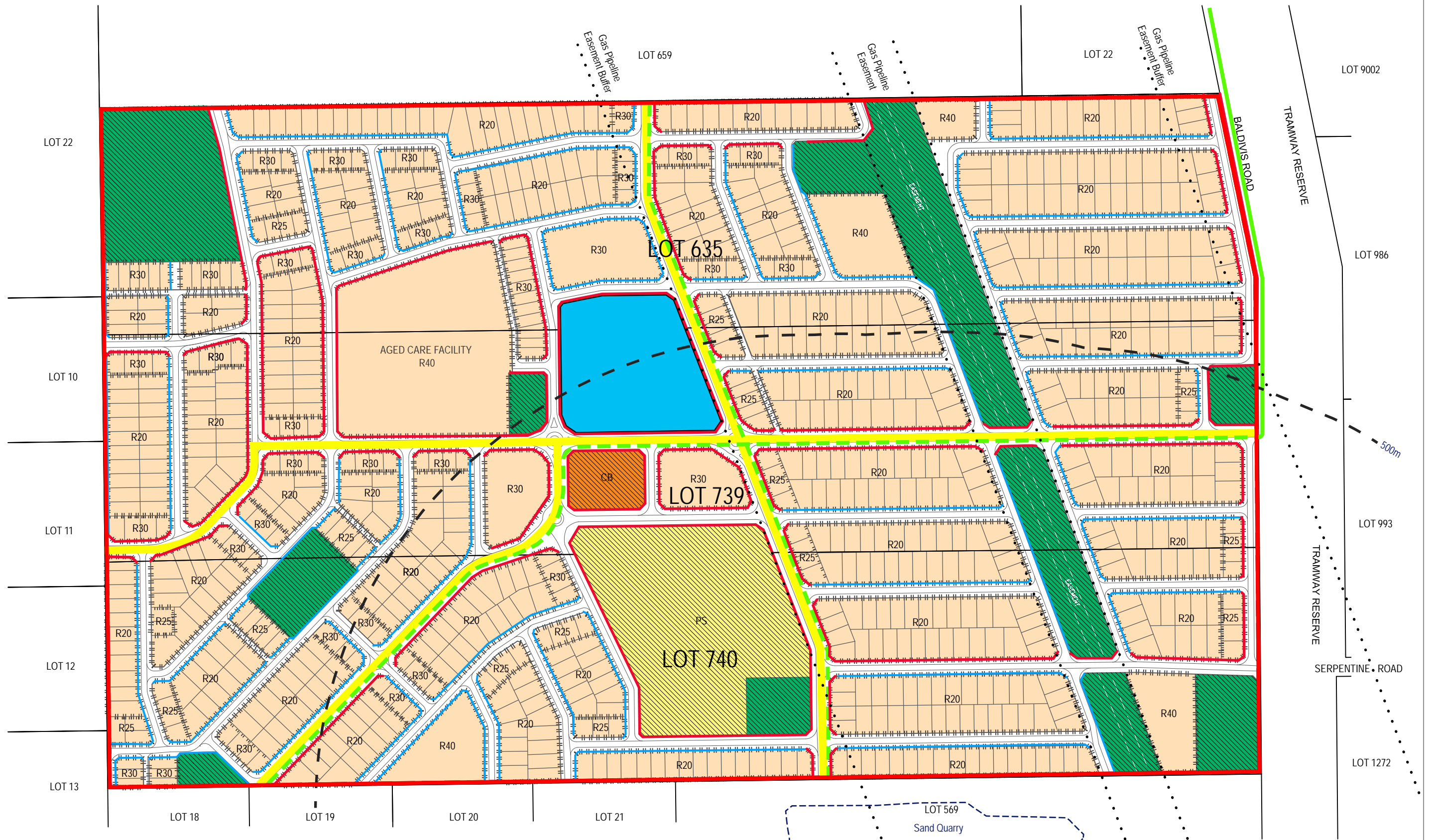
Based upon the results of the detailed traffic operations assessment at the two Baldivis Road intersections, the following localised road improvements are recommended:

- The construction of a single circulating roundabout at the intersection of Baldivis Road/Main East-West Access road, subject to review by the City of Rockingham.
- The construction of a dedicated southbound right-turn pocket on Baldivis Road at the proposed intersection with the Southern Access Road and the eastbound approach to this intersection (Southern Access Road approach) to consist of a single shared left- and right-turning lane and a single inbound lane.
- Both intersections to incorporate a minimum 1.8 metre pedestrian splitter island on the approach legs to Baldivis Road to accommodate pedestrian movements.
- Local Area Traffic Management measures within the structure plan area to minimise conflict for a variety of users and maximise safety within the structure plan area will be addressed during the detailed subdivision design process of the planning process and undertaken in consultation with the City of Rockingham.

No other intersection improvements will be required. The abovementioned intersection improvements will be considered in further detail during the detailed subdivision design process, in consultation with the City of Rockingham. The specific details relating to rubbish truck and internal circulation issues as well as manoeuvring in the context of laneway access, on-street car parking and design of 4-way intersections will also be addressed during the detailed subdivision design process.

There is no requirement to consider a noise assessment for this Local Structure Plan under WAPC State Planning Policy 5.4 as the major road, being Baldivis Road is forecast by MRWA to carry some 10,000 vpd by the year 2031, which is well short of the threshold of 20,000 vpd set by SPP 5.4 for applying the policy.

APPENDIX A: PROPOSED LOCAL STRUCTURE PLAN



LEGEND		LOCAL SCHEME RESERVES		ZONES		OTHER		ELEMENTS THAT INFORM THE STRUCTURE PLAN			
	SUBJECT SITE		CIVIC & CULTURAL DENOTED AS FOLLOWS		PUBLIC PURPOSES DENOTED AS FOLLOWS		RESIDENTIAL		Generic 500m separation distance to sand extraction operations. This generic distance may be amended based on the results of a technical study.		SAND QUARRY
		CB	COMMUNITY BUILDINGS	PS	PRIMARY SCHOOL		COMMERCIAL		GAS PIPELINE EASEMENT BUFFER		PROPOSED BUS ROUTE
			PUBLIC OPEN SPACE						PROPOSED DUAL USE PATH		NEIGHBORHOOD CONNECTOR
									PROPOSED FOOTPATHS		EXISTING BUS ROUTE



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SIZE A3
1:4000
0 40 80 120 160 200 metres

I	UPDATES TO MATCH TPS	140228	RF	DP
H	UPDATES TO MATCH TPS	140130	RF	DP
G	UPDATES TO MATCH TPS	140115	RF	DP
F	ROCKINGHAM UPDATES	110825	MS	DP
E	UPDATE DESIGN	101222	BS	DP
D	UPDATE DESIGN	101222	BS	DP
C	ADD BUFFERS	100813	SB	DP
B	CGC BAL UD1 102G	100614	SB	DP
REV	DESCRIPTION	YYMMDD	DRAWN	APPR'D

LOCAL STRUCTURE PLAN
Lots 635, 739 and 740 Baldvis Road
City of Rockingham
REF NO. DRAW NO. REV.
CGC BAL UD3 201 I

DISCLAIMER: ISSUED FOR DESIGN INTENT ONLY. ALL AREAS AND DIMENSIONS ARE SUBJECT TO DETAIL DESIGN AND SURVEY

