

# Technical Note

**Project Code:** W149950      **Project Name:** Muriel Court Structure Plan TIA Addendum  
**Date:** 13/08/2018      **Version:** B (draft)  
**Author:** Rodney Ding  
**Reviewer:** Neale McCracken/Tim Judd  
**SUBJECT:** **TIA Addendum Report**  
**Page 1 of** 12, plus attachments

## 1. Introduction

This technical note report was commissioned by the City of Cockburn, to document a review of the Traffic Impact Assessment for the Muriel Court Structure Plan due to the revised traffic generation based on the now expected lot yields for the proposed structure plan. The revised information to be provided as part of this scope of works is to be an addendum to the original traffic impact assessment undertaken in 2008.

## 2. Methodology

The broad methodology of this assessment to revise the 2008 traffic assessment included the following steps:

- Calculation of the expected traffic generation of the structure plan road network based on the expected lot development yield
- Assignment of the expected trip generating of the above lot yield onto the road network proposed with the new road link connection to North Lake Road
- Report back to the City of Cockburn as to the implications of the revised traffic volumes expected due to the above changed lot yields
- Provide options for Muriel Court for the limitation of full movement intersections to allow the maximisation of a boulevard treatment along its length
- Determine appropriate intersection controls along Muriel Court as determined by the above tasks
- Undertake as assessment of the new road link from the structure plan area to North Lake Road, west of Kentucky Court.

### 3. Preliminary Analysis

The preliminary assessment was based on a review of the now expected lot yield of the structure plan as provided by the City of Cockburn in April 2018. The lot yield information provided is summarised below.

Advice from the City of Cockburn was that the lot yield is to be derived from a 75% potential yield, based on the current structure plan shown at Attachment 1. The advice provided by the City was that the following minimum areas in Table 1 should be applied to the current proposed residential densities.

**Table 1: Minimum Land Area for 75% Yield**

Density	Min. Land Area (Lot) to Yield 75%	Land Area to Yield 100%
R25	466m <sup>2</sup>	350m <sup>2</sup>
R40	293m <sup>2</sup>	220m <sup>2</sup>
R60	200m <sup>2</sup>	150m <sup>2</sup>
R80	160m <sup>2</sup>	120m <sup>2</sup>
R160	160m <sup>2</sup>	120m <sup>2</sup>

Source: City of Cockburn

The above minimum lot yields were applied to the expected development densities for the same traffic generation zones from the previous traffic impact assessment undertaken by Uloth & Associates in 2008 (and shown as Attachment 2).

The resulting traffic generation for each of the zones in comparison to the previous traffic impact assessment is shown below in Table 2. The traffic generation rates for each of the densities are further summarised below in Table 3.

**Table 2: Traffic Generation Rate v Density**

Density	Traffic Generation Rate per dwelling (vpd)
R25	8
R40	6
R60	6
R80	5
R160	5

Source: Uloth & Associates

**Table 3: STRUCTURE PLAN Traffic Generation**

Zone	Original TIA	Addendum TIA	Difference (%)
Zone 1	930	1550	+66%
Zone 2	680	890	+31%
Zone 3	350	1320	+278%
Zone 4	1360	1540	+14%
Zone 5	550	870	+59%
Zone 6	1200	1980	+65%
Zone 7	1910	2520	+32%
Zone 8	3740	1980	-47%

Zone	Original TIA	Addendum TIA	Difference (%)
<b>TOTAL STRUCTURE PLAN</b>	<b>10720</b>	<b>12660</b>	<b>+18%</b>

Source: Uloth & Associates

Overall the new lot yields are expected to generate approximately 12,700 trips per day compared to the previous report which was expected to generate approximately 10,700 trips per day. This is an increase of approximately 18%.

The revised expected trip generation was assigned to the current proposed road network for the structure plan with the origins based on the above zone traffic generation and the destinations based on the previous traffic impact assessment report traffic volumes expected for the external links in the model prepared for the previous study on a pro-rata basis. These traffic volumes are summarised below in Table 4.

**Table 4: External Trips**

External Road	Original TIA	Addendum TIA
Berrigan Dr W	1740	2050
Elderberry Dr	210	250
Berrigan Dr E	2680	3160
North Lake Rd W	1810	2140
Poletti Rd	110	130
Northlake Rd (S,W)	4170	4920
<b>TOTAL</b>	<b>10720</b>	<b>12660</b>

The revised expected traffic flows on the internal road links along Muriel Court is shown in Attachment 3. These are not significantly different to the previously calculated traffic flows as shown in Attachment 4. Traffic volumes are expected to vary from 3,600 vpd near the Semple Court intersection, 2,400 vpd near the central section of Muriel Court to approximately 3,100 vpd near Kentucky Court. The comparison to the previous traffic study is shown below in Table 5.

**Table 5: Muriel Court Traffic Volumes**

Section	Original TIA	Addendum TIA
Muriel Ct W	3,250	3,600
Muriel Ct Central	2,980	2,400
Muriel Ct W	1,850	3,100

With the increase in traffic generation for the whole structure plan area anticipated to be approximately 18%, the traffic is expected to be slightly lower in the middle section of Muriel Court in comparison to the previous traffic report. This is a function of the location of the different densities now expected in the structure plan and the proximity the higher densities located closer to the extremities of the subject site and thus there is expected to be less traffic in the centre of the site.

Based on the expected revised traffic flows on Muriel Court of 2,400 to 3,600 vpd, the proposed road typologies as shown in Attachment 5 will generally provide the same functionality as previously expected. However, based on the rationalisation of the number of full movement intersections along Muriel Court, the proposed cross section is recommended to be modified to facilitate U-turn movements to and from proposed left-in/left-out intersections, this is discussed in more detailed below.

Muriel Court has 15 intersections proposed along its 770m length between the proposed roundabout at the new Semple Court/Muriel Court intersection and the eastern extremity of Muriel

Court, near its proposed continuation into Kentucky Court. None of these are proposed to be 4-way intersections with each intersection proposed to be a T-junction. The average intersection spacing is expected to be approximately 51m between intersections with off-set to T-junctions on the opposite side of Muriel Court ranging from 27m to 40m. If all intersections were to become full movement intersections this would have detrimental road safety and operational effects due to the number of movements to and from these intersections through the proposed median treatment along Muriel Court. In addition to this, the City of Cockburn desire that Muriel Court become a boulevard with a long median length, maximising landscape planting.

Based on an assessment of the expected traffic volumes on side roads intersecting with Muriel Court three options have been recommended.

### 3.1 Option 1

This option has two pairs of full movement intersections, one near the intersection of Muriel Court/Semple Court and the local centre (Lots 50/51 and Lots 7/30 roads), to facilitate traffic movement in and around the local centre, and the other near the middle of Muriel Court (Lots 56/57 and Lots 10/11 roads), to facilitate a north-to-south traffic movement through the structure plan.

These intersections are proposed to have a left/right stagger to facilitate north-to-south movements across Muriel Court through the use of left turns. A left/right stagger would require vehicles to undertake a less desirable right turn from the side road across and into Muriel Court. This is slightly less safe than the recommended right/left stagger. These intersections are separated by approximately 40m at the centre line of the intersections, this being the minimum for intersections of this nature as recommended in Table 5 from Appendix 3 in Liveable Neighbourhoods.

The eastern end of Muriel Court is proposed to have two full movement T-junctions one near the eastern end of Muriel Court (through Lot 65) and the other slightly to the west between Lots 20/80. This will facilitate movements to and from North Lane Road via Kentucky Court for lots in and around the large Lot 1 Verna Court.

The road between Lots 20/80 is expected to carry approximately 750 vpd and will provide connection through to the new link from the structure plan onto North Lake Road between Lots 52/55 North Lake Road. This new link is expected to carry approximately 800 vpd to and from the structure plan at its northern end and approximately 3,800 vpd at the southern end, due to the commercial strip traffic near the intersection with North Lake Road.

The above is shown in Attachment 6.

### 3.2 Option 2

To reduce the attractiveness of the new link road for structure plan traffic, an alternate intersection arrangement is shown in Attachment 7. This has the full movement intersection located between Lots 21/100. This will then be offset from the intersection through Lot 65 by approximately 47m, thus satisfying Liveable Neighbourhoods requirements. The other accesses along Muriel Court remain the same as Option 1.

### 3.3 Option 3

This option is similar to Option 1, with the exception that the full movement intersection near the eastern end of Muriel Court is now proposed between Lots 101/102 as shown at Attachment 8. This

will provide a left/right stagger with the intersection through Lot 65 on the north side of Muriel Court but will have a stagger of approximately 20m.

This option may not be able to provide a median between these two roads and there may be a small degree of corner cutting as vehicles travel between these two intersections. This option would further reduce the attractiveness of the new link road onto North Lake Road for structure plan traffic.

### 3.4 Muriel Street Cross-section

The current proposed Muriel Court cross-section has the a 24.4m wide road reserve (see cross-section at Attachment 5).

The rationalisation of the number of full movement intersections along Muriel Court will lead to the creation of nine (9) left-in/left-out type T-junctions with six (6) full movement T-junctions. The number of left-in/left-out intersections will encourage the use of median openings for U-turn movements as residents undertake U-turns to drive to and from the left-in/left-out T-junctions.

The current proposed cross-section will provide approximately 11.4m width between the on-road cycle lanes to undertake U-turns. To increase the ability for most passenger vehicles to undertake U-turns it is recommended that the median width be increased from 4.4m to 4.8m with a narrowing of the parking bay width on each side of the road from 2.5m to the general minimum recommended in AS/NZS 2890.1:2004 of 2.3m. This will allow a 11.8m width between cycle lanes for passenger vehicles to undertake U-turns. This proposed cross-section would be as per Attachment 9.

The median openings for the intersections are recommended to be basic openings with no right or left turn pockets provided in either the median or road side.

## 4. Detailed Analysis

A more detailed assessment was undertaken for the key intersections along Muriel Court and for the proposed new road link intersection with North Lake Road. Details of these assessments are discussed in more detail below.

### 4.1 Muriel Court

The intersection types along Muriel Court are all proposed to be T-junctions and either be restricted to left-in/out (for nine intersections) or allow full movements (for six intersections). All these intersections are recommended to be priority controlled, with Muriel Court being the priority road. To examine if this type of control would provide an acceptable level of service the intersection with the highest expected traffic flows was assessed utilising SIDRA Intersection.

Based on the maximum expected traffic flows on Muriel Court of approximately 3,400 vpd near Simple Court and the largest side road traffic flow estimated at approximately 750 vpd for the side road near the eastern end of Muriel Court. On an hourly basis this works out to approximately 350 vph in Muriel Court and 75 vph for the side road. The expected level of service for this traffic flow and the basic intersection layout discussed above is shown below in Table 1.

**Table 1: Typical Peak Performance – Typical Muriel Court full movement intersection**

	Demand Flows		Cap. Veh/h	Deg. Satn v/c	Average Delay Sec	Level of Service	95% Back of Queue	
	Total veh/h	HV %					Veh	Dist m
<b>South: New Road</b>								
Lane 1	39	2.0	1375	0.028	5.1	LOS A	0.1	0.7
Approach	39	2.0		0.028	5.1	LOS A	0.1	0.7
<b>East: Muriel Ct</b>								
Lane 1	171	2.0	1918	0.089	0.3	LOS A	0.0	0.0
Approach	171	2.0		0.089	0.3	NA	0.0	0.0
<b>West: Muriel Ct</b>								
Lane 1	171	2.0	1882	0.091	0.4	LOS A	0.1	0.6
Approach	171	2.0		0.091	0.4	NA	0.1	0.6
<b>Intersection</b>	<b>380</b>	<b>2.0</b>		<b>0.091</b>	<b>0.9</b>	<b>NA</b>	<b>0.1</b>	<b>0.7</b>

Based on the maximum expected traffic flows, the intersection is expected to operate at a level of service A in peak periods with priority control. There is expected to be minimal queuing and delays on all approaches. With this minimal queuing and delays, U-turns will be facilitated and thus not impeded.

## 4.2 North Lake Road

The new link road from the structure plan area through the commercial strip fronting North Lake Road is proposed to intersect with North Lake Road at a full movement intersection. The type of control and cross-section of this new road link has yet to be determined.

As previously discussed, this new link is expected to draw traffic from a combination of structure plan traffic (approximately 800vpd at its northern end) and the commercial strip fronting North Lake Road (approximately 3,000vpd) for a total of approximately 3,800vpd near the intersection with North Lake Road.

The expected traffic generation for the commercial strip has been based on the following assumed development scenario:

- Lots 53/54 Mixed Business & R160
- Lot 55 Fire Station
- Lots 52/81 Mixed Business & R160
- Lots 75/76 Self Storage
- Lot 74 Medical Centre
- Lots 18/53/73 Mixed Business & R160

The Mixed Business & R160 use was assumed to be similar to the development on the corner of North Lake Road and Kentucky Court. This development consisted of 77 residential units with 373m<sup>2</sup> of commercial floorspace consisting of office/restaurant uses. This type of development was applied on a pro-rata basis for the vacant lots to derive expected traffic generation.

Traffic flows for North Lake Road were provided by the City of Cockburn and is shown at Attachment 10. This data has assumed that North Lake Road has been extended east over the Kwinana Freeway with a new bridge linking to Armadale Road, together with the expansion of

Cockburn Gateway Shopping Centre to 90,000sqm. Based on these assumptions, approximately 38,270 vpd are expected to utilise North Lake Road near the new intersection of the new link road and North Lake Road.

With an expected peak hour factor of 9% for the traffic flows on North Lake Road and a 10% factor for traffic flows on the new link road, the expected performance of this new intersection in the AM and PM peak periods is shown in the Table 2 and Table 3. The 7m wide median in North Lake Road will allow vehicles turning right from the new link road to perform this manoeuvre in two movements. In the AM peak, the intersections critical movement is the right turn from the new link road and this is expected to have a level of service E with vehicles typically waiting up to 47s in the median to turn right. For the right turn, the overall delay is expected to be approximately 65s. The queue length is expected to be one to two vehicles.

**Table 2: New Link Intersection AM Peak Performance**

	Demand Flows		Cap. veh/h	DOS v/c	Average Delay sec	Level of Service	95% Back of Queue	
	Total veh/h	HV %					Veh	Dist m
<b>East: North Lake Rd</b>								
Lane 1	1120	6.0	1877	0.597	0.1	LOS A	0.0	0.0
Lane 2	1120	6.0	1877	0.597	0.1	LOS A	0.0	0.0
Lane 3	105	2.0	361	0.291	16.7	LOS C	0.9	6.7
Approach	2345	5.8		0.597	0.9	NA	0.9	6.7
<b>NorthEast: Median RT</b>								
Lane 1	100	2.0	180	0.554	46.6	LOS E	3.2	22.5
Approach	100	2.0		0.554	46.6	LOS E	3.2	22.5
<b>North: New Link</b>								
Lane 1	80	2.0	589	0.136	9.9	LOS A	0.5	3.6
Lane 2	100	2.0	276	0.362	18.8	LOS C	1.3	9.5
Approach	180	2.0		0.362	14.8	LOS B	1.3	9.5
<b>West: North Lake Rd</b>								
Lane 1	60	2.0	1831	0.033	6.4	LOS A	0.0	0.0
Lane 2	603	6.0	1877	0.321	0.0	LOS A	0.0	0.0
Lane 3	603	6.0	1877	0.321	0.0	LOS A	0.0	0.0
Lane 4	5	2.0	62	0.081	63.0	LOS F	0.2	1.3
Approach	1270	5.8		0.321	0.6	NA	0.2	1.3
<b>Intersection</b>	<b>3895</b>	<b>5.5</b>		<b>0.597</b>	<b>2.6</b>	<b>NA</b>	<b>3.2</b>	<b>22.5</b>

In the PM peak the critical right turn from the new link road is expected to operate at level of service F, with delays of approximately 50 seconds waiting to turn right into the median from the new link. For the right turn, the overall delay is expected to be approximately 62s. The queue length is expected to be two vehicles.

**Table 3: New Link Intersection PM Peak Performance**

	Demand Flows		Cap. veh/h	DOS v/c	Average Delay sec	Level of Service	95% Back of Queue	
	Total veh/h	HV %					Veh	Dist m
<b>East: North Lake Rd</b>								
Lane 1	688	6.0	1877	0.366	0.0	LOS A	0.0	0.0
Lane 2	688	6.0	1877	0.366	0.0	LOS A	0.0	0.0
Lane 3	105	2.0	156	0.672	43.8	LOS E	2.3	16.0
Approach	1480	5.7		0.672	3.2	NA	2.3	16.0
<b>NorthEast: Median RT</b>								
Lane 1	70	2.0	490	0.143	11.5	LOS B	0.8	5.4
Approach	70	2.0		0.143	11.5	LOS B	0.8	5.4
<b>North: New Link</b>								
Lane 1	110	2.0	308	0.358	19.8	LOS C	1.4	10.0
Lane 2	70	2.0	118	0.594	50.2	LOS F	2.1	14.7
Approach	180	2.0		0.594	31.6	LOS D	2.1	14.7
<b>West: North Lake Rd</b>								
Lane 1	110	2.0	1831	0.060	6.4	LOS A	0.0	0.0
Lane 2	1033	6.0	1877	0.550	0.1	LOS A	0.0	0.0
Lane 3	1033	6.0	1877	0.550	0.1	LOS A	0.0	0.0
Lane 4	5	2.0	210	0.024	23.2	LOS C	0.1	0.5
Approach	2180	5.8		0.550	0.5	NA	0.1	0.5
<b>Intersection</b>	<b>3910</b>	<b>5.5</b>		<b>0.672</b>	<b>3.1</b>	<b>NA</b>	<b>2.3</b>	<b>16.0</b>

This right turn movement from the new link road into North Lake Road movement is thus the critical movement. To address this delay, the option of installing traffic signals is available. However, the installation of traffic signals will make this new link road very attractive for structure plan traffic and may provide a rat-run to avoid the nearby signalised intersection of North Lake Road/Kentucky Court.

Thus, to discourage structure plan traffic from this new link, it is not recommended to signalise this intersection.

In addition to this, the following Local Area Traffic Management (LATM) treatments are recommended to actively discourage structure plan traffic from using the link road:

- A raised plateau treatment at the intersection of the new link road and internal structure plan road
- Raised median in the structure plan road to limit movements to left-in/left-out to and from the new link road
- Consider an access strategy similar to Muriel Court for the Kentucky Court extension to the eastern end of Muriel Court. Under this scenario, only a single intersection would have full turning movements, with two other intersections limited to left-in/left-out.

The above is schematically shown in Attachment 11.

With the expected traffic flows of close to 4,000 vpd near the intersection of North Lake Road, the link cross section is recommended to be similar to the Muriel Court cross section, but within a 20.0m road reserve with a median treatment. At the intersection of North Lake Road, the intersection



treatment should include a left turn lane in place of verge that is typically provided elsewhere on this road. This is schematically shown at Attachment 12.

## 5. Modified Fire Station/Lot 55 Access

Another consideration is the impact of the proposed layout of the fire station on Lot 55 and the impact on the above predicted flows on the new link and at the intersection of North Link Road. The proposed crossover is shown in Attachment 13.

Regarding the traffic flows expected for the new link onto North Lake Road, the original GTA update report had assessed the traffic flow to be approximately 3,800 vehicles per day (vpd) with origins/destinations consisting of approximately:

- 2,300vpd from west of the new link (from Lots 18, 53, 73, 74, 81 & 52) using the Easement in Gross crossover on Lot 52
- 700vpd from east of the new link (comprising approximately 250vpd from the proposed fire station on Lot 55 and 450vpd from Lots 53 & 54 using the Easement in Gross crossover on Lot 55
- 800vpd from the internal Muriel Court LSP.

The left-in/left-out treatment for Lots 53/54 was originally expected to cater for approximately 450vpd.

With the proposed building footprint for the proposed fire station across Lot 55, the Easement in Gross will be required to be removed from the North Lake Road frontage of Lot 55, thus Lot 53/54 traffic will now be required to use the proposed LILO access direct onto North Lake Road and/or the signalised intersection at Midgegooroo Ave/Kentucky Ct to the east (and then use the Easement in Gross to travel to and from Lots 53/54 across Lots 16/17) or the proposed new intersection form by the intersection of the above new link and North Lake Road between Lot 55 and Lot 52 (to undertake U-turns after travelling east-west to then travel west-east and enter the Lot 53/54 crossover via a left turn).

With the above access arrangement, the expected traffic flows are:

- 2,300vpd from west of the new link (Lots 18, 53, 73, 74, 81 & 52) using the Easement in Gross crossover on Lot 52 - NO CHANGE
- 250vpd from east of the new link (comprising approximately 250vpd from the proposed fire station on Lot 55) – a REDUCTION of approximately 450vpd from Lots 53/54.
- 800vpd from the internal Muriel Court LSP – NO CHANGE

The left-in/left-out treatment for Lots 53/54 should carry approximately 550 to 650vpd. Approximately 250 to 350vpd would utilise the Easement in Gross across Lots 16/17 to access the intersection at Midgegooroo Ave/Kentucky Ct.

In terms of the traffic volumes expected along the length of new link they would be in the order of:

- 3,350vpd North Lake Road to Easement in Gross crossover
- 1,050vpd Easement in Gross crossover to Lot 55 crossover
- 800vpd Lot 55 crossover to end of new link road

With the expected traffic volumes near North Lake Road (3,350vpd) and size of vehicles accessing the fire station crossover (tenders, appliances, trucks etc), the proposed carriageway widths recommended are:

- North Lake Road to Lot 55 crossover
  - 7.2m wide two-way pavement with 5.0m verges either side in a 17.2m wide road reserve (as per an Access Street C in Liveable Neighbourhoods)

See Figure 5.1 below.

**Figure 5.1: North Lake Rd to Lot 55 Crossover Cross-section**

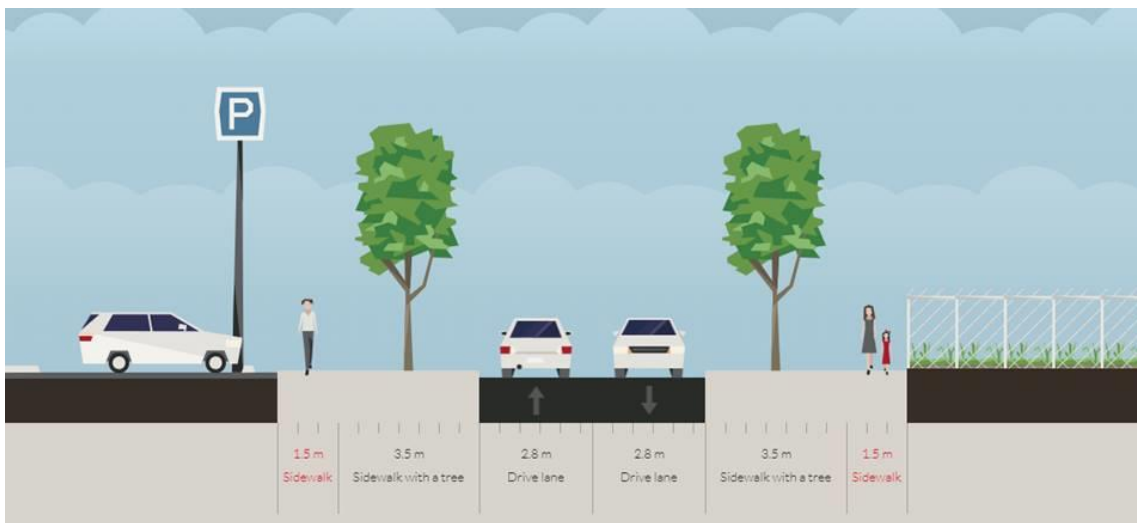


As traffic volumes decrease north of the fire station access and type of vehicles become more small private motor vehicle the proposed crossover carriageway widths recommended are:

- Lot 55 crossover to end of road
  - 5.5m wide two-way pavement with 5.0m verges either side in a 15.5m wide road reserve (as per an Access Street D in Liveable Neighbourhoods). This could be further reduced by 1.0m along the POS frontage, subject to servicing requirements.

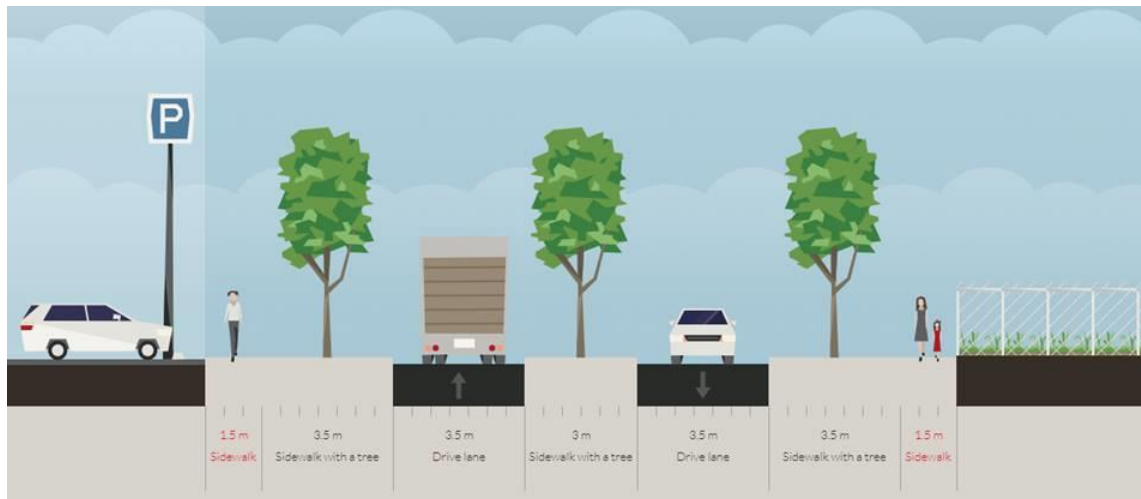
See Figure 5.2 below.

**Figure 5.2: Lot 55 Crossover to end of New Link Cross-section**



The original technical note in Sections 1 to 4 above, had assumed that a boulevard treatment would be required and allowed a 3.0m median along its entire length (North Lake Road to the end of the road), with 3.5m wide carriageways and 5.0m wide verges in a 20.0m wide road reservation, see Figure 5.3 below.

**Figure 5.3: Original New Link Cross-section**



## 6. Summary & Conclusions

### 6.1 Muriel Court Boulevard

- Compared to the original traffic impact assessment, the proposed 75% yield for the currently proposed structure plan layout will generate traffic flows of a similar quantum.
- Intersections are generally proposed to be left-in/left-out for Muriel Court with the exception of 3 or 4 locations where full movement are proposed.
- These intersections are anticipated to operate satisfactorily as proposed.
- The median is recommended to be widened from 4.4m to 4.8m to facilitate U-turns where possible.

### 6.2 New Link to North Lake Road

- This road is expected to carry approximately 800 vpd near its northern end to 3,800 vpd near North Lake Road.
- The proposed North Lake Road/Link Road intersection is expected to operate satisfactorily with the anticipated North Lake Road traffic flows that include the new bridge over the Kwinana Freeway.
- Traffic signals are not recommended at the North Lake Road/Link Road intersection as this may encourage this new link to be used as a rat-run for structure plan traffic to avoid the signalised intersection at North Lake Road /Kentucky Court.
- Notwithstanding the above, LATM treatments are recommended at the northern end of the new link road near the public open space to discourage structure plan traffic from using this road. Also, an access/intersection strategy for Kentucky Court, similar to Muriel Court, is further recommended to ensure structure plan traffic is generally contained to the Muriel Court/Kentucky Court boulevard.

### 6.3 Modified Lot 55 Access for Fire Station

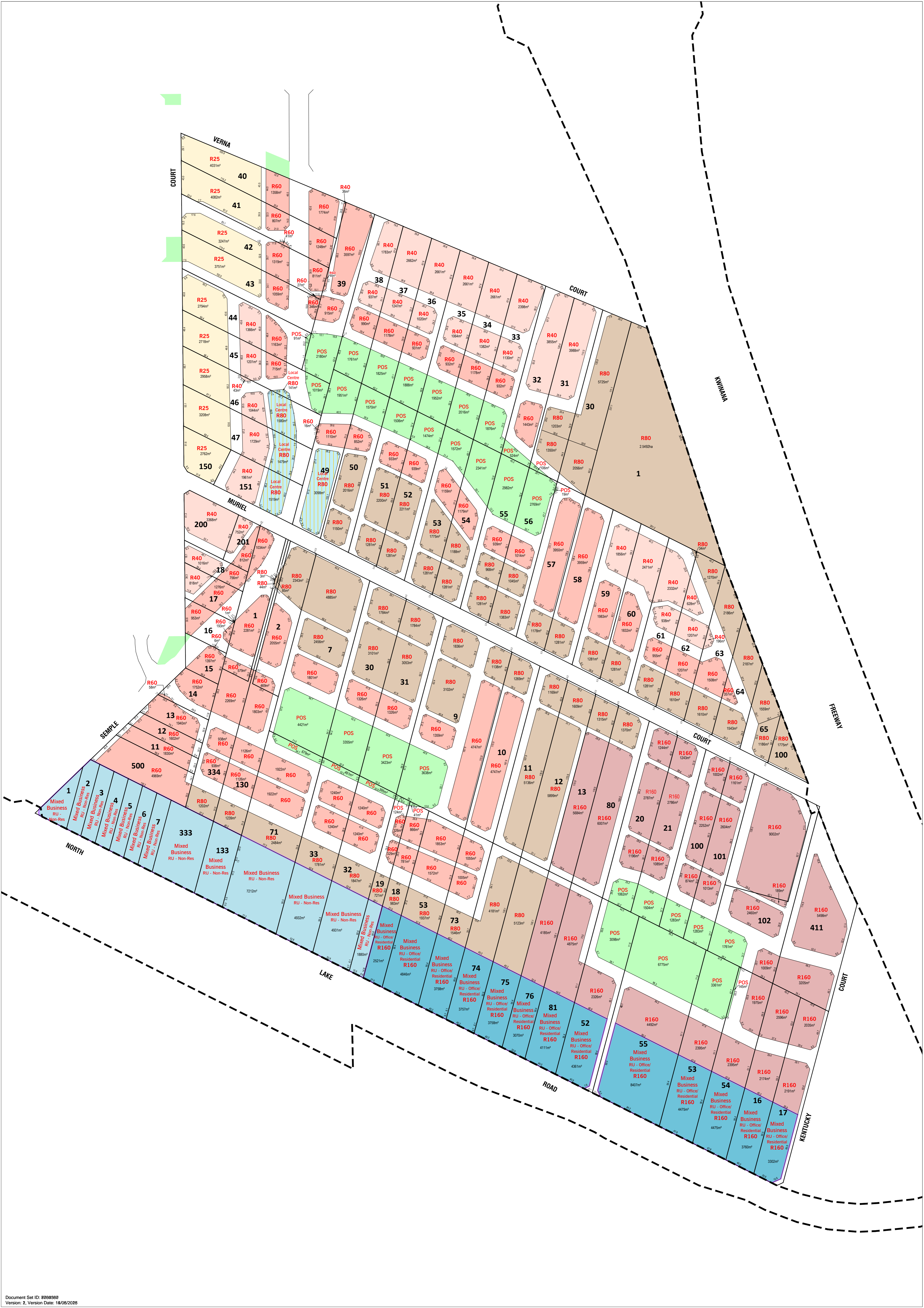
- Traffic volumes are expected to be approximately 3,350vpd near North Lake Road with approximately 2,300vpd coming from the Easement in Gross crossover on the western side of the new link.
- The left-in/left-out on Lots 53/54 is expected to cater for approximately 550 to 650 vpd.
- A road reserve of 17.2m would be possible near North Lake Road and this decreasing to 15.5m north of the Lot 55 crossover.

### 6.4 Conclusion

On the basis of the above, and the discussion provided in this report, the transport characteristics of the proposed amended structure plan are considered acceptable.

# Attachment 1

DRAFT



COURT

VERNA

COURT

KWINDA

FREEWAY

MURIEL

SEMPL

NORTH

LAKE

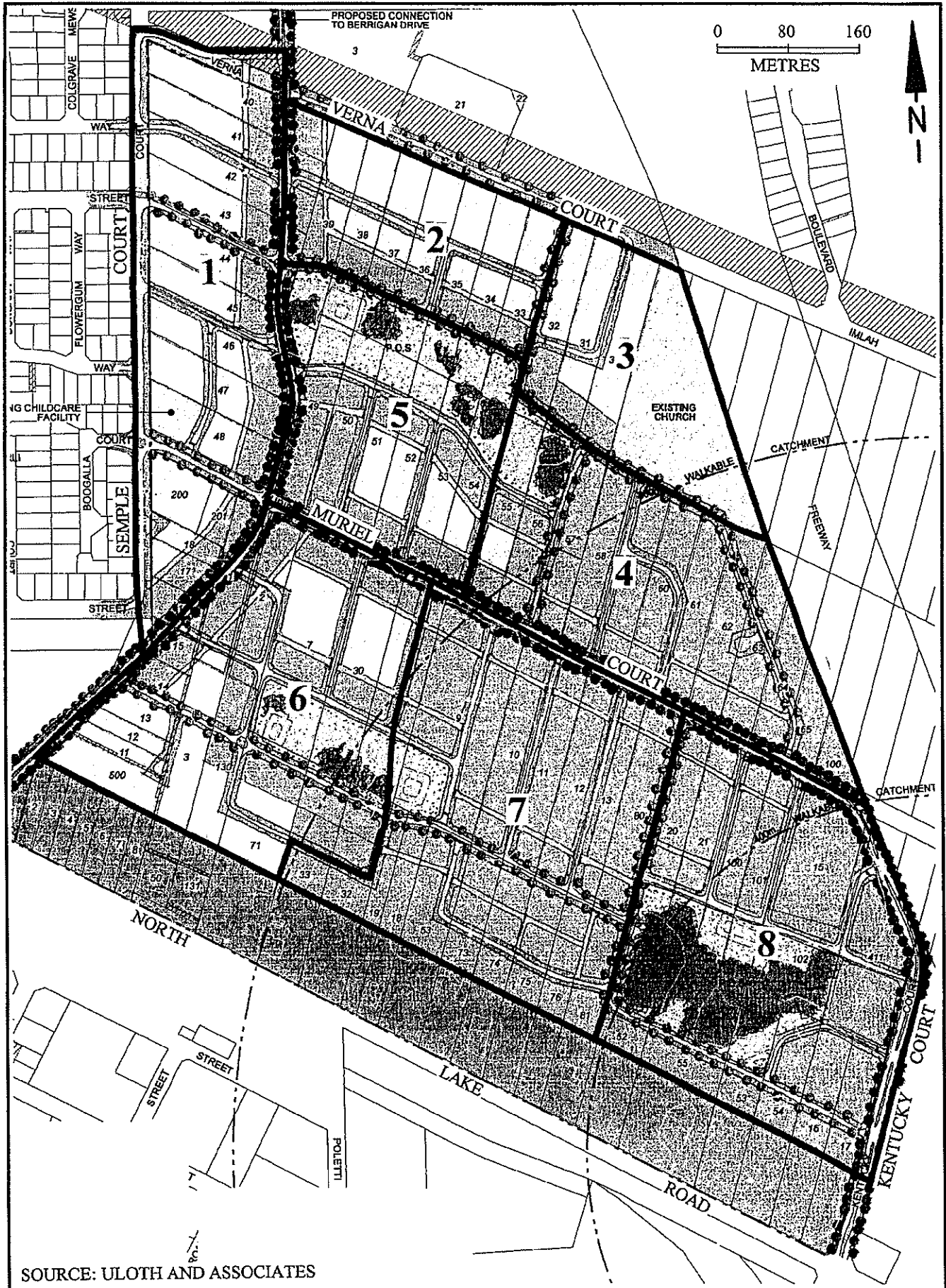
ROAD

KENTUCKY

COURT

# Attachment 2

DRAFT



SOURCE: ULOTH AND ASSOCIATES

**Future Traffic Zones**  
 PROPOSED MURIEL COURT STRUCTURE PLAN

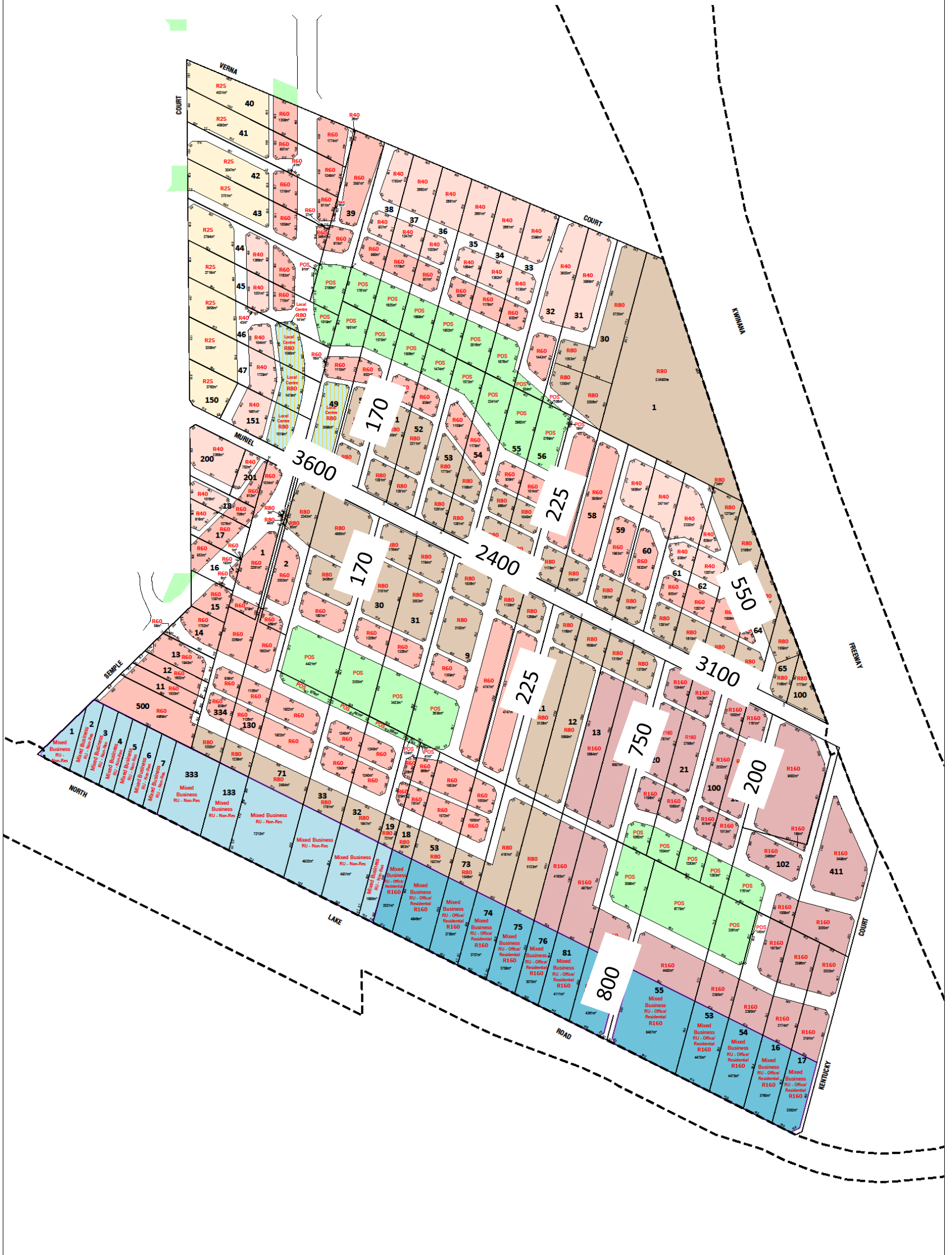
FIG.  
 A.9

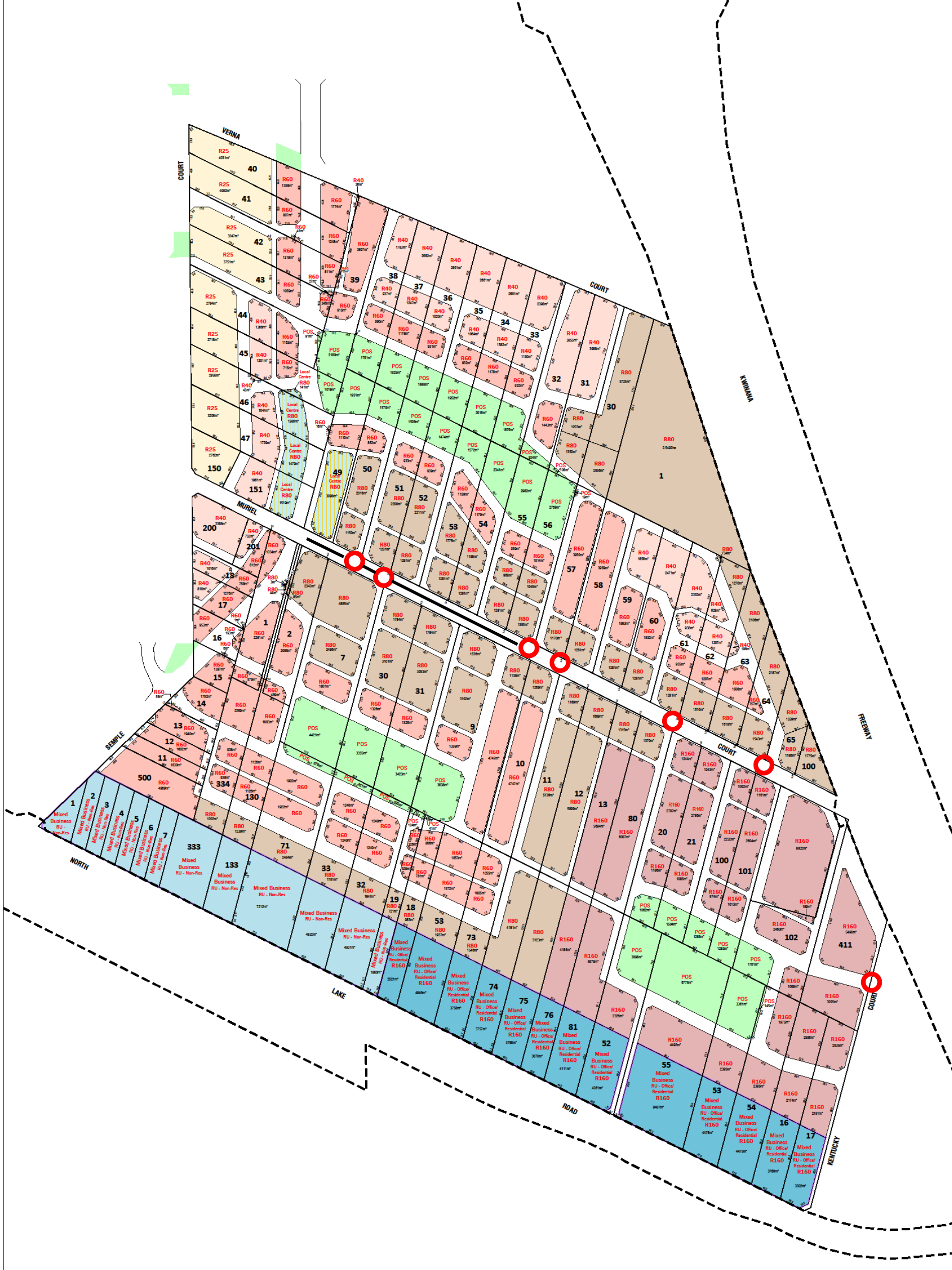


# Attachment 3

DRAFT

# FUTURE DEVELOPMENT TRAFFIC FLOWS PROPOSED MURIEL COURT STRUCTURE PLAN WITH NEW PROPOSED YIELDS





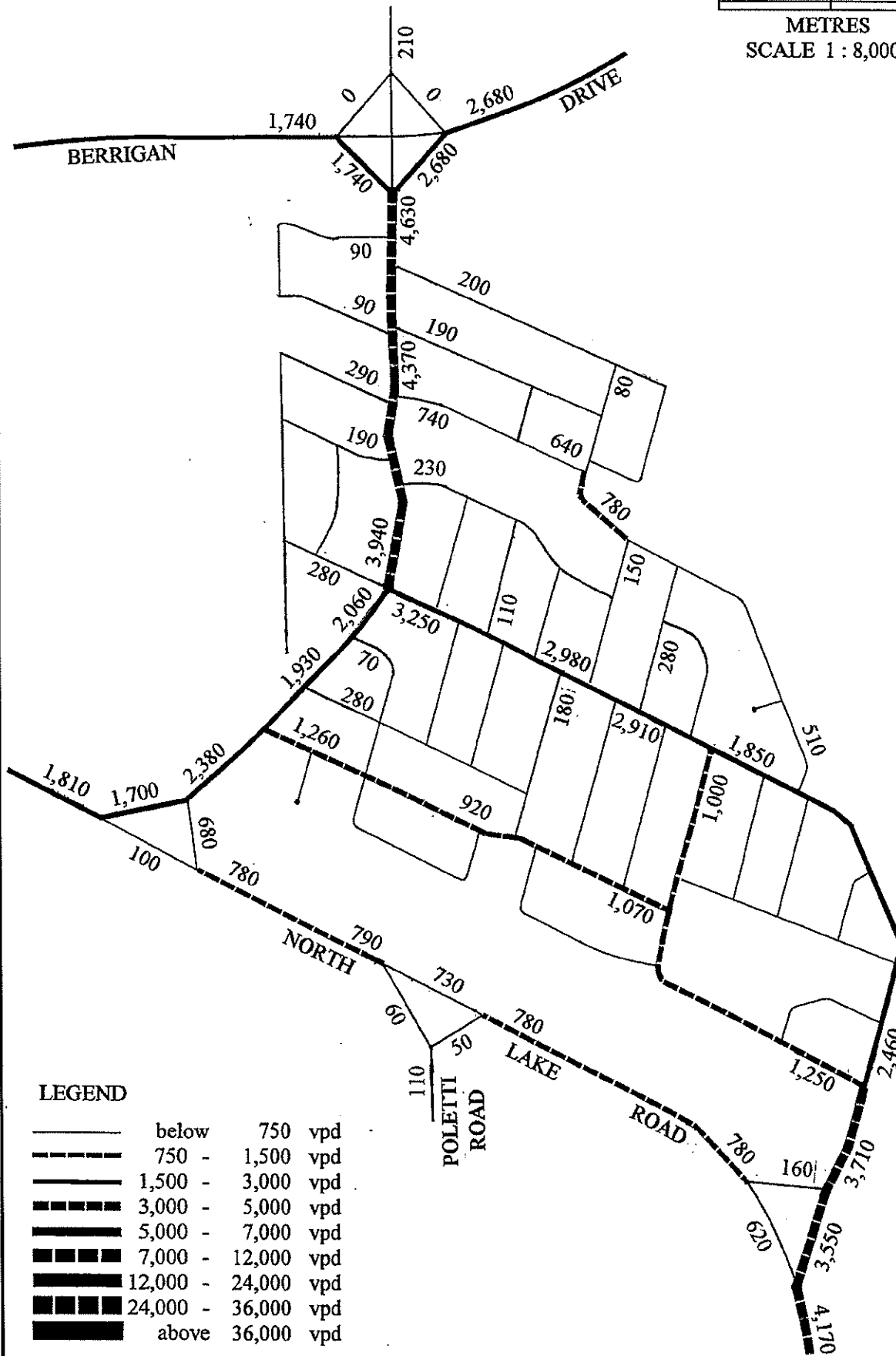
# Attachment 4

DRAFT

SOURCE: ULOTH AND ASSOCIATES

0 160 320

METRES  
SCALE 1 : 8,000

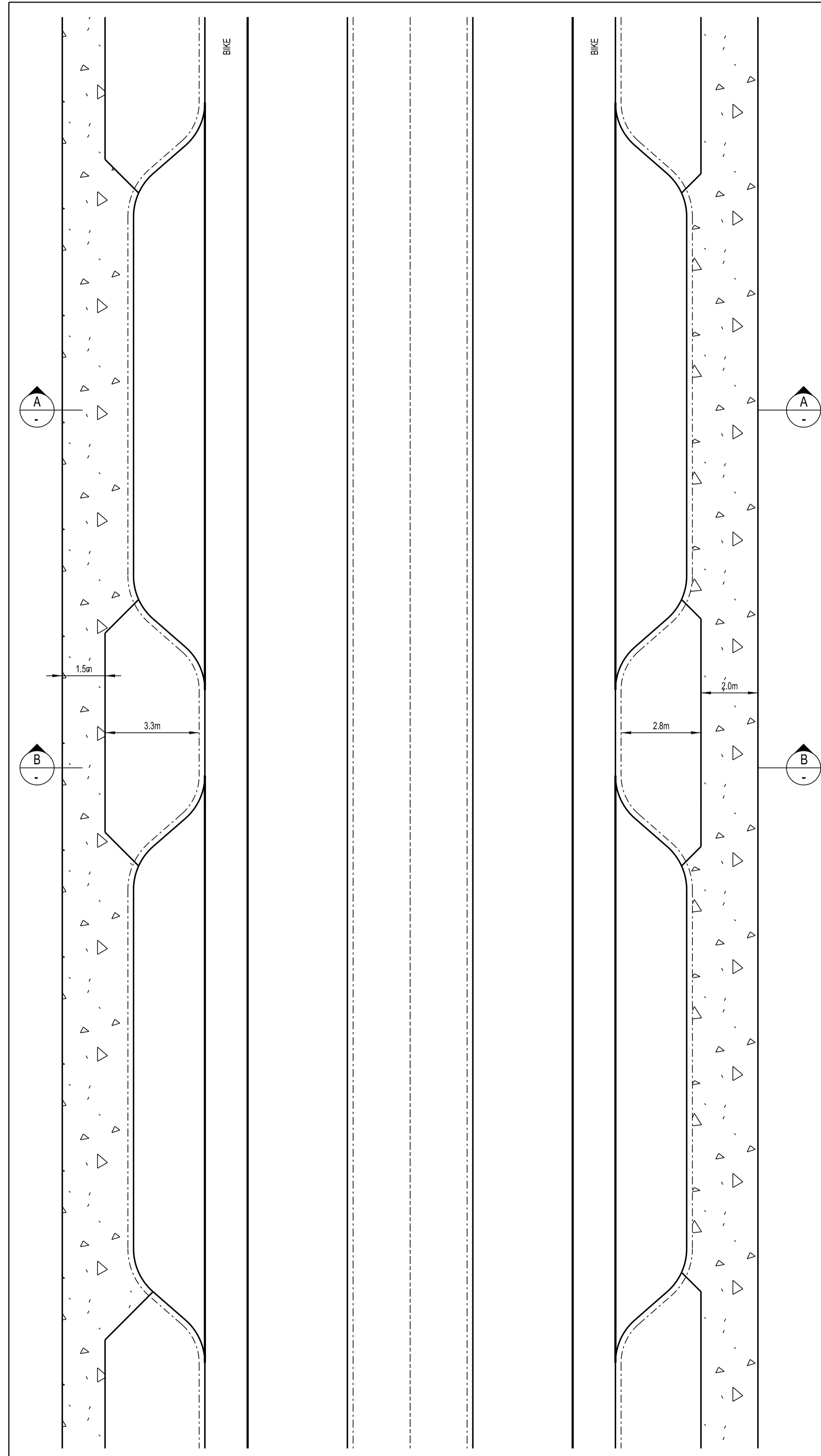


**Future Development Traffic Flows**  
PROPOSED MURIEL COURT STRUCTURE PLAN

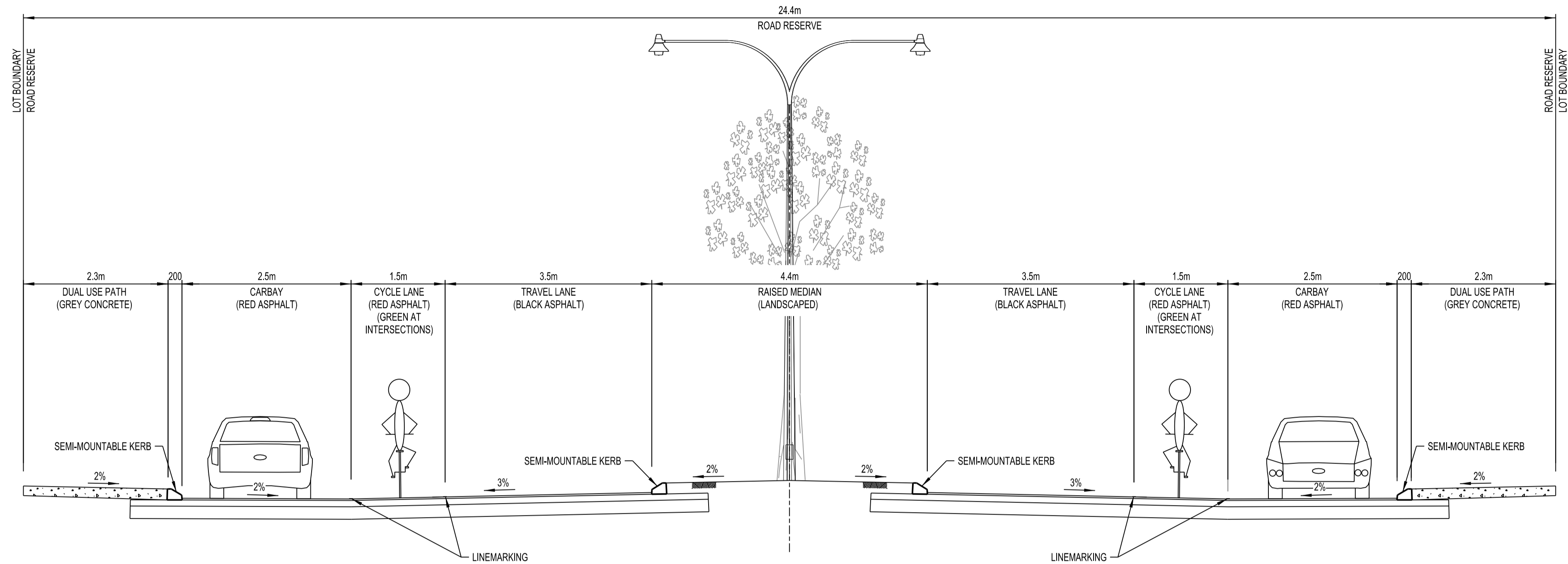
FIG. A.10

# Attachment 5

DRAFT

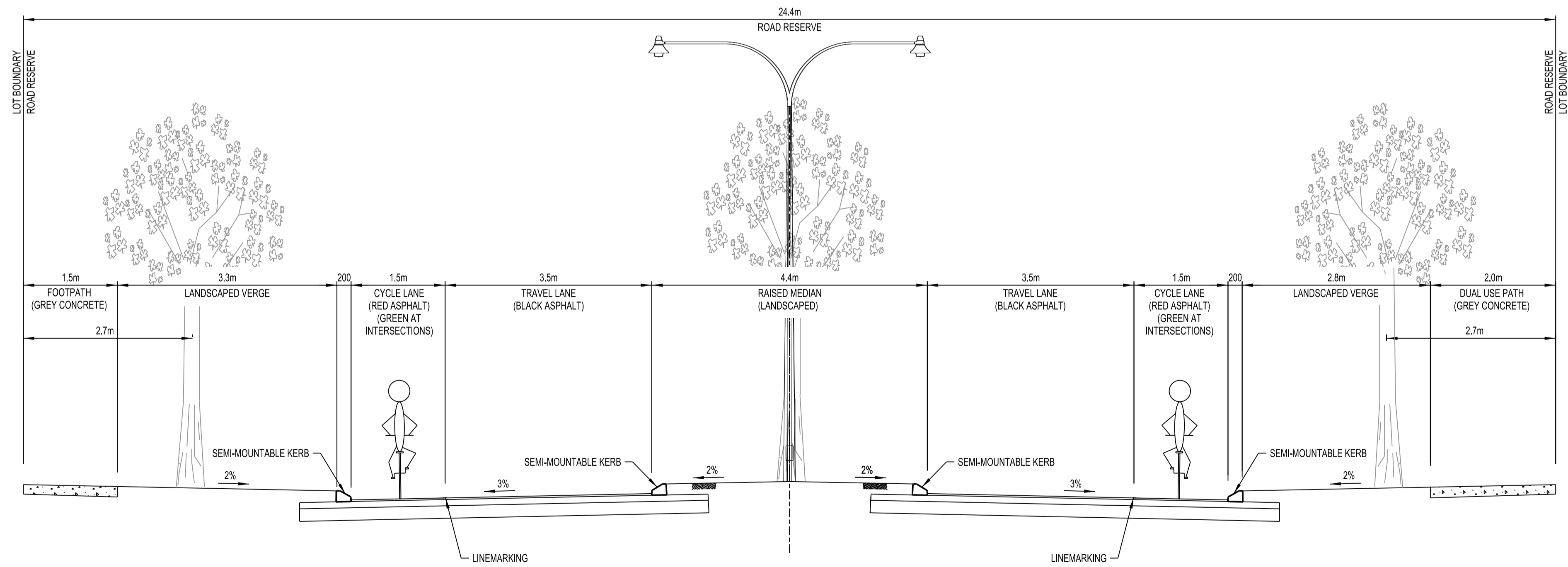


**MURIEL COURT PLAN**  
N.T.S.



**MURIEL COURT (CROWN)**  
N.T.S.

SECTION A-A  
SCALE N.T.S.



**MURIEL COURT (CROWN)**  
N.T.S.

SECTION B-B  
SCALE N.T.S.

REV	DESCRIPTION	DRW	DGN	VER	APPROVED	DATE
A	ORIGINAL ISSUE					

--	--	--

0 5 10 25  
A1 @ 1:500 (A3 @ 1:1000)

155969	CO-ORD	AHD
WAPC No.	COORDINATES	DATUM

CLIENT  
**MURIEL NUMBER 1 PARTNERSHIP**

PROJECT  
**MURIEL COURT - VARIOUS LOTS**

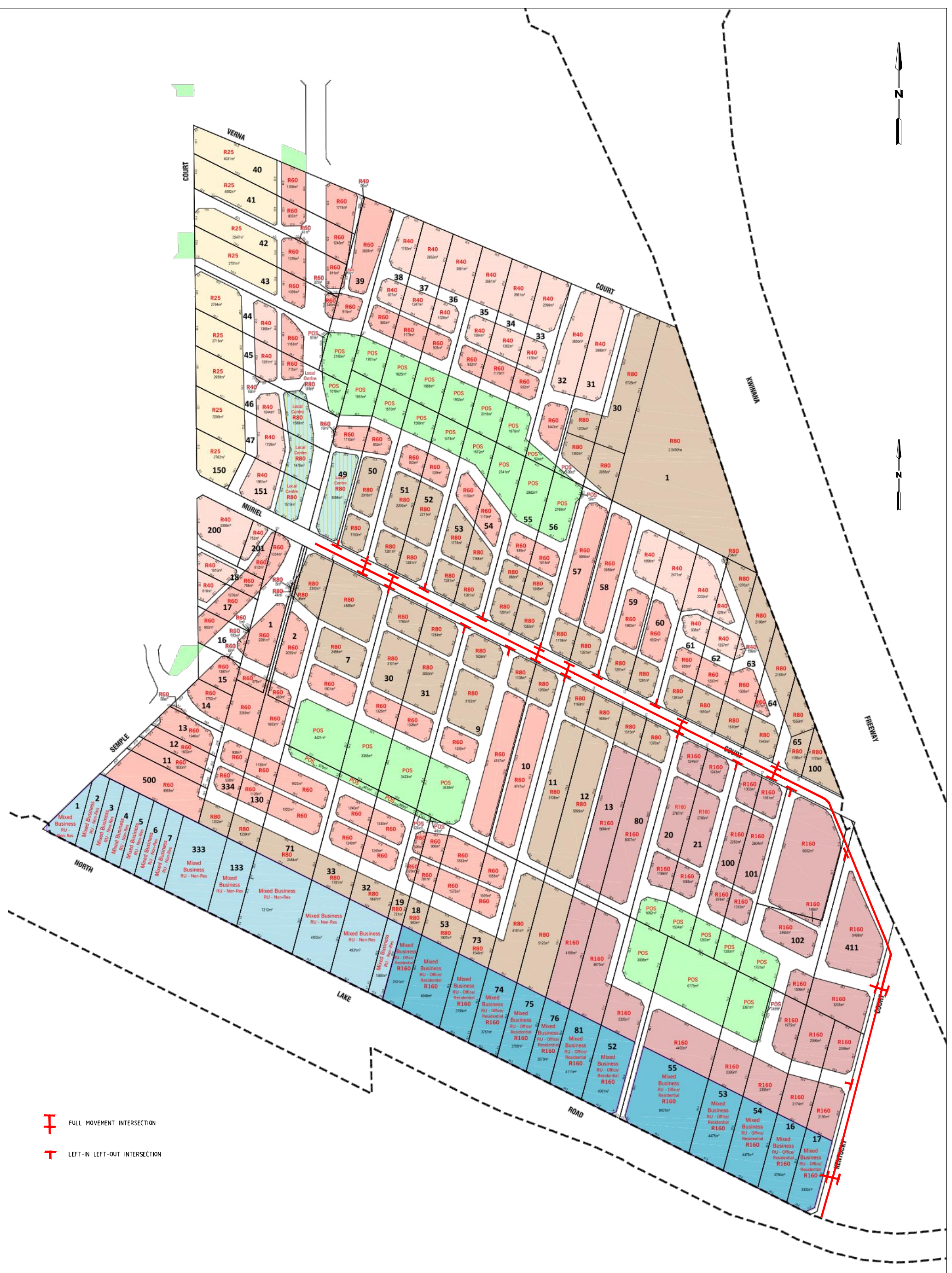
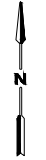
TITLE  
**ROAD CROSS SECTION - SHEET 3**



36096-1	CI-403-RD-C3	A
PROJECT No.	DRAWING No.	REVISION

# Attachment 6

DRAFT





 FULL MOVEMENT INTERSECTION  
 LEFT-IN LEFT-OUT INTERSECTION

**PRELIMINARY PLAN**  
 FOR DISCUSSION PURPOSES ONLY  
 SUBJECT TO CHANGE WITHOUT  
 NOTIFICATION

PLOTTED BY SIMON PEDRETTI ON 07/05/2018 AT 14:08  
 W:\14-9950-14-9950\W14-9950-SK01-P1.DWG COCKBURN CENTRAL\CAD\W14-9950-SK01-P1.DWG



Melbourne 03 9851 9600  
 Sydney 02 8448 1800  
 Brisbane 07 3113 5000  
 Canberra 02 6243 9400  
 Adelaide 08 8334 3600  
 Gold Coast 07 5510 4814  
 Townsville 07 4722 2765  
 Perth 08 6169 1000

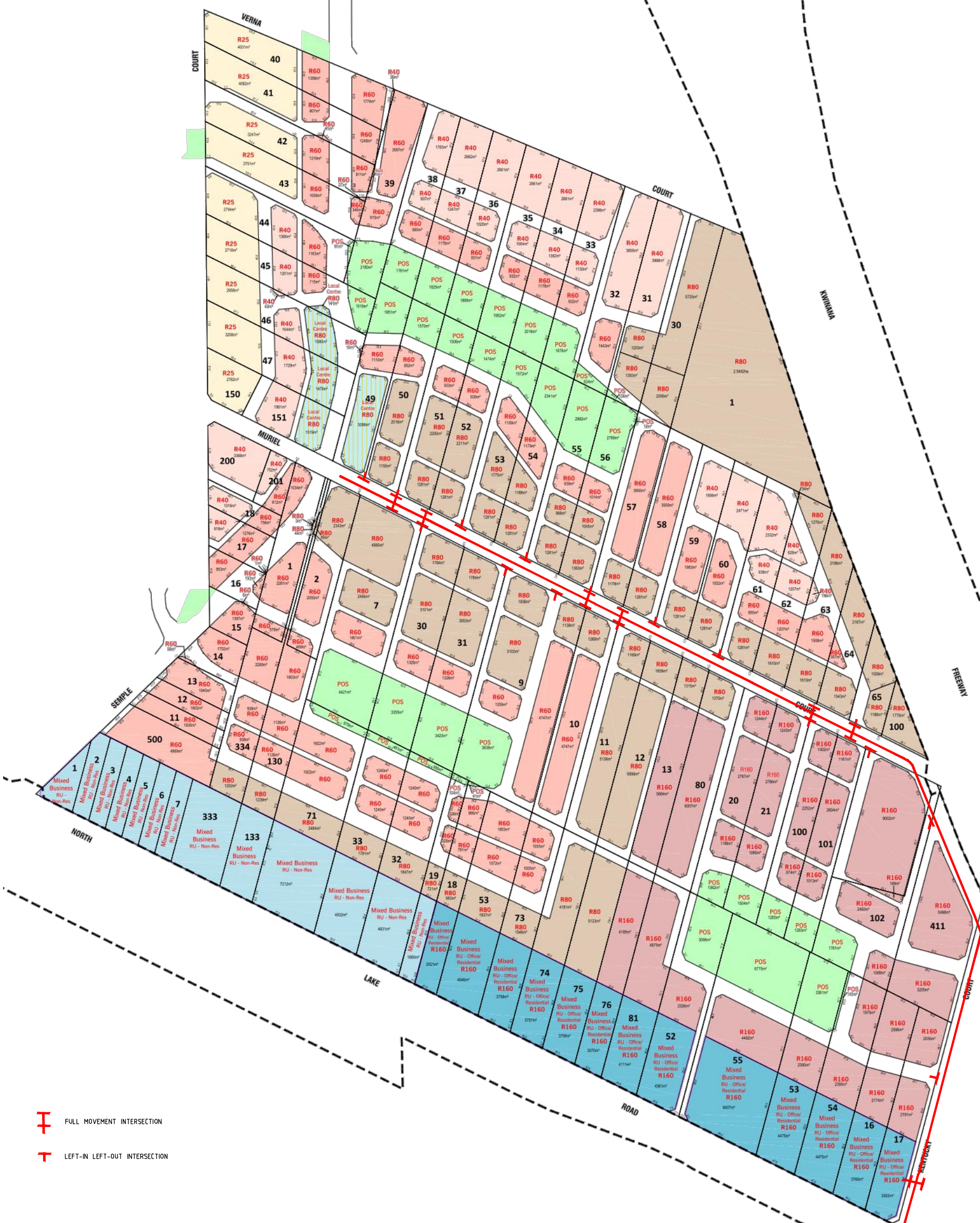
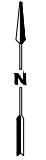
DESIGNED	DESIGN CHECK
APPROVED BY	DATE ISSUED MAY 2018



SCALE A3 - N/A  
 CAD FILE NO.  
 W149950-SK01-P1.DWG

**FUTURE DEVELOPMENT**  
**MURIEL COURT STRUCTURE PLAN**  
**MURIEL COURT INTERSECTIONS RATIONALISATION**  
**OPTION 1**  
 DRAWING NO. W149950-SK01 SHEET 1 OF 4 ISSUE P1

# Attachment 7

DRAFT



 FULL MOVEMENT INTERSECTION  
 LEFT-IN LEFT-OUT INTERSECTION

**PRELIMINARY PLAN**  
 FOR DISCUSSION PURPOSES ONLY  
 SUBJECT TO CHANGE WITHOUT  
 NOTIFICATION

PLOTTED BY SIMON PEDRETTI ON 07/05/2018 AT 14:08  
 W:\149950-14-9950\W149950-SK02-P1.DWG COCKBURN CENTRAL\CAD\W149950-SK02-P1.DWG



Melbourne 03 9851 9600  
 Sydney 02 8448 1800  
 Brisbane 07 3113 5000  
 Canberra 02 6243 9400  
 Adelaide 08 8334 3600  
 Gold Coast 07 5510 4814  
 Townsville 07 4722 2765  
 Perth 08 6169 1000

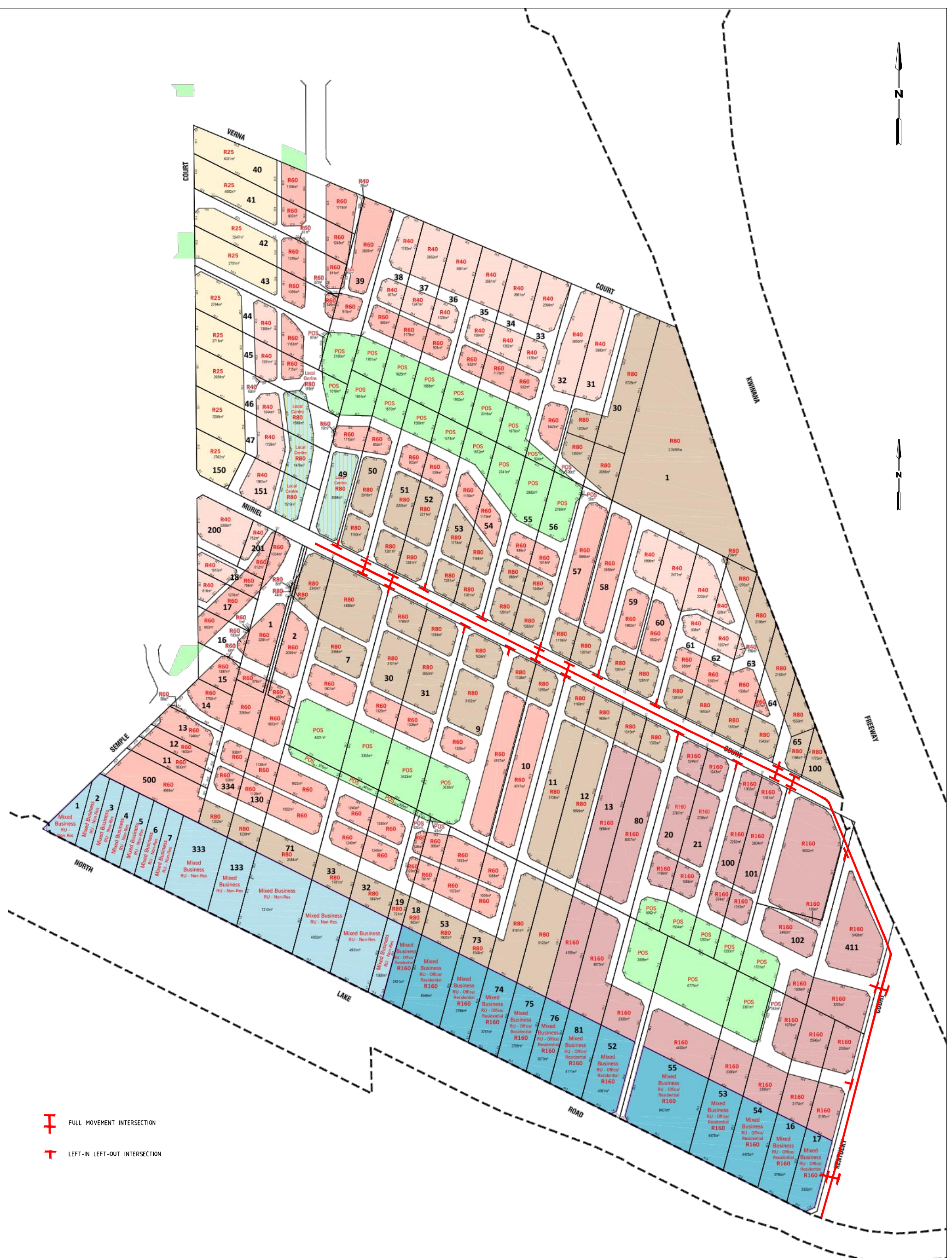
DESIGNED	DESIGN CHECK
APPROVED BY	DATE ISSUED
	MAY 2018



SCALE A3 - N/A  
 CAD FILE NO. W149950-SK02-P1.DWG

**FUTURE DEVELOPMENT**  
**MURIEL COURT STRUCTURE PLAN**  
**MURIEL COURT INTERSECTIONS RATIONALISATION**  
**OPTION 2**  
 DRAWING NO. W149950-SK02 SHEET 2 OF 4 ISSUE P1

# Attachment 8

DRAFT



 FULL MOVEMENT INTERSECTION  
 LEFT-IN LEFT-OUT INTERSECTION

**PRELIMINARY PLAN**  
 FOR DISCUSSION PURPOSES ONLY  
 SUBJECT TO CHANGE WITHOUT  
 NOTIFICATION

PLOTTED BY SIMON PEDRETTI ON 07/05/2018 AT 14:08  
 W:\149950-14-9950\W149950-COCKBURN-CENTRAL\CAD\W149950-SK03-P1.DWG



Melbourne 03 9851 9600  
 Sydney 02 8448 1800  
 Brisbane 07 3113 5000  
 Canberra 02 6243 9400  
 Adelaide 08 8334 3600  
 Gold Coast 07 5510 4814  
 Townsville 07 4722 2765  
 Perth 08 6169 1000

DESIGNED	DESIGN CHECK
APPROVED BY	DATE ISSUED MAY 2018

SCALE A3 - N/A  
 CAD FILE NO.  
 W149950-SK03-P1.DWG

**FUTURE DEVELOPMENT**  
**MURIEL COURT STRUCTURE PLAN**  
**MURIEL COURT INTERSECTIONS RATIONALISATION**  
**OPTION 3**  
 DRAWING NO. W149950-SK03 SHEET 3 OF 4 ISSUE P1

# Attachment 9

DRAFT

# MURIEL COURT (NIB)



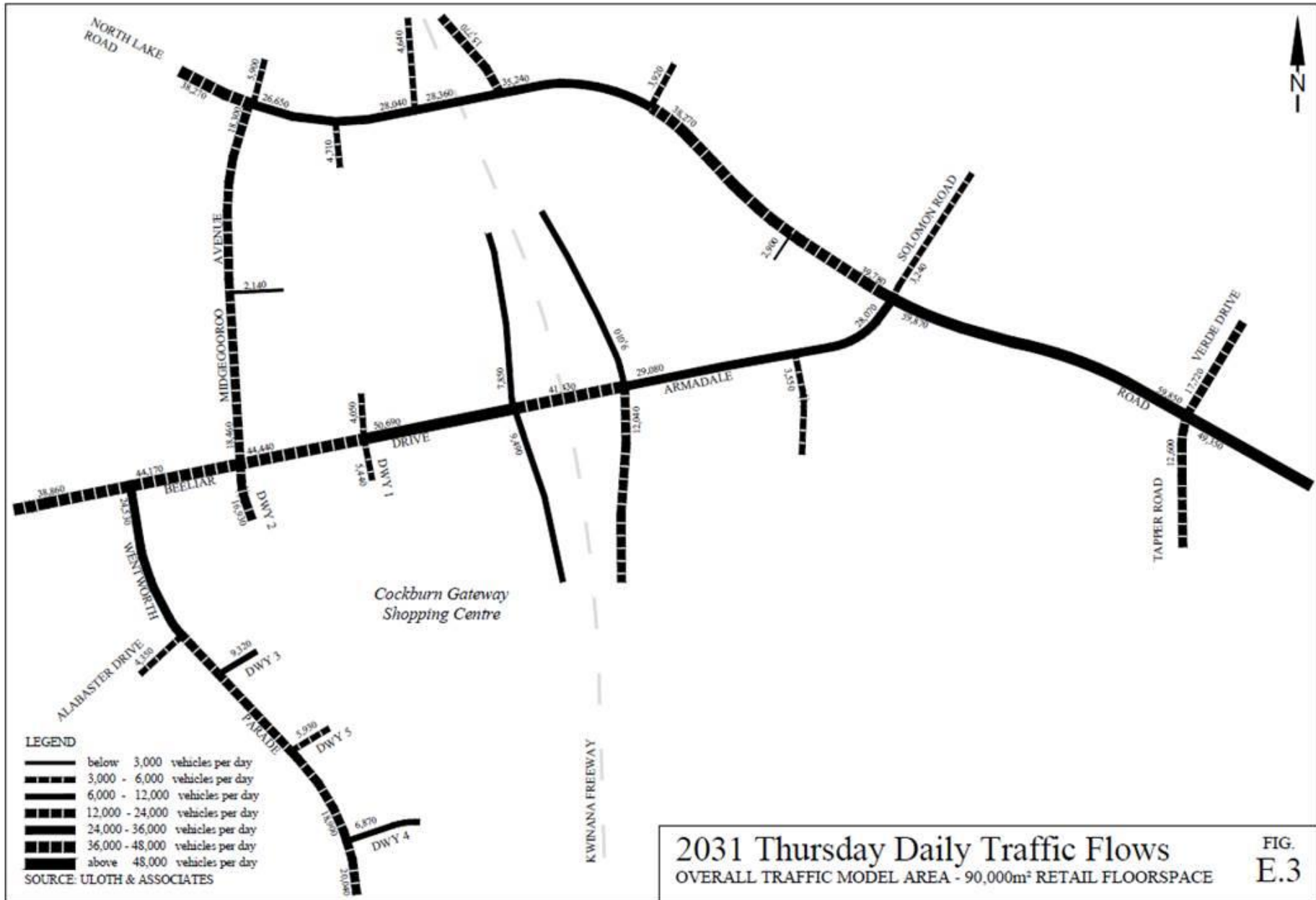
# MURIEL COURT (PARKING)





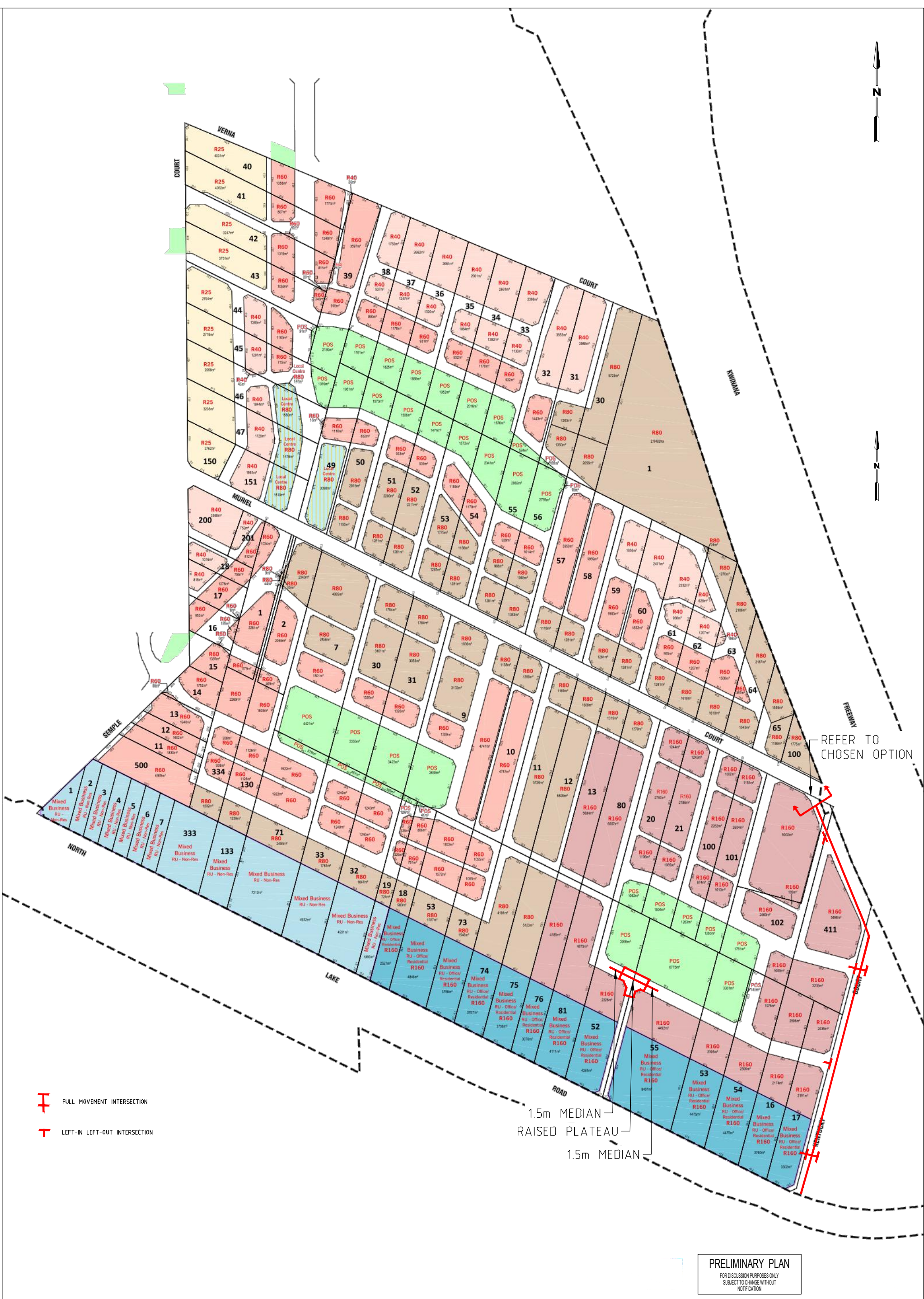
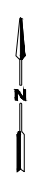
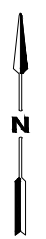
# Attachment 10

DRAFT





# Attachment 11

DRAFT



REFER TO CHOSEN OPTION

-  FULL MOVEMENT INTERSECTION
-  LEFT-IN LEFT-OUT INTERSECTION

1.5m MEDIAN  
RAISED PLATEAU  
1.5m MEDIAN

PRELIMINARY PLAN  
FOR DISCUSSION PURPOSES ONLY  
SUBJECT TO CHANGE WITHOUT  
NOTIFICATION

PLOTTED BY SIMON PEDRETTI ON 07/05/2018 AT 14:08



Melbourne 03 9851 9600  
Sydney 02 8448 1800  
Brisbane 07 3113 5000  
Canberra 02 6243 9400  
Adelaide 08 8334 3600  
Gold Coast 07 5510 4814  
Townsville 07 4722 2765  
Perth 08 6169 1000

DESIGNED  
DESIGN CHECK  
APPROVED BY  
DATE ISSUED  
MAY 2018

SCALE  
A3 - N/A  
CAD FILE NO.  
W149950-SK04-P1.DWG

FUTURE DEVELOPMENT  
MURIEL COURT STRUCTURE PLAN  
KENTUCKY COURT ACCESS STRATEGY  
DRAWING NO. W149950-SK04  
SHEET 4 OF 4  
ISSUE P1

# Attachment 12

DRAFT

# NEW LINK

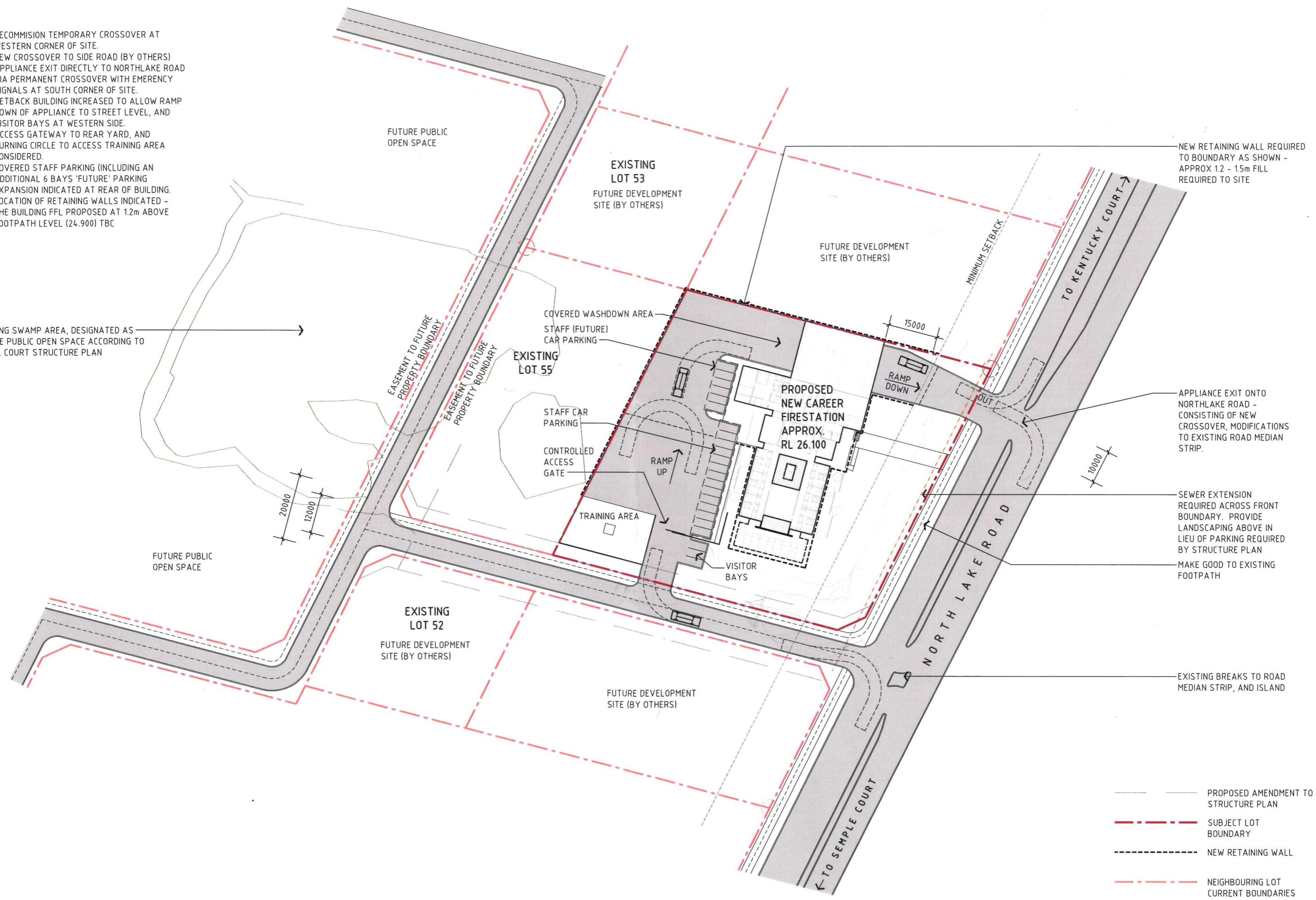


# Attachment 13

DRAFT

- NOTE:
- DECOMMISSION TEMPORARY CROSSOVER AT WESTERN CORNER OF SITE.
  - NEW CROSSOVER TO SIDE ROAD (BY OTHERS)
  - APPLIANCE EXIT DIRECTLY TO NORTHLAKE ROAD VIA PERMANENT CROSSOVER WITH EMERGENCY SIGNALS AT SOUTH CORNER OF SITE.
  - SETBACK BUILDING INCREASED TO ALLOW RAMP DOWN OF APPLIANCE TO STREET LEVEL, AND VISITOR BAYS AT WESTERN SIDE.
  - ACCESS GATEWAY TO REAR YARD, AND TURNING CIRCLE TO ACCESS TRAINING AREA CONSIDERED.
  - COVERED STAFF PARKING (INCLUDING AN ADDITIONAL 6 BAYS 'FUTURE' PARKING EXPANSION INDICATED AT REAR OF BUILDING.
  - LOCATION OF RETAINING WALLS INDICATED - THE BUILDING FFL PROPOSED AT 1.2m ABOVE FOOTPATH LEVEL (24.900) TBC

EXISTING SWAMP AREA, DESIGNATED AS FUTURE PUBLIC OPEN SPACE ACCORDING TO MURIEL COURT STRUCTURE PLAN



NEW RETAINING WALL REQUIRED TO BOUNDARY AS SHOWN - APPROX 1.2 - 1.5m FILL REQUIRED TO SITE

APPLIANCE EXIT ONTO NORTHLAKE ROAD - CONSISTING OF NEW CROSSOVER, MODIFICATIONS TO EXISTING ROAD MEDIAN STRIP.

SEWER EXTENSION REQUIRED ACROSS FRONT BOUNDARY. PROVIDE LANDSCAPING ABOVE IN LIEU OF PARKING REQUIRED BY STRUCTURE PLAN

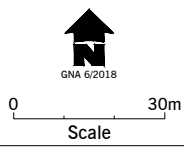
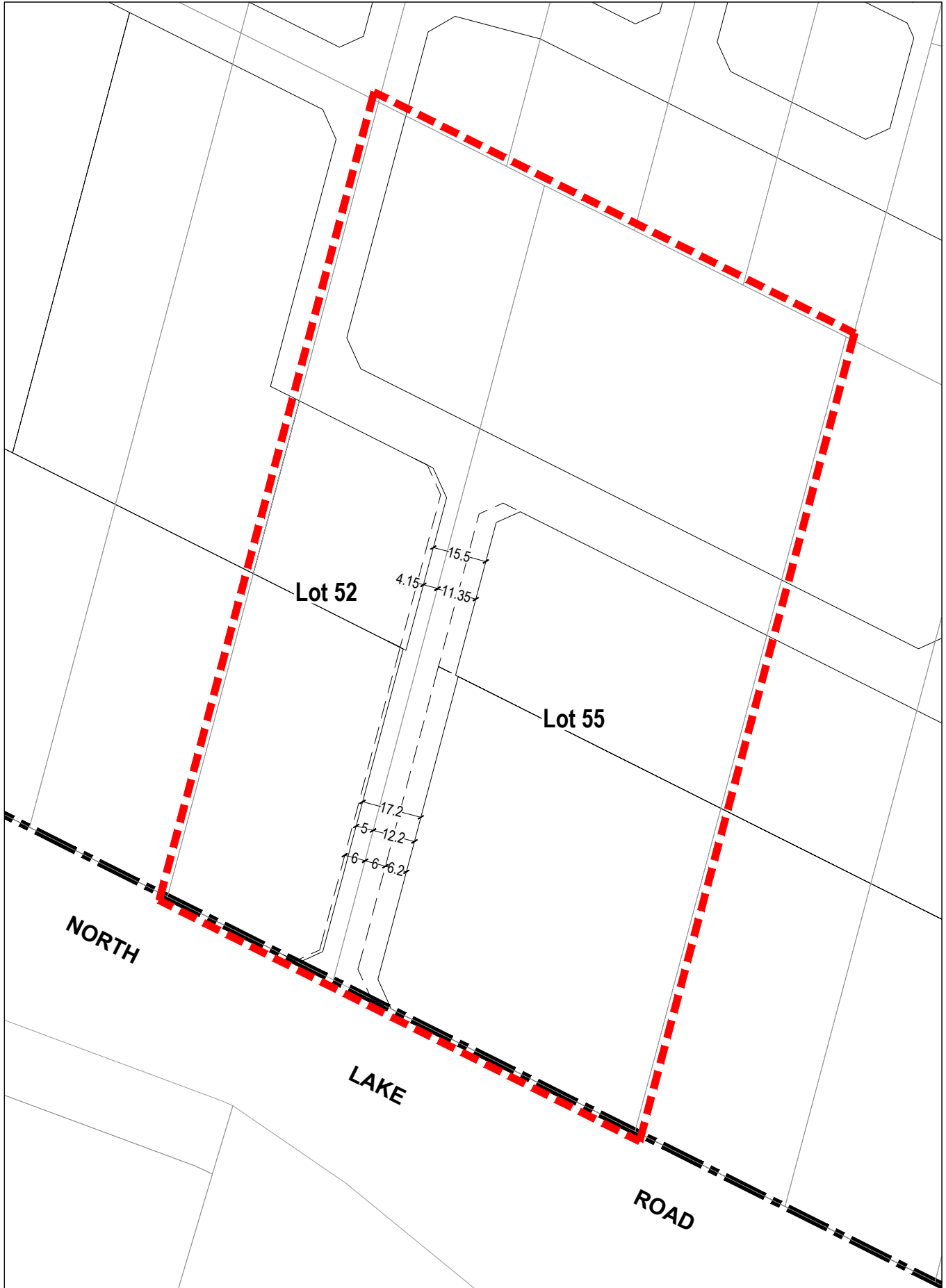
MAKE GOOD TO EXISTING FOOTPATH

EXISTING BREAKS TO ROAD MEDIAN STRIP, AND ISLAND

- PROPOSED AMENDMENT TO STRUCTURE PLAN
- - - SUBJECT LOT BOUNDARY
- - - NEW RETAINING WALL
- - - NEIGHBOURING LOT CURRENT BOUNDARIES

**COCKBURN CAREER FIRE STATION**  
**LOT 55 NORTH LAKE ROAD - SITE PLAN WITH IMPLEMENTATION OF STRUCTURE PLAN**





**Proposed Amendment  
Muriel Court Structure Plan  
Lots 52,55 North Lake Rd, Cockburn Central**