

ATTACHMENTS

PART 2 – EXPLANATORY REPORT

Amendment 3

Amendment 3 to Agreed Structure Plan No 60
Lots 1001 & 1002 Marmion Avenue, Alkimos



These are the Attachments to Part 2 –
Explanatory Report and should be
read in conjunction with that report

LIST OF ATTACHMENTS

Attachment 1	Typical Cross Section (45 metre rail and road crossing)
Attachment 2	Department of Education advice
Attachment 3	DEHWA advice
Attachment 4	Traffic and Movement Network Report
Attachment 5	Economic Assessment of Amendment 3 to LSP 60
Attachment 6	Addendum to Economic Assessment of Amendment 3 to LSP 60
Attachment 7	Local Water Management Strategy
Attachment 8	Transportation Noise Assessment (Freeway)
Attachment 9	Transportation Noise Assessment (Railway)


Prepared for: **LWP**

Prepared by: Gray & Lewis Landuse Planners
Suite 5 / 2 Hardy Street, South Perth

Telephone: (08) 9474 1722
Facsimile: (08) 9474 1172
Email: perth@graylewis.com.au

Job Reference NC1
Revision: Amendment 3 to Local Structure Plan

The following table is for document control by Gray & Lewis Landuse Planners:

Report file name	Report Status	Date Printed	Authorised
NC1 Alkimos/ Amendment 3 to LSP 60/ Version 1 Explanatory Report Part 2 October 2014	Lodgement	16 October 2014	

ATTACHMENT 1

Typical Cross Section (Rail / Road crossing)

Note: This cross section was provided by the Public Transport Authority. The City of Wanneroo requested it be included in the Explanatory Report for Amendment 2 to ASP 60. It has been re-included in this report for ease of reference.

ATTACHMENT 2

Department of Education
advice

From: MULDOON Stephen [Strategic Asset Planning]
[mailto:Stephen.Muldoon@education.wa.edu.au]
Sent: Tuesday, 13 August 2013 11:19 AM
To: geoff@graylewis.com.au
Cc: jkaras@lwpproperty.com.au; BLOOR Richard [Strategic Asset Planning]; COOPER Michael [Strategic Asset Planning]
Subject: FW: Trinity

Hi Geoff

In response to your email of 26.7.13, the Department would like to clarify the situation regarding the provision of school sites shown under the ownership of LWP/NCDL in the shared Education/District Open Space (DOS) Precinct in North Butler/Trinity.

As you indicated in your email of 26.7.13, originally the configuration of the high school/primary school/DOS precinct showed a combined total area of 23.5 ha. The following table shows the allocation of land provision from each developer:

TABLE 1

	LWP	SATTERLEY
HS	4.5 ha	4.5 ha
PS	3.5 ha	-
DOS	5.5 ha	5.5 ha
TOTAL	13.5 ha	10.00 ha
Combined Total Area	23.5 ha	

This allocation corresponds to the areas shown in your email and, as this is the configuration shown on the approved structure plan, this is the allocation that the Department will use for land acquisition purposes.

Subsequent to this, the Department has decided to relocate the primary school (which includes a primary only special education school) from the LWP land to the Satterley component (4.5ha) that was originally identified for the high school.

The current configuration is now;

TABLE 2

	LWP	SATTERLEY
HS	8.0 ha	-
PS	-	4.5 ha
DOS	5.5 ha	5.5 ha
TOTAL	13.5 ha	10.00 ha
Combined Total Area	23.5 ha	

To clarify the situation, the Department requests that the notes on Figure 16 (dwelling Estimates Plan, 4th December 2012) for the education portion of the precinct on LWP land be amended as follows:

Government Education 8ha
(High School 4.5ha & Primary School 3.5ha)

Regarding the acquisition of the 8ha of land identified for government education on the LWP landholding the Department suggests the following options;

1. Full acquisition by the Department of the 8 ha of land identified for Government education at current market value (at the time of acquisition) at a future time when funding is available. Northern Corridor Development Ltd will be required to pay pro rata contributions for all residential lots in the Central Cell towards the Butler North PS site.

2. Partial acquisition the 8 ha of land identified for Government education with NCDL to give up 3.5 ha of the 8.0 ha site free of cost and the Department of Education paying for the residual 4.5 ha at current market value (at the time of acquisition) at a future time when funding is available. In this option, there would be no pro rata contributions payable for residential lots located in the Central Cell, however the Department would require NCDL to enter into a Deed of Covenant over the site to ensure tenure for the Department until the site is transferred to the Department's ownership.

Regarding the acquisition of the 4.5ha of land from the Satterley JV, from an acquisition point of view this has been treated as a high school site and the Department has paid for all of this land. This is consistent with the land allocation in Table 1.

The Department hopes that this information clarifies the situation, should you wish to discuss the matter further please do not hesitate to contact me.

Regards

Steve Muldoon
Senior Consultant
Strategic Asset Planning
Ph: 9264 4183
Email: stephen.muldoon@education.wa.edu.au

ATTACHMENT 3

DEWHA advice



Australian Government

Department of the Environment, Water, Heritage and the Arts

Mr Andrew Harvey
LWP Property Group
34 Main Street
ELLENBROOK WA 6069

EPBC Ref: 2008/4601
EPBC contact: Rene Provis
(02) 6275 9006
rene.provis@environment.gov.au

Dear Mr Harvey

Decision on approval

Mixed Commercial and Residential Development, Lot 3 Romeo Rd, Alkimos WA (EPBC 2008/4601)

I refer to the proposal by Northern Corridor Developments Pty Ltd (NCD) to construct a mixed commercial and residential development at Alkimos, approximately 40km northwest of Perth, Western Australia.

I have considered the proposal in accordance with Part 9 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and have decided to grant an approval to NCD. The details of my decision are attached. The proposal must be undertaken in accordance with the conditions specified in the approval.

To confirm the offset properties included at condition 8 in the approval notice, these refer specifically to both properties, or parts thereof, as described in the Commercial in Confidence Appendix G: parts 1.2 and 1.3 included in the Supplementary Report provided to the Department on 17 June 2009.

I would appreciate your assistance by informing me when you provide the information specified in the conditions and who will be the contact person responsible for the administration of the approval decision.

You should also note that this EPBC Act approval does not affect obligations to comply with any other laws of the Commonwealth, state or territory that are applicable to the action. Neither does this approval confer any right, title or interest that may be required to access land or waters to take the action.

The Department has an active audit program for proposals that have been referred or approved under the EPBC Act. The audit program aims to ensure that proposals are implemented as planned and that there is a high degree of compliance with any associated conditions. You should be aware that your project may be selected for audit by the Department at any time and all related records and documents may be subject to scrutiny. Information about the Department's audit strategy is enclosed.



Australian Government

Department of the Environment and Water Resources

I have also written to the following parties to advise them of this decision:

West Australian Department of Environment and Conservation	David Mitchell
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City of Wanneroo	Mark Dickson
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If you have any questions about this decision, please contact the project manager and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'A. Weavers'.

Andrew Weavers
A/g Assistant Secretary
Environment Assessment Branch

// September 2009

CC Mr Paul Zuvela, Coffey Environments.

ATTACHMENT 4

Traffic and Movement Network report



Trinity Alkimos Local Structure Plan Amendment

Traffic & Movement Network
CITY OF WANNEROO

Final Report

For

Northern Corridor Developments Pty Ltd

Oct 2012

Bruce Aulabaugh

Traffic Engineering & Transport Planning

Integrated Transport Solutions for Sustainable Communities

FINAL REPORT

Trinity LSP Amendment

Traffic & Movement Network

For Northern Corridor Developments Pty Ltd
Date: October 2012

Reference: Trinity LWP

Bruce Aulabaugh

ABN: 36 329 608 551

Traffic Engineering & Transport Planning

Unit 5, 18 Fogerthorpe Crescent
Maylands WA 6051

Telephone: 0402 919 933 / Facsimile: 9370-2432
brucea@iinet.net.au

This report has been prepared in accordance with the scope of services described in the contract or agreement between Bruce Aulabaugh and the Client. The report relies upon data, surveys, measurements and results taken at or under the particular times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client and Bruce Aulabaugh accepts no responsibility for its use by other parties.

Approved by: Bruce Aulabaugh (Traffic/ Transport Engineer)

Signed:



Date: October 26, 2012

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EXECUTIVE SUMMARY

Neighbourhood Connector Realignment & Marmion Avenue Intersections:

This report presents traffic and transport planning information for the Trinity Local Structure Plan Amendment in the City of Wanneroo. A key feature of the Trinity LSP Amendment is the realignment of a Neighbourhood Connector to a position further north and having a controlled 4-way intersection on Marmion Avenue at a location approximately 450m south of Romeo Road. Refer to *Figure 5A* (in body of report)

The proposed revision to the N.Connector alignment better serves the access needs of the Trinity LSP area as well as the LandCorp land located to the south of Romeo Road.

The proposed road network changes have been discussed with the CoW, the DoP, MRWA and adjacent landowner representatives. Please refer to Appendix A for correspondence in this regard. At a meeting at MRWA offices on September 20, 2012 agreement was reached with MRWA, City of Wanneroo and land owners on the following:

- In principle agreement with the realigned N.Connector in the Trinity LSP area.
- In principle agreement to a 4-way controlled intersection on Marmion Avenue at approximately 450m south of Romeo Road to which the realigned N.Connector would connect.

Subsequent to the meeting on 20 September, MRWA were requested if they would have any objection to an additional local road access on Marmion Avenue (i.e. a left in/ left out t-junction on the east side of Marmion Avenue at a location 240m south of the subject controlled 4-way intersection). MRWA replied on 12 October that the left in/ left out would be acceptable to them. This left in/ left out t-junction is shown in *Figure 3* (in body of report).

Additional Traffic/ Transport Outcomes

This report also presents:

- Road Hierarchy & Arterial Intersection Control Plan
- Street Cross-Sections for local streets in the LSP area.
- Local Traffic Treatment plan showing boulevard treatments, local roundabouts, 4-way treatments, etc.
- Ultimate Development Traffic Forecasts (Daily and PM Peak Hour).
- Marmion Avenue Controlled 4-way SIDRA Simulation for Ultimate Development PM Peak Hour.
- Pedestrian & Cyclist Facilities plan showing shared paths and on-road cycle lanes.
- Local Bus Routes Plan showing the Transperth bus routes proposed for the area (i.e. Route 480, 483, and 484). These routes will operate between Alkimos Station and Clarkson Station (via Butler Station).

1. INTRODUCTION

This report presents traffic and transport planning information for the *Trinity Local Structure Plan Amendment* in the City of Wanneroo. The scope of works includes traffic forecasting, road access planning, local street design, local traffic treatments, pedestrian/cyclist facilities and bus services. Refer to *Figure 1* (locality plan) showing the Trinity landholding, located south of Romeo Road and also just south of the Alkimos-Eglinton District Structure Plan area. While the Trinity LSP forms part of the Butler-Jindalee District Structure Plan (shown in *Figure 2*), the road connections near the Alkimos Regional Centre are more relevant to this LSP Amendment report.

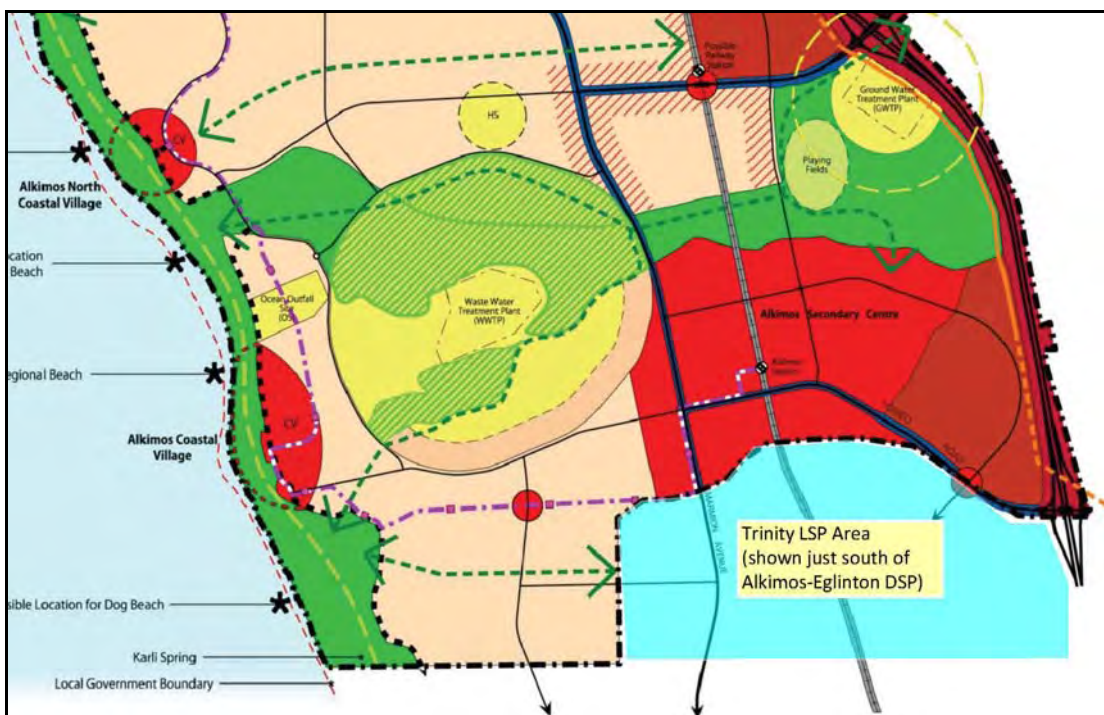
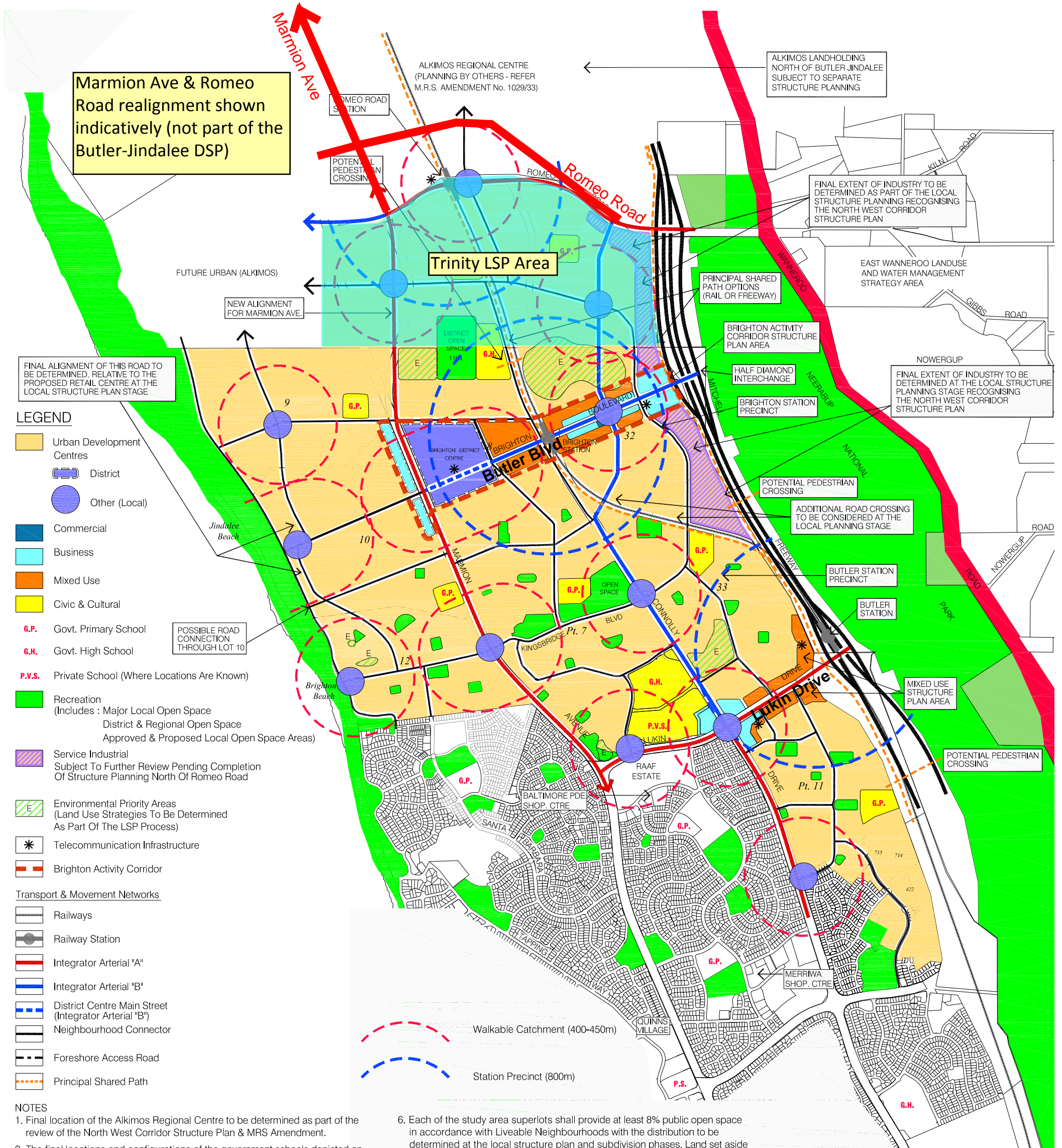


Figure 1: Trinity LSP Locality Plan (shown in context of Alkimos-Eglinton DSP)

2. REGIONAL ROAD NETWORK

The future Mitchell Freeway is identified in the Metropolitan Region Scheme (MRS) as a Primary Regional Road. Marmion Avenue and Romeo Road are identified as an Other Regional Roads. Marmion Ave and Romeo Road have road reserves designed to accommodate 4-lane divided arterials.

Butler Boulevard's (located to the south of the Trinity LSP area) primary role is to provide access to the Butler District Centre and immediate surrounds. It is not reserved in the Metropolitan Region Scheme. *Figure 2* (overleaf) shows the Butler- Jindalee District Structure Plan.



Marmion Avenue is currently constructed to Lukin Drive as a 4-lane divided arterial then from Lukin Drive to Yanchep Beach Road as a 2-lane road. It is expected that Marmion Avenue will require upgrading to 4-lane divided arterial by year 2021 or shortly thereafter.

The Mitchell Freeway is currently constructed to Burns Beach Road. There is no indication from state planning authorities when the Mitchell Freeway will be constructed further north to Butler Boulevard.

The transport priority in the North West Corridor is to progress development of the northern suburbs passenger railway (extension to Butler Station by mid 2014). Rail service is expected to reach the Alkimos Town Centre Station by approximately 2021.

3. ROAD HIERARCHY & INTERSECTION CONTROL

3.1 INTRODUCTION

The road hierarchy and arterial access plan is presented in *Figure 3* (overleaf). Local Distributors (Neighbourhood Connectors) run throughout Trinity and connect its neighbourhoods to each other, to Butler District Centre and Alkimos Regional Centre and to the surrounding Arterial Roads.

The road hierarchy and intersection control presented in *Figure 3* is generally consistent with the City of Wanneroo Local Planning Policy 3.8, shown in *Figure 4* below.

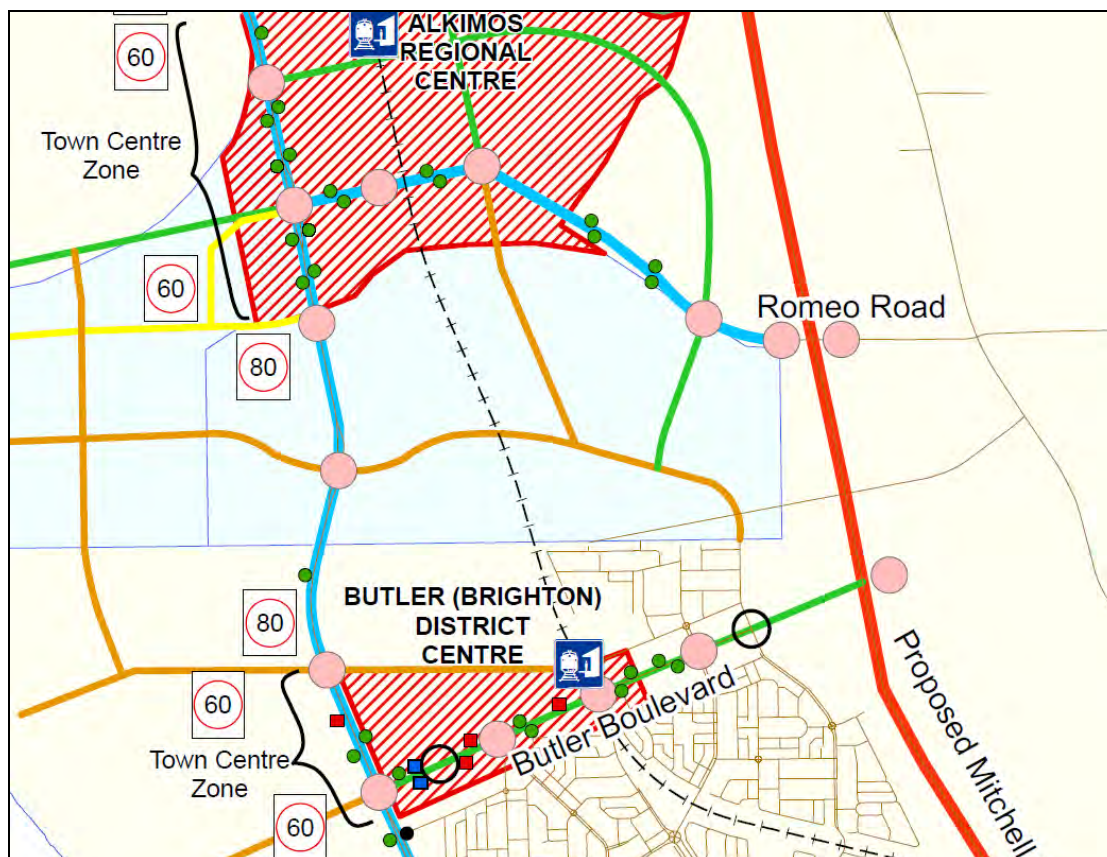


Figure 4 Excerpt from LPP 3.8 Marmion Ave Access Policy (City of Wanneroo, 2012)

3.2 CONSULTATION WITH GOVERNMENT AUTHORITIES

A key feature of the Trinity LSP Amendment is the realignment of a Neighbourhood Connector to a position further north. The LSP Amendment also proposes to link this Neighbourhood Connector to Marmion Avenue at a controlled 4-way intersection approximately 450m south of Romeo Road. Refer to *Figure 5A* (overleaf)

The proposed revision to the N.Connector alignment better serves the access needs of the Trinity LSP area as well as the LandCorp land located to the south of Romeo Road.

The original Trinity LSP Neighbourhood Connector alignment (refer *Figure 5B*) was initially put in place as an interim measure in the absence of any conceptual planning over the LandCorp land. With that information now available, a more rational road structure has been developed in a collaborative process between both land owners. Lend Lease (on behalf of LandCorp) have provided a letter to Northern Corridor Developments Pty Ltd supporting the proposed road network change.

The proposed road network changes have also been discussed with the CoW, the DoP and MRWA. Please refer to Appendix A for correspondence with MRWA and CoW. At a meeting at MRWA offices on September 20, 2012 agreement was reached on the following:

- In principle agreement with the realigned N.Connector in the Trinity LSP area.
- In principle agreement to a 4-way controlled intersection on Marmion Avenue at approximately 450m south of Romeo Road to which the realigned N.Connector would connect.

Subsequent to the meeting on 20 September, MRWA were requested if they would have any objection to an additional local road access on Marmion Avenue (i.e. a left in/ left out t-junction on the east side of Marmion Avenue at a location 240m south of the subject controlled 4-way intersection). MRWA replied on 12 October that the left in/ left out would be acceptable to them. This left in/ left out t-junction is shown in *Figure 3*.

4. STREET CROSS-SECTIONS

Plan E Landscape Architects have prepared street cross-section drawings (see Appendix B) for the key roads with the Trinity LSP Amendment application area. The medians, travel lanes, cycle lanes and footpath/ shared path provisions are consistent with the forecast vehicle traffic and the functional role specified for each road.

The cross-sections are also in conformance with Liveable Neighbourhoods Policy as applied in the City of Wanneroo. Any variations to Liveable Neighbourhoods Policy are agreed with the City of Wanneroo and sanctioned by WAPC at subdivision approval stage.

5. ULTIMATE DEVELOPMENT TRAFFIC FORECAST

Ultimate development stage traffic forecasts have been produced using a PM Peak Hour traffic model for the NW Corridor. The traffic model covers an area from Hester Avenue (south boundary) to Wilbinga Reserve (Two Rocks, north boundary) and from the coast (west boundary) to Old Yanchep Road (east boundary, located east of Wanneroo Road). Refer to *Figure 6* showing the extent of the study area.

The traffic model land use information is taken from district and local structure plans and from information provided by the City of Wanneroo and Main Roads Western Australia. The specific information for the Trinity LSP has been provided by Grey Lewis Land Use Planners.

The Main Roads Regional Operation Model (ROM) provided a 24 hour sub-area vehicle trip matrix for this 'ultimate corridor development scenario'. This ROM vehicle trip matrix provided through trip and internal/ external trip pattern information. The Department of Planning Strategic Transport Evaluation Model (STEM) and provided person trip rate information and the Department of Transport provided guidance on mode splits for use in the model. Refer to Appendix C for more information on traffic model inputs/ outputs.



Figure 6. NW Corridor Traffic Model Network (Bruce Aulabaugh)

NW Corridor Ultimate Development Traffic Model PM peak hour traffic is shown in *Figure 7*. The daily traffic forecast for the ultimate development case is shown in *Figure 8*.

Summary traffic range forecasts are provided below for key roads in the study area:

- Marmion Avenue (adjacent Trinity): 25,000 – 27,000 veh/day.
- Trinity NC 1: 4500 - 5000 veh/day.
- Trinity NC 2: 2000 - 3000 veh/day.
- Trinity NC 3 2000 -2500 veh/day
- Howden Parade 2500 - 4000 veh/day
- Santorini Promenade: 4500 – 6500 veh/day
- Bennenden Drive: 4000 – 7000 veh/day.
- Landbeach Blvd: 2500 – 3500 veh/day.

The forecast traffic levels are all within design specifications for the road types specified and are adequately catered for by the proposed street cross-sections (Section 4) and intersection designs (Section 6).

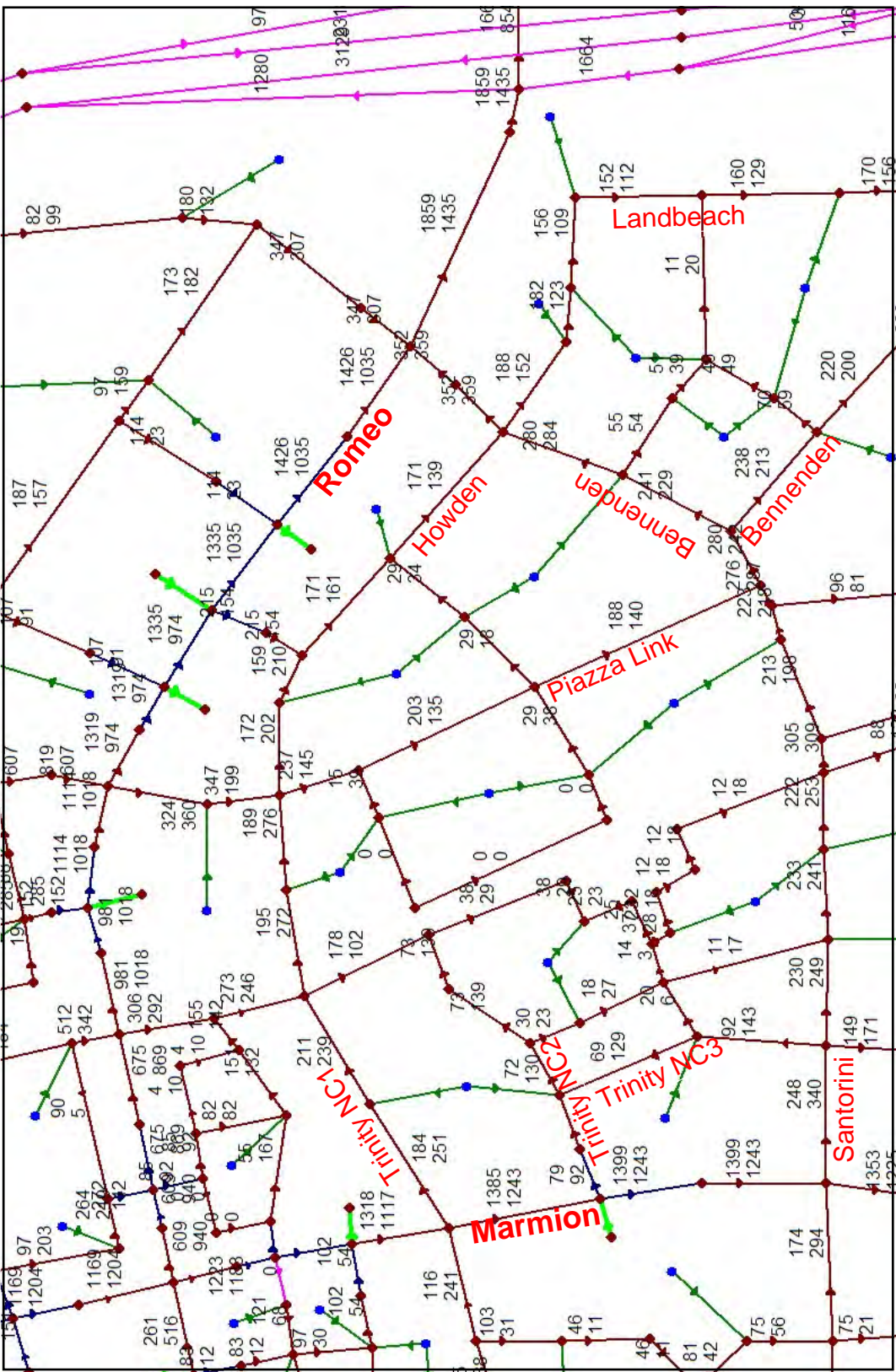
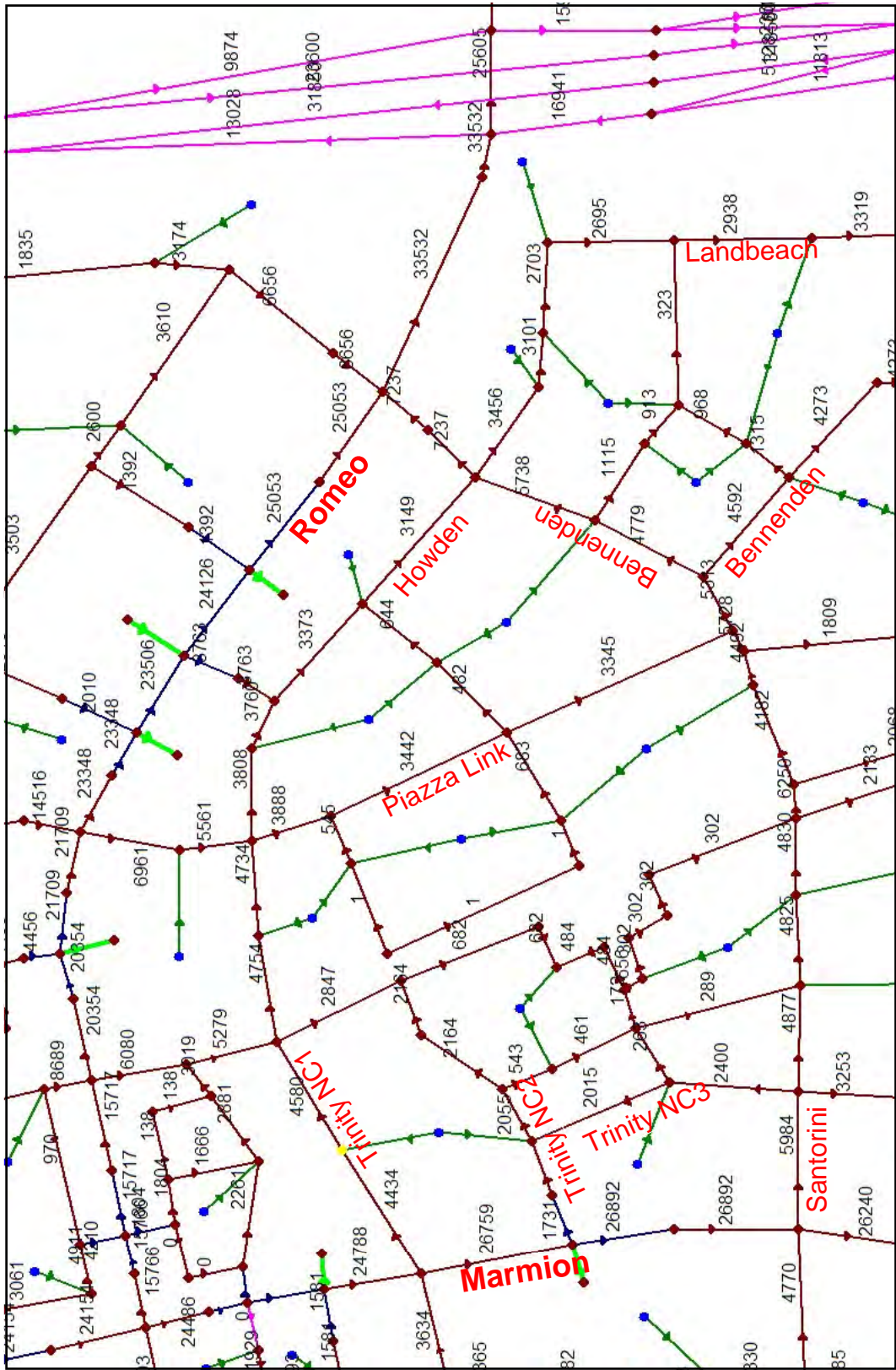


Figure 7 PM Peak Traffic Ultimate Development (veh/hr)



Trinity Aikimos LSP Amendment
 Bruce Aulabaugh Traffic Engineering & Transport Planning
 Figure 8 Daily Traffic Ultimate Development (veh/day)

6. MARMION AVE CONTROLLED INTERSECTION ASSESSMENTS

The following intersections ultimate development PM peak hour operation has been analysed with SIDRA 5.1 software for both signal control and dual lane roundabout control:

- Marmion Ave/ Trinity Neighbourhood Connector

6.1 MARMION AVE/N.C 1 INTERSECTION- SIDRA ASSESSMENT FOR **SIGNAL CONTROL**

Summary results are provided in Table 1 and show an average intersection delay of 20 seconds for Level of Service 'C' rating overall. Refer also to Appendix D.

Table 1: PM Peak Hour Assessment: Marmion Ave/ Trinity N.C 1 Signalised Intersection

Cycle length = 150 seconds

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Marmion South											
1	L	56	3.0	0.049	8.7	LOS A	0.2	1.1	0.05	0.63	59.8
2	T	1122	6.0	0.578	11.8	LOS B	15.0	110.2	0.39	0.35	57.0
3	R	156	3.0	0.377	52.6	LOS D	8.3	59.3	0.75	0.78	35.7
Approach		1333	5.5	0.578	16.5	LOS B	15.0	110.2	0.42	0.41	53.6
East: Trinity East Side											
4	L	136	3.0	0.534	12.9	LOS B	3.6	25.5	0.41	0.70	40.9
5	T	118	3.0	0.385	63.4	LOS E	7.8	55.8	0.92	0.73	19.2
6	R	56	3.0	0.301	73.9	LOS E	3.7	26.8	0.91	0.76	19.6
Approach		309	3.0	0.534	43.1	LOS D	7.8	55.8	0.69	0.72	25.5
North: Marmion North											
7	L	56	3.0	0.048	8.6	LOS A	0.2	1.1	0.05	0.63	53.2
8	T	1274	6.0	0.656	12.5	LOS B	19.2	141.7	0.44	0.40	56.3
9	R	110	3.0	0.267	51.3	LOS D	5.6	39.9	0.71	0.76	25.5
Approach		1439	5.7	0.656	15.3	LOS B	19.2	141.7	0.45	0.44	53.6
West: Trinity West Side											
10	L	56	3.0	0.219	9.9	LOS A	0.8	5.9	0.26	0.65	43.1
11	T	56	3.0	0.182	60.8	LOS E	3.5	25.3	0.88	0.67	19.7
12	R	61	3.0	0.399	79.5	LOS E	4.3	31.1	0.95	0.76	18.7
Approach		172	3.0	0.399	51.0	LOS D	4.3	31.1	0.70	0.70	23.6
All Vehicles		3254	5.2	0.656	20.3	LOS C	19.2	141.7	0.47	0.47	48.6

The SIDRA analysis was undertaken with the most onerous cycle length (i.e. 150 seconds). This was done in the event that signal coordination on Marmion Avenue requires a very long cycle length (to provide long green time to northbound and southbound platoons of vehicles to pass through sequential signals with minimum stops). This performance assessment is therefore a 'worst case' test for the Trinity NC 1 approach legs. The delays and queues are thus 'high side' results under extreme circumstances.

The north and south (Marmion Ave) approach legs rated 'LOS B' with delays averaging about 16 seconds. The east and west (Trinity NC1) approach legs rated 'LOS D' with delays averaging 43 and 51 seconds, respectively.

Figure 9 shows the basic intersection geometry as input to the SIDRA analysis in the event that this intersection is ultimately signalised. Marmion Ave is a 4-lane divided arterial with 2

through lanes and right and left turn lanes (per direction). Trinity NC 1 is a 2-lane divided Neighbourhood Connector to the east and west of Marmion Ave but has 3 approach lanes at Marmion Ave intersection (left turn lane, through lane, right turn lane).

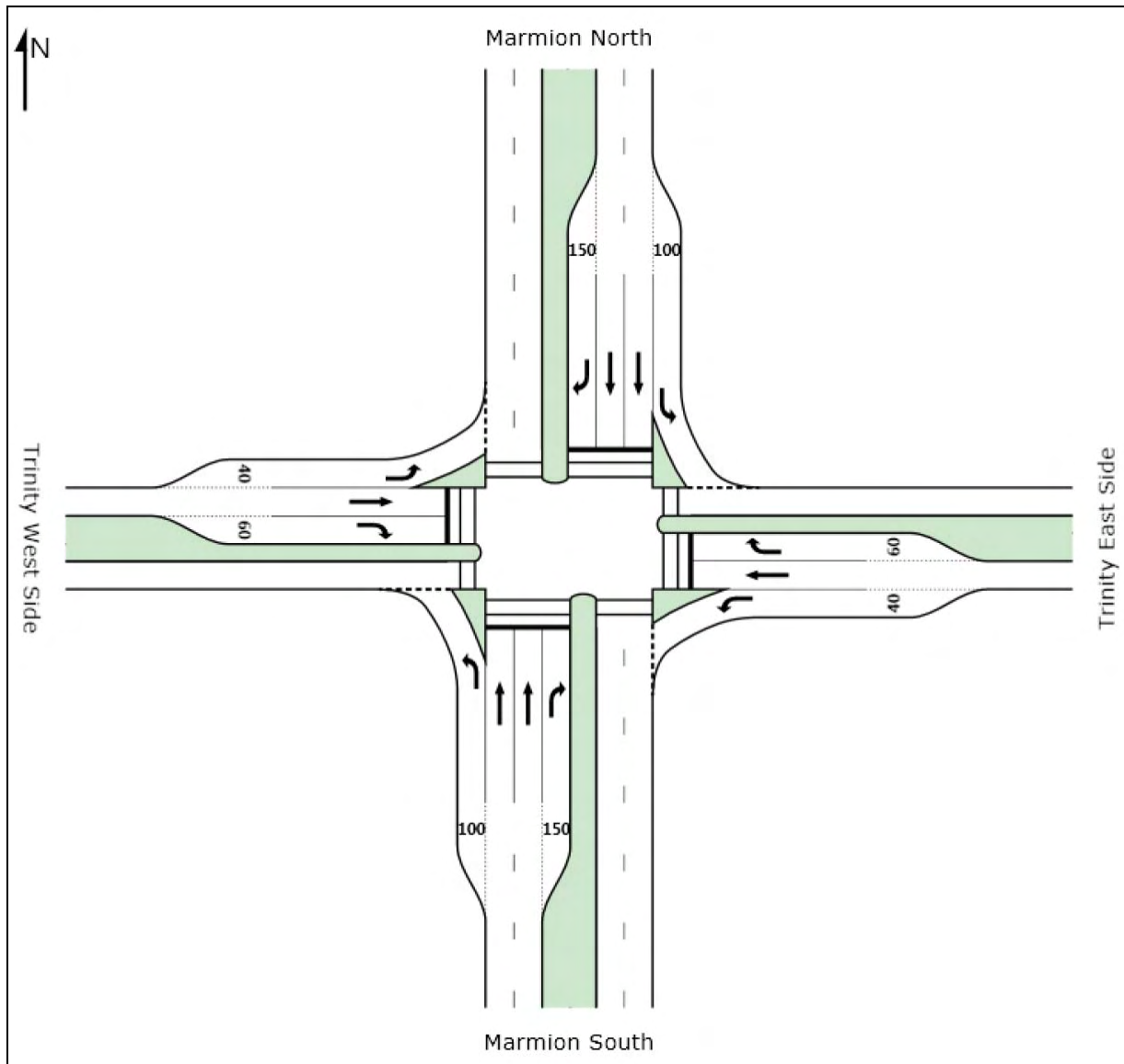


Figure 9. Marmion Ave/ Trinity NC 1 (as input to SIDRA 5.1) – SIGNAL CONTROL.

6.2 MARMION AVE / TRINITY NC 1 ASSESSMENT – ROUNDABOUT CONTROL

Summary results are provided in Table 2 for the intersection if it is ultimately roundabout controlled. The average intersection delay is 8.1 seconds for Level of Service 'A' rating overall. Refer also to Appendix D.

Table 2: PM Peak Hour Assessment Ultimate Development – Roundabout Control

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Marmion South											
4	L	56	3.0	0.529	7.1	LOS A	4.1	30.2	0.55	0.62	49.2
5	T	1122	6.0	0.529	6.7	LOS A	4.1	30.2	0.56	0.56	54.8
6	R	156	3.0	0.529	11.8	LOS B	3.9	28.8	0.58	0.82	45.7
Approach		1333	5.5	0.529	7.3	LOS A	4.1	30.2	0.56	0.60	54.0
East: Trinity NC1 East											
7	L	136	3.0	0.549	12.7	LOS B	3.7	26.6	0.87	1.03	40.9
8	T	118	3.0	0.549	12.2	LOS B	3.7	26.6	0.87	1.00	44.3
9	R	56	3.0	0.549	19.5	LOS B	3.7	26.6	0.87	1.09	38.7
Approach		309	3.0	0.549	13.7	LOS B	3.7	26.6	0.87	1.03	41.6
North: Marmion North											
10	L	56	3.0	0.559	6.3	LOS A	4.4	32.4	0.54	0.60	50.8
11	T	1274	6.0	0.559	6.7	LOS A	4.4	32.4	0.55	0.57	51.6
12	R	110	3.0	0.559	13.3	LOS B	4.2	30.8	0.57	0.83	46.1
Approach		1439	5.7	0.559	7.2	LOS A	4.4	32.4	0.55	0.59	51.2
West: Trinity NC1 West											
10	L	56	3.0	0.291	9.7	LOS A	1.5	10.8	0.78	0.86	47.1
11	T	56	3.0	0.291	8.6	LOS A	1.5	10.8	0.78	0.79	46.9
12	R	61	3.0	0.291	15.9	LOS B	1.5	10.8	0.78	0.97	43.8
Approach		172	3.0	0.291	11.5	LOS B	1.5	10.8	0.78	0.87	45.7
All Vehicles		3254	5.2	0.559	8.1	LOS A	4.4	32.4	0.60	0.65	51.6

All movements have Level of Service between A and B (delays between 0 seconds and 20 seconds).

Figure 10 shows the basic intersection geometry as input to the SIDRA analysis.

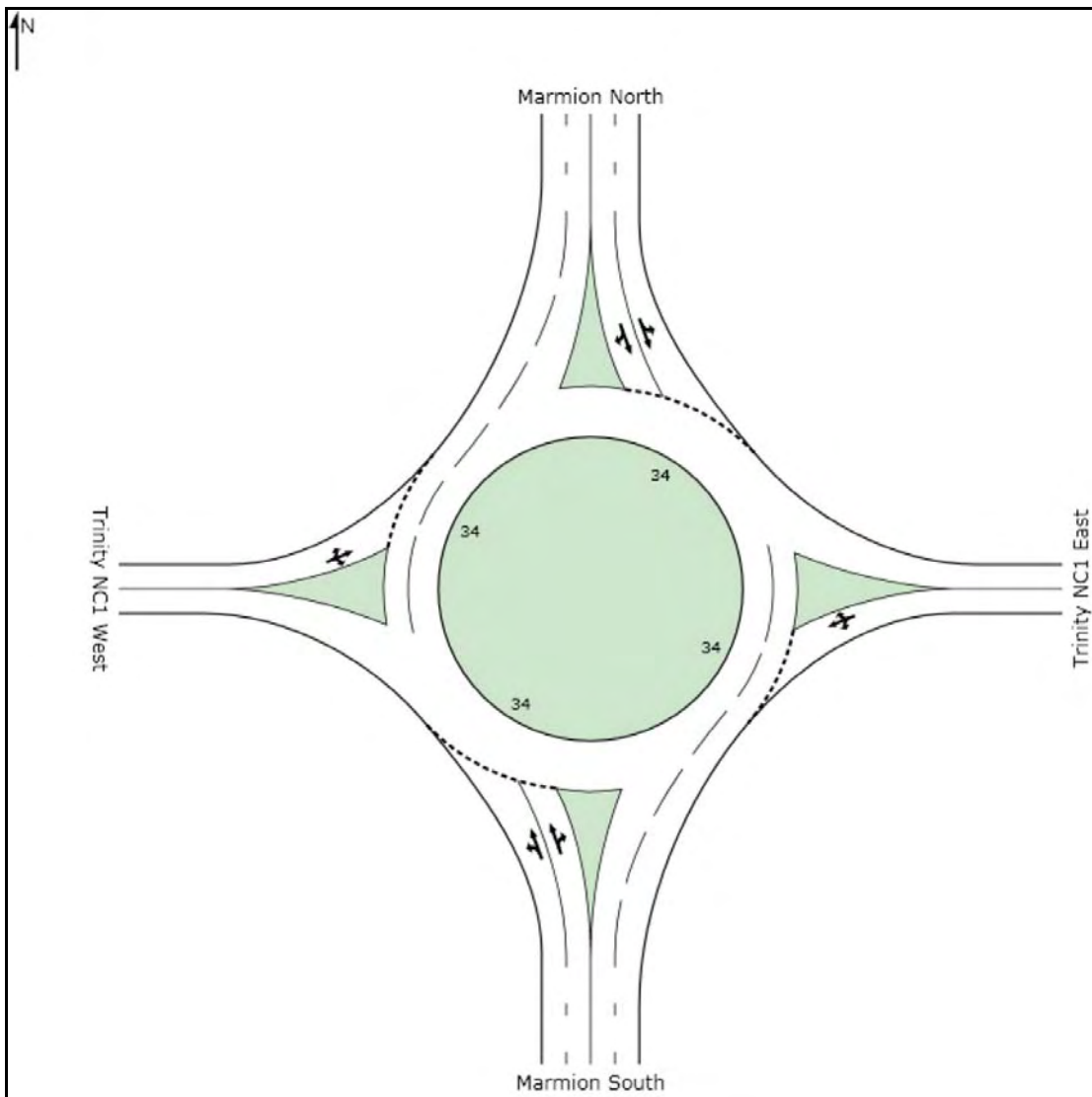


Figure 10. Marmion Ave/ Trinity NC 1 (as input to SIDRA 5.1).

7. MARMION AVE & ROMEO ROAD ACCESS POLICY PROVISIONS

Individual properties on the local roads which connect with District Distributor Type A's (i.e. Integrator Arterial Type A) will require the standard City of Wanneroo corner clearance of 30m (measured from nearest edge of crossover to the arterial road reserve boundary). This requirement will affect properties located on roads that intersect Marmion Avenue and Romeo Road.

In addition to the above standard City of Wanneroo property access condition, Local Planning Policy 3.8 Marmion Avenue Arterial Road Access (LPP 3.8) makes reference to property access along Marmion Avenue and Romeo Road.

Specifically, provision 1 in 'Part 2 – Policy Provisions' of LPP 3.8 requires the following:

No direct property access will be permitted to the Integrator Arterial roads (A) & (B) – depicted in Figure 1 between Marmion Avenue and the proposed Mitchell Freeway – except where the access meets the requirements of this Policy and is for one of the following:

- a) For the purposes of super lots; or*
- b) Where a commercial development creates rationalised access with the public road with an easement in gross granting reciprocal rights of access.*

Consistent with the above policy statements, the City has provided correspondence supporting, in principle, rationalised vehicle access points to commercial developments along Romeo Road, where they comply with the requirements of Liveable Neighbourhoods and LPP 3.8. The location of the left in/ left out's and signalised intersections proposed as part of the neighbourhood connector realignment are as per depicted in Figure 1 of LPP 3.8. Refer to Appendix A for City of Wanneroo email correspondence in this regard and to a copy of LPP 3.8.

Because of the LPP 3.8 provisions, it will be possible for City of Wanneroo planning and engineering departments to review and approve structure plan, subdivision plan and design drawings incorporating easements in gross and dedicated crossovers granting reciprocal rights of access.

8. LOCAL TRAFFIC MANAGEMENT

Figure 11 identifies particular intersections and special traffic management treatments for the Trinity LSP Amendment street layout design. These include:

- Traffic signals or roundabouts;
- Special 4-way intersection treatment;
- Speed control device (i.e. intersection plateau treatment)
- School Speed Zone at Primary Schools

Traffic signals and roundabouts are identified in *Figure 11* at the busier 4-way intersections and near schools to assist in slowing traffic and managing U-turn demand.

At lower order 4-way junctions (where traffic volumes are light and approach speeds low), stop or give-way signs and brick paved threshold treatment are typically used. Where the 'run up distance' on the minor approach exceeds 200m, a splitter island and second sign are usually recommended. Where appropriate, a raised intersection plateau may be employed to slow traffic and render sign control of the 4-way more effective.

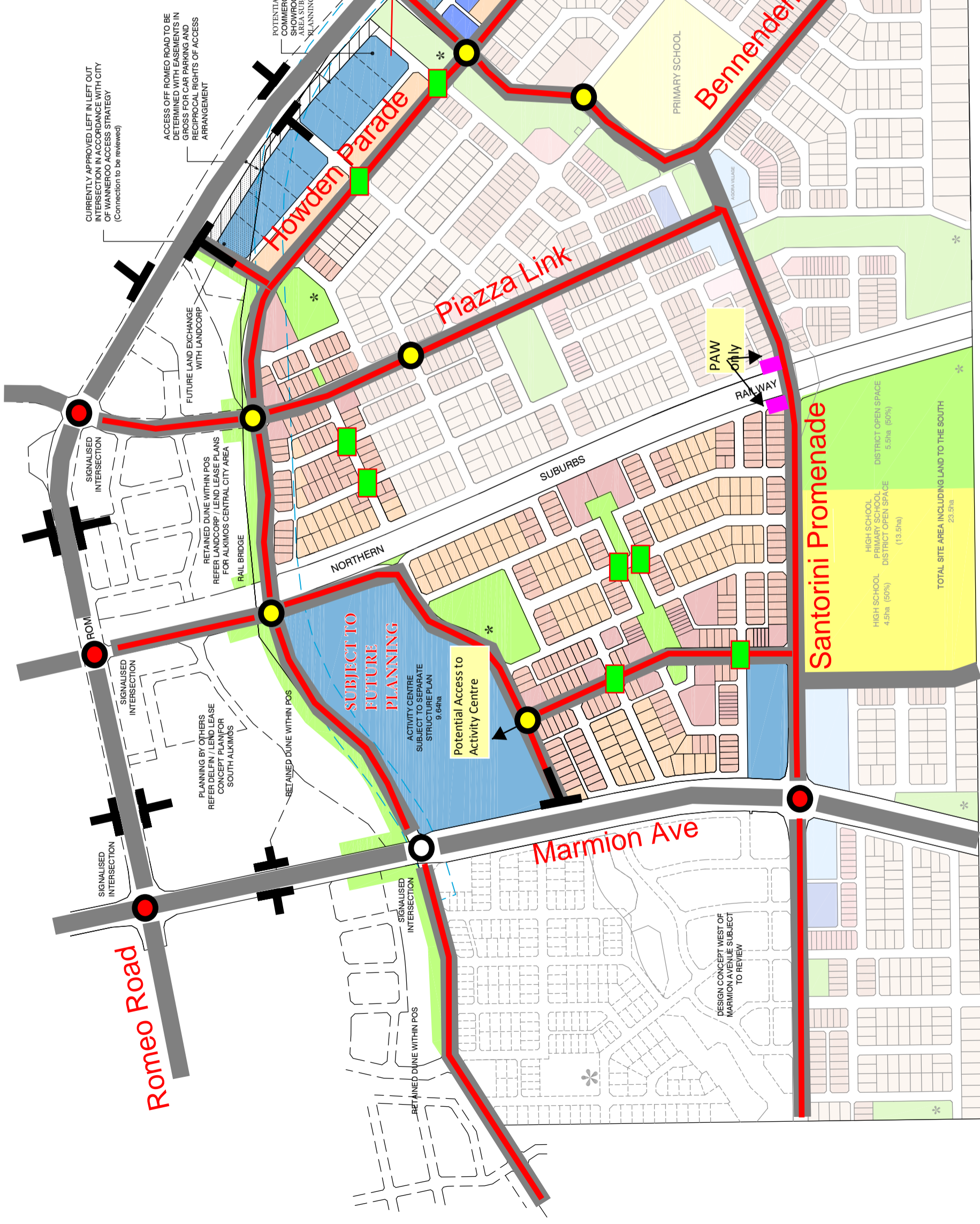
In the Trinity LSP Amendment study area there are numerous 4-way intersections that will need to be reviewed at subdivision stage to confirm whether they are to be treated with sign control or roundabout control. These reviews will be done in consultation with the City of Wanneroo.

Boulevard Treatment
with median openings determined at subdivision

4-way Treatment
as agreed with City of Wanneroo at subdivision

Local Roundabout
Left in / Left out T-junction

Signalised Intersection
Arterial Roundabout or Signals



Trinity Alkimos LSP Amendment
Bruce Aulabaugh Traffic Engineering & Transport Planning

Figure 11 Local Traffic Treatment Plan
Base Plan: Gray & Lewis Land Use Planners

9. PEDESTRIAN & CYCLIST FACILITIES

The proposed Trinity LSP Amendment shared path and cycle lane networks are shown in *Figure 12*. Refer also to the street cross-sections (Appendix B). Path and cycle lane allocations are set out using the following guidelines:

- Integrator Arterial Type A Roads: Shared paths and cycle lanes are provided on both sides
- Integrator Arterial Type B Roads: Shared path one side, footpath opposite side, cycle lanes both sides.
- Local Distributors (i.e. Neighbourhood Connectors) with traffic > 3000 veh/day: Shared path one side and footpath opposite side, cycle lanes both sides.
- Local Distributors (i.e. Neighbourhood Connectors) with traffic < 3000 veh/day: Shared path one side and footpath opposite side.

In addition to the above, special attention will be required in the planning and design of pedestrian road crossings.

Pedestrians will cross Marmion Ave and Romeo Road at signalised intersections where pedestrian button signal activation will be available. Most local road crossings will however be unmarked and will have kerb ramps and pedestrian gaps in medians.

10. BUS SERVICES

Figure 13 shows the proposed bus routes operating between Alkimos Station and Clarkson Station. These routes stop en-route at Butler Station.

Route 480 runs from Alkimos Station south to Clarkson Station via Romeo Road and Marmion Ave (via Butler Station).

Route 483 runs from Alkimos Station to Clarkson Station (via Butler Station) via Piazza Link to Santorini Promenade then turns south onto Hollington Gardens.

Route 484 runs from Alkimos Station to Clarkson Station via Bennenden Ave (via Butler Station).

Route 480 will require bus embayments at stops on Marmion Ave. The stop locations and bus embayment design will be confirmed with Transperth at subdivision stage. Where Route 483 and Route 484 use the local distributor roads, buses will stop on-street without bus embayments, as per Transperth standard practice in local street networks.

Advice provided by Transperth is that service frequency for these routes is likely to be:

- 10-15 minutes in peak hours
- 30 minutes in off-peak
- 60 minutes on-weekends (Route 483 might have 30min frequency if funding allows).

APPENDICES:

- APPENDIX A: CONSULTATIONS & LPP 3.8
- APPENDIX B: STREET CROSS-SECTIONS
- APPENDIX C: NW CORRIDOR TRAFFIC MODELLING INFORMATION
- APPENDIX D: SIDRA ASSESSMENTS: MARMION AVE INTERSECTION
- APPENDIX E: DISTRICT BUS ROUTES

APPENDIX A

MRWA, CITY WANNEROO & LANDOWNER CONSULTATION
(including Local Planning Policy 3.8)

Bruce Aulabaugh

From: MCKIRDY Justin (URPM) [justin.mckirdy@mainroads.wa.gov.au]
Sent: 12 October 2012 09:52
To: Bruce Aulabaugh
Cc: 'Jim Karakatsanakis'; 'Geoff Lewis'; BROADHURST Lindsay (MRP); 'Corbellini, John'; Jay.Naidoo@wanneroo.wa.gov.au; KING Bruce (TSC)
Subject: RE: TRIM: LWP Trinity Estate: LSP amendment with realigned N.Connector and Marmion Ave Access - potential left in / left out addition to plan provided at 20th Sept meeting

Bruce,

I have no objection to the proposed access point approximately 240m south of the controlled intersection discussed on 20 September.

Regards

Justin McKirdy
Urban Road Planning Manager



Telephone: (08) 9323 4991 Fax: (08) 9323 4449
Mobile: 0417 173 352
Email: justin.mckirdy@mainroads.wa.gov.au

From: Bruce Aulabaugh [<mailto:brucea@inet.net.au>]
Sent: Thursday, 4 October 2012 7:42 AM
To: MCKIRDY Justin (On Leave); KING Bruce (TSC)
Cc: 'Jim Karakatsanakis'; 'Geoff Lewis'; BROADHURST Lindsay (On Leave); 'Corbellini, John'; Jay.Naidoo@wanneroo.wa.gov.au
Subject: TRIM: LWP Trinity Estate: LSP amendment with realigned N.Connector and Marmion Ave Access - potential left in / left out addition to plan provided at 20th Sept meeting

Justin/ Bruce

Thanks again for the meeting on the 20th Sept at your offices. We appreciate the positive discussions and the progress achieved at the meeting.

Subsequent to the meeting the Trinity team identified one possible addition to the plan provided to you. On the attached plan I've highlighted this potential left in/ left out intersection to be added to Marmion Avenue at a location approx 240m south of the 'controlled 4-way' serving the realigned N.Connector. Please refer to PDF titled 'Oct 3 2012 Arterial Access Romeo & Marmion at Trinity Interface'. I've also attached traffic modeling results for the 'with LILO' and 'without LILO' networks. As noted at the meeting on Sept 20th, these are daily traffic forecasts for the ultimate development scenario.

Please review this information and advise if MRWA would be willing to accept this addition to the access planning in this area (for inclusion in the LSP amendment currently being prepared).

Many thanks and regards

Bruce Aulabaugh
Traffic Engineering & Transport Planning
5/18 Foggerthorpe Crescent
Maylands WA 6051
mobile: 0402919933

Bruce Aulabaugh

From: Bruce Aulabaugh [brucea@iinet.net.au]
Sent: 04 October 2012 07:42
To: 'MCKIRDY Justin (URPM)'; 'KING Bruce (TSC)'
Cc: 'Jim Karakatsanakis'; 'Geoff Lewis'; 'BROADHURST Lindsay (MRP)'; 'Corbellini, John'; 'Jay.Naidoo@wanneroo.wa.gov.au'
Subject: LWP Trinity Estate: LSP amendment with realigned N.Connector and Marmion Ave Access - potential left in / left out addition to plan provided at 20th Sept meeting
Attachments: Oct 3 2012 Arterial Access Romeo & Marmion at Trinity Interface.pdf; NW Corridor Oct 1 2012 Trinity LILO Marmion.pdf; NW Corridor Oct 1 Trinity no LILO at Marmion.pdf

Justin/ Bruce

Thanks again for the meeting on the 20th Sept at your offices. We appreciate the positive discussions and the progress achieved at the meeting.

Subsequent to the meeting the Trinity team identified one possible addition to the plan provided to you. On the attached plan I've highlighted this potential left in/ left out intersection to be added to Marmion Avenue at a location approx 240m south of the 'controlled 4-way' serving the realigned N.Connector. Please refer to PDF titled 'Oct 3 2012 Arterial Access Romeo & Marmion at Trinity Interface'. I've also attached traffic modeling results for the 'with LILO' and 'without LILO' networks. As noted at the meeting on Sept 20th, these are daily traffic forecasts for the ultimate development scenario.

Please review this information and advise if MRWA would be willing to accept this addition to the access planning in this area (for inclusion in the LSP amendment currently being prepared).

Many thanks and regards

Bruce Aulabaugh
Traffic Engineering & Transport Planning
5/18 Fogerthorpe Crescent
Maylands WA 6051
mobile: 0402919933

Bruce Aulabaugh
 19 Sept 2012
 Trinity/ Alkimos Regional Centre
 Access Spacings:
 Romeo Road
 Marmion Ave

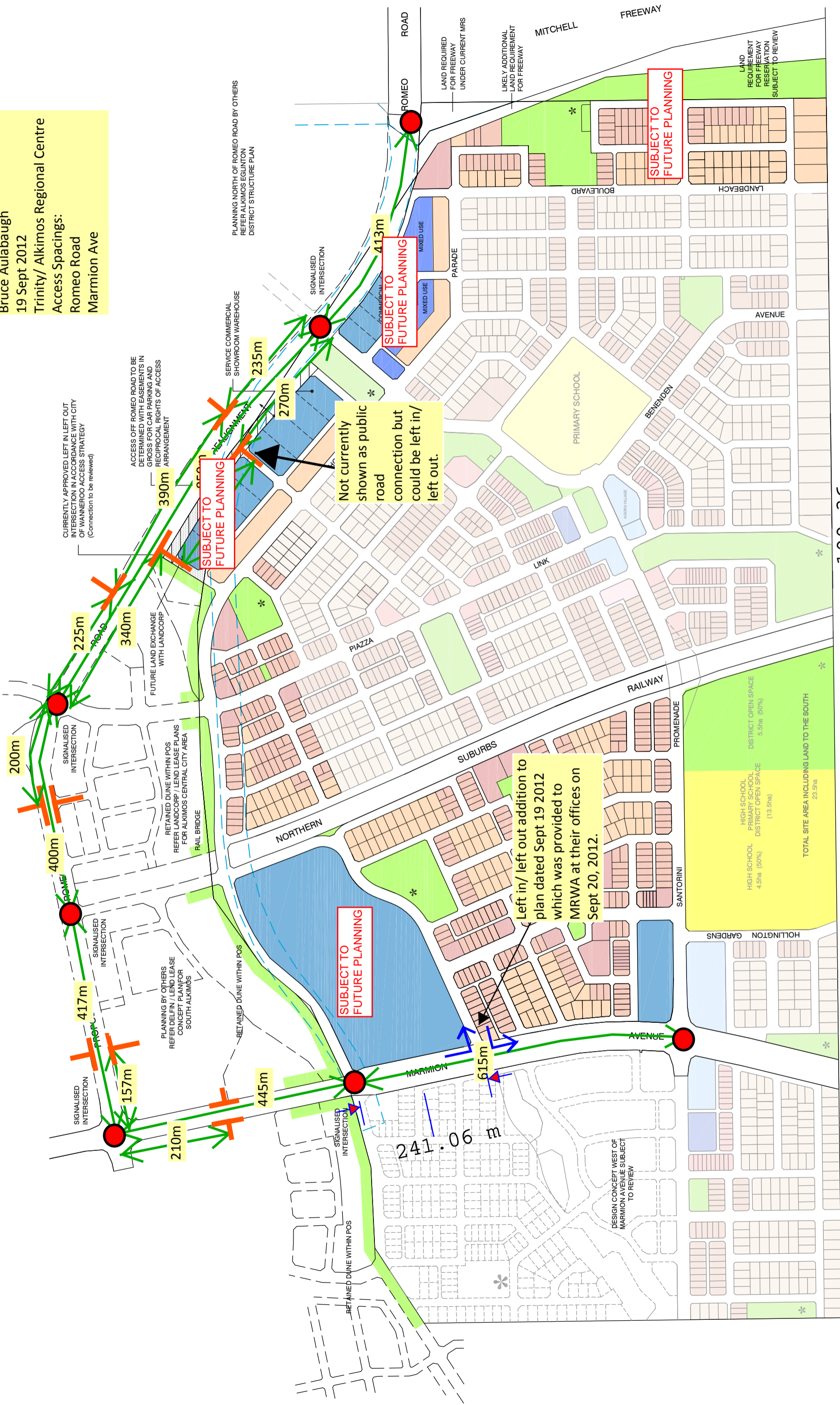


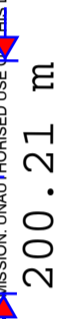
Figure 7

TRINITY ALKIMOS
 DEVELOPMENT CONCEPT PLAN (Romeo Road Interface)
 LOTS 1001 & 1002 MARMION AVENUE
 ALKIMOS



Suite 5, 2 Hardy Street
 South Perth, WA 6151
 T (08) 9474 1722
 F (08) 9474 1172
 perth@graylewis.com.au

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199.36 m
 200.21 m

Bruce Aulabaugh

From: Geoff Lewis [geoff@graylewis.com.au]
Sent: 07 September 2012 15:00
To: 'Jim Karakatsanakis'
Cc: 'Bruce Aulabaugh'
Subject: FW: Trinity Estate LSP: Proposed change to N.Connector

Fyi

Only just back will respond to other matters next week.

From: Naidoo, Jay [mailto:Jay.Naidoo@wanneroo.wa.gov.au]
Sent: Wednesday, 5 September 2012 11:08 AM
To: justin.mckirdy@mainroads.wa.gov.au; Geoff Lewis
Cc: Corbellini, John
Subject: RE: Trinity Estate LSP: Proposed change to N.Connector

Hi Justin,

Thank you for providing a response in respect to the realignment of the neighbourhood connector. Council's adopted position on the type and location of vehicular access points for Marmion Avenue and other significant roads such as Romeo Road are detailed in the City's Local Planning Policy 3.8: Marmion Avenue Arterial Road Access (LPP 3.8). Specifically, provision 1 in 'Part 2 – Policy Provisions' of LPP 3.8 requires the following:

No direct property access will be permitted to the Integrator Arterial roads (A) & (B) – depicted in Figure 1 between Marmion Avenue and the proposed Mitchell Freeway – except where the access meets the requirements of this Policy and is for one of the following:

- a) For the purposes of super lots; or*
- b) Where a commercial development creates rationalised access with the public road with an easement in gross granting reciprocal rights of access.*

As such, the City would like to clarify that as per the above provision, the Council supports, in principle, rationalised access points to commercial developments along Romeo Road, where they comply with the requirements of Liveable Neighbourhoods and LPP 3.8. The location of the left in - left out's and signalised intersections proposed as part of the neighbourhood connector realignment is as per depicted in Figure 1 of LPP 3.8.

The provision of employment land to the south east of the proposed signalised intersection for Marmion Avenue and the neighbourhood connector is supported, in principle, by the City given the need for increased employment land in the north-west sub-region in order to meet the 60% employment self-sufficiency target for this sub-region under Directions 2031. The proponent is proposing to remove the part of the employment land from the western side of the freeway. The City requires this area of employment land, identified in the Butler-Jindalee DSP, to be replaced elsewhere in the DSP area, if it is to support this proposal. The City therefore supports the employment land being located along Marmion Avenue and Romeo Road in principle. These areas would be more commercially viable than if it were located along the freeway to the east and would therefore deliver a greater number of jobs than if it's in the current DSP location, on the basis that an equivalent area of land is provided.

The City is supportive of this proposal in principle and looks forward to the meeting scheduled on Thursday 20 September.

Regards,

Jay



Jay Naidoo
Planning Officer
City of Wanneroo

T : 08 9405 5465
F : 08 9405 5499
E : jay.naidoo@wanneroo.wa.gov.au

23 Dundobar Road, Wanneroo WA 6065
Locked Bag 1, Wanneroo WA 6946

wanneroo.wa.gov.au

From: MCKIRDY Justin (URPM) [<mailto:justin.mckirdy@mainroads.wa.gov.au>]
Sent: 02 August 2012 14:19
To: Bruce Aulabaugh
Cc: 'Geoff Lewis'; 'Jim Karakatsanakis'; Corbellini, John; BROADHURST Lindsay (MRP); OSTOIC Jerko (TSC)
Subject: RE: Trinity Estate LSP: Proposed change to N.Connector

Hi Bruce,

Thanks for the opportunity to provide input.

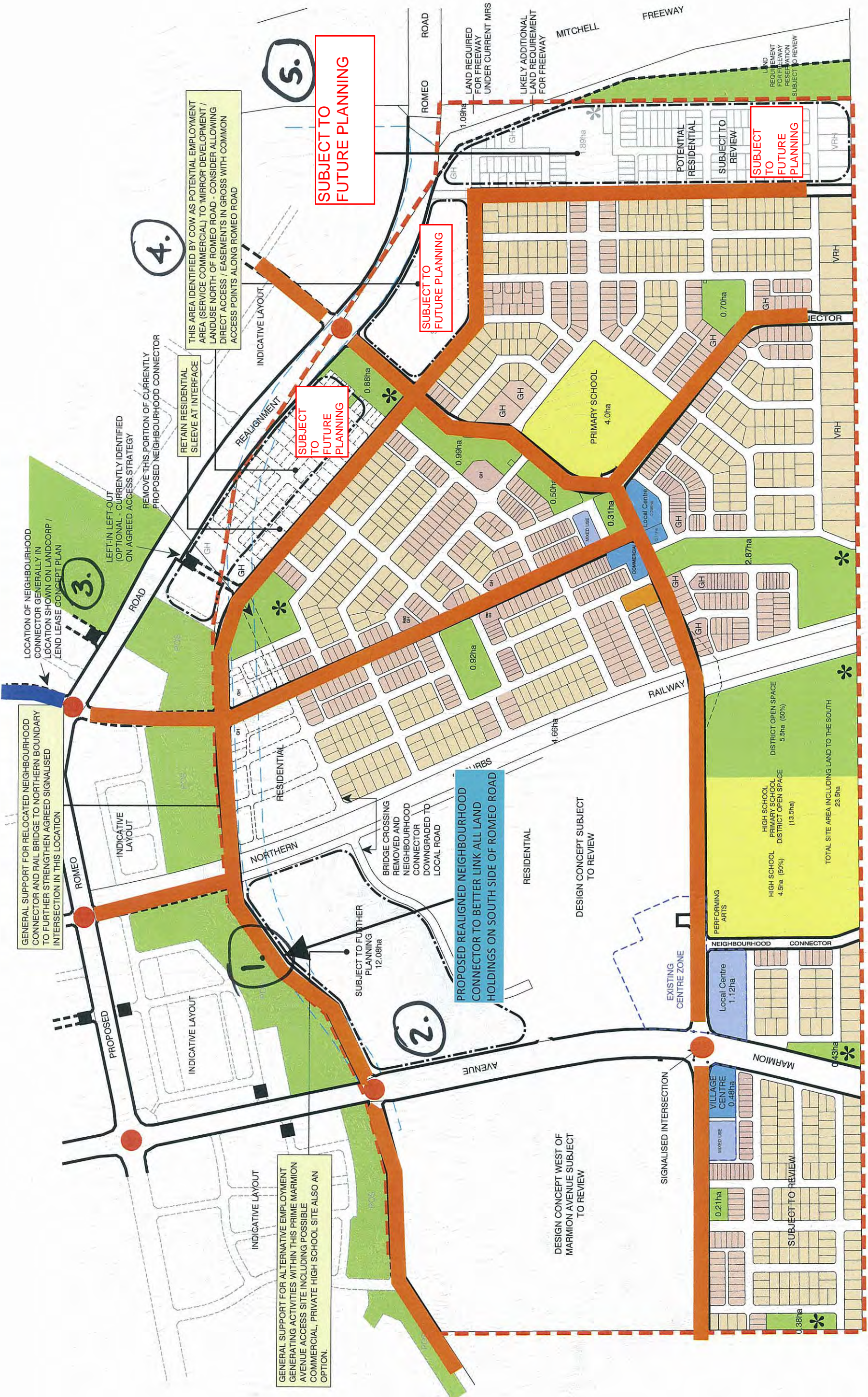
We have reviewed the plan provided with the realignment shown and various additional comments. Please refer to the attached plan which has numbering corresponding to our comments which are as follows:

1. The proposed realignment of the Neighbourhood Connector is acceptable to us. Having said that, we have questioned the necessity of the four way connection with Marmion Ave and whether there is sufficient demand in this location to warrant a signalised intersection.
2. The Alternative Employment zone to the south west of the intersection referred to above in item 1 is new to us and we would question why this is required when there is a large zone already identified for the District Centre. If it does come to fruition that the land use changes then we would strongly oppose any direct access to or from Marmion Ave in this area.
3. The north south road crossing Romeo Road has been straightened and is generally acceptable to us. The left in left out junction indicated to the immediate east is considered too close to the proposed signalised intersection and therefore not supported.
4. We have no concern with the identified land being considered for potential employment use but we do oppose the suggestion of direct access and additional access points along Romeo Road – particularly in close proximity to the freeway. We consider there is excellent serviceability of these areas from the adjacent lower order road network.
5. We support the principle of making the identified area of land residential and reiterate that connectivity of this area to Romeo Road is not supported.

We generally agree with the other access connections discretely indicated as controlled intersections or left in left out intersections. We do not support any additional access points at this time. Please also note that whilst the ultimately situation may necessitate signalised intersections there may be a need to consider alternate interim control arrangements.

Regards

Justin McKirdy
Urban Road Planning Manager



GENERAL SUPPORT FOR RELOCATED NEIGHBOURHOOD CONNECTOR AND RAIL BRIDGE TO NORTHERN BOUNDARY TO FURTHER STRENGTHEN AGREED SIGNALISED INTERSECTION IN THIS LOCATION

INDICATIVE LAYOUT

INDICATIVE LAYOUT

INDICATIVE LAYOUT

INDICATIVE LAYOUT

INDICATIVE LAYOUT

LEFT-IN LEFT-OUT (OPTIONAL - CURRENTLY IDENTIFIED ON AGREED ACCESS STRATEGY)

REMOVE THIS PORTION OF CURRENTLY PROPOSED NEIGHBOURHOOD CONNECTOR

RETAIN RESIDENTIAL SLEEVE AT INTERFACE

THIS AREA IDENTIFIED BY COW AS POTENTIAL EMPLOYMENT AREA (SERVICE COMMERCIAL) TO MIRROR DEVELOPMENT / LANDUSE NORTH OF ROMEO ROAD - CONSIDER ALLOWING DIRECT ACCESS / EASEMENTS IN GROSS WITH COMMON ACCESS POINTS ALONG ROMEO ROAD

GENERAL SUPPORT FOR ALTERNATIVE EMPLOYMENT GENERATING ACTIVITIES WITHIN THIS PRIME MARMION AVENUE ACCESS SITE INCLUDING POSSIBLE COMMERCIAL, PRIVATE HIGH SCHOOL SITE ALSO AN OPTION.

SUBJECT TO FURTHER PLANNING 12.08ha

PROPOSED REALIGNED NEIGHBOURHOOD CONNECTOR TO BETTER LINK ALL LAND HOLDINGS ON SOUTH SIDE OF ROMEO ROAD

BRIDGE CROSSING REMOVED AND NEIGHBOURHOOD CONNECTOR DOWNGRADED TO LOCAL ROAD

DESIGN CONCEPT WEST OF MARMION AVENUE SUBJECT TO REVIEW

DESIGN CONCEPT SUBJECT TO REVIEW

SUBJECT TO REVIEW

EXISTING CENTRE ZONE

NEIGHBOURHOOD CONNECTOR

PERFORMING ARTS

HIGH SCHOOL 4.5ha (60%)

PRIMARY SCHOOL DISTRICT OPEN SPACE (13.5ha)

HIGH SCHOOL DISTRICT OPEN SPACE 5.5ha (60%)

TOTAL SITE AREA INCLUDING LAND TO THE SOUTH 23.5ha

Local Centre 1.12ha

VILLAGE CENTRE 0.48ha

MIXED USE 0.2ha

0.31ha

0.50ha

0.92ha

0.99ha

0.88ha

0.70ha

4.0ha

2.87ha

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TRINITY ALKIMOS
NORTHERN INTERFACE OPTION 2A - RELOCATED BRIDGE LOCATION
AND REMOVED NEIGHBOURHOOD CONNECTOR
LOTS 1001 & 1002 MARMION AVENUE, ALKIMOS

18th MAY 2012

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- LEGEND:
- SIGNALISED INTERSECTION
 - LEFT IN - LEFT OUT



GRAY & LEWIS
LAND USE PLANNERS

Suite 5, 2 Hardy Street
 South Perth, WA 6151
 T (08) 9474 1722
 F (08) 9474 1172
 perth@graylewis.com.au



Telephone: (08) 9323 4991 Fax: (08) 9323 4449
Mobile: 0417 173 352
Email: justin.mckirdy@mainroads.wa.gov.au

From: Bruce Aulabaugh [<mailto:brucea@inet.net.au>]
Sent: Wednesday, 1 August 2012 3:40 PM
To: MCKIRDY Justin (URPM); BROADHURST Lindsay (MRP)
Cc: 'Geoff Lewis'; 'Jim Karakatsanakis'
Subject: Trinity Estate LSP: Proposed change to N.Connector

Dear Justin/ Lindsay,

Attached please find road network planning information relating to a proposed change to the Trinity Estate LSP local road network which is being progressed with the City of Wanneroo as a 'minor amendment'. We have discussed the change with the City and DoP and have in principle support at officer level.

The City of Wanneroo has now requested that we liaise with MRWA for any comments you might have.

The first page of the attached document shows the current Trinity LSP Neighbourhood Connector layout including an 'indirect' east-west N.Connector toward the north end of the Trinity Estate. The second page of the attached document shows the proposed revision to the N.Connector alignment so that it better serves the access needs of the Trinity LSP area as well as the LandCorp land located to the south of Romeo Road. The original alignment was proposed as an interim measure in the absence of any conceptual planning over the LandCorp land. With that information now available, a more rational road structure has been developed in a collaborative process between both land owners. Lend Lease (on behalf of LandCorp) have provided a letter to LWP supporting the proposed road network change.

The final pages of the attached document show City of Wanneroo LPP 3.8 (provided here for your convenience). It details the arterial road network access planning principles adopted for Marmion Avenue and other important roads such as Romeo Road.

Please review the proposed change to the Trinity LSP road network and provide any comments you might have.

Thank you and regards

Bruce Aulabaugh

Traffic Engineering & Transport Planning

5/18 Fogerthorpe Crescent

Maylands WA 6051

mobile: 0402919933

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Owner	Planning and Sustainability
Implementation	2011
Reviewed	Biannual
Next Review	2013

PART 1 – POLICY OPERATION

Policy Development

This Policy has been prepared under the provisions of Section 8.11 of the City of Wanneroo District Planning Scheme No. 2.

Application and Purpose

This Policy prescribes acceptable standards for the type and location of vehicular access points, provisional standards for cycling infrastructure, and operational procedures for all new planning proposals including:

- structure plans and structure plan amendments;
- detailed area plans;
- applications for planning approval; and
- subdivision applications.

The area to which this Policy applies is bordered by, and inclusive of, Toreopango Avenue to the north, the proposed Mitchell Freeway to the east, Kingsbridge Boulevard to the south, and Marmion Avenue to the west. This area is represented graphically in **Figure 1**.

In the event of any inconsistency between the provisions of this Policy and:

- an agreed structure plan; or
- an application for planning approval that accords with an agreed structure plan; or
- a subdivision application that accords with an agreed structure plan;

then the provisions of that structure plan shall prevail, but only to the extent of that inconsistency.

Objectives

The objectives of this Policy are to:

1. Recognise Marmion Avenue is a major north-south transport route serving the north west corridor, but accept it is a lower classification road than the proposed Mitchell Freeway, which will run parallel, approximately two kilometres to the east;
2. Facilitate adequate pedestrian and bicycle movement (within the road reservation) along and across Marmion Avenue;
3. Strike a balance between the safe movement and flow of traffic on Marmion Avenue and the need for traffic to enter, leave and cross Marmion Avenue; and
4. Create sufficient access opportunities to regional and district centres, which include crossing points for all modes of transport (including pedestrians) and safe access for vehicles accessing the centres.

Structure

This Policy consists of three parts:

Part 1 – Policy Operation: This includes the Policy context and objectives.

Part 2 – Policy Provisions: Sets out Policy provisions for:

- Property access;
- Road design requirements;
- Cycle paths;
- Operating speeds and junction spacing; and
- Seeking amendments to the Policy.

Part 3 – Figure 1: A spatial plan that graphically reflects the following:

- The Policy application area
- Road hierarchy and rail network
- Key vehicular access points
- Ultimate target operating speed zones
- Centre locations

PART 2 – POLICY PROVISIONS

1. No direct property access will be permitted to the Integrator Arterial roads (A) & (B) – depicted in **Figure 1** between Marmion Avenue and the proposed Mitchell Freeway – except where the access meets the requirements of this Policy and is for one of the following:
 - a) For the purposes of super lots; or
 - b) Where a commercial development creates rationalised access with the public road with an easement in gross granting reciprocal rights of access.
2. In the event of any inconsistency between the provisions of this Policy and either, relevant Main Roads WA (MRWA) Guidelines, the Austroads Guide to Road Design or Liveable Neighbourhoods then the provision of those documents shall prevail over the conflicting provision of this Policy but only to the extent of any inconsistency.
3. A safe network of pedestrian and bicycle crossing points will be provided to link communities across major roads and provide safe access to regional and district centres. Major pedestrian crossing points will generally be provided under traffic signal control, but grade separated crossings will also be considered where the geometry is supportive and traffic signals are considered to be inappropriate.

4. Clearly defined cycle paths, at the widths specified below, are required for both sides of the following roads in the applicable area. Acceptable designs will include:
- On-road cycle lanes and physically separated dual use paths; or
 - Physically separated dedicated cycle paths and pedestrian paths.

Table 1: Cycle Path Location and Minimum Widths

Road Type	On-road Cycle Lane	Physically Separated Dedicated Cycle Path	Physically Separated Dual Use Path	Pedestrian Path
Integrator Arterial (A)	2.5 m	2.0 m	2.1 m	1.5 m
Integrator Arterial (B) and Neighbourhood Connector (A)	1.5 m	1.5 m		

5. Ultimate target operating speed and minimum junction spacing are specified in **Table 2** for Marmion Avenue and Integrator Arterial (A) and (B) roads, both;
- Within Town Centre Zones; and
 - Roads outside of Town Centre Zones.

Table 2: Ultimate Target Operating Speeds and Minimum Junction Spacing

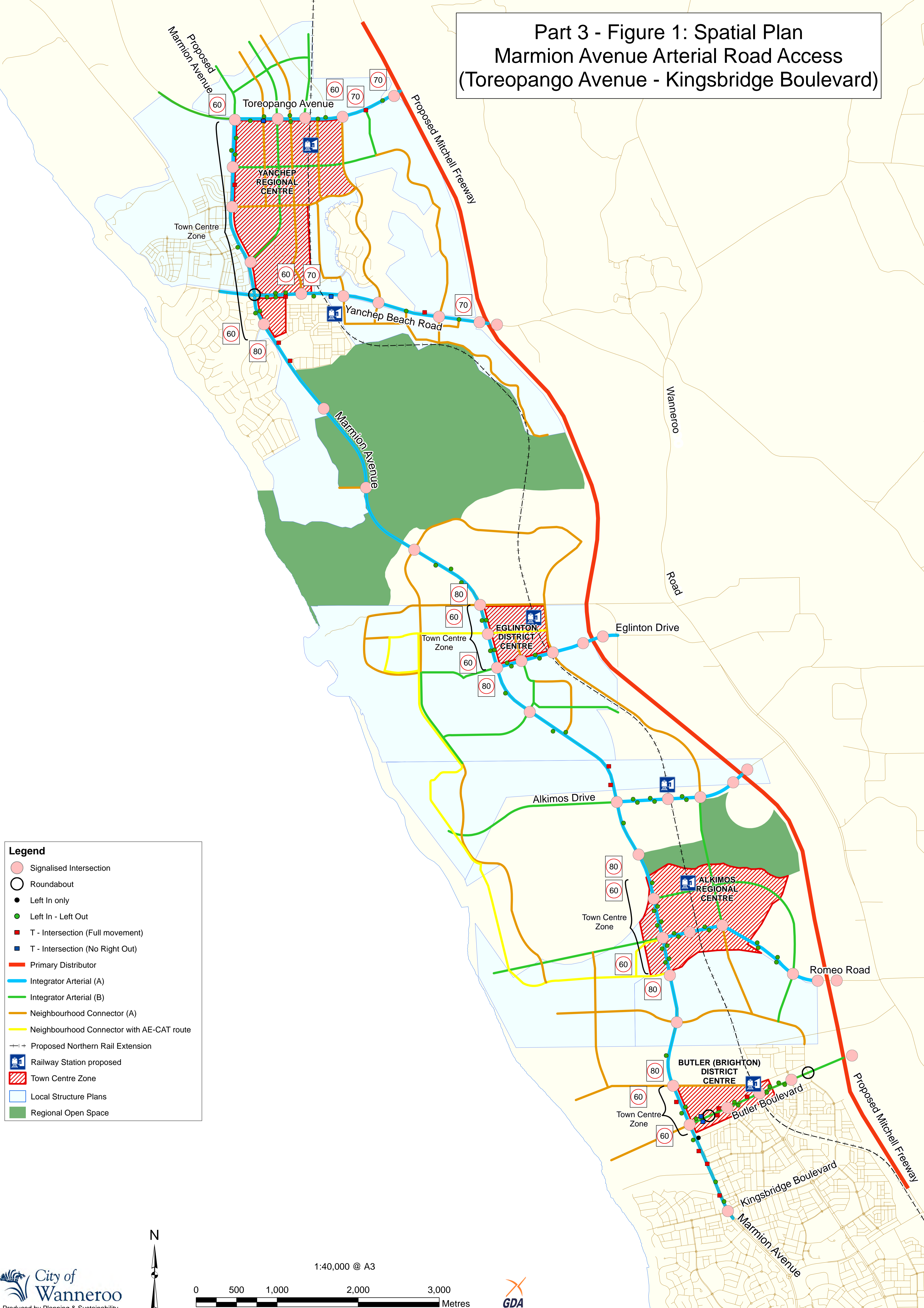
Roads within Town Centre Zones		
Affected Road	Ultimate Target Operating Speed*	Minimum Junction Spacing**
Marmion Avenue	60 km/h	Major: 350 m Minor: 165 m
Other Integrator (A) Roads	60 km/h	Spacing according to Table 5 of Liveable Neighbourhoods
Integrator (B) Roads	60 km/h	
Roads outside of Town Centre Zones		
Affected Road	Ultimate Target Operating Speed*	Minimum Junction Spacing**
Marmion Avenue	80 km/h	Major: 1 km Minor: 500 m
Other Integrator (A) Roads	70 km/h	Spacing according to Table 5 of Liveable Neighbourhoods
Integrator (B) Roads	60 km/h	

*Ultimate target operating speeds are a forecasted requirement only. Future urban growth will dictate whether these speeds are needed or if they require review. Until then, interim speeds will be in effect. Existing roads already have these interim speeds applied by Main Roads WA policy. Future roads' interim speed zoning will be decided by Main Roads WA when required.

**For Marmion Avenue only, 'Major' junctions involve more than two intersecting roads and are controlled by either signals or a roundabout. 'Minor' junctions are T intersections that involve two intersecting roads, controlled by either a 'Stop' or 'Give Way' sign. Within Town Centre Zones, the City may allow right turn manoeuvres. Outside of Town Centre Zones, only left-in left-out intersections will be accepted.

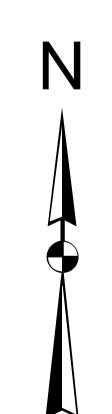
6. Where applications are made to Council seeking to depart from the intersection location, design or any other provision of this Policy, an application must first be made to seek an amendment of this Policy. The application must be supported by a Traffic Assessment, which needs to;
 - be undertaken by a sufficiently qualified and experienced traffic engineer;
 - clearly justify the necessity of the amendment including how it will benefit the road network and address the effect on traffic flow and safety; and
 - be approved by the City of Wanneroo in consultation with MRWA.

Part 3 - Figure 1: Spatial Plan Marmion Avenue Arterial Road Access (Toreopango Avenue - Kingsbridge Boulevard)



Legend

- Signalised Intersection
- Roundabout
- Left In only
- Left In - Left Out
- T - Intersection (Full movement)
- T - Intersection (No Right Out)
- Primary Distributor
- Integrator Arterial (A)
- Integrator Arterial (B)
- Neighbourhood Connector (A)
- Neighbourhood Connector with AE-CAT route
- - - Proposed Northern Rail Extension
- Railway Station proposed
- Town Centre Zone
- Local Structure Plans
- Regional Open Space



1:40,000 @ A3



15 May 2012

Jim Karakatsanakis
LWP Property Group Pty Ltd
34 Main Street
ELLENBROOK WA 6069

Dear Jim

Proposed Amendment to Bridge Crossing Location - Trinity

Lend Lease writes to confirm its position on the LWP's proposed amendment to the road hierarchy and bridge crossing location in its land to the south of the Alkimos Regional Centre known as Trinity.

Lend Lease acts as the project manager for LandCorp's land which has been designated as the future Alkimos Regional Centre. In preparing a Centre Structure Plan for the land, Lend Lease has been working with LWP to ensure that the interface between the two projects is planned in an orderly manner.

Through these discussions it became clear that in order to simplify the road connections from Trinity into the Alkimos Regional Centre and optimise the benefit from the proposed signalised intersections on Marmion Avenue and Romeo Road, the neighbourhood connector within LWP's land needed to shift further north and straightened.

As a result of this amendment the proposed bridge crossing over the future railway line has also shifted north. This is in accordance with the attached plan "Northern Interface Option 2A – Relocated Bridge Location and Removed Neighbourhood Connector" dated 24 April 2012.

Lend Lease confirms that both it and LandCorp as landowner are supportive of the neighbourhood connector in the new location as well as the associated bridge crossing.

Lend Lease understands that the extent of bridge crossing will occur in LWP's land and will not impact the LandCorp landholding in any way. Lend Lease asks that LWP provide a cross section of this bridge crossing as soon as soon as possible to ensure that there is no impact on LandCorp's land holding including the parabolic dune system at the southern boundary of the land. On the proviso that the cross section is acceptable and there is no impact to LandCorp's land holding, we have no issue with the proposed amendment.

Please contact me directly should you wish to discuss this matter on 08 9223 2839.

Yours sincerely

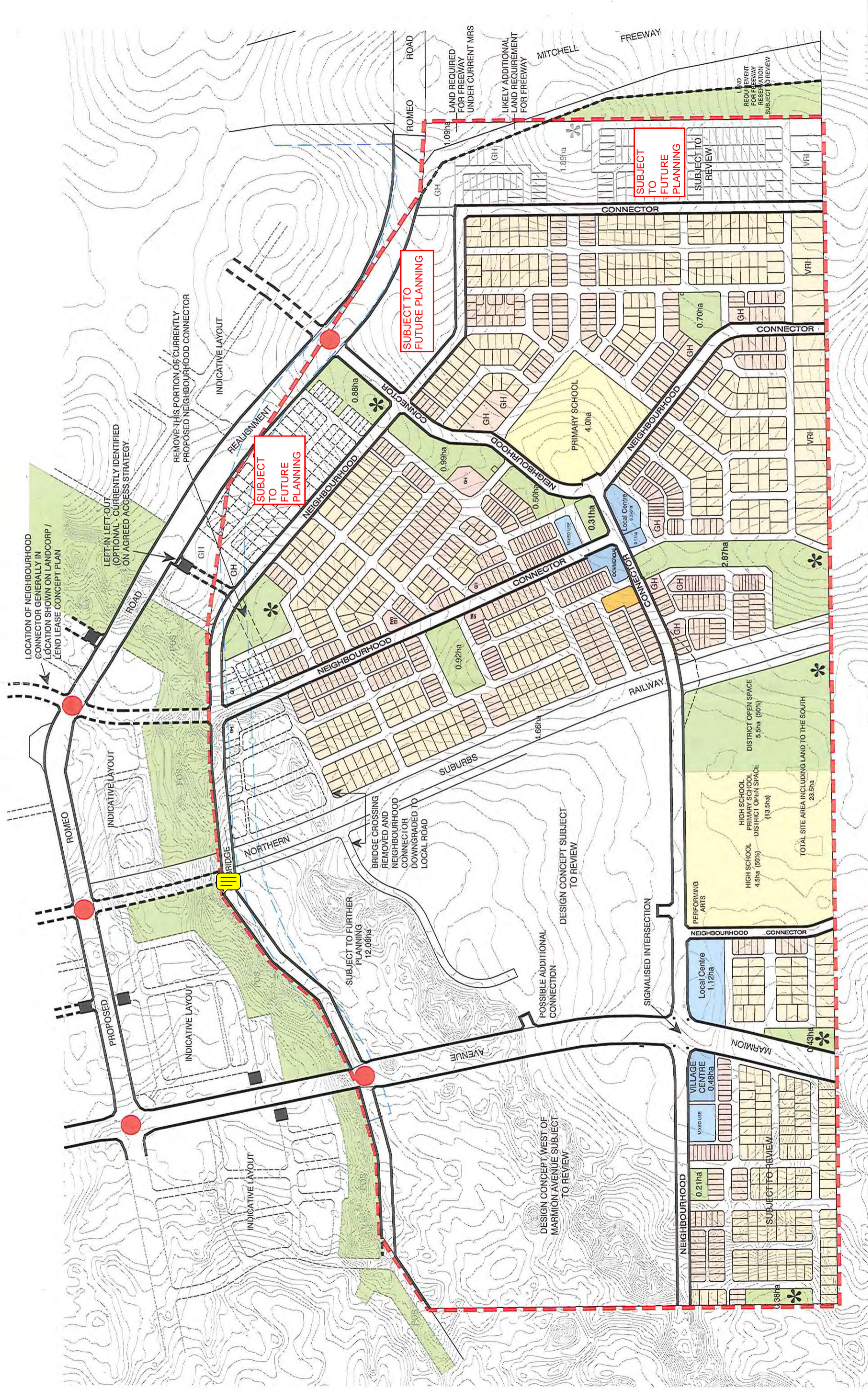


Anne Jolic

Project Director
Lend Lease Communities

cc: Matt Bradley, LandCorp

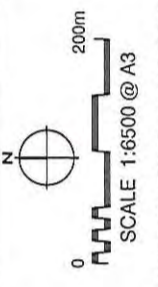
encl: Plan "Northern Interface Option 2A" dated 24 April 2012



TRINITY ALKIMOS
NORTHERN INTERFACE OPTION 2A - RELOCATED BRIDGE LOCATION
AND REMOVED NEIGHBOURHOOD CONNECTOR
LOTS 1001 & 1002 MARMION AVENUE, ALKIMOS

24th APRIL 2012

LEGEND:
● SIGNALISED INTERSECTION
■ LEFT IN - LEFT OUT



Suite 5, 2 Hardy Street
 South Perth, WA 6151
 T (08) 9474 1722
 F (08) 9474 1172
 perth@graylewis.com.au

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APPENDIX B

STREET CROSS SECTIONS

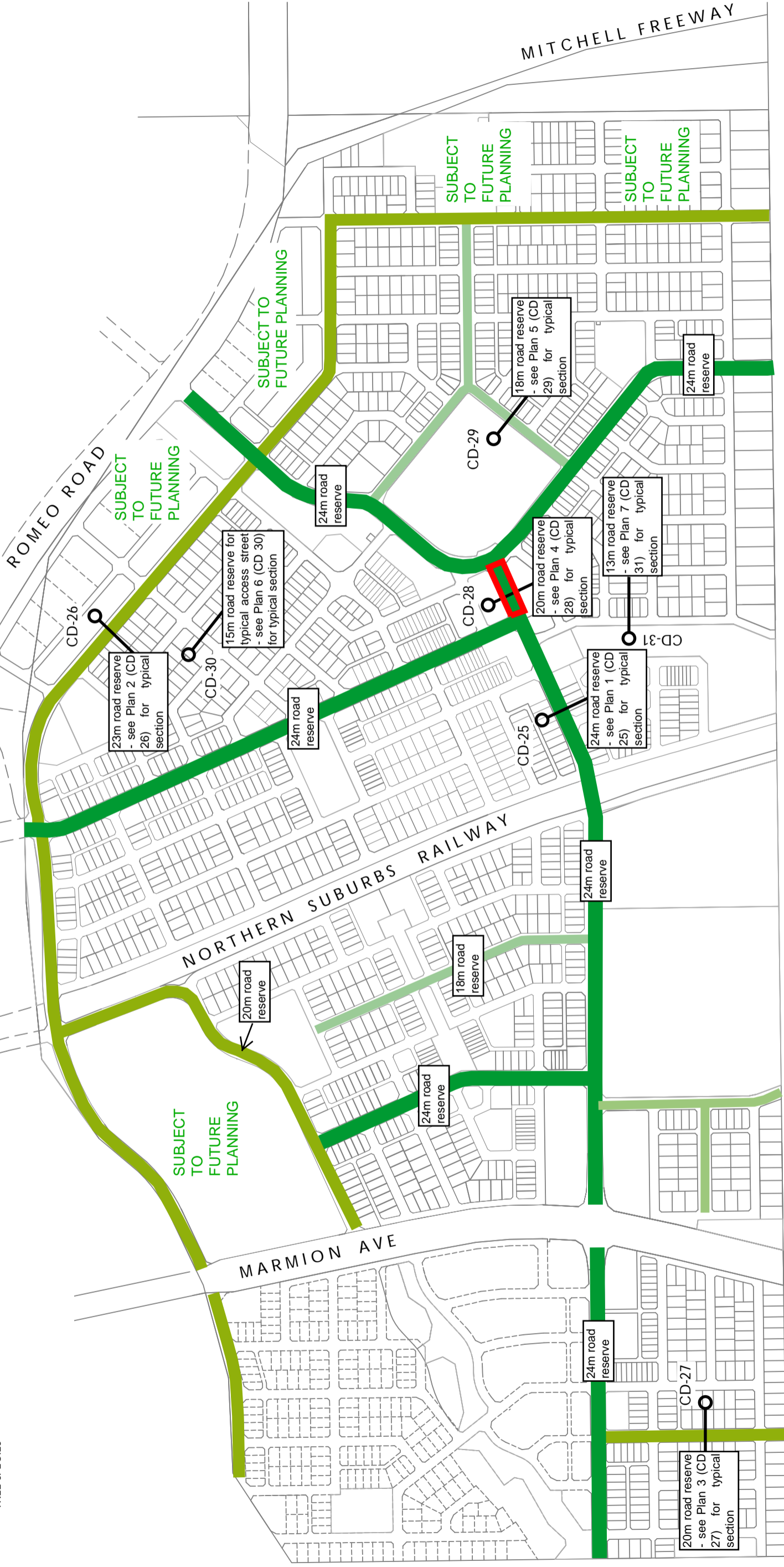
(SOURCE: PLAN E LANDSCAPE ARCHITECTS)

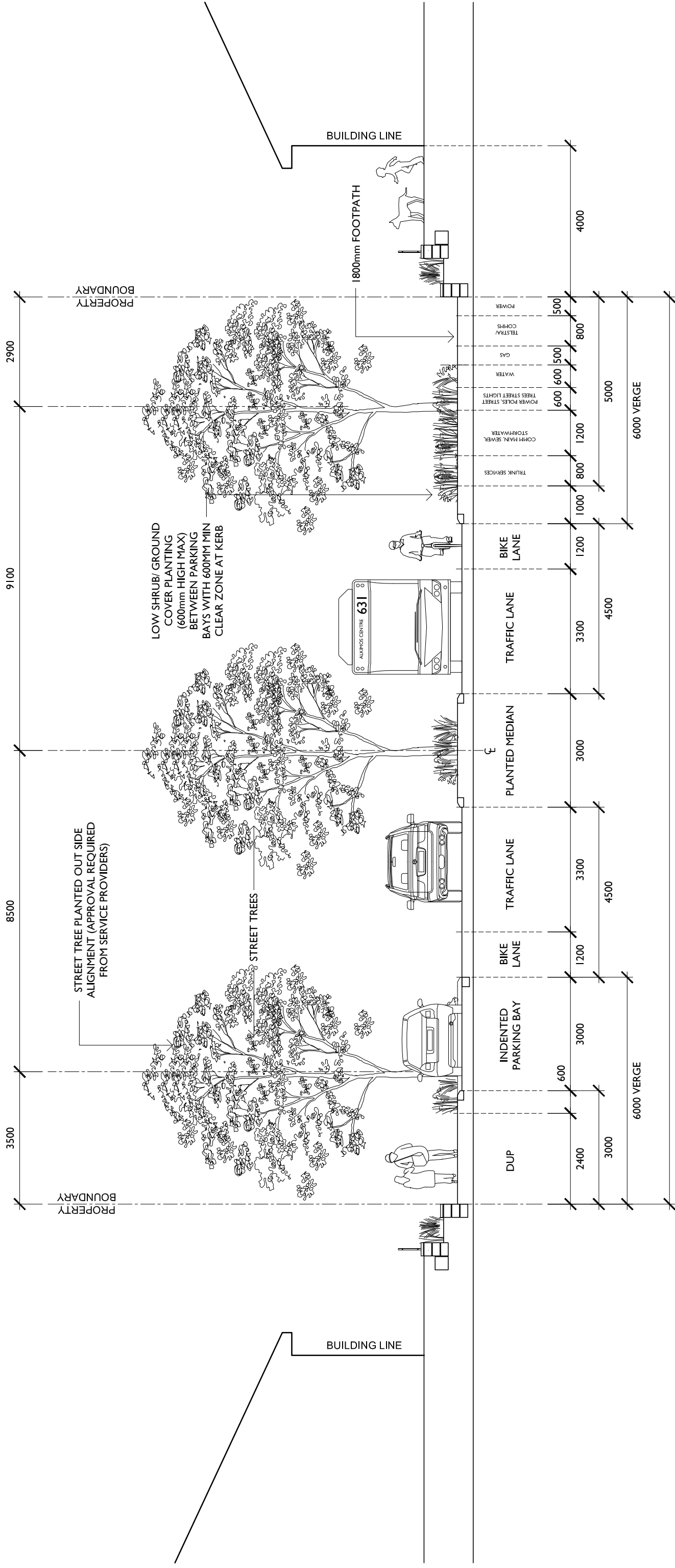
LEGEND

-  24m (W) ENTRY ROAD/NEIGHBOURHOOD CONNECTORS
(STREET TREE PLANTING WITH VERGE AND MEDIAN PLANTING)
-  22-20m (W) NEIGHBOURHOOD CONNECTORS
(STREET TREE PLANTING WITH VERGE AND/OR MEDIAN PLANTING)
-  18-24m (W) GREEN CONNECTORS
(STREET TREE PLANTING WITH VERGE AND MEDIAN PLANTING)

ALL OTHER ROADS TO HAVE STREET TREE PLANTING ONLY WITH MULCHED VERGES. REFER TO STREET TREE MASTERPLAN FOR TREE SPECIES

NOTE: There are typical sections for roads which are labeled Plan 1 (CD-25) to Plan 7 (CD-31) by PLAN E LANDSCAPE ARCHITECTURE in the 'Traffic and Movement Network Report' - refer following pages





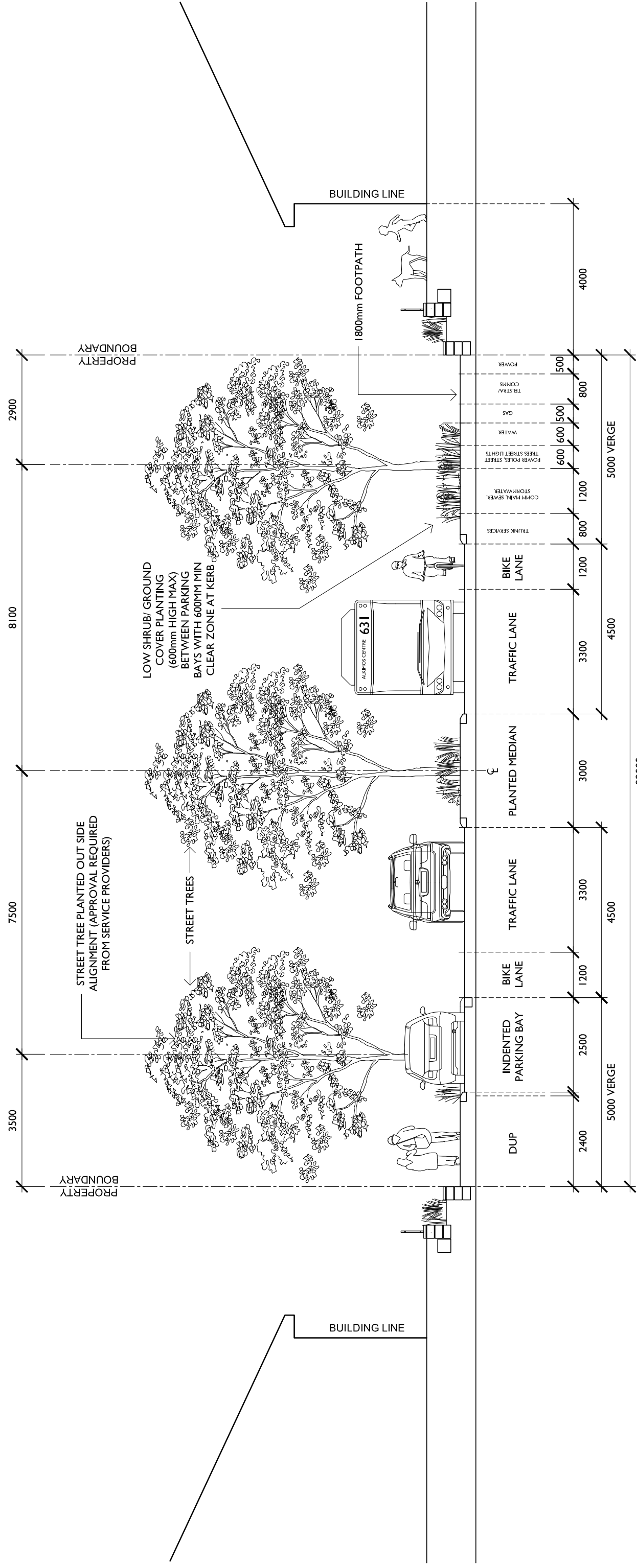
TYPICAL SECTION

24 m WIDE NEIGHBOURHOOD CONNECTOR ROAD & ENTRY ROAD

NOTES : SERVICE CORRIDOR ALIGNMENT FROM UTILITY PROVIDERS CODE OF PRACTICE FOR WA (JAN 2007)

PLAN 1 - CD 25





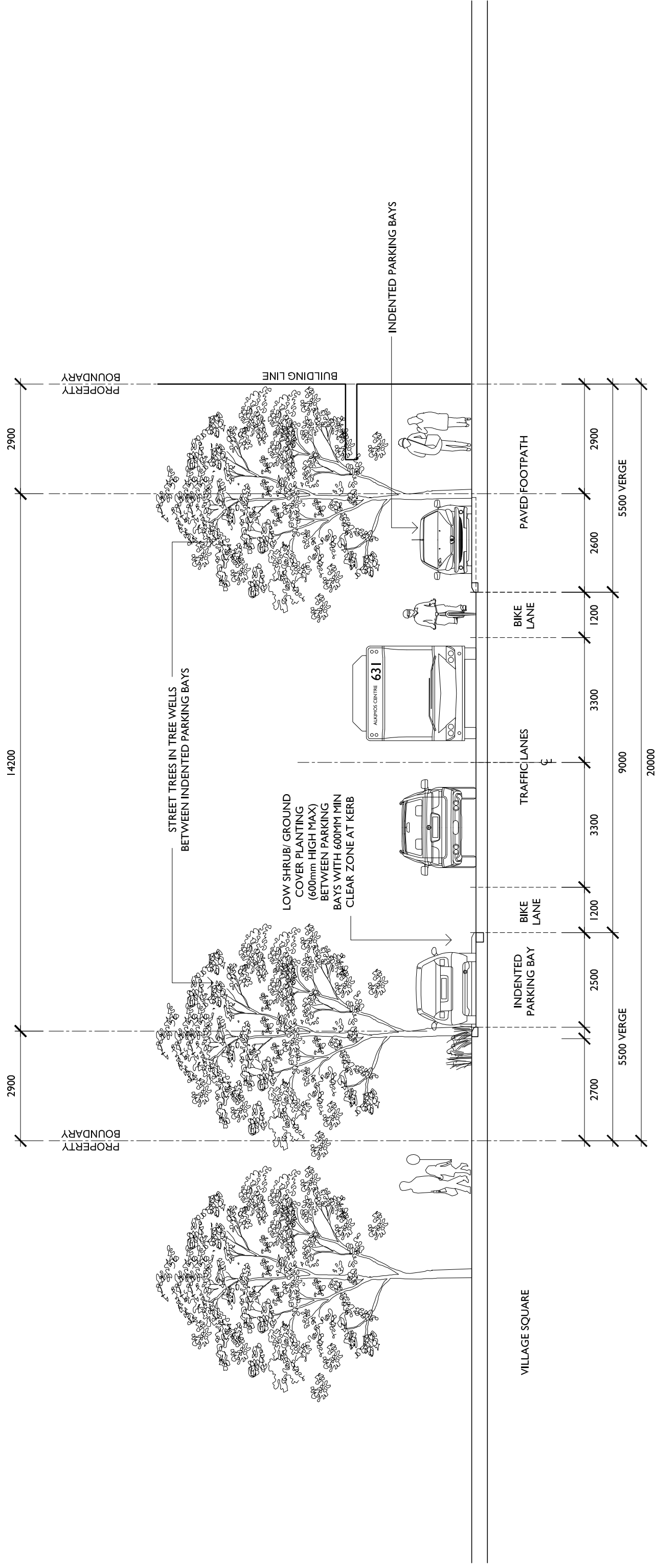
TYPICAL SECTION

22 m WIDE NEIGHBOURHOOD CONNECTOR ROAD

NOTES : SERVICE CORRIDOR ALIGNMENT FROM UTILITY PROVIDERS CODE OF PRACTICE FOR WA (JAN 2007)

PLAN 2 - CD 26



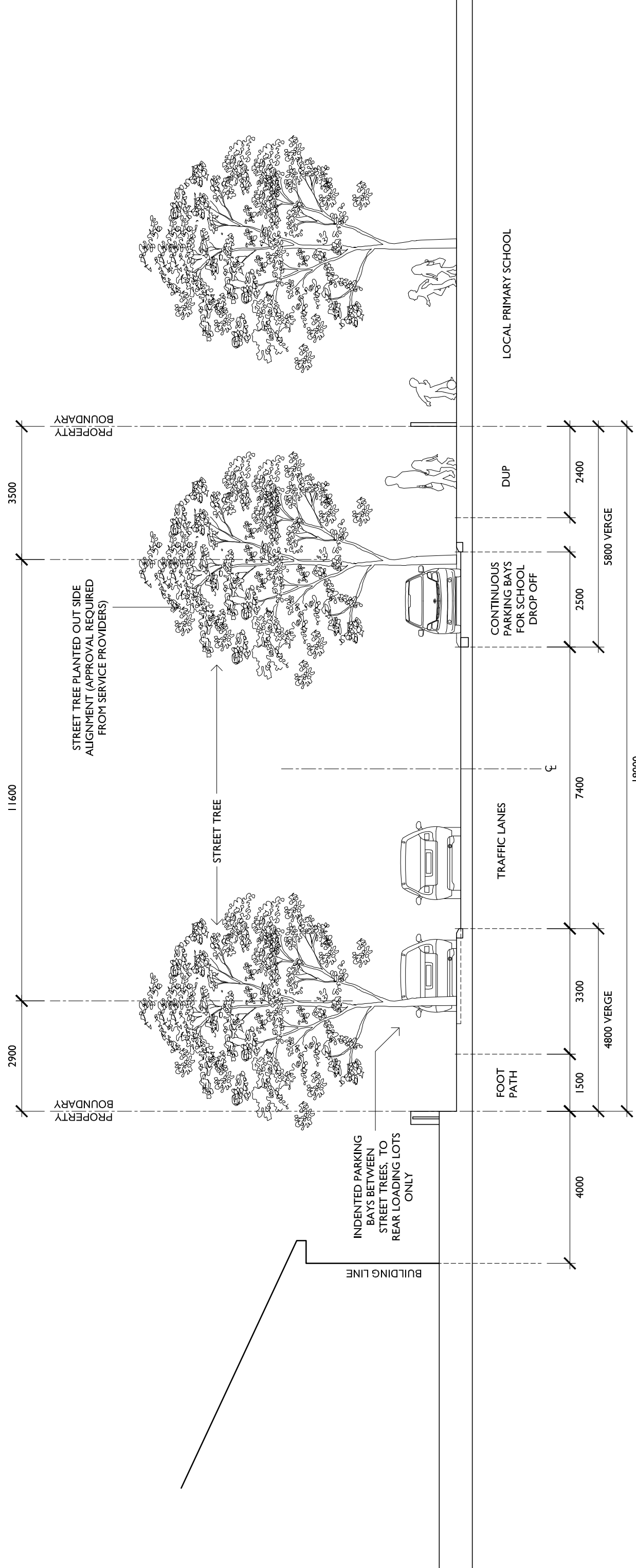


TYPICAL SECTION

20 m WIDE NEIGHBOURHOOD CONNECTOR ROAD & ENTRY ROAD @ VILLAGE SQUARE

PLAN 4 - CD 28



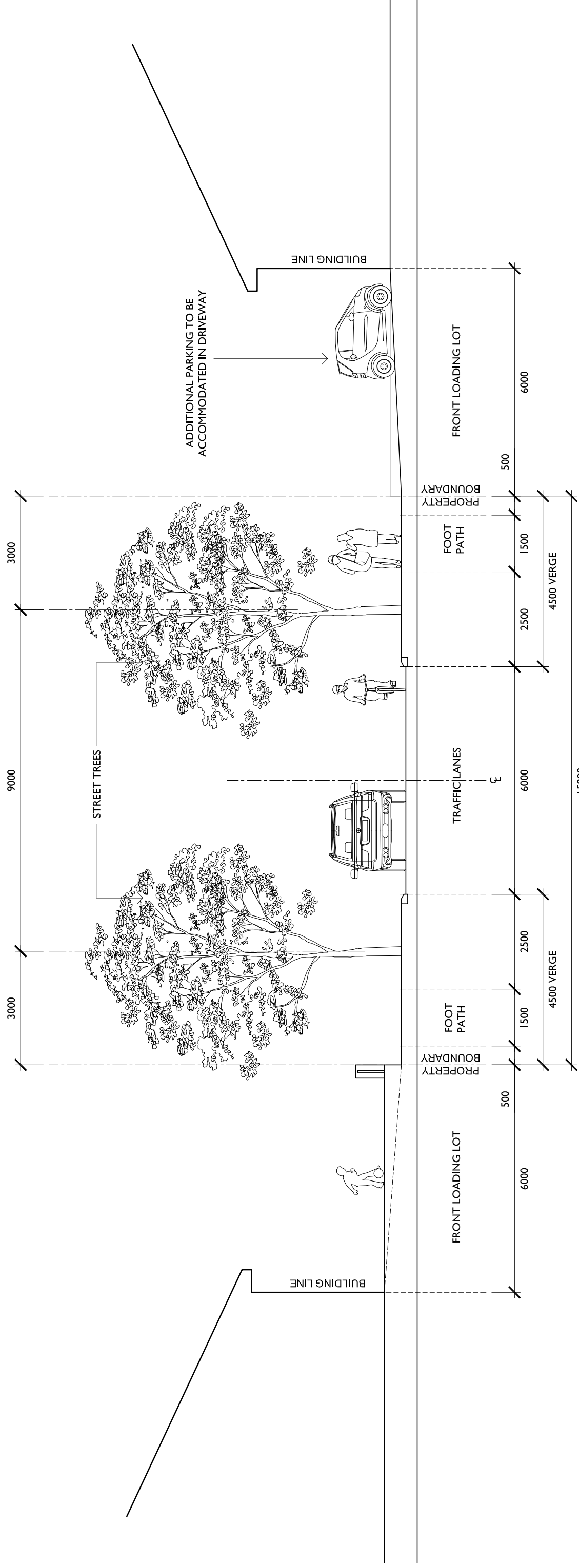


TYPICAL SECTION

18 m WIDE NEIGHBOURHOOD ROAD AROUND LOCAL PRIMARY SCHOOL

PLAN 5 - CD 29

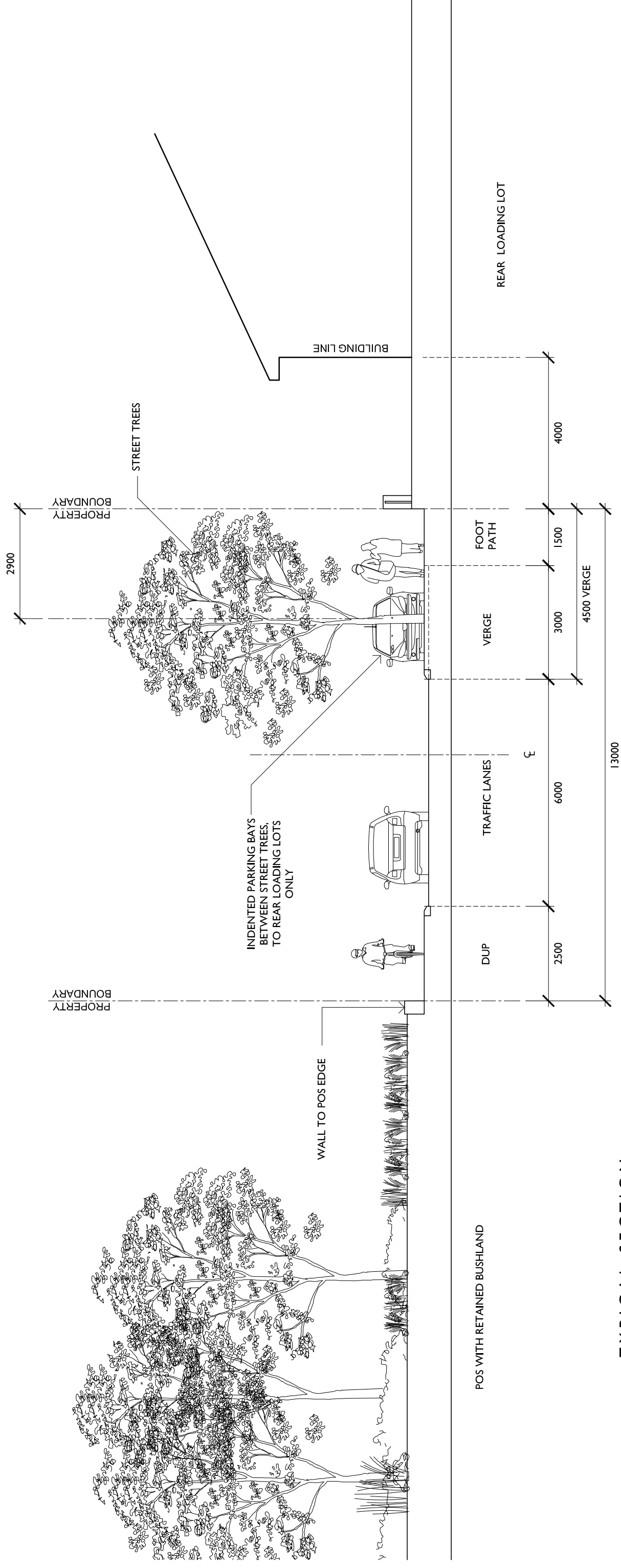




TYPICAL SECTION

15 m WIDE LOCAL ROAD

PLAN 6 - CD 30








TYPICAL SECTION

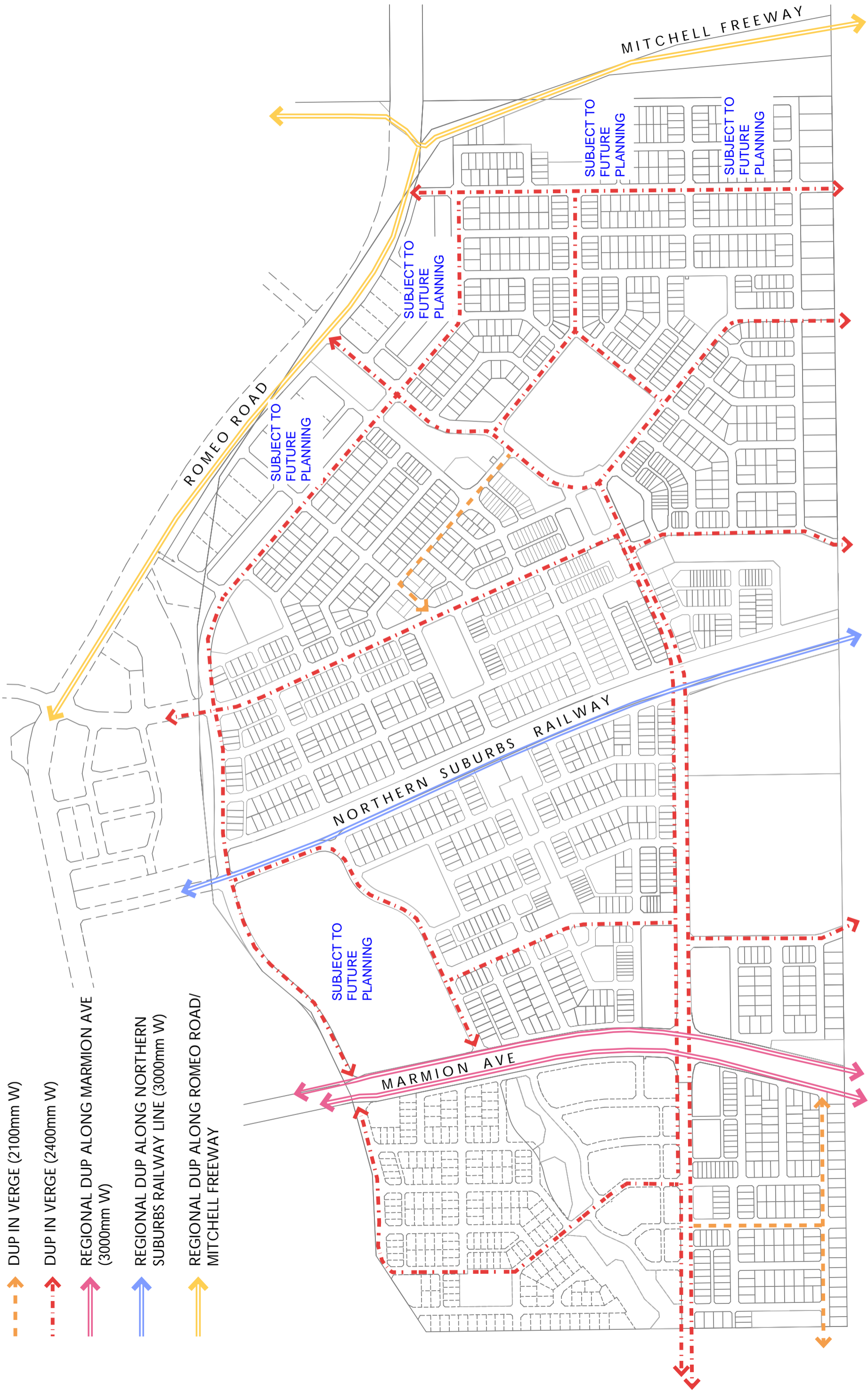
13m WIDE LOCAL ROAD ADJACENT TO POS/BUSHLAND

PLAN 7 CD 31



LEGEND

-  DUP IN VERGE (2100mm W)
-  DUP IN VERGE (2400mm W)
-  REGIONAL DUP ALONG MARMION AVE (3000mm W)
-  REGIONAL DUP ALONG NORTHERN SUBURBS RAILWAY LINE (3000mm W)
-  REGIONAL DUP ALONG ROMEO ROAD/ MITCHELL FREEWAY



- NOTES:**
1. ALL STREETS TO HAVE FOOTPATH TO BOTH SIDES, MIN. 1500mm UNO.
 2. PATH CONNECTION THROUGH POS AREAS TO BE DETERMINED DURING DESIGN STAGE FOR EACH INDIVIDUAL POS
 3. PATH NETWORK WEST OF MARMION AVE INDICATIVE ONLY AND SUBJECT TO CHANGE WITH FUTURE PLANNING

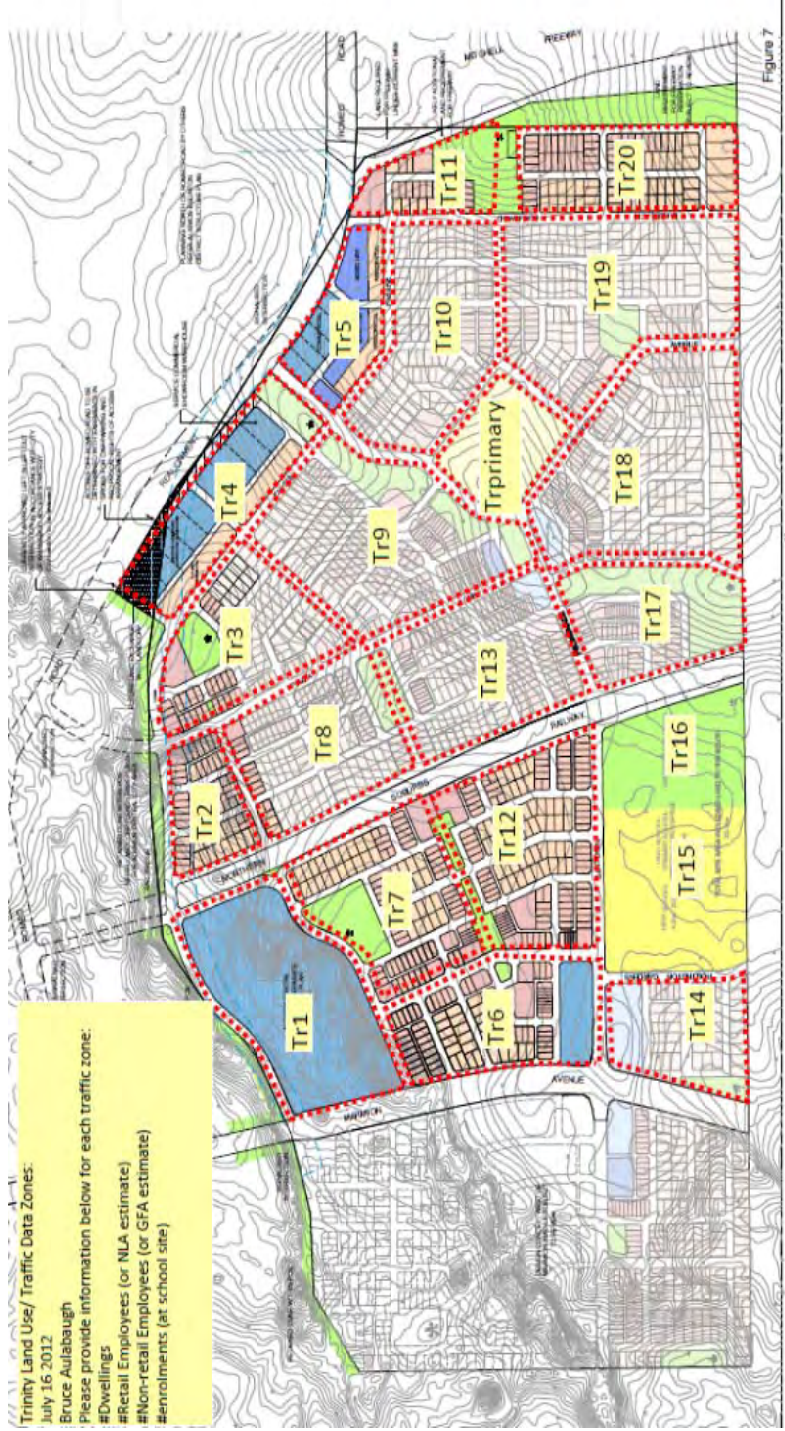


APPENDIX C

NW CORRIDOR TRAFFIC MODELLING INFORMATION

Trinity (east of Marrison) : July 2012 land use data

Zone	#dwellings	retail employees or NLA	non retail employees or GFA
TR1	0	0	300
TR2	60	0	0
TR3	110	0	0
TR4	30	0	180
TR5	20	0	150
TR6	100	50	30
TR7	130	0	0
TR8	120	0	0
TR9	175	10	30
TR10	140	0	0
TR11	40	0	0
TR12	175	0	0
TR13	160	20	55
Tprimary	0	0	52
TR14	65	50	25
TR15	0	0	102
TR16	0	0	0
TR17	75	0	0
TR18	175	50	50
TR19	175	0	0
TR20	95	0	0



TRAFFIC MODEL TRIP GENERATION

Trip Productions

The Department of Transport provided guidance on mode share assumptions for use in this Ultimate Development NW Corridor traffic model. The guidance takes account of current travel behaviour and expected changes over time. The email from Department of Transport dated 21 March 2012 is attached at the end of this Appendix.

Table 1 compares the NW Corridor Traffic Model average daily person trip production rates and vehicle trip rates (after applying the DoT suggested mode split %) with the 2006 STEM Model.

	Home Based	Non-home based	HB + NHB	Car Driver Mode Split	Daily Veh-trip/person
NW Corridor Model	2.92	0.69	3.61	0.55	1.98
*STEM 2006 calibration	2.86	0.67	3.53	0.568	2.02

**Strategic Transport Evaluation Model 2006 calibration metro average person trip rates and car driver mode split. (Peter Lawrence of DoP, August 201).*

Trip Attractions

Vehicle trip attractions were calculated using the following rates:

- *Retail: 14.5 veh-trips/day per employee. Café's and restaurants are included in this category. This rate is slightly higher than the 13 veh-trips/ day per employee derived using the STEM model attraction coefficients and 70% car driver mode share.
- *Non retail: 3.2 veh-trips/day per employee. This rate is slightly higher than the weighted average of 2.53 veh-trips/ day per non-retail employee derived using Perth Commercial Complex and Industrial Complex employee data and STEM model attraction coefficients. Commercial vehicle fleet trips are accounted separately in the STEM model and are not included in this rate.
- Education: 1.2 veh-trips/ day per student
- Dwelling: 1.2 veh-trips/ day per dwelling

**The NW Corridor traffic model rates listed above include commercial vehicle trips, whereas the STEM model rates quoted for comparison do not. The STEM commercial fleet trips are accounted for through a separate commercial vehicle sub-model.*

PM Peak Hour trip productions/ attractions from the model are given in Table 2, below:

<i>Table 2: PM Peak Hour: Vehicle Trip Productions/ Attractions by Trip Purpose</i>			
Productions		Attractions	
HBW (home based work):	19702	HBW (home based work):	19702
HBO (home based other):	22373	HBO (home based other):	22373
HBS (home based shopping):	12907	HBS (home based shopping):	12907
NHB (non home based):	17807	NHB (non home based):	17807
TOTAL	72789	TOTAL	72789

VEHICLE TRIP PRODUCTIONS & ATTRACTIONS (INTERNAL & EXTERNAL)

Table 3 shows that 'Internal-Internal' trips constitute approximately 78% of the forecast vehicle trips in the NW Corridor Model. 'Internal-External/ External-Internal' trips make up the remaining 22% of the forecast traffic. This corresponds with the ROM model outputs for this ultimate development scenario.

<i>Table 3: PM Peak Hour Prod/ Attraction Trip Distribution Table (Internal & External)</i>		
Distribution Category	Vehicle Trips	Percentage
Internal - Internal	56688	78%
Internal – External/ External - Internal	16100 (i.e. 8624 +7476)	22%
Total	72788	100%

INTERNAL – EXTERNAL TRIP PATTERN

The ROM traffic model data, referred to in Section 4.1, was used to guide the directional distribution of external trips (*Table 4*).

<i>Table 4: External Origin/ Destination Distribution</i>	
External Station Name/ Direction	External Attraction/ Productions %
Mitchell Fwy/ Wanneroo Road (North)	0.6%
Old Yanchep Road and local roads (south)	10.1%
Wanneroo Road (south)	14.9%
Mitchell Fwy (South)	43.2%
Connolly Drive and local roads (south)	8.7%
Marmion Avenue and local roads (South)	22.5%
TOTAL	100%

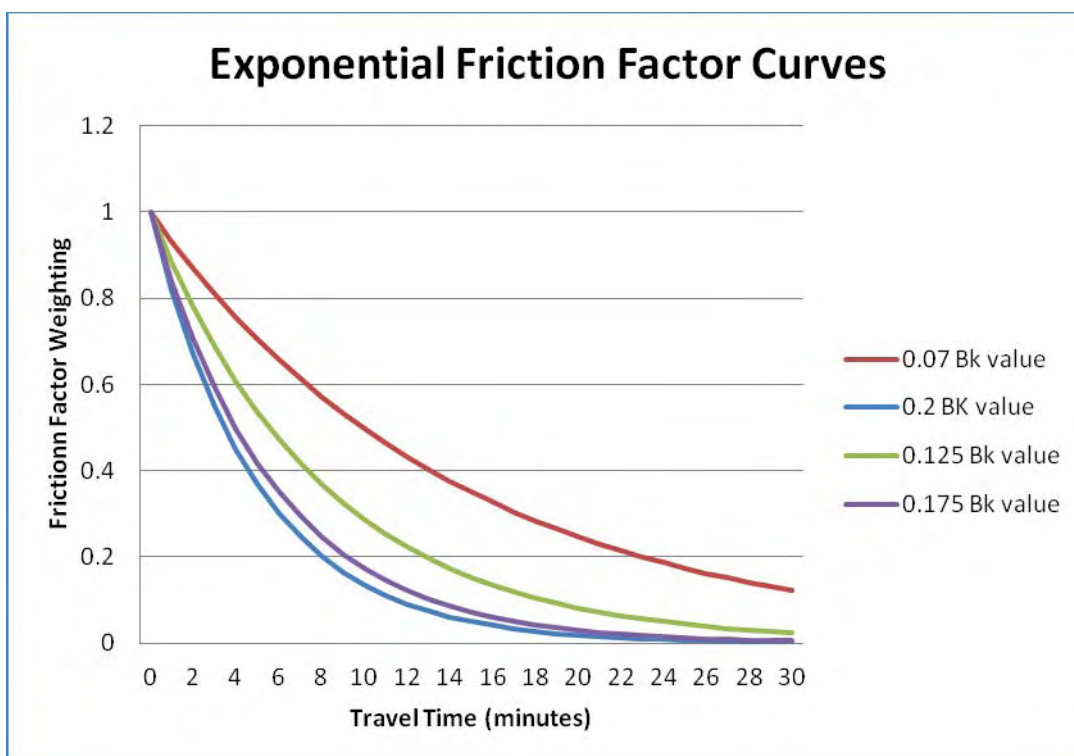
VEHICLE TRIPS – FRICTION FACTOR

The NW Corridor Model uses an Exponential Friction Factor Function in its vehicle trip distribution step (where origins and destinations are paired):

$$F_k(t_{ij}) = \exp(-B_k \cdot t_{ij})$$

Where:

- k = trip purpose
- B_k = exponential parameter for purpose k
- t_{ij} = travel time between zone i and j in minutes



The chart above shows the friction factor weighting curves resulting from the Exponential Function with a range of Bk values.

In the NW Corridor Model the exponential parameters (Bk) are as follows:

HBW = 0.1

HBO, HBS, & NHB = 0.2

The relatively 'higher value' of 0.2 for HBO, HBS & NHB based trips means that origin-destination pairing is more sensitive to travel time than for HBW trips.

Special Note: Friction Factor curves are not the same as modeled travel time distribution curves. Travel time distribution curves show the effects of the friction factor equations as applied to the model's origin and destination opportunities. As a result, travel time distribution curves may show an increase in trips with increasing travel time as more destinations are within reach (before dropping off due to time cost effects).

Bruce Aulabaugh

From: Piotrowski, Steven [Steven.Piotrowski@transport.wa.gov.au]
Sent: 21 March 2012 11:32
To: Richardson, Emmerson (SKM); Bruce Aulabaugh
Cc: Beyer, Steve; Han, Renlong
Subject: FW: Mode share and STEM - NW Corridor

Emmerson & Bruce,

After a considerable amount of investigation and discussion, we suggest using mode splits somewhere within the following ranges for the Alkimos zones in 2031 for Bruce's modelling:

Car Driver 54-56%
Car Pass 20-22%
PT 7-9%
Cyc 2-4%
Walk 12-14%

Kind regards,

Steven Piotrowski

Consultant | Integrated Transport Planning | Department of Transport

Level 8, 140 William St, Perth, WA 6000

Tel: 6551 6270 Fax: (08) 6552 4417 Mob: 0402 222 611| Steven.Piotrowski@transport.wa.gov.au



From: Richardson, Emmerson (SKM)
Sent: Sunday, 26 February 2012 3:21 PM
To: 'Beyer, Steve'
Cc: 'Bruce Aulabaugh'
Subject: FW: Mode share and STEM - NW Corridor

Steve,

Further to the email I sent you last week, Lend lease are keen to have DOT express a position on this which can be the basis for transport planning in the corridor and in Alkimos more particularly. There are a number of people who would be interested in attending any meeting that is held.

Would you be interested in convening a meeting with the following people attending:

- Steve Beyer (convenor)
- Renlong Han –DOP
- Chris Watts – PTA
- Bruce Aulabaugh
- Emmerson Richardson.

Regards, Emmerson.

Regards

Emmerson Richardson

Senior Executive Transport Planning

Sinclair Knight Merz

Level 10, 263 Adelaide Terrace, Perth, WA 6000

T +61 8 9469 4682 F +61 8 9469 4488 E ERichardson@globalskm.com

www.globalskm.com

From: Richardson, Emmerson (SKM)
Sent: Wednesday, 22 February 2012 8:46 AM
To: 'Beyer, Steve'
Cc: Bruce Aulabaugh
Subject: Mode share and STEM - NW Corridor

Steve,

I refer to our brief telephone discussion yesterday. As I mentioned Bruce Aulabaugh and I are involved in various strategic transport planning studies for Alkimos, Yanchep and Two Rocks. We are finding that some of the STEM outputs being provided by the DOP do not seem to be consistent with the STEM modelling being undertaken as part of the long term PT study. Our suspicion is that these outputs may predate the long term PT plan STEM outputs. As discussed there is a need for consistent modelling outputs to be used for development planning.

The car driver mode share for the entire NW corridor from the PARTS study 1n 2005/ 06 was 59%. This includes the area east of the freeway where car driver mode share is likely to be slightly greater than to the west of the freeway, which is closer to the railway. The 2002, TravelSmart survey for the City of Joondalup showed a 57% car driver mode share.

As the railway is constructed northwards in accordance with the long term PT plan recommendations and congestion on the freeway increases it is likely that car driver mode share will decrease by 2031. My recollection is that we were looking at about 51% car driver mode share across Perth and Peel on average in 2031 in the modelling undertaken as part of the long term PT planning. It may be slightly higher in the NW corridor, but would most likely be in the range 51% to 53% range. Your thoughts on this would be appreciated.

We are currently undertaking detailed traffic modelling for a number of areas and the car driver mode share is of critical importance in getting the quantum right. I am going to suggest that we us 52% car driver mode share for Alkimos, Yanchep, and Two Rocks for 2031 as being broadly consistent with the latest STEM modelling. I would appreciate it if you could liaise with the DOP and agree on a single latest series of STEM modelling outputs for the area.

Regards, Emmerson.

Regards

Emmerson Richardson

Senior Executive Transport Planning

Sinclair Knight Merz

Level 10, 263 Adelaide Terrace, Perth, WA 6000

T +61 8 9469 4682 F +61 8 9469 4488 E ERichardson@globalskm.com

www.globalskm.com

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APPENDIX D

SIDRA INTERSECTION ASSESSMENTS



Marmion North

150

100

Trinity West Side

40

60

Trinity East Side

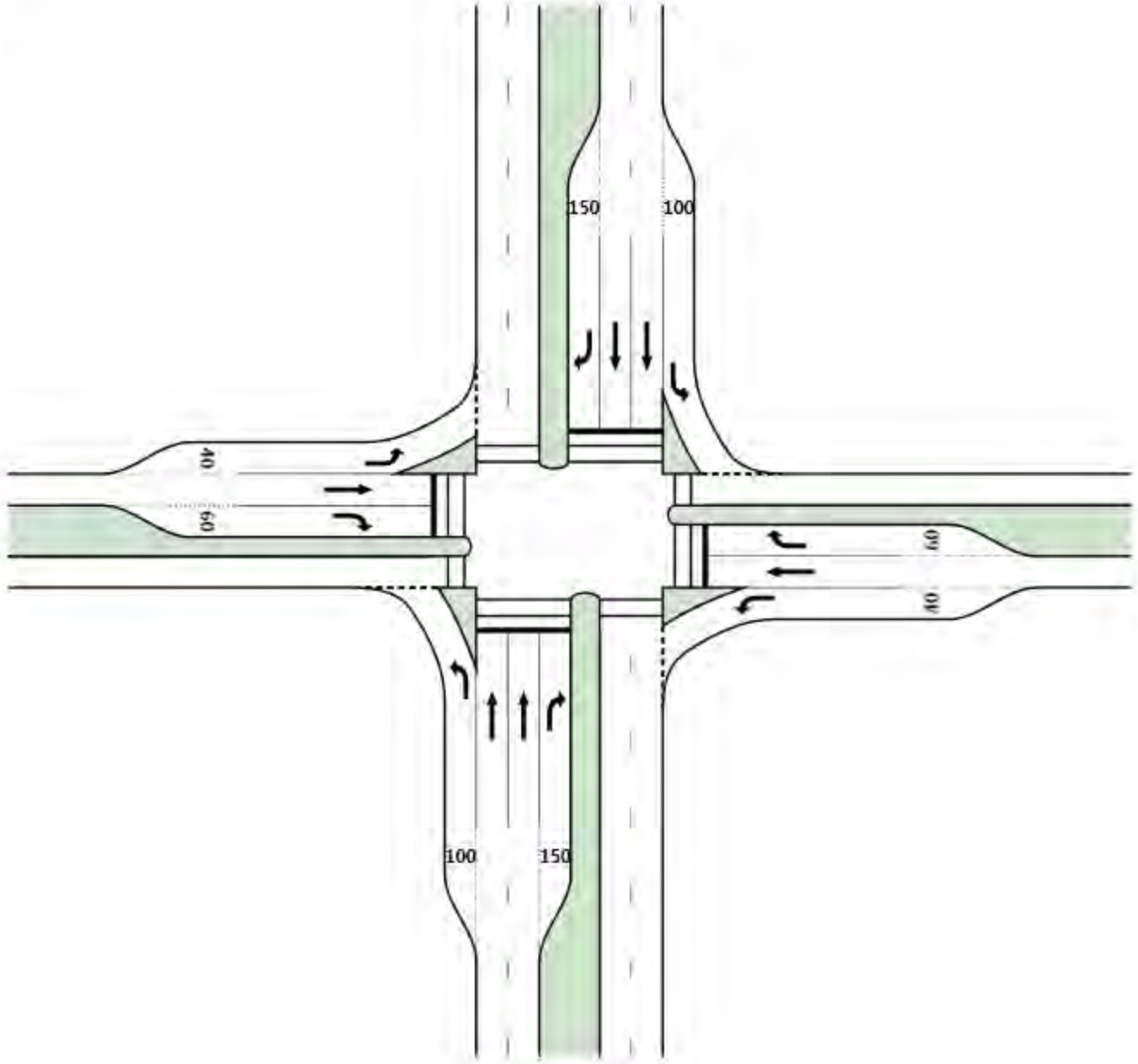
60

60

100

150

Marmion South



MOVEMENT SUMMARY

Site: Trinity Marmion Signals
Actuated 150 sec cycle

Oct 15 2012 Ulimate Development Scenario
3 phase signal plan
PM Peak Hour Weekday, NW Corridor Model
Trinity North & Marmion Ave intersection
Four-way intersection with slip lanes (Signals)
Highly Favourable Coordination Marmion
Random Arrivals Side Roads
95% PHF Marmion
90% PHF Side Roads
6% heavies Marmion
3% heavies side roads
QRS Network Marmion LILLO at Trinity & new Central Alkimos
Highschool
Signals - Actuated Cycle Time = 150 seconds

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
South: Marmion South												
1	L	56	3.0	0.049	8.7	LOS A	0.2	1.1	0.05	0.63	59.8	
2	T	1122	6.0	0.578	11.8	LOS B	15.0	110.2	0.39	0.35	57.0	
3	R	156	3.0	0.377	52.6	LOS D	8.3	59.3	0.75	0.78	35.7	
Approach		1333	5.5	0.578	16.5	LOS B	15.0	110.2	0.42	0.41	53.6	
East: Trinity East Side												
4	L	136	3.0	0.534	12.9	LOS B	3.6	25.5	0.41	0.70	40.9	
5	T	118	3.0	0.385	63.4	LOS E	7.8	55.8	0.92	0.73	19.2	
6	R	56	3.0	0.301	73.9	LOS E	3.7	26.8	0.91	0.76	19.6	
Approach		309	3.0	0.534	43.1	LOS D	7.8	55.8	0.69	0.72	25.5	
North: Marmion North												
7	L	56	3.0	0.048	8.6	LOS A	0.2	1.1	0.05	0.63	53.2	
8	T	1274	6.0	0.656	12.5	LOS B	19.2	141.7	0.44	0.40	56.3	
9	R	110	3.0	0.267	51.3	LOS D	5.6	39.9	0.71	0.76	25.5	
Approach		1439	5.7	0.656	15.3	LOS B	19.2	141.7	0.45	0.44	53.6	
West: Trinity West Side												
10	L	56	3.0	0.219	9.9	LOS A	0.8	5.9	0.26	0.65	43.1	
11	T	56	3.0	0.182	60.8	LOS E	3.5	25.3	0.88	0.67	19.7	
12	R	61	3.0	0.399	79.5	LOS E	4.3	31.1	0.95	0.76	18.7	
Approach		172	3.0	0.399	51.0	LOS D	4.3	31.1	0.70	0.70	23.6	
All Vehicles		3254	5.2	0.656	20.3	LOS C	19.2	141.7	0.47	0.47	48.6	

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model used.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Queue Distance m	Prop. Queued	Effective Stop Rate per ped	
P1	Across S approach	53	69.1	LOS F	0.2	0.2	0.96	0.96	
P3	Across E approach	53	69.1	LOS F	0.2	0.2	0.96	0.96	
P5	Across N approach	53	69.1	LOS F	0.2	0.2	0.96	0.96	
P7	Across W approach	53	69.1	LOS F	0.2	0.2	0.96	0.96	
All Pedestrians		212	69.1	LOS F			0.96	0.96	

PHASING SUMMARY

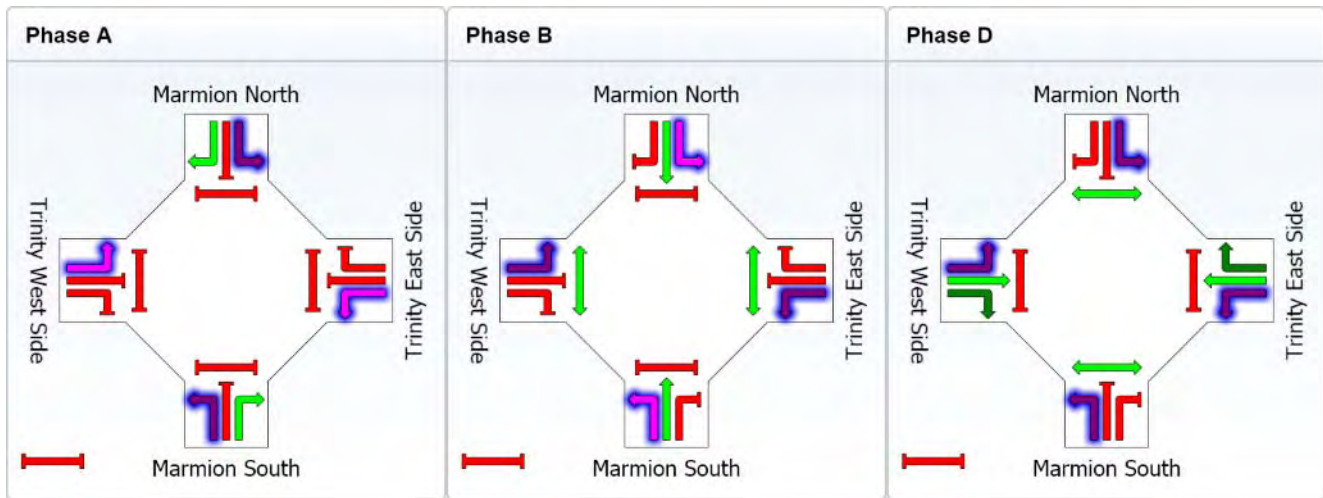
Site: Trinity Marmion Signals
Actuated 150 sec cycle

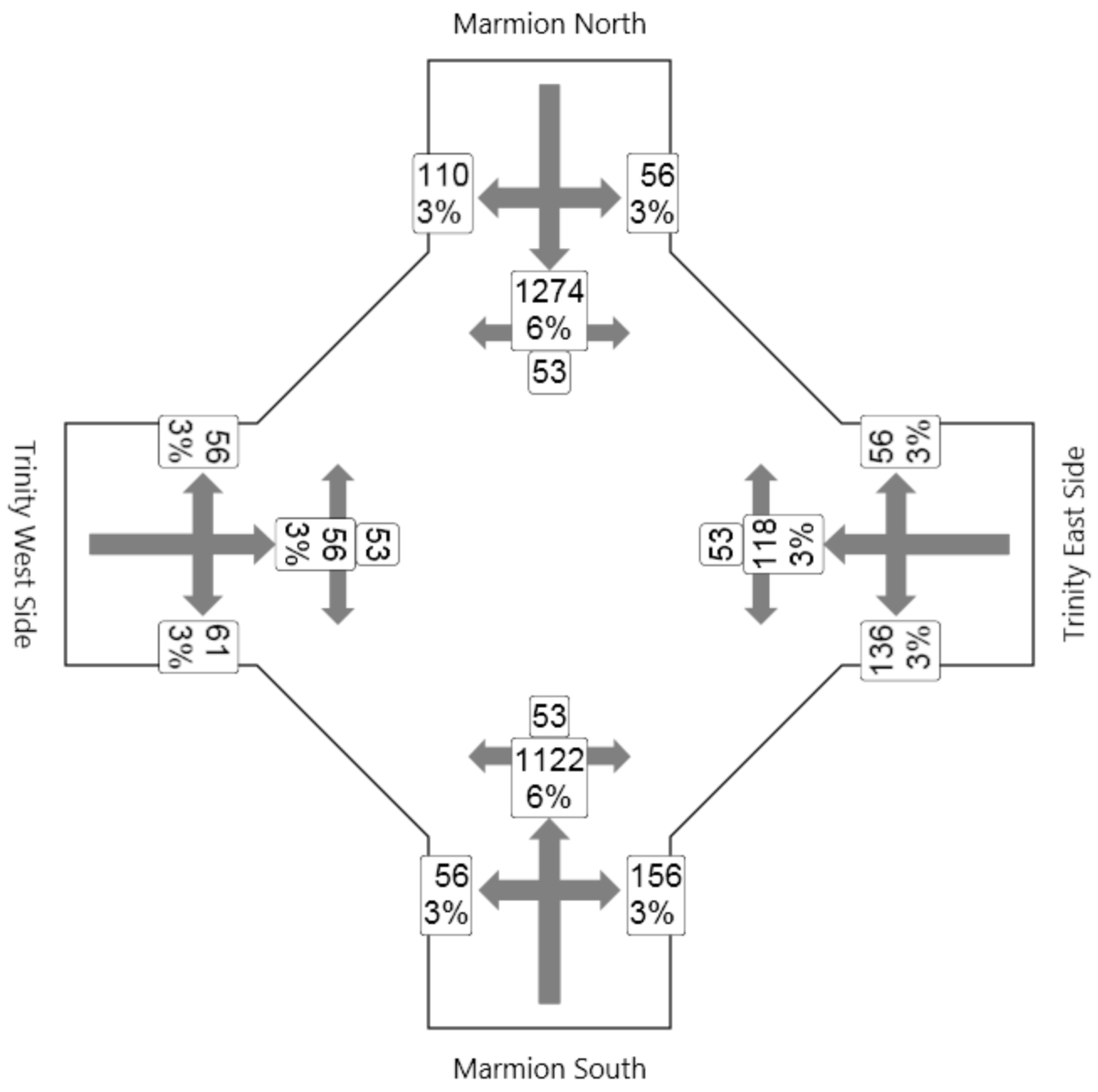
Oct 15 2012 Ulimatte Development Scenario
3 phase signal plan
PM Peak Hour Weekday, NW Corridor Model
Trinity North & Marmion Ave intersection
Four-way intersection with slip lanes (Signals)
Highly Favourable Coordination Marmion
Random Arrivals Side Roads
95% PHF Marmion
90% PHF Side Roads
6% heavies Marmion
3% heavies side roads
QRS Network Marmion LILO at Trinity & new Central Alkimos
Highschool
Signals - Actuated Cycle Time = 150 seconds

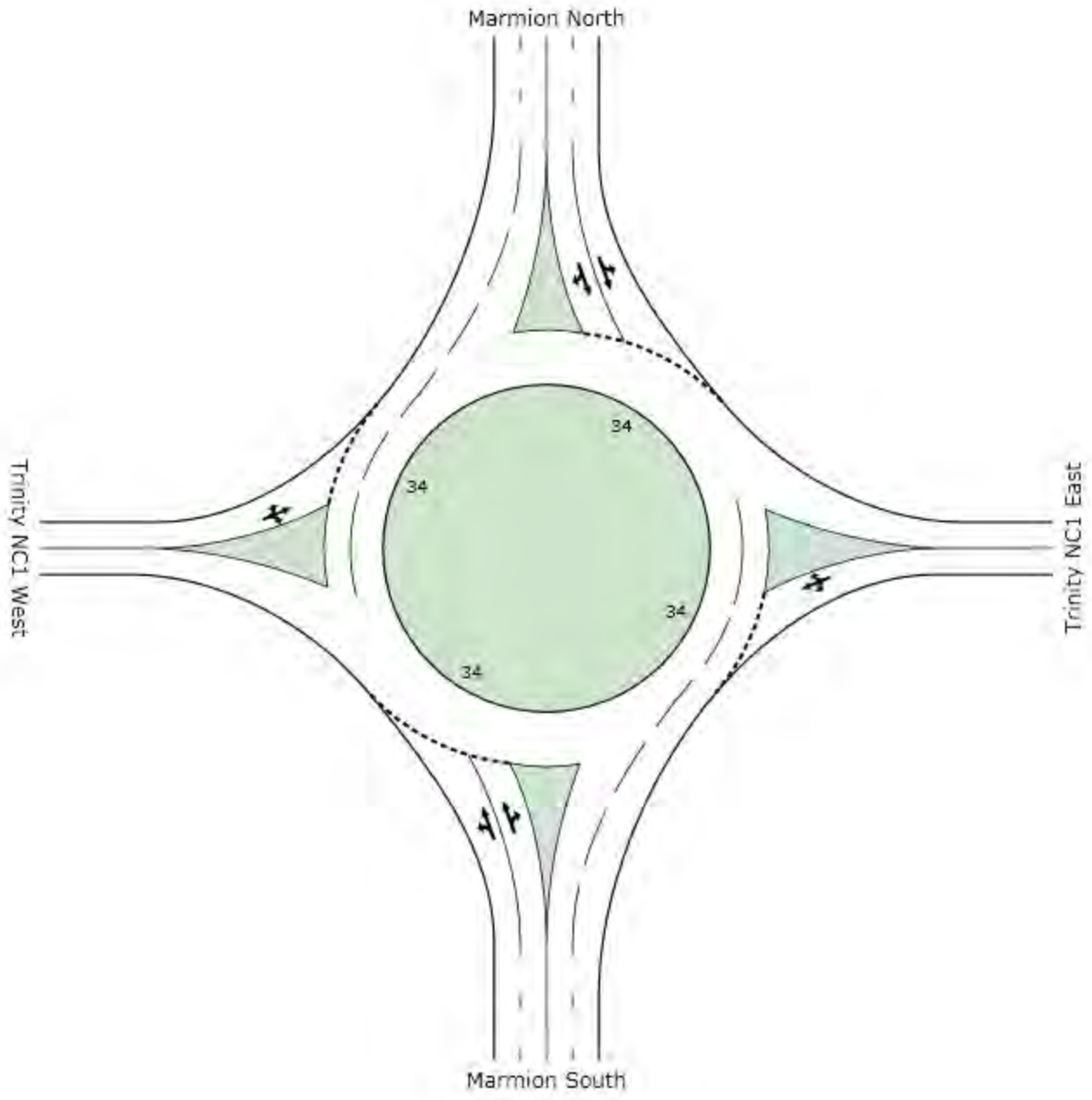
Phase times determined by the program
Green Split Priority for Coordinated Movements applies
Sequence: Three-phase New
Input Sequence: A, B, D
Output Sequence: A, B, D

Phase Timing Results

Phase	A	B	D
Green Time (sec)	34	72	24
Yellow Time (sec)	4	4	3
All-Red Time (sec)	3	3	3
Phase Time (sec)	41	79	30
Phase Split	27 %	53 %	20 %







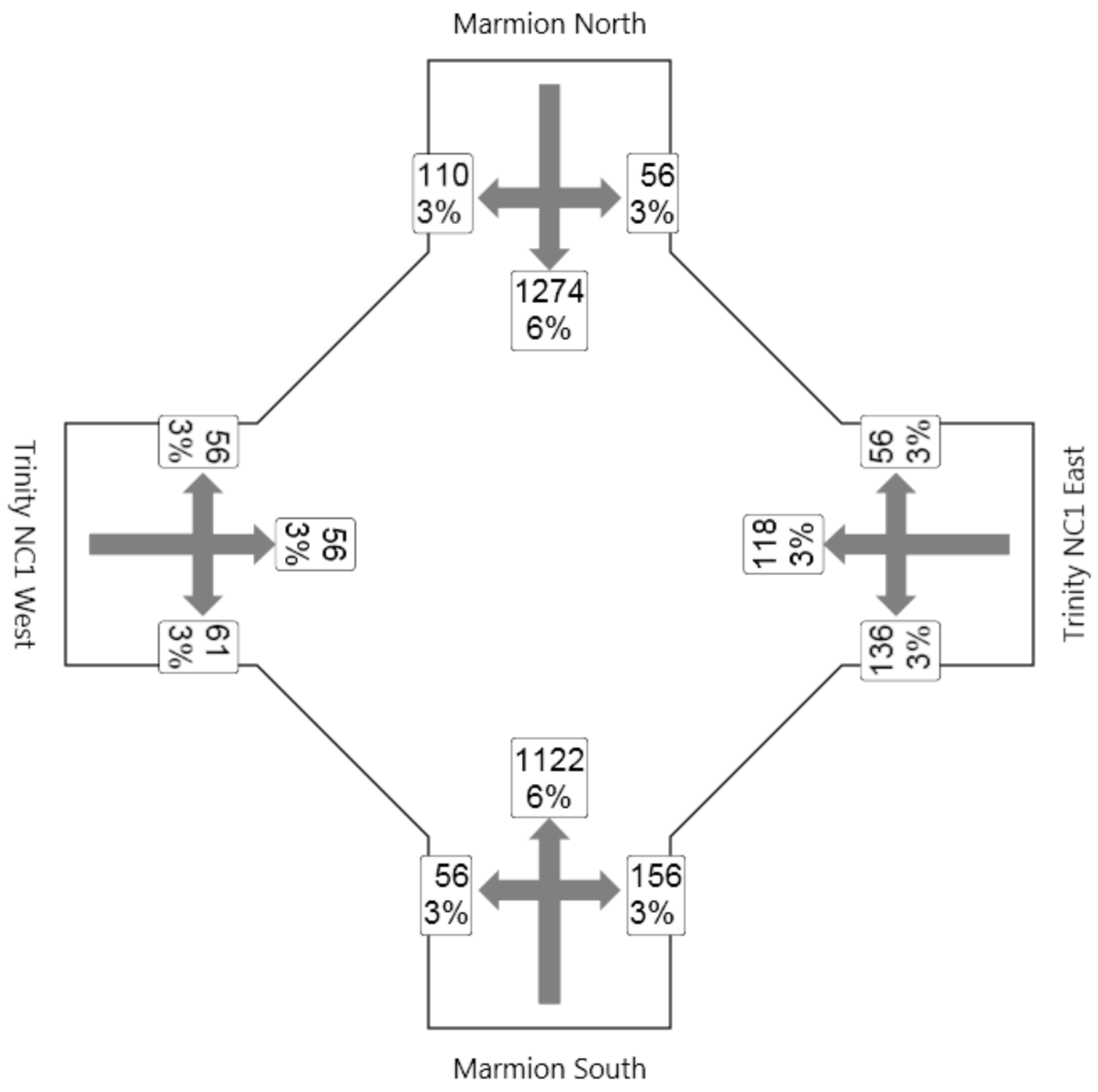
MOVEMENT SUMMARY

Site: Trinity Marmion Roundabout

Ultimate Development PM Peak
 Marmion & Trinity NC1 Intersection
 Environment Factor 1.05
 Roundabout with 2-lane approaches on Marmion and single lane approaches on Trinity NC1
 heavies = 3% to/ from Butler
 Heavies = 6% through traffic on Marmion
 0% exiting as circulating for Marmion approaches
 15% exiting as circulating for Trinity NC1
 95% phf for Marmion
 90% phf for Trinity NC1
 Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Marmion South											
4	L	56	3.0	0.529	7.1	LOS A	4.1	30.2	0.55	0.62	49.2
5	T	1122	6.0	0.529	6.7	LOS A	4.1	30.2	0.56	0.56	54.8
6	R	156	3.0	0.529	11.8	LOS B	3.9	28.8	0.58	0.82	45.7
Approach		1333	5.5	0.529	7.3	LOS A	4.1	30.2	0.56	0.60	54.0
East: Trinity NC1 East											
7	L	136	3.0	0.549	12.7	LOS B	3.7	26.6	0.87	1.03	40.9
8	T	118	3.0	0.549	12.2	LOS B	3.7	26.6	0.87	1.00	44.3
9	R	56	3.0	0.549	19.5	LOS B	3.7	26.6	0.87	1.09	38.7
Approach		309	3.0	0.549	13.7	LOS B	3.7	26.6	0.87	1.03	41.6
North: Marmion North											
10	L	56	3.0	0.559	6.3	LOS A	4.4	32.4	0.54	0.60	50.8
11	T	1274	6.0	0.559	6.7	LOS A	4.4	32.4	0.55	0.57	51.6
12	R	110	3.0	0.559	13.3	LOS B	4.2	30.8	0.57	0.83	46.1
Approach		1439	5.7	0.559	7.2	LOS A	4.4	32.4	0.55	0.59	51.2
West: Trinity NC1 West											
10	L	56	3.0	0.291	9.7	LOS A	1.5	10.8	0.78	0.86	47.1
11	T	56	3.0	0.291	8.6	LOS A	1.5	10.8	0.78	0.79	46.9
12	R	61	3.0	0.291	15.9	LOS B	1.5	10.8	0.78	0.97	43.8
Approach		172	3.0	0.291	11.5	LOS B	1.5	10.8	0.78	0.87	45.7
All Vehicles		3254	5.2	0.559	8.1	LOS A	4.4	32.4	0.60	0.65	51.6

Level of Service (LOS) Method: Delay (HCM 2000).
 Roundabout LOS Method: Same as Signalised Intersections.
 Vehicle movement LOS values are based on average delay per movement
 Intersection and Approach LOS values are based on average delay for all vehicle movements.
 Roundabout Capacity Model: SIDRA Standard.
 SIDRA Standard Delay Model used.



APPENDIX E

DISTRICT BUS ROUTE PLAN AND TRANSPERTH CORRESPONDENCE

Bruce Aulabaugh

From: Piggott, Lom [Lom.Piggott@pta.wa.gov.au]
Sent: 12 October 2012 16:05
To: 'Bruce Aulabaugh'
Subject: RE: LWP Trinity Estate LSP Amendment - Bus Route Planning Review & Confirmation

Hi Bruce,

As discussed, the 484 alternative (dashed line) running north of Romeo Rd, instead of along it is the preferred route. With regard to a service on Marmion Avenue, Route 480 will fulfil this role.

Funding permitting, the anticipated eventual frequencies of these services every 10 minutes in the peak period and 30 minutes off-peak, on weekdays. Weekend frequencies would be hourly, although Route 483 could operate at a 30 minute frequency, again if funding permits.

Cheers,

Lom Piggott | Senior Service Planner | Service Development

Transperth, Regional & School Bus Services

Public Transport Authority WA | PO Box 8125, Perth Business Centre, WA, 6000

📞 Ph: 9326 2859 | 📠 Fax: +61 (8) 9326 2487 | 📧 eMail: Lom.Piggott@pta.wa.gov.au

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From: Bruce Aulabaugh [<mailto:brucea@inet.net.au>]
Sent: Monday, October 08, 2012 4:32 PM
To: Piggott, Lom; Cox, Simon; Foreman, Andrew; Pacy, Thomas
Subject: FW: LWP Trinity Estate LSP Amendment - Bus Route Planning Review & Confirmation

Guys,

This 'district' bus plan is more appropriate for the Alkimos City Centre station approach options than the one sent previously. It shows what Lom sent to me in August 2012 (his markup of my interpretation of routes as advised by Transperth in the 2010/2011 period). In relation to Trinity planning it means that the Route 484 Alternative Route is the correct one (dotted red line on previously sent plan).

Hope this helps get to the bottom of the wider route planning – so that you can comment in relation to the Trinity LSP Amendment.

regards

Bruce Aulabaugh
Traffic Engineering & Transport Planning
5/18 Fogerthorpe Crescent
Maylands WA 6051
mobile: 0402919933

From: Bruce Aulabaugh [<mailto:brucea@inet.net.au>]
Sent: 08 October 2012 13:49

To: 'Piggott, Lom'; 'Cox, Simon'; 'Foreman, Andrew'; 'Pacy, Thomas'

Subject: RE: LWP Trinity Estate LSP Amendment - Bus Route Planning Review & Confirmation

Guys,

Please replace last attachment with this one (I missed a route on the Alk City Centre inset).

cheers

Bruce Aulabaugh

Traffic Engineering & Transport Planning

5/18 Fogerthorpe Crescent

Maylands WA 6051

mobile: 0402919933

From: Bruce Aulabaugh [<mailto:brucea@iinet.net.au>]

Sent: 08 October 2012 13:45

To: 'Piggott, Lom'; 'Cox, Simon'; 'Foreman, Andrew'; 'Pacy, Thomas'

Subject: LWP Trinity Estate LSP Amendment - Bus Route Planning Review & Confirmation

Guys (again I'm using 'Shotgun' approach – hoping the appropriate one of you will reply),

I'm currently working with LWP on the Trinity project and we've got an LSP amendment going in soon to the CoW for which I need you guys to review the bus routes. Attached, please find the NEW LSP- showing the proposed road network and the current bus routes as I understand them.

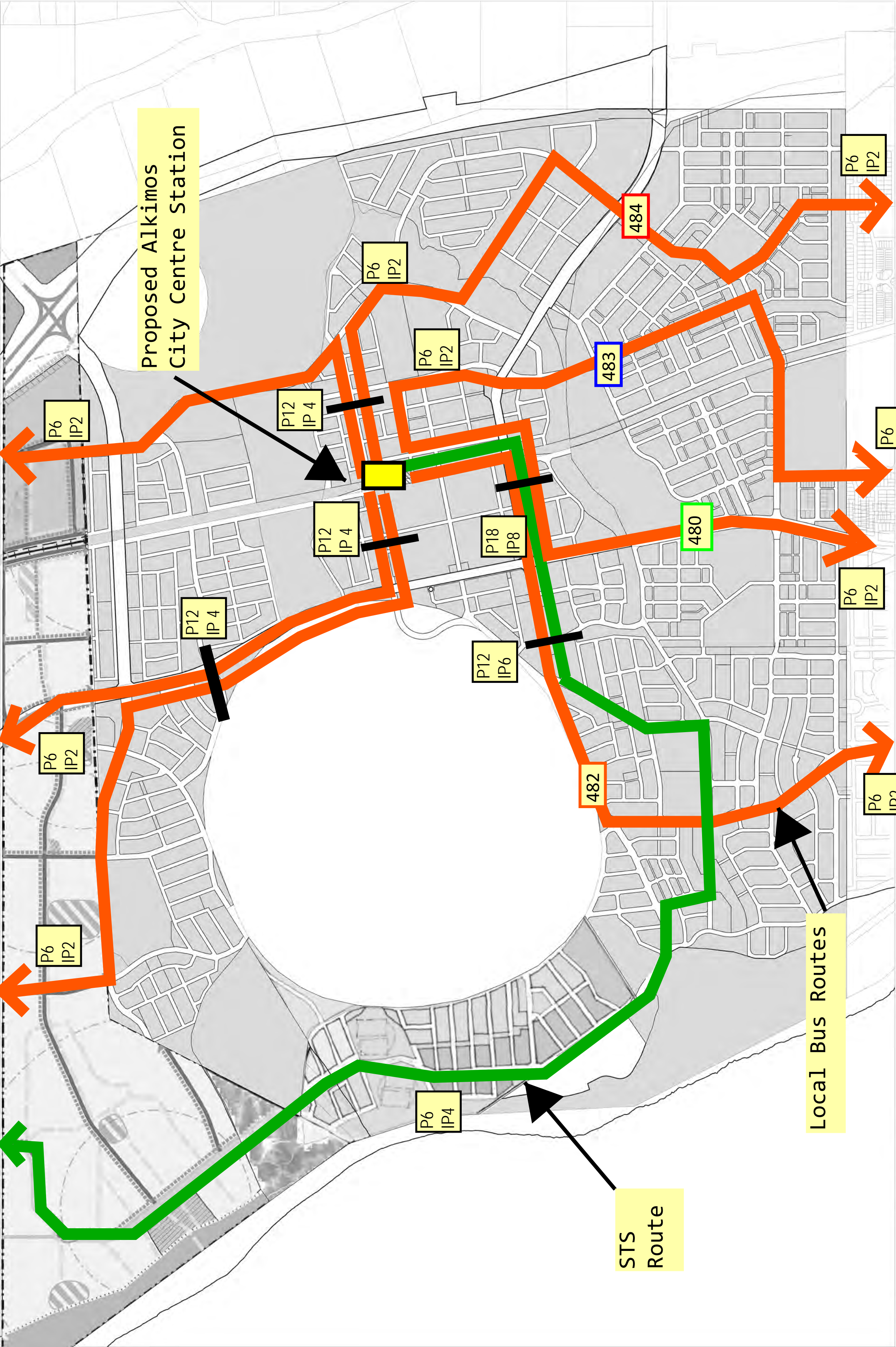
The plan also has 2 INSETS shown: **District Bus Routes** INSET as put together earlier this year and **ALKIMOS CITY CENTRE** INSET showing the latest road network planning to the north of Romeo Road.

Please review the attached information and call me to discuss as soon as possible.

Thanks and regards

Bruce Aulabaugh

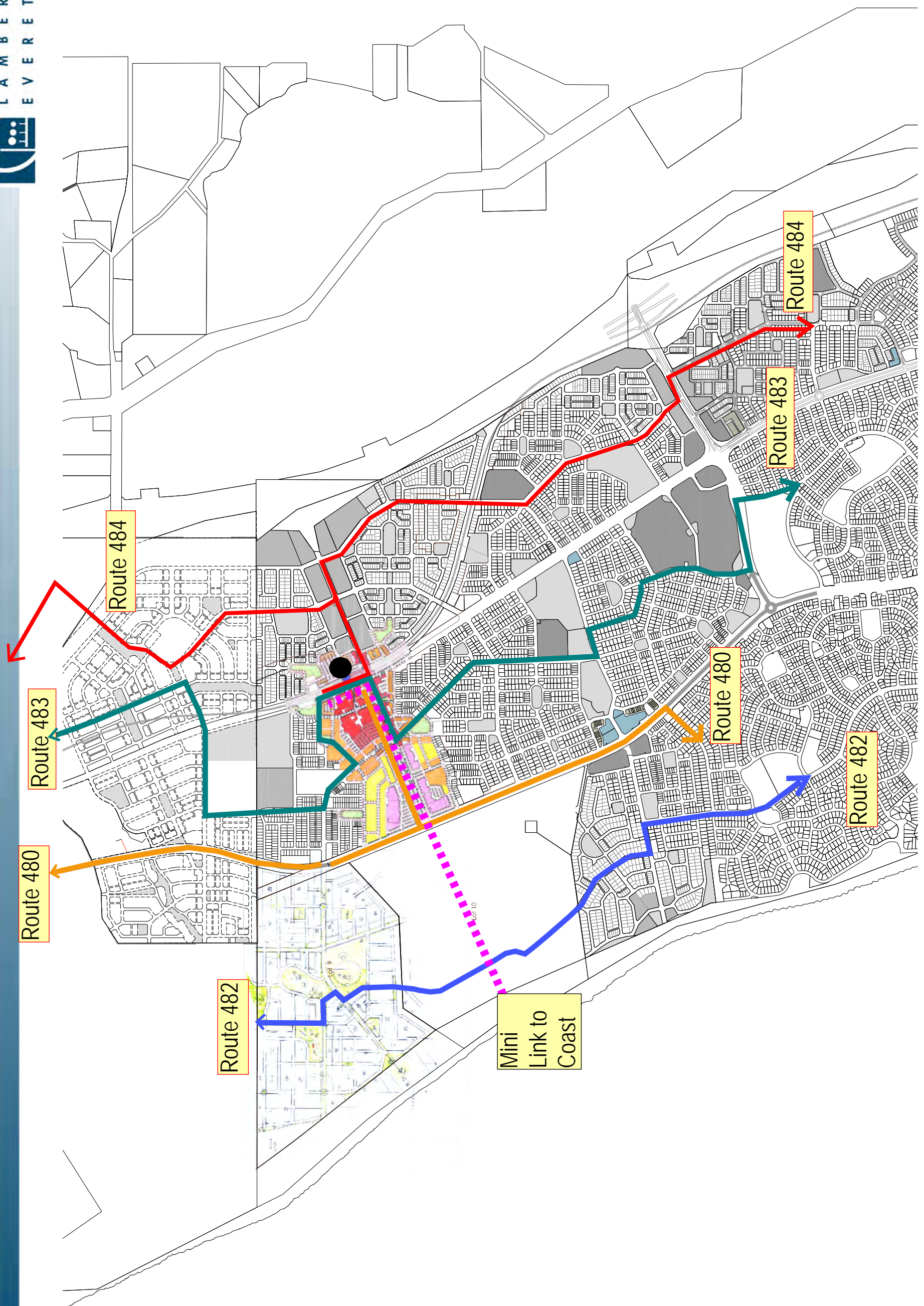
0402919933



Proposed Alkimos
City Centre Station

STS
Route

Local Bus Routes



ATTACHMENT 5

Economic Assessment of Amendment 3

Lots 1001 & 1002 Marmion Avenue, Alkimos

EMPLOYMENT ASSESSMENT OF AMENDMENT 1
TO BUTLER JINDALEE DISTRICT
STRUCTURE PLAN

July 2014



URBIS STAFF RESPONSIBLE FOR THIS REPORT WERE:

Director	David Cresp
Director	Clinton Ostwald
Senior Consultant	Anna Garvey
Job Code	PPE1056
Report Number	Final

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Executive Summary

Study Purpose

The purpose of this report is to assess the employment impacts of the original Butler-Jindalee District Structure Plan (BJDSP) with the latest Development Concept Plan for Lots 1001 and 1002 Marmion Avenue, Alkimos, which form the basis of Amendment No. 1 to the BJDSP. The plans relate to a change of land use, on Lots 1001 and 1002, to proposed “business” zoning from “service industry”, and a redistribution of the commercial/business uses from the most eastern part of the property to the Romeo Road and Marmion Avenue frontages. Amendment No. 1 also reflects the changes to location of the planned primary and high schools.

Wider employment areas are a key consideration, as are ‘like for like’ land areas and comparisons of employment rates between different land uses. The report also seeks to address the issue of “service industry” zone removal and explain where such zoning could be better located.

Site Location

Lots 1001 and 1002 are located approximately 40 kilometres north of Perth’s Central Business District (CBD), in the developing suburb of Alkimos. The local government of Wanneroo is the responsible authority for Alkimos. The landholding is bounded by LandCorp and Lend Lease’s residential joint venture Alkimos Beach in the west and north, national park in the east and the residential suburb of Butler in the south.

At its centre, the Lots are dissected by a corridor of land which has been designated for the extension of the northern suburbs’ railway line (or Joondalup line). On the western side, the landholding is dissected by Marmion Avenue: the major arterial road between Alkimos and surrounding suburbs to the south, including Butler and Jindalee.

The existing Joondalup regional centre is located 16 kilometres south of the site, while the future regional centres of Alkimos and Yanchep are located within one kilometre and approximately 12 kilometres north of the landholding respectively. The emerging Brighton District Centre in Butler is less than one kilometre from the Lots’ southern boundary.

Local Demographic Profile

The City of Wanneroo is attracting a growing proportion of working age residents who earn above average incomes. Growth in the City of Wanneroo’s average household income from 2006 to 2011 outpaced growth across the broader Perth metropolitan area – 38.4% (municipal) compared with 34.3% (Perth-wide). Construction, manufacturing and retail trade are the dominant industries of employment among working residents.

Employment Impacts

The result of Amendment No. 1 to the BJDSP is expected to generate 257 more jobs compared with the original BJDSP. This is forecast to see a higher Employment Self Sufficiency level of 55% compared with 43% under the original plan.

Economic Development Strategies

A range of strategies have been identified by the developer, which seek to optimise the economic benefits that the development will deliver. Broadly, these strategies deal with business communications, technology infrastructure, community engagement, education, marketing, donations and sponsorships.

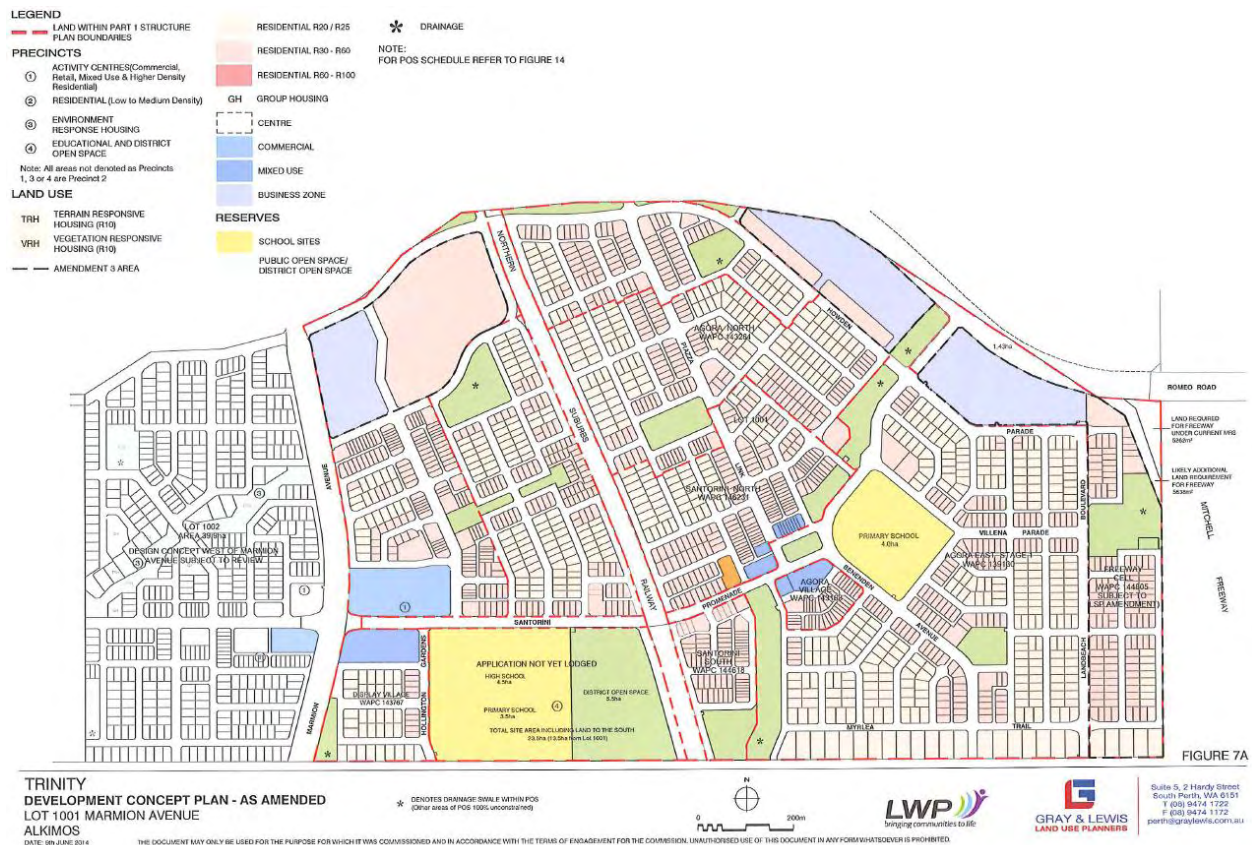
1 Background

In June 2014, Urbis was approached by Gray & Lewis Land Use Planners to prepare an employment assessment report regarding Amendment No. 1 to the Butler-Jindalee District Structure Plan (BJDSP). This follows Urbis' engagement by LWP Property Group and Gray & Lewis in a) August 2012 to prepare a similar report in support of Amendment No. 2 to LSP 60 (which is expected to be finalised in the near future) and b) June 2011 to prepare an economic assessment report for the original agreed BJDSP.

1.1 PROPOSED AMENDMENT

A change of land use is proposed in the latest Development Concept Plan for Lots 1001 and 1002 (figure one) and is the catalyst for the current proposed amendments to the BJDSP. The change relates to "service industry" areas, located on the eastern boundary of the Lots. It is proposed that they be replaced with three "business" zones (one towards the north-west and two in the north-east of the landholding, see figure two). Consequently, Amendment No. 1 to the BJDSP would be required by the City of Wanneroo and Western Australian Planning Commission.

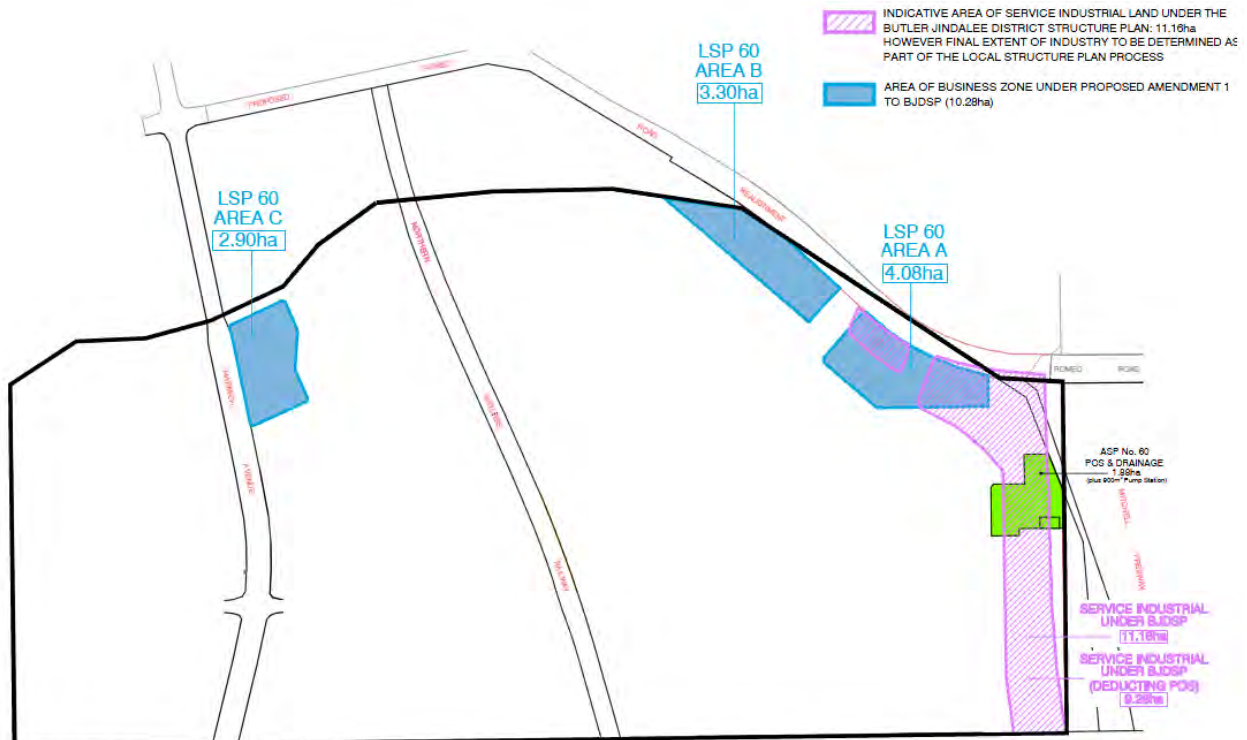
FIGURE 1 – DEVELOPMENT CONCEPT PLAN



Prepared by: Gray & Lewis Land Use Planners

Under the existing BJDSP, the eastern area was envisaged for use as “service industry”. An accurate measurement of this area, as shown below, illustrates that the area is 11.16 hectares. A 1.88 hectare portion is required for public open space, drainage and a pump station. Therefore, the effective “service industry” area is 9.28 hectares. As illustrated in figure two, a total proposed “business” zone of 10.28 hectares would result from proposed Amendment No. 1 to the BJDSP.

FIGURE 2 – AREA COMPARISON FOR PROPOSED AMENDMENT NO. 1 TO THE BUTLER-JINDALEE DISTRICT STRUCTURE PLAN



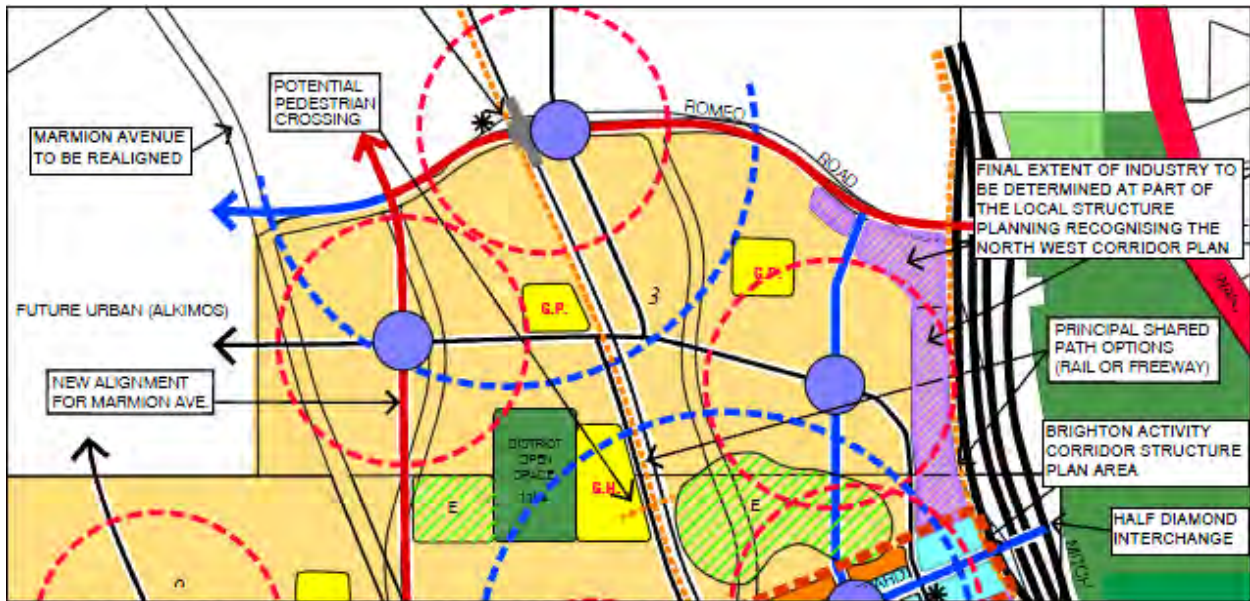
Prepared by: Gray & Lewis Land Use Planners

TABLE 1 – DEVELOPMENT SUMMARY COMPARING ORIGINAL BJDSP WITH AMENDMENT ONE TO BJDSP

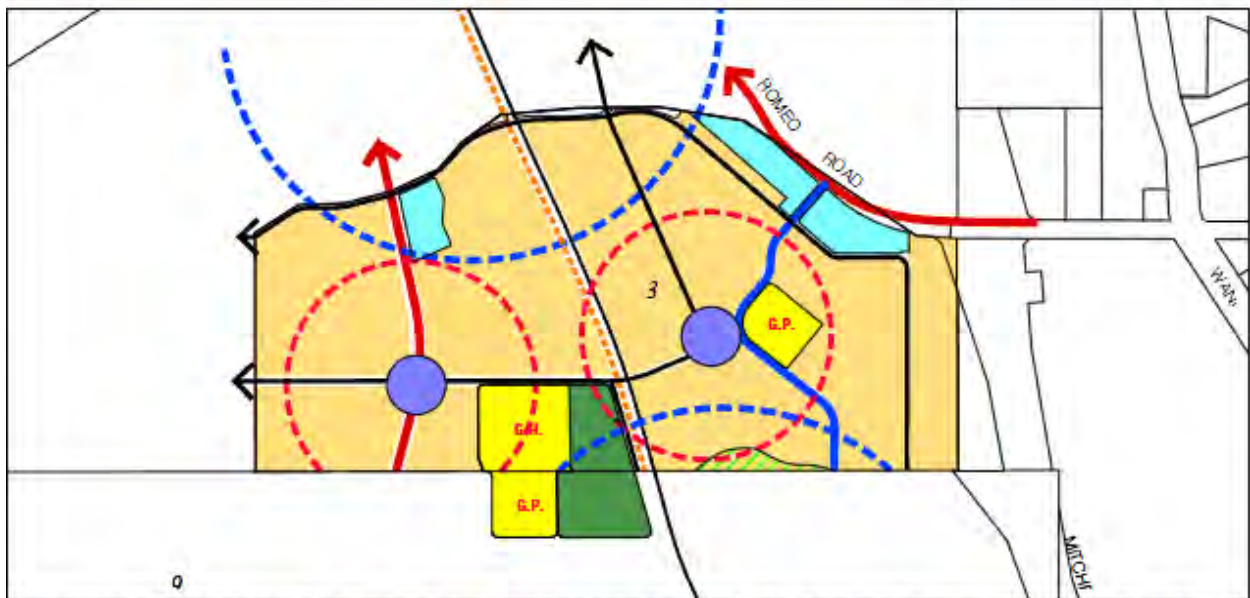
ORIGINAL BJDSP	AMENDMENT 1 TO BJDSP
<p>Dwellings: 2,750</p> <p>Population: 7,425 persons</p> <p>Service Industry: 9.28 hectares (exclusive of 1.88 hectares of public open space, drainage and pump station). Previously identified as 14.18 hectares with a notation that “final extent of Industry to be determined as part of the Local Structure Planning recognising the North West Corridor Structure Plan.”</p> <p>Primary schools: two within landholding</p> <p>High school: one occupying nine hectares of which 50% is within the landholding</p> <p>Retail floor space: 4,100 sq.m. across two Village Centres</p> <p>Child care: 2,000 sq.m. site in the eastern sector, with the potential for a second child care centre of the same size in the western sector</p> <p>Commercial office space: up to 4,000 sq.m. located within the Village Centre area</p> <p>Gymnasium/ crèche/ community centre: 600 sq.m.</p>	<p>Dwellings: 2,605</p> <p>Population: 7,034 persons</p> <p>Business (proposed): 10.28 hectares (dispersed along Marmion Avenue and Romeo Road)</p> <p>Primary schools: one within landholding</p> <p>High school: one occupying nine hectares of which eight hectares fall within the landholding</p> <p>Retail floor space: 4,100 sq.m. across two Village Centres</p> <p>Child care: 2,000 sq.m. site in the eastern sector, with the potential for a second child care centre of the same size in the western sector</p> <p>Commercial office space: up to 4,000 sq.m. located within the Village Centre area</p> <p>Gymnasium/ crèche/ community centre: 600 sq.m.</p>

A comparison between the original BJDSP and Amendment No. 1 are shown in the following figure three plans.

FIGURE 3 – COMPARISON FOR PROPOSED AMENDMENT NO. 1 TO THE BUTLER-JINDALEE DISTRICT STRUCTURE PLAN



AGREED BUTLER - JINDALEE DISTRICT STRUCTURE PLAN



PROPOSED AMENDMENT No. 1 TO AGREED BUTLER - JINDALEE DISTRICT STRUCTURE PLAN



AMENDMENT 1
BUTLER - JINDALEE DISTRICT STRUCTURE PLAN
 LOTS 1001 & 1002 MARMION AVENUE, ALKIMOS
 LOTS 2966 & 8210 HALESWORTH PARADE, BUTLER

JOB REFERENCE: NC1 DATE: 11th JUNE 2014
 Prepared by: Gray & Lewis Land Use Planners



FIGURE 3

GRAY & LEWIS
 LAND USE PLANNERS
 Suite 5, 2 Hardy Street
 South Perth, WA 6151
 T (08) 9474 1700
 F (08) 9474 1172
 perth@graylewis.com.au

1.2 PURPOSE OF REPORT

The purpose of this report is to assess the employment impacts of the latest plans which form the catalyst for Amendment No. 1 to the BJDSP and how this will differ from the original BJDSP. As discussed in section 1.1, the plans regard a change of land use on Lots 1001 and 1002 Marmion Avenue in Alkimos. The report comprises the following sections:

- Section 2: Development Context
- Section 3: Employment and Employment Impacts
- Section 4: Economic Development Strategies

Wider employment areas are a key consideration, as are 'like for like' land areas and comparisons of employment rates between different land uses. The report also seeks to address the issue of "service industry" zone removal and explain where such zoning could be better located (minimising conflict with residential uses).

2 Development Context

2.1 DEVELOPMENT LOCATION

Lots 1001 and 1002 are located approximately 40 kilometres north of Perth's Central Business District (CBD), in the developing suburb of Alkimos. The local government area of Wanneroo covers Alkimos.

At the district level, the landholding falls within the area covered by the Butler-Jindalee District Structure Plan (BJDSP), adopted by the Western Australian Planning Commission (WAPC) in October 2006. The Alkimos-Eglinton District Structure Plan (AEDSP) covers the area immediately north of the landholding.

The Lots are bounded by LandCorp and Lend Lease's residential joint venture Alkimos Beach in the west and north, national park in the east and the residential suburb of Butler in the south.

The existing Joondalup regional centre is located 16 kilometres south of the site, while the future Regional Centres of Alkimos and Yanchep are located within one kilometre and approximately 12 kilometres north of the landholding respectively. The emerging Brighton District Centre in Butler is less than one kilometre from the Lots' southern boundary.

Given their proximity, Alkimos Regional Centre and Brighton District Centre will be major employment sources for residents of Lots 1001 and 1002, affecting the capacity for retail and commercial uses at the landholding. Upon completion, Alkimos Regional Centre is expected to comprise up to 80,000 sq.m. of retail floor space and up to 70,000 sq.m. of other commercial floor space. Brighton District Centre is anticipated to contain up to 22,500 sq.m. of retail floor space and up to 30,000 sq.m. of other commercial floor space.

At its centre, the landholding is dissected by a corridor of land which has been designated for the extension of the northern suburbs' railway line (or Joondalup line), which currently terminates at Clarkson. However Butler train station has reached practical completion and will be operational from September 2014. On the western side, the Lots are dissected by Marmion Avenue: the major arterial road between Alkimos and surrounding suburbs to the south, including Butler and Jindalee.

FIGURE 4 – REGIONAL CONTEXT REGARDING LOTS 1001 AND 1002 MARMION AVENUE, ALKIMOS



Source: Urbis

2.2 POPULATION FORECASTS

In February 2012, the Western Australian Planning Commission released *WA Tomorrow (2012)* containing population forecasts for local government areas (LGAs) in Western Australia. The forecasts are an update of the *WA Tomorrow (2005)* population forecasts that were released in 2005.

Table two compares the *WA Tomorrow* forecasts released in 2005 with those released in 2012. The 2012 release of *WA Tomorrow* contains multiple series of forecasts which assume varying rates of population growth, from low to high. The forecasts presented in table two relate to the series which most closely reflects how the City of Wanneroo's population actually changed from 2006 to 2011, as reported by the 2006 and 2011 Censuses.

Table two shows that significantly higher population growth is forecast in the 2012 release, compared with the 2005 release's figures.

TABLE 2 – CITY OF WANNEROO POPULATION FORECASTS (2016-2031)

YEAR	POPULATION		AVERAGE ANNUAL POPULATION GROWTH (NUMBER)		AVERAGE ANNUAL POPULATION GROWTH (%)	
	Forecast as at 2005	Forecast as at 2012	Forecast as at 2005	Forecast as at 2012	Forecast as at 2005	Forecast as at 2012
2016	171,000	202,000	4,840	8,000	3.3%	4.9%
2021	201,200	239,400	6,040	7,480	3.5%	3.7%
2026	226,700	278,100	5,100	7,740	2.5%	3.2%
2031	258,400	N/A	6,340	N/A	2.8%	N/A

Source: WAPC, Urbis

2.3 DEMOGRAPHIC SNAPSHOT

Table three provides a comparison of key demographic variables for the City of Wanneroo LGA in the 2006 and 2011 Census years. The demographic profile of residents in the City of Wanneroo has remained largely unchanged, in terms of mix, but its population has grown substantially. Key changes to note include:

- 67% of residents were of working age (15-64 years) in 2011, compared with 66% in 2006;
- Growth in the City of Wanneroo's average household income from 2006 to 2011 outpaced growth across the broader Perth metropolitan area – 38.4% (municipal) compared with 34.3% (Perth-wide); and
- *Construction, Manufacturing and Retail Trade* are the dominant industries of employment among working residents of the Wanneroo LGA. Between 2006 and 2011, the *Construction* industry's representation increased by 5% to almost one third of all workers.

The above changes show that the City of Wanneroo is attracting a growing proportion of working age residents that earn above average incomes.

TABLE 3 – CITY OF WANNEROO DEMOGRAPHIC AND EMPLOYMENT PROFILE (2006 VERSUS 2011)

	2006		2011	
	No.	%	No.	%
Population	110,939		152,078	
Age Distribution				
0-4 years	8,976	8%	12,896	8%
5-14 years	18,776	17%	24,216	16%
15-19 years	8,043	7%	11,356	7%
20-24 years	7,174	6%	10,055	7%
25-34 years	16,014	14%	22,752	15%
35-44 years	18,511	17%	24,926	16%
45-54 years	13,656	12%	19,401	13%
55-64 years	9,904	9%	13,040	9%
65-74 years	5,901	5%	7,882	5%
75-84 years	3,129	3%	4,109	3%
85 years and over	855	1%	1,445	1%
Family Structure				
Couple family with no children	10,043	33%	13,353	32%
Couple family with children under 15	11,543	38%	15,919	38%
Couple family with no children under 15	3,838	13%	5,506	13%
One parent family with children under 15	2,834	9%	3,769	9%
One parent family with no children under 15	1,691	6%	2,459	6%
Other family	369	1%	552	1%
Average Household Size	2.9	-	2.9	-
Income				
Average annual household income	\$56,888	-	\$78,728	-
Average annual individual income	\$25,532	-	\$34,112	-
Industry of Employment				
Agriculture, forestry and fishing	725	6%	653	4%
Mining	240	2%	391	2%
Manufacturing	3,644	29%	4,542	28%
Electricity, gas, water and waste services	121	1%	174	1%
Construction	3,062	24%	4,806	29%
Wholesale trade	1,339	11%	1,589	10%
Retail trade	3,540	28%	4,215	26%

Source: ABS, Urbis

The Wanneroo LGA has a sizeable workforce participation rate of 67%, which indicates that a significant number of people are actively in the workforce as compared with the Greater Perth Metropolitan Area (table four). In addition to this, the unemployment rate as at the 2011 Census was in line with the Greater Perth Metropolitan Area of 5%.

Wanneroo resident workers have a higher representation in the *Technical and Trades; Clerical and Administration; Labourer; Community and Personal and Sales* occupation groups compared with Greater Perth. In contrast, the LGA has a lower share of *Professionals and Managers*. This indicates that there is a greater need for blue collar occupations in Wanneroo.

TABLE 4 – KEY RESIDENT WORKFORCE CHARACTERISTICS

Labour Force and Unemployment (2011)	Wanneroo	Perth Metro
Employed	73,381	857,634
Unemployed	3,752	42,860
Labour Force	77,133	900,494
% Unemployed	5%	5%
Labour Force Participation	67%	64%
Occupation		
Technicians & trades workers	20%	16%
Clerical & Administrative Workers	16%	15%
Professionals	15%	22%
Labourers	11%	9%
Community & Personal Service Workers	11%	10%
Managers	10%	12%
Sales Workers	10%	9%
Machinery operators & Drivers	7%	7%

Source: ABS, Urbis

In table five, Urbis calculates the industry jobs' gaps across the City of Wanneroo. This is done by subtracting the number of local jobs in each industry from the number of Wanneroo LGA residents working in each industry (covering 'places of work' both within and outside the LGA). As at the 2011 Census, there was an overall discrepancy of negative 40,206 jobs. This means that 40,206 net jobs are exported out of the Wanneroo LGA. The top three largest external industries of employment were *Health Care and Social Assistance*, *Construction* and *Retail Trade*.

TABLE 5 – JOBS' GAP ACROSS THE CITY OF WANNEROO (2011)

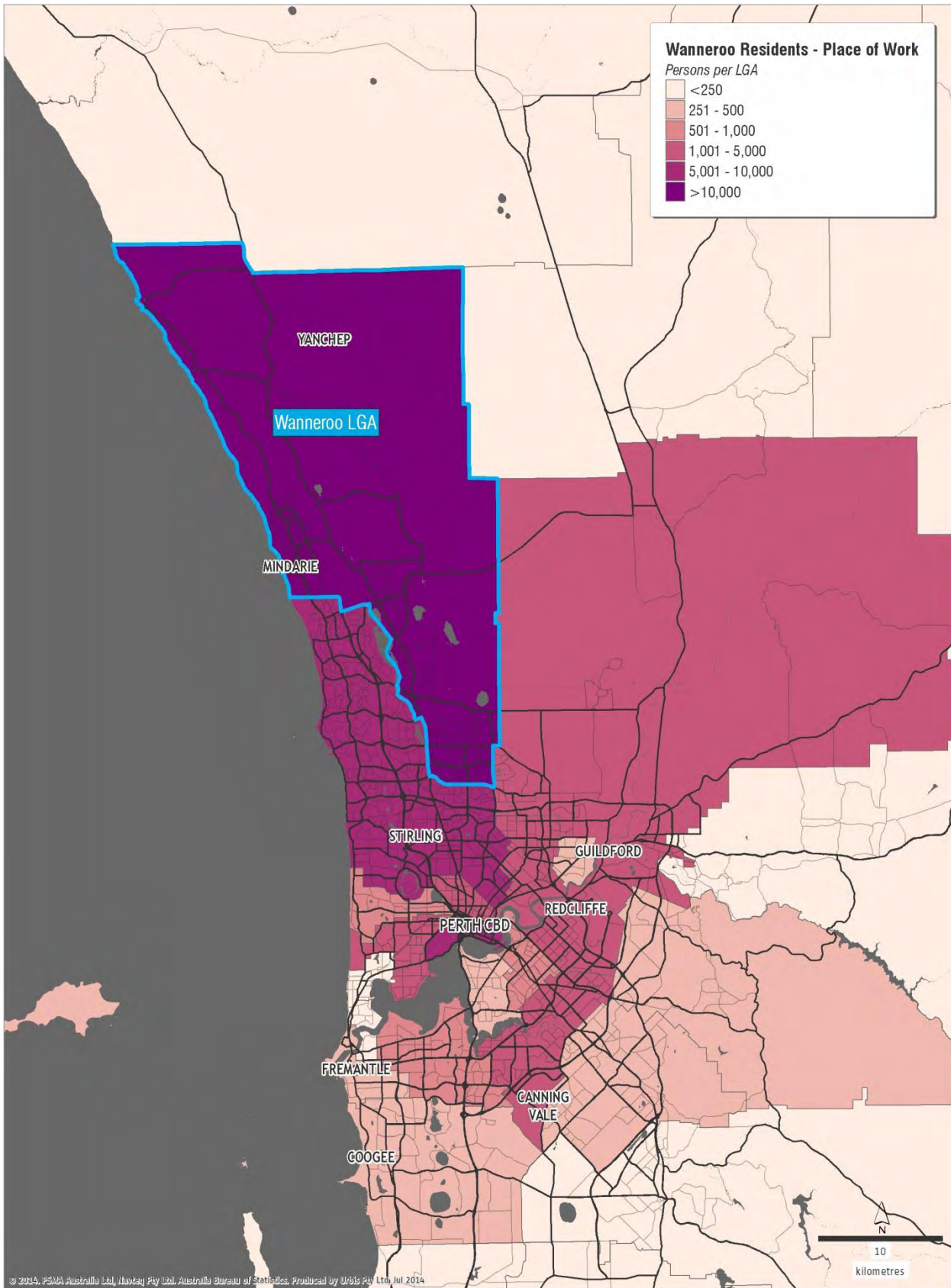
Industry	Industry of Resident Workers	Jobs by Industry in LGA	Jobs Gap
Agriculture, Forestry & Fishing	725	653	-72
Arts & Recreation Services	854	294	-560
Rental, Hiring & Real Estate Services	1,137	559	-578
Electricity, Gas, Water & Waste Services	812	172	-640
Information Media & Telecommunications	820	159	-661
Education & Training	4,745	3,691	-1,054
Wholesale Trade	2,925	1,591	-1,334
Transport, Postal & Warehousing	2,684	1,006	-1,678
Other Services / Unclassified	3,418	1,657	-1,761
Manufacturing	6,415	4,542	-1,873
Administrative & Support Services	2,634	754	-1,880
Financial & Insurance Services	2,340	343	-1,997
Accommodation & Food Services	3,932	1,773	-2,159
Mining	3,169	389	-2,780
Professional, Scientific & Technical Services	4,268	1,213	-3,055
Public Administration & Safety	4,454	1,191	-3,263
Retail Trade	8,356	4,214	-4,142
Construction	10,116	4,808	-5,308
Health Care & Social Assistance	7,847	2,436	-5,411
Total	71,651	31,445	-40,206

Source: ABS, BTS JTW, Urbis

Figure five illustrates where Wanneroo LGA resident workers travel to work by municipality of employment, as at the 2011 Census. The vast majority are employed north of the Swan River. However major arterial roads including the Mitchell/Kwinana Freeway facilitate access to employment opportunities which are further afield. It also indicates that some residents are forced to travel substantial distances to obtain suitable employment given the limitations on local jobs' provision.

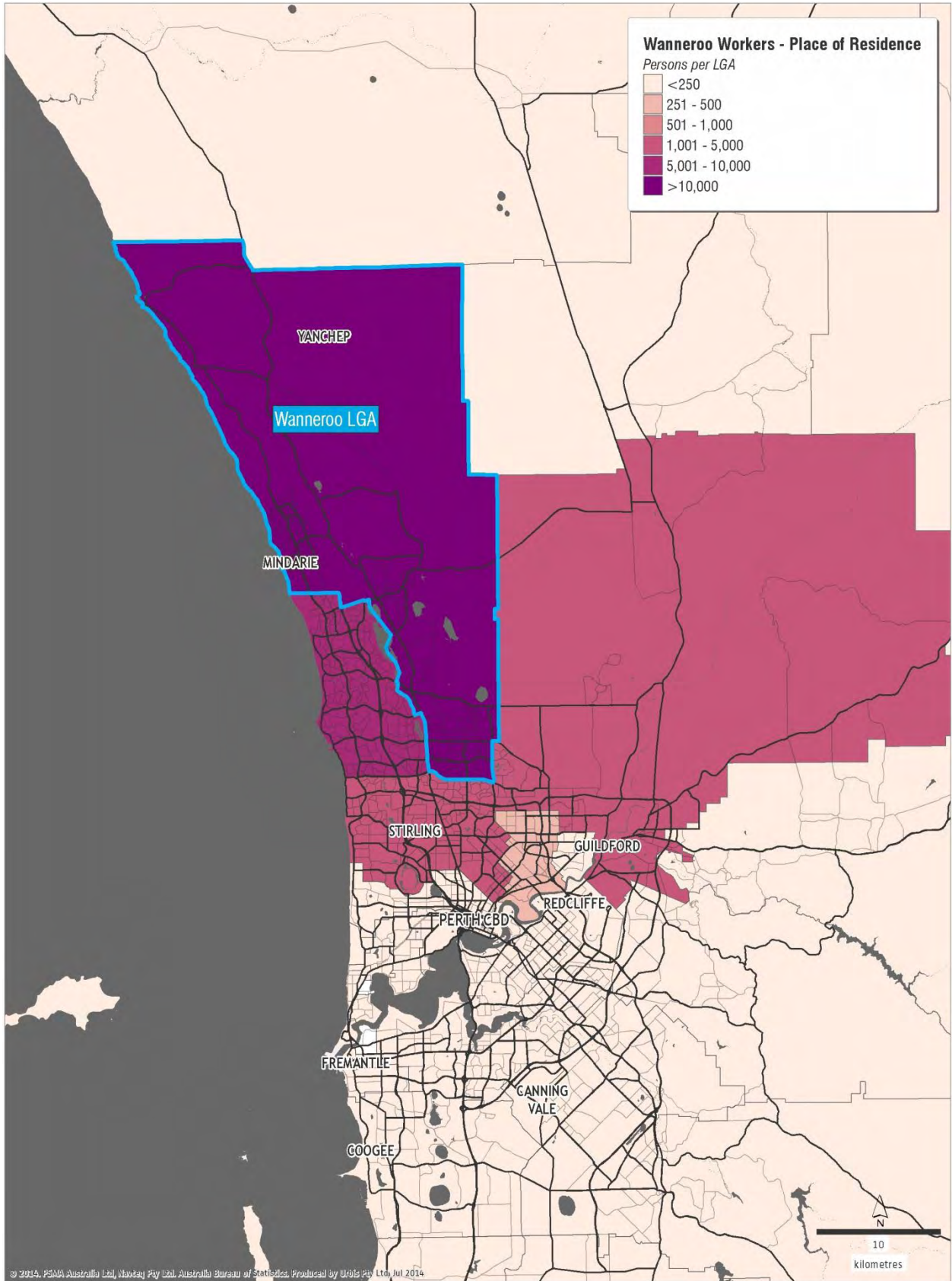
In figure six, it is interesting to note that the vast majority of people employed within the boundary of the Wanneroo LGA reside in Perth's northern suburbs. This indicates the lower employment draw offered within the City of Wanneroo.

FIGURE 5 – LOCATION OF WORKPLACE (BY MUNICIPALITY) OF EMPLOYED RESIDENTS OF WANNEROO LGA (2011)



Source: ABS, Urbis

FIGURE 6 – RESIDENTIAL ORIGIN OF PERSONS EMPLOYED WITHIN THE WANNEROO LGA (2011)



Source: ABS, Urbis

3 Employment Impacts of Amendment

This section assesses the net impact of replacing part of the landholding, proposed under the existing BJDSP as “service industry” and covering 11.16 hectares (including 1.88 hectares of public open space, drainage and pump station facilities), with 10.28 hectares of proposed “business” use. The existing “service industry” is located on the eastern boundary of the landholding. The replacement proposed “business” use is located in three boundary areas: north-west or proposed “Marmion Avenue Business Zone” (2.9 hectares) and north-east or proposed “Romeo Road Business Zone” (3.3 hectares and 4.08 hectares), refer to figure two. The job impacts of the other employment land uses planned to be incorporated within the landholding are also discussed.

Also allowed for are the changes to the position of the schools under Amendment 1 to BJDSP.

The number of jobs generated under Amendment 1 will be greater than the number of jobs that would be generated under the current BJDSP.

3.1 JOB PROVISION

Proposed Business/ Service Industry

Under the original BJDSP it was envisaged that the **subject 9.28 hectares in the eastern portion** of Lot 1001 would accommodate service industrial uses such as construction and repairs’ businesses, similar to those located within the industrial precincts in Osborne Park and Balcatta. The average employment density for these uses is 102 sq.m. per employee, as recorded by the Department of Planning’s *Perth Land Use & Employment Survey 2008* (PLUES). Assuming a site efficiency of 50% (i.e. buildings cover 50% of the site), and an employment density of 102 sq.m. per employee, the subject 9.28 hectares of service industrial uses identified in the BJDSP would accommodate an estimated **455 jobs**.

Under Amendment No. 1 to the BJDSP, 10.28 hectares of land along Marmion Avenue and Romeo Road is a proposed “business” zone. The City of Wanneroo’s District Planning Scheme No. 2 defines its “business” zone as:

intended to accommodate warehouses, showrooms, trade and professional services and small scale complementary and incidental retailing uses, as well as providing for retail and commercial businesses which require large areas such as bulky goods and category/theme-based retail outlets that provide for the needs of the community but which due to their nature are generally not appropriate to or cannot be accommodated in a commercial area.

This compares with the following intention of a local “service industry” zone:

to provide for a wide range of business, industrial and recreational developments which the Council may consider would be inappropriate in Commercial, Business and General Industrial Zones and which are capable of being conducted in a manner which will prevent them being obtrusive or detrimental to the local amenity.

Urbis understands that the proposed Marmion Avenue Business Zone would be expected to accommodate larger bulky goods showrooms or service commercial uses (for example Harvey Norman, Bunnings, Barbecues Galore) while the proposed Romeo Road Business Zone would accommodate smaller showroom/warehouse businesses. Comparatively smaller businesses on Romeo Road would be more sympathetic to adjoining residential land uses.

The 7.38 hectares adjoining Romeo Road and the 2.9 hectares on Marmion Avenue could employ an average of one person per 70 sq.m., according to PLUES. Assuming site efficiency of 50%, businesses accommodated within these areas would generate an estimated **734 jobs**.

Retail

Assuming an employment density of 20 sq.m. per employee, the 4,100 sq.m. of retail space within the development will accommodate around **205 jobs**. An employment density of 20 sq.m. represents the approximate mid-point between the benchmark employment densities for supermarkets (25 sq.m. per employee) and specialty stores (16 sq.m. per employee).

Schools

Urbis has allowed for a high school of approximately 1,000 students. Based on the ABS publication *Schools, Australia* (ABS cat. no. 4221.0). This release shows that on average, high schools have 12.2 students per staff member. Allowing for 20% more than this (covering administrative and support staff), Urbis has assumed the high school will employ 70 staff. Given that just 8 hectares of the 9 hectare high school site fall within Lots 1001 & 1002, Urbis has attributed 89% (**62 staff**) of the anticipated jobs at the high school to the landholding. For the original BJDSP, 50% of the high school was within the landholding and 50% of the staff has been allowed for.

Originally the BJDSP had allowed for two primary schools. Under Amendment 1, one of these has been moved to the south of the landholding area. Based on a 2008 report from the Department of Education, the staff numbers of the primary schools were 70 staff for the Eastern cell primary school and 30 for the Western cell (now moved to the south of the landholding).

Child Care

The BJDSP nominates a 2,000 sq.m. site in the eastern sector for a child care centre. Assuming 80% site efficiency, the site could accommodate a child care centre of 1,600 sq.m.. There is also capacity for a second child care centre of the same size in the western sector of the development, and the developer has indicated that there is a strong likelihood of this going ahead.

According to national standards for child care centres, each child within a child care centre should have 3.25 sq.m. of 'un-encumbered' indoor play space (equivalent to approximately 5 sq.m. of gross/encumbered play space and 7 sq.m. of useable outdoor play space). Therefore, given a requirement of 12 sq.m. per child, a 1,600 sq.m. child care centre at Lots 1001 & 1002 could accommodate up to approximately 133 children. Based on child care centre regulations for Western Australia, a child care centre of this size would require 22 staff. Therefore, the two child care centres within Lots 1001 & 1002 would employ an estimated **44 staff** combined.

Gymnasium

A 600 sq.m. gymnasium which will be operated by YMCA will require an estimated **11 staff**, based on an employment density of 45 sq.m. per employee, as per the employment density benchmarks for Entertainment / Recreation land uses documented in PLUES.

Commercial Office

It is anticipated that up to 4,000 sq.m. of office space will be located around the Village Centre. However, this represents the maximum amount of space. Urbis has assumed that 2,000 sq.m. of commercial space will be developed. This space would most likely attract services such as real estate agents, accountants, solicitors, and health / medical service providers. Whilst the PLUES indicates an employment density of around 67 sq.m. per employee for these uses across Perth, we note that the employment density for small, neighbourhood, commercial spaces located within a retail precinct typically have an employment density of around 25 sq.m. per employee. This closely aligns with the density of 23 sq.m. per employee assumed by the Smart Growth Assessment Tool (SGAT). Assuming an employment density of 25 sq.m. per employee, the commercial space would accommodate **80 jobs**.

Weekend Markets

A weekend market comprising 70 stalls will be run once a month by YMCA at the Village Square. The market will provide an opportunity for local suppliers to sell items such as fresh produce and handicrafts. This initiative has been successfully implemented at LWP's development in Byford. Assuming that, on average, 1.5 people operate each stall, the markets would provide employment for more than 100 people on a monthly basis. This equates to approximately **5 jobs** on a FTE basis.

Home-Based Employment

Under the original BJDSP there was an estimate of 2,750 dwellings. This has been revised down slightly to 2,605 under Amendment 1. Allowing for 2.7 people per household, this gives an estimated population of 7,425 and 7,034 people under the Amendment 1 plan.

As at 2006, 2% of the City of Wanneroo's workforce worked from home. This was slightly below the Perth average of 3%. In view of the high speed internet access that will be provided through fibre optic technology at Lots 1001 & 1002, and considering the high proportion of couple families with children (and therefore, a high proportion of mothers who have a higher propensity to work from home), we foresee that the incidence of home-based employment at Lots 1001 & 1002 will be higher than the City of Wanneroo and Perth averages, and therefore assume 5%.

Given that it is a function of the size of the population, the number of home-based jobs would be slightly lower under the revised proposed Development Concept, compared with the original BJDSP – 352 home-based jobs versus 371 home-based jobs.

3.2 IMPACTS

To summarise section 3.1, the result of Amendment No. 1 to the BJDSP is expected to generate 257 more jobs compared with the original BJDSP. This is summarised in table six.

TABLE 6 – JOB IMPACTS OF ORIGINAL BJDSP COMPARED WITH AMENDMENT ONE

Employment Use	Jobs	
	Original BJ DSP	Amendment 1 BJDSP
Service Industry / Commercial / Bulky Goods / Showroom	455	734
Retail	205	205
Primary Schools	100	70
High School	35	62
Child Care	44	44
Gymnasium	11	11
Commercial Office	100	100
Weekend Markets	5	5
Home-Based	371	352
Total Jobs	1,327	1,584
Net Difference		257

Source: PLUES, Urbis

It is important to note that jobs have been quantified using standard employment density benchmarks for the range of sectors that will operate within the development, primarily recorded by PLUES. However the actual level of employment achieved will depend on the type of tenants and businesses that choose to locate at Lots 1001 & 1002.

In any case, we believe that the estimates of employment are conservative for the following reasons:

- We have not taken into account population-driven public sector employment that will be generated by the development – for example council gardeners, garbage services and postal services; and
- We have assumed that 2,000 sq.m. of commercial space will be developed, despite there being capacity for up to 4,000 sq.m.

Another critical point to note is that the job estimates assume the 9.28 hectares of “service industry” nominated in BJDSP will be fully developed and occupied. However, we note that this land is likely to face significant competition from superior neighbouring industrial locations, such as existing industrial areas located north of Joondalup along Marmion Avenue, in Quinns Rocks and Merriwa, and future development at Meridian Park (8 kilometres south of Lots 1001 & 1002) which will be the largest industrial area in the North West Corridor of Perth, containing over 1.5 million sq.m. of general industrial, service industrial and business floor space across 400 hectares.

3.3 EMPLOYMENT SELF-SUFFICIENCY

Based on the job numbers quantified in section 3.2, the revised proposed Development Concept according to Amendment 1 is expected to achieve an ESS ratio of 55%, compared with 43% under the original BJDSP. This is in line with the City of Wanneroo’s target of 60% ESS laid out in the Smart Growth Strategy.

TABLE 7 – EMPLOYMENT SELF SUFFICIENCY COMPARISONS BETWEEN BJDSP AND AMENDMENT 1

	Original BJDSP	Amendment 1 BJDSP
Population	7,425	7,034
Population aged >15 years	80%	80%
Working age population	5,940	5,627
Labour force participation rate	64%	64%
Size of the labour force	3,802	3,601
- Full time	2,661	2,521
- Part time *	798	756
Size of FTE labour force	3,060	2,899
Lots 1001 & 1002 FTE job provision	1,327	1,584
ESS achieved by Lots 1001 & 1002	43%	55%

* Assumes part time = 0.5 FTE

Source: WAPC, Urbis

The concept of employment self-sufficiency is an effective tool for planning economically and environmentally sustainable communities at the regional and subregional levels. However, caution should be taken in applying it at all levels of planning. We note the following potential issues relating to the application of ESS targets:

- When applied at the individual development level, ESS targets can result in the placement of economic activity and jobs in locations which are not optimal in terms of commercial viability; and
- ESS can compromise the role of larger centres by dispersing commercial activities and inhibiting these centres from achieving activity agglomeration.

In the case of Lots 1001 & 1002, providing a significantly larger quantum of employment floor space than what is designated in BJDSP is unlikely to be commercially viable given the development’s location between the Brighton District Centre and Alkimos Regional Centre. Given their proximity, these centres will capture a significant proportion of resident retail expenditure. Moreover, they are likely to be more attractive to businesses seeking to locate in the region due to their higher exposure and co-location with other services – albeit, we recognise that Lots 1001 & 1002 have a role to play in providing accommodation to small businesses which may not be able to afford to locate in these larger centres.

3.4 ECONOMIC RATIONALE FOR REPLACEMENT OF SERVICE INDUSTRY USE

In our view, the original nominated location for “service industry” uses along the eastern boundary of Lot 1001 does not provide an attractive location for business. Given the lack of visibility from any major roads, in our opinion businesses would struggle in this location and face strong competition from the proposed, significantly larger and better located, Commercial/Industrial areas to the north and south, in particular:

- Existing service commercial / industrial areas located along Marmion Avenue in Quinns Rocks and Merriwa;
- 100 hectares of service commercial area, located in the eastern portion of the Alkimos Regional Centre area adjacent to Mitchell Freeway directly north of Romeo Road; and
- 150 hectares of service industrial uses between the Alkimos Regional Centre and the Eglinton District Centre adjacent to the Freeway.

These centres will benefit from far greater exposure than the nominated 9.28 hectares of “service industry” land on the eastern boundary of Lot 1001.

In the event that the nominated “service industry” land on the eastern boundary of Lot 1001 is not able to attract businesses to locate there, given the availability of superior sites in very close proximity, the number of jobs on this parcel would actually be zero. Therefore, the proposed relocation/replacement of “service industry” would result in a significantly greater number of jobs than what would be accommodated by the current plan.

3.5 ALTERNATE LOCATIONS FOR SERVICE INDUSTRY USE

The originally planned “service industry” precinct on the eastern boundary of the landholding, which is not entirely sympathetic to adjacent residential uses, could be relocated to an alternate location. Options include Neerabup (the Meridian Park estate), emerging developments to the north of Alkimos that are directly serviced by arterial roads and to a lesser extent, the Alkimos subregional centre.

3.6 SUMMARY

In summary, the proposed “business” land uses included in Amendment No. 1 to the Butler-Jindalee District Structure Plan are considered to provide a superior location for businesses to locate, and are likely to attract higher order, and more intensive employment uses compared with the “service industry” areas nominated in the original BJDSP. As such, Amendment No. 1 to the Butler-Jindalee District Structure Plan is expected to have capacity to accommodate more jobs than the original BJDSP.

4 Economic Development Strategies

The developers of Lots 1001 and 1002 recognise that economic development is not solely dependent on providing land for employment uses. To this end, they have identified a range of initiatives that seek to optimise the economic benefits that the development will deliver. These are detailed below:

- Regularly, in residential subdivision projects such as this, developers will nominate for a secondary developer to undertake the 'town centre' retail and commercial components. However, in recognition of the economic value that these components of the project will deliver, the developer has nominated to undertake these. Delivery of the village centre early on in the development will provide a catalyst for further economic development;
- Establishing an arrangement with the YMCA whereby the developer will provide space to YMCA in the village centre on a rent-free basis, and YMCA will run community programs such as the weekend market, arts and crafts' courses and other recreational activities. This arrangement between the developer and YMCA mirrors that which has been successfully implemented in Byford. This initiative – which is made possible by the developer subsidising YMCA's accommodation – will deliver community and economic benefits. For example, the markets provide an alternative form of employment to residents that may not be able to participate in mainstream employment, and the various community activities provide opportunities for informal business networking within the community;
- Delivery of high speed internet technology will play a role in attracting businesses to the area, and will provide opportunities for high levels of home-based employment;
- Providing opportunities for small businesses to obtain accommodation in the village centre on lease hold arrangements. This will be particularly attractive to small businesses which may not have the capacity to occupy on a freehold basis, or which may not be able to afford accommodation in the larger surrounding district and regional centres;
- Facilitating relationships between construction companies and building supplies' businesses in the local area. Such arrangements will seek to ensure that the economic benefits of construction activities are retained within the local area. For example, local limestone quarries;
- Company policy to employ locally where practical and possible;
- Targeted marketing campaigns to attract businesses and tenants to the development, through mediums such as the *West Australian* newspaper, *WA Business News* and *Community Newspaper*;
- Marketing the development to the consumer market across the state through a range of mediums such as local and state newspapers and magazines, and online media. These marketing activities will build the profile of the development itself, as well as the broader region;
- Producing a local newsletter which would provide an affordable medium for local businesses to promote themselves;
- Sponsorship of local business events and sporting teams; and
- Making open space areas available for events such as music concerts, sport and exhibitions. These events can generate significant economic benefits by attracting business investment and private expenditure from beyond the local area.

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This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.

Sydney

Level 23/201, Sussex St
Sydney, NSW 2000
Tel: +61 2 8233 9900
Fax: +61 2 8233 9966

Brisbane

Level 7, 123 Albert Street
Brisbane, QLD 4000
Tel: +61 7 3007 3800
Fax: +61 7 3007 3811

Melbourne

Level 12, 120 Collins Street
Melbourne, VIC 3000
Tel: +61 3 8663 4888
Fax: +61 3 8663 4999

Perth

Level 1, 55 St Georges Terrace
Perth, WA 6000
Tel: +61 8 9346 0500
Fax: +61 8 9221 1779

Australia · Asia · Middle East
www.urbis.com.au
info@urbis.com.au