Morton East - Stage 1
Section 96A Application
Transport Impact Assessment
Truganina PSP Area

transportation planning, design and delivery

12M2045000 30/10/12

GTAconsultants

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Truganina PSP Area

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Issue	Date	Description	Prepared By	Checked By	Approved By
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1. Introduction

1.1 Background

A planning permit is currently being sought for a proposed residential subdivision known as Morton East on land located to the immediate south east of the Derrimut Road/Dohertys Road intersection in Tarneit under a Section 96a Application. The subject site (Section 96a Application) incorporates a total of 297 residential lots.

The Growth Areas Authority (GAA) is currently in the pre-planning stage of preparing a Precinct Structure Plan (PSP) for the broader area (PSP 90 – Truganina) which will form an Amendment in the Wyndham Planning Scheme.

GTA Consultants was commissioned by Dacland Management Australia in October 2012 to undertake an Access and Mobility Assessment of the proposal in line with the requirements of Clause 56 of the Wyndham Planning Scheme.

1.2 Purpose of this Report

This report sets out an assessment of the traffic and transport implications of the proposed development, including consideration of the following:

i existing street network and traffic conditions surrounding the site
ii accessibility of the site by public transport and other non-vehicular modes of travel
iii road hierarchy within the subdivision
iv proposed access arrangements for the subdivision
v impact of the development on the surrounding road network.

1.3 References

In preparing this report, a number of references have been made, including the following:

- Wyndham Planning Scheme
- PSP Notes "Our Roads: Connecting People", prepared by Growth Areas Authority (GAA)
- Australian Standard / New Zealand Standard, Parking Facilities (AS2890)
- plans for the proposed development prepared by Breese Pitt Dixon Pty Ltd and Aecom
- various technical data as referenced in this report
- an inspection of the site and its surrounds
- other documents as nominated.

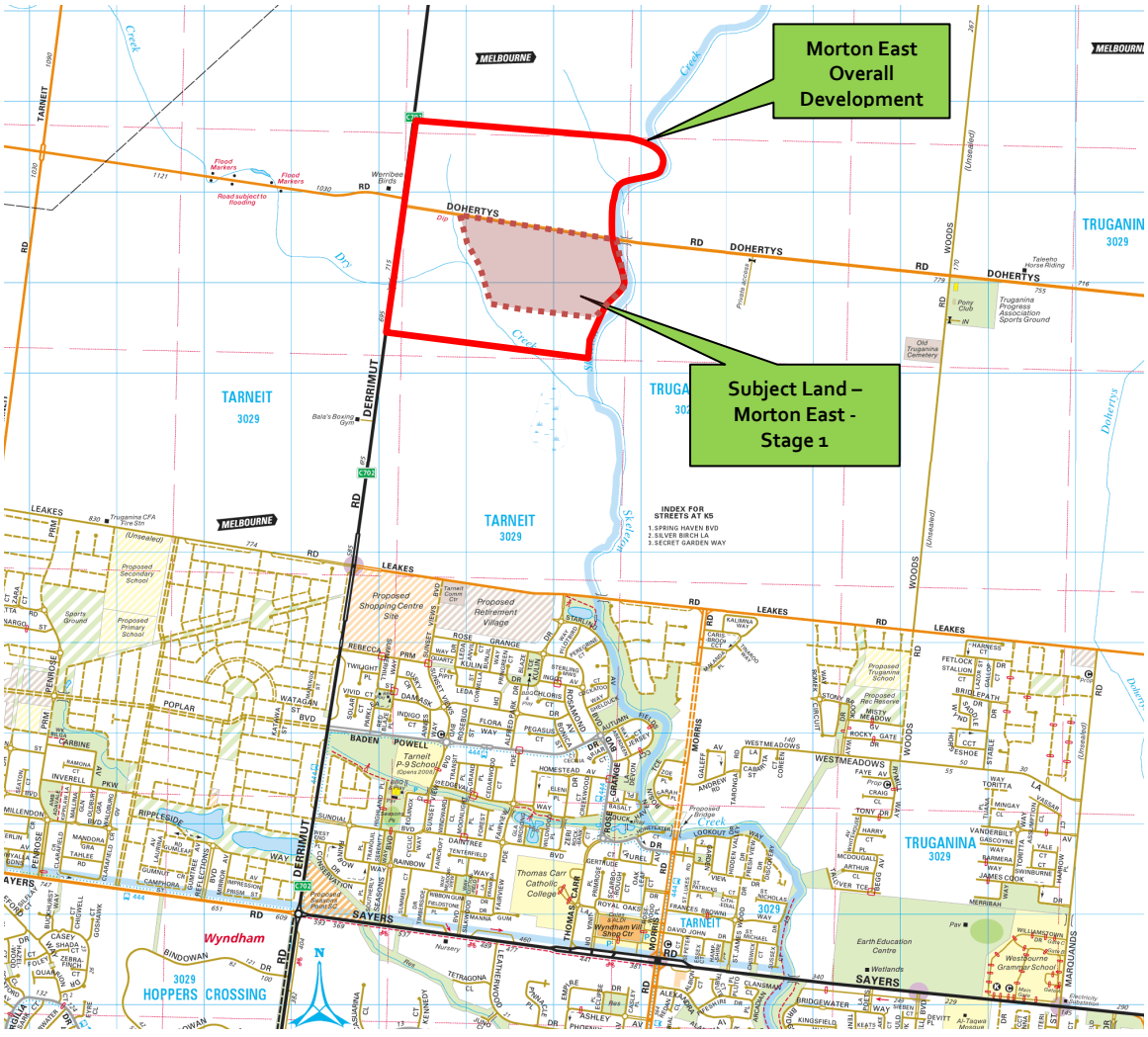
2. Existing Conditions

2.1 Subject Site

The subject site is located south east of the Derrimut Road/Dohertys Road intersection in Tarneit. The site of approximately 43.1ha has a frontage to Dohertys Road and is located within an Urban Growth Zone. The site is currently unoccupied and the surrounding properties include a mixture of farming and residential land uses.

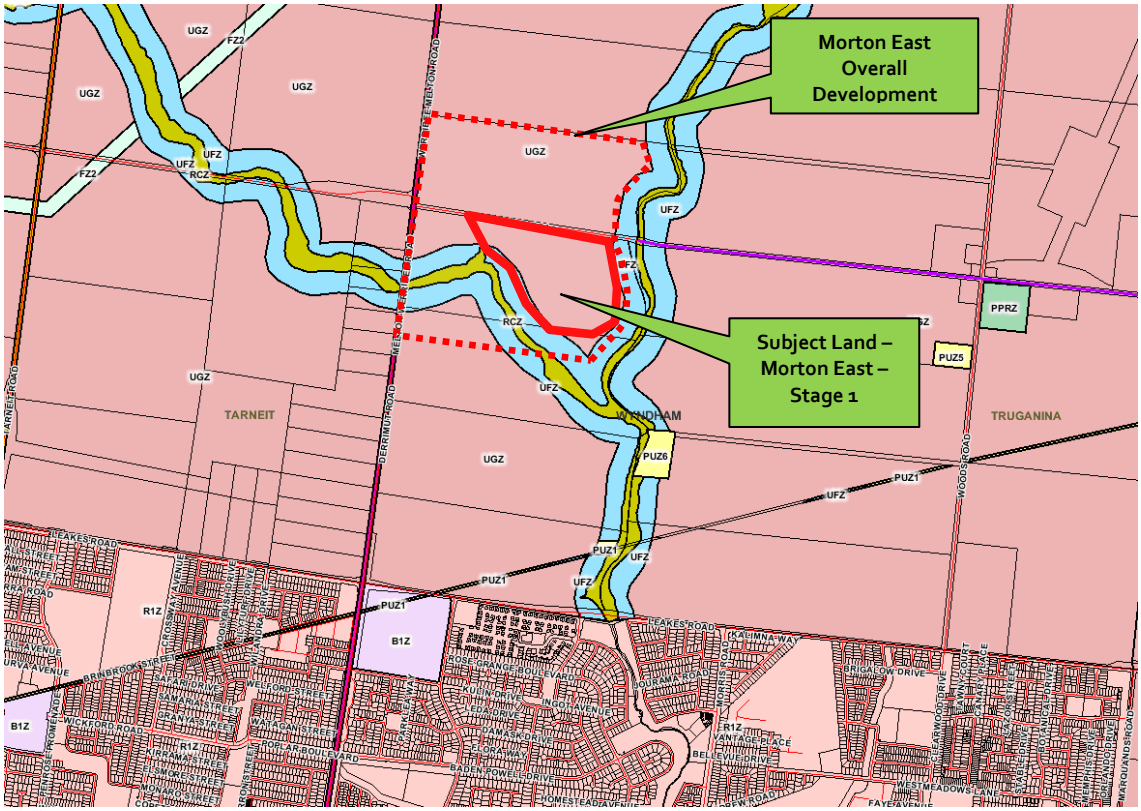
The location of the subject site and the surrounding environs is shown in Figure 2.1 and the land zoning is shown in Figure 2.2.

Figure 2.1: Subject Site and its Environs



(Reproduced with Permission from Melway Publishing Pty Ltd)

Figure 2.2: Land Zoning Map



2.2 Road Network

2.2.1 Adjoining Roads

Derrimut Road

Derrimut Road functions as a primary arterial road (VicRoads controlled). It is a two-way road aligned in a north-south direction and is configured with a two lane (one lane in each direction), 6.5 metre wide carriageway set within a 20.0 metre wide road reserve (approximate).

Derrimut Road is shown in Figure 2.3 and Figure 2.4.

Figure 2.3: Derrimut Road (Looking north)

Figure 2.4: Derrimut Road (Looking south)

Dohertys Road

Dohertys Road functions as a major local road (Council controlled). It is a two-way road aligned in an east-west direction and is configured with a two lane (one lane in each direction), 7.0 metre wide carriageway set within a 25.0 metre wide road reserve (approximate).

Dohertys Road is shown in Figure 2.5 and Figure 2.6.

Figure 2.5: Dohertys Road (Looking east)

Figure 2.6: Dohertys Road (Looking west)

2.2.2 Surrounding Intersections

The key intersection in the vicinity of the site is the Derrimut Road/ Dohertys Road intersection which is currently an unsignalised staggered X-intersection.

2.2.3 Traffic Volumes

GTA Consultants undertook traffic movement counts at the intersection of Derrimut Road and Dohertys Road on Thursday 25 October 2012 during the following peak periods:

- 7:00am - 9:00am
- 4:00pm - 6:00pm.

The AM and PM peak hour traffic volumes are shown in Figure 2.7 and Figure 2.8, respectively.

Figure 2.7: Existing AM Peak Hour Traffic Volumes

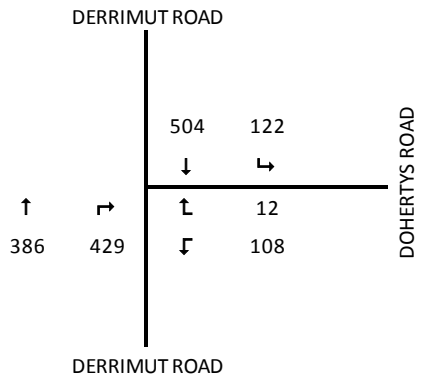
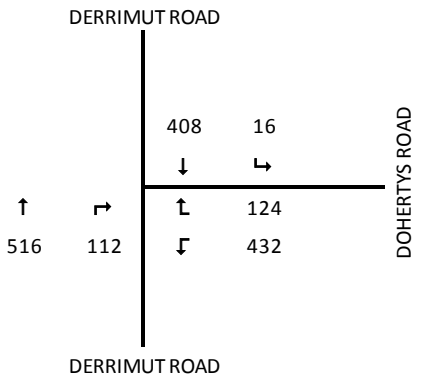


Figure 2.8: Existing PM Peak Hour Traffic Volumes



2.2.4 Intersection Operation

The operation of the intersection of Derrimut Road and Dohertys Road has been assessed using *SIDRA INTERSECTION*[1], a computer based modelling package which calculates intersection performance.

The commonly used measure of intersection performance is referred to as the *Degree of Saturation (DOS)*. The DOS represents the flow-to-capacity ratio for the most critical movement on each leg of the intersection. For unsignalised intersections, a DOS of around 0.90 has been typically considered the practical limit, beyond which queues and delays increase disproportionately[2].

Table 2.1 presents a summary of the existing operation of the intersection, with full results presented in Appendix B of this report.

Table 2.1: Derrimut Road/ Dohertys Road Intersection – Existing Operating Conditions

Peak	Approach	Movement	DOS	Average Delay (sec)	95th Percentile Queue (m)
AM Peak	Derrimut Rd (South)	Through	#0.69	3.0	51
		Right	#0.69	18.0	51
	Dohertys Rd (East)	Left	0.18	10.7	3
		Right	0.06	24.4	1
	Derrimut Rd (North)	Left	0.33	8.3	-
		Through	0.33	-	-
PM Peak	Derrimut Rd (South)	Through	0.33	2.5	22
		Right	0.33	11.7	22
	Dohertys Rd (East)	Left	#0.65	12.9	24
		Right	0.36	20.3	10
	Derrimut Rd (North)	Left	0.22	8.3	-
		Through	0.22	-	-

DOS – Degree of saturation, # - Intersection DOS

On the basis of the above assessment, it is clear that the intersection of Derrimut Road and Dohertys Road currently operates well with the intersection operating at approximately 65-70% of its theoretical capacity during the AM and PM peak hours. The average delays and queues described above are reflective of the observed operation of the intersection.

2.2.5 Accident Statistics

A review of the reported casualty accident history for the roads and intersections adjoining the subject site has been sourced from VicRoads CrashStats accident database. This database records all accidents causing injury that have occurred in Victoria since 1987 (as recorded by Victorian Police) and categorises these accidents as follows:

[1] Program used under license from Akcelik & Associates Pty Ltd.

[2] SIDRA INTERSECTION adopts the following criteria for Level of Service assessment:

		Intersection Degree of Saturation (X)
		Unsignalised
A	Excellent	<=0.60
B	Very Good	0.60-0.70
C	Good	0.70-0.80
D	Acceptable	0.80-0.90
E	Poor	0.90-1.00
F	Very Poor	>=1.0

- *Fatal injury: at least one person was killed in the accident or died within 30 days as a result of the accident.*
- *Serious injury: at least one person was sent to hospital as a result of the accident.*
- *Other injury: at least one person required medical treatment as a result of the accident.*

A summary of the accidents in the vicinity of the site for the last available five year period (1 January 2007 to 31 December 2011) is presented in Table 2.2.

Table 2.2: Casualty Accident History

Location	Accident No.		
	Fatality	Serious Injury	Other Injury
Roads Fronting Site			
On Dohertys Road between Derrimut Road and Woods Road		2	1
Nearby Intersections			
Derrimut Road/Dohertys Road		3	5

Source: VicRoads

Table 2.2 indicates that a total of 11 accidents were recorded in the vicinity of the site during the last available five year data period. Of these, five 'serious injury' and six 'other injury' accidents were recorded.

A review of the crash data indicates that three left off the carriageway into object/parked vehicle accidents were recorded during this period.

2.3 Sustainable Transport Infrastructure

There are currently no public transport services operating within the immediate vicinity of the subject site.

No pedestrian or bicycle infrastructure (i.e. paths) are currently provided on either Derrimut Road or Dohertys Road.

3. Truganina PSP Area (draft)

3.1 Overview

The site is located within the future Truganina PSP Area. The Future Urban Structure (Draft) of the Wyndham North PSP Area is shown in Figure 3.1.

Figure 3.1: Morton East PSP Area – Future Urban Structure (Draft)

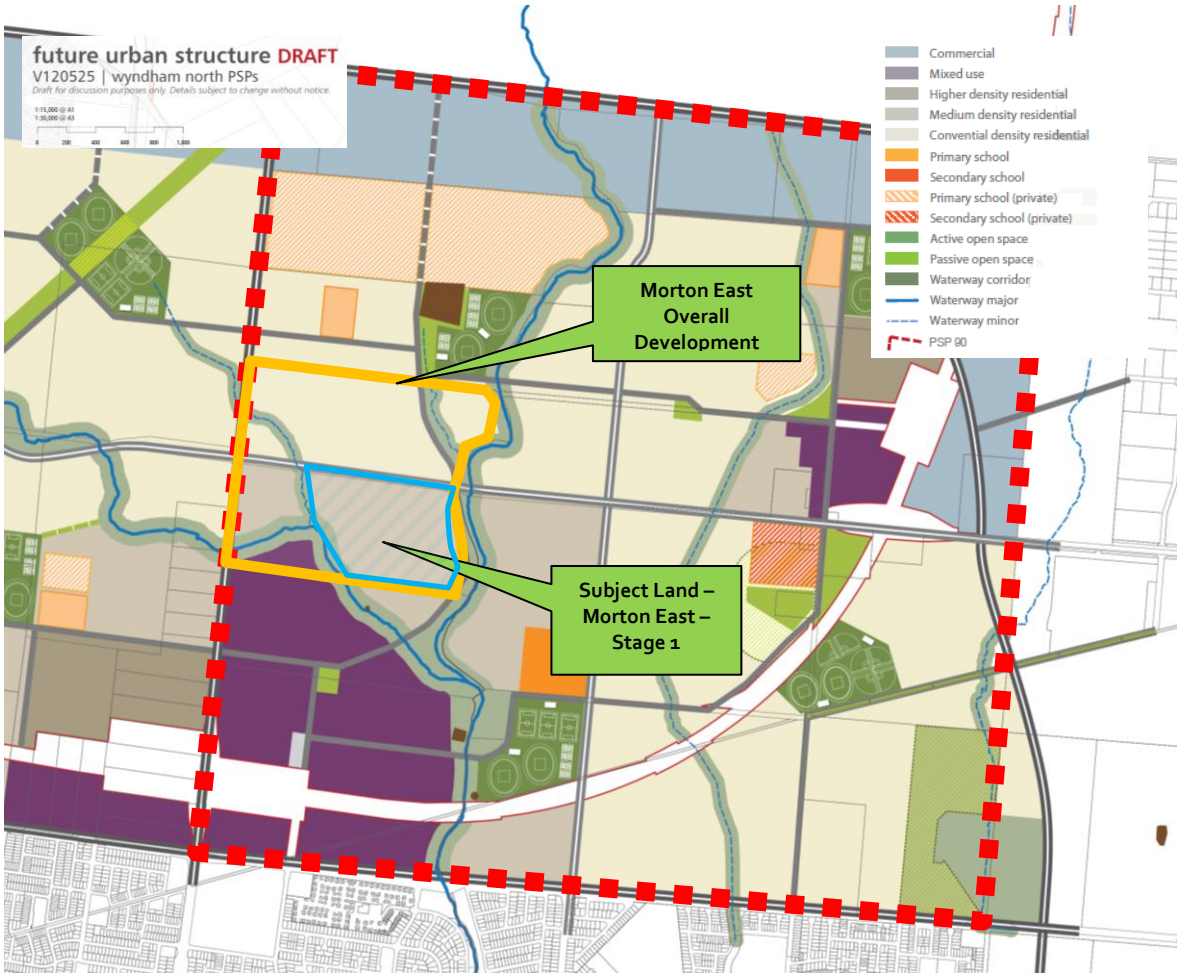


Figure 3.1 indicates that the site is earmarked for residential land uses. It is noted that Skeleton Creek runs north south and forms the eastern boundary of the site, while Dry Creek is located on the western portion of the site.

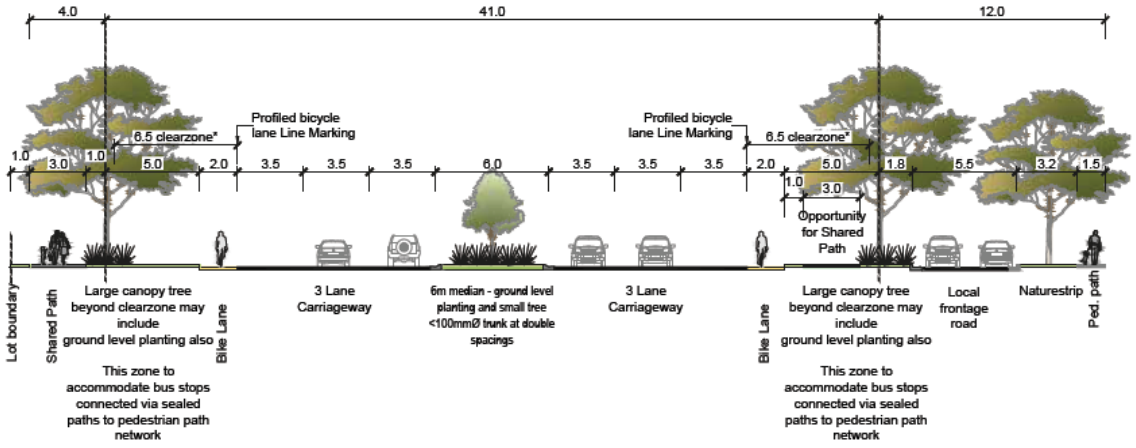
A local neighbourhood activity centre (mixed use land uses) is proposed to the south of the site with a number of primary and secondary schools also earmarked for the area.

3.2 Road Network

The Future Urban Structure (draft) indicates the anticipated road network requirements for the site which include the provision of a north south connector road through the site linking the land parcels to the north and the major activity centre to the south. It is also noted that Derrimut Road and Dohertys Road in the vicinity of the site are both proposed to be upgraded to six and four lane roads in the future, respectively.

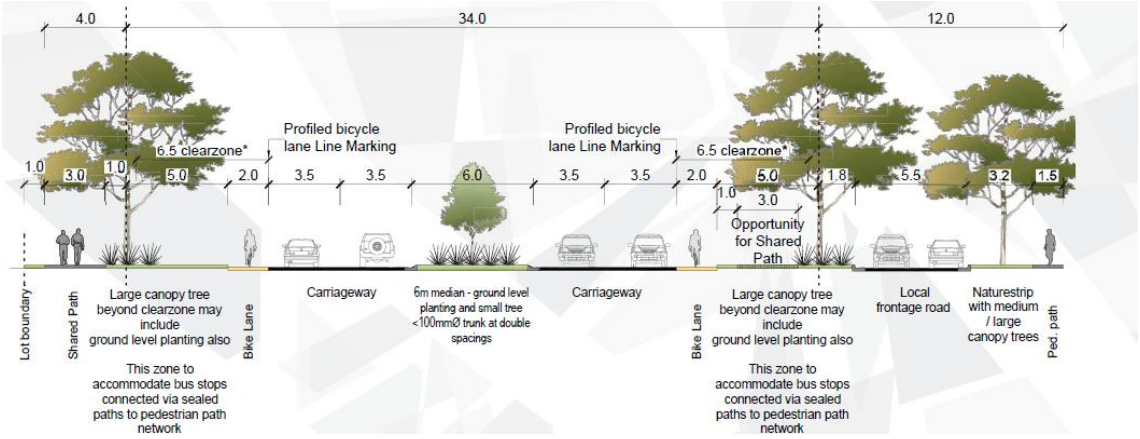
Both roads will function as arterial roads with Derrimut Road to be under the control of VicRoads and Dohertys Road controlled by Council. The future anticipated cross-sections of Derrimut Road and Dohertys Road are illustrated in Figure 3.2 and Figure 3.3 respectively.

Figure 3.2: Derrimut Road (6-Lane Primary Arterial Cross Section)



(source: GAA 'Our Roads: Connecting People' PSP Notes)

Figure 3.3: Dohertys Road (4-Lane Secondary Arterial Cross Section)



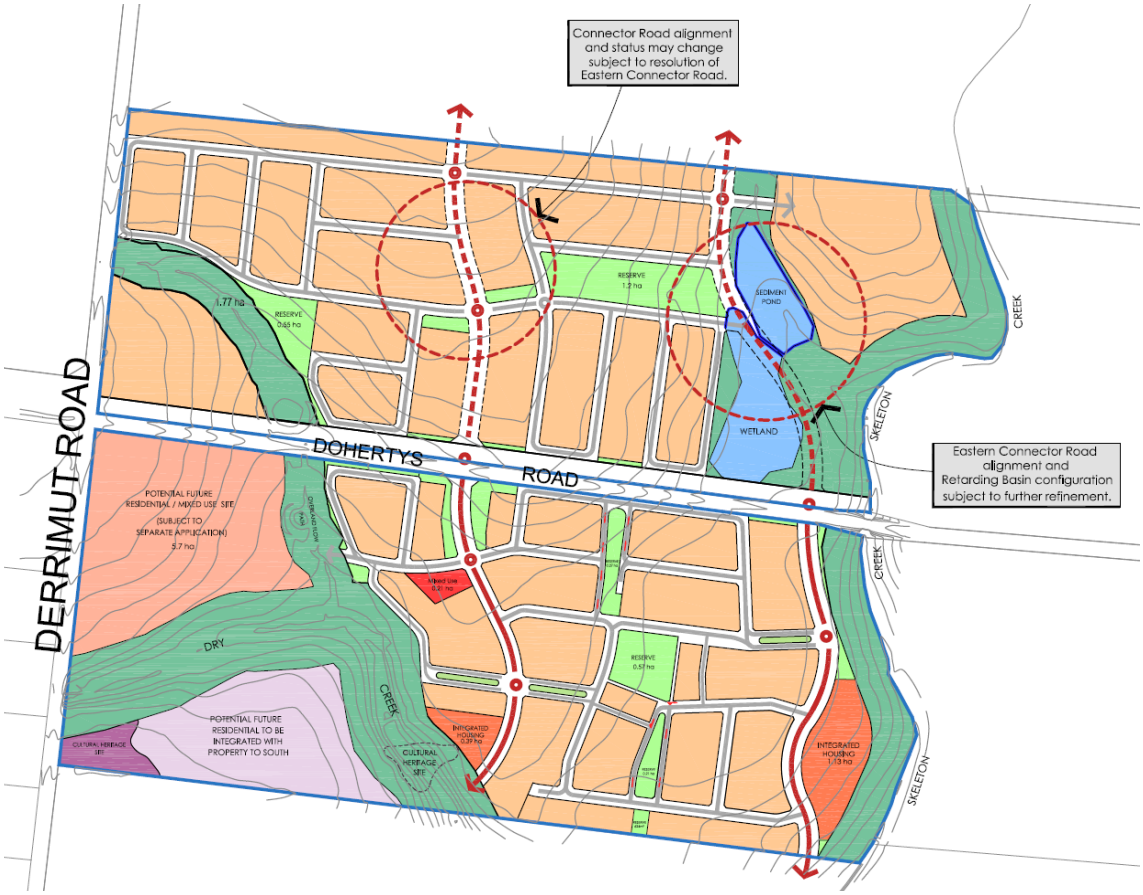
(source: GAA 'Our Roads: Connecting People' PSP Notes)

4. Development Proposal

4.1 Land Uses

The overall development is proposed to incorporate residential lots (including traditional and medium density lots) and supporting retail/commercial land uses. An indicate subdivision layout is illustrated below in Figure 4.1 which also indicates the anticipated future road network thought the site.

Figure 4.1: Overall – Subdivision Layout



4.2 Section 96a Application

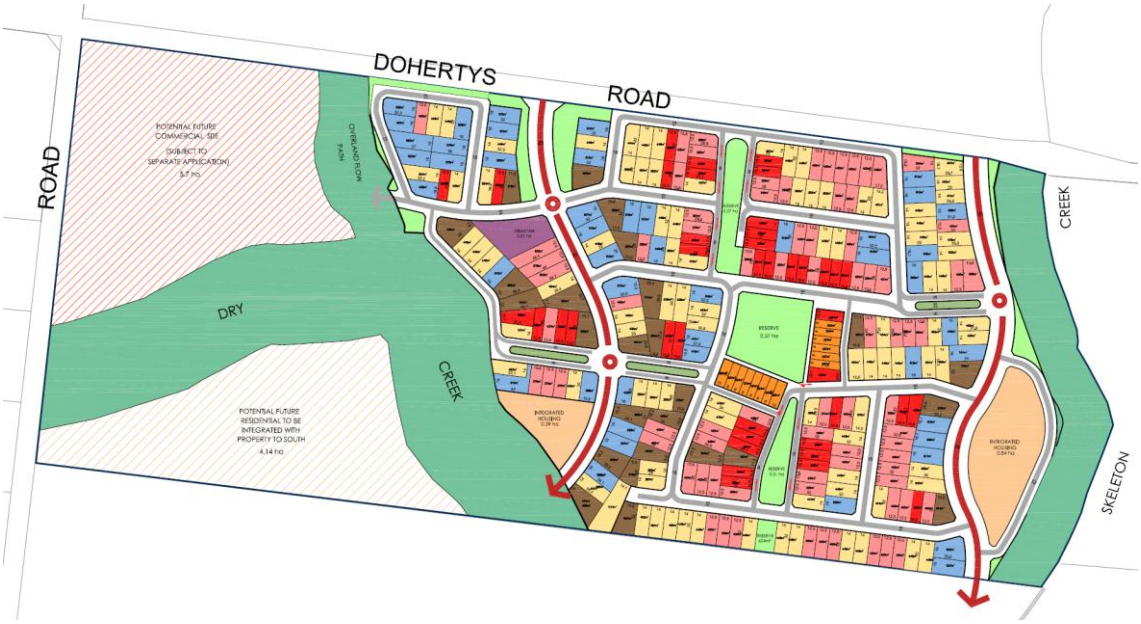
The Section 96a Application incorporates a residential subdivision of 297 traditional lots along with 1.24ha of integrated housing. A 2.1ha mixed use site is also proposed. The subdivision layout is illustrated in Figure 4.2 and presented in full in Appendix A while Table 4.1 provides a summary of the development proposal.

Table 4.1: Development Summary

Type	Size	Number of Lots
Traditional Lots	200sqm-299sqm	25
	300sqm-399sqm	68
	400sqm-499sqm	131
	500sqm-599sqm	51
	>600sqm	22
Integrated Housing	1.24ha	62[1]
Mixed Use Site	0.21ha	1
	TOTAL	**360**

[1] Assuming a lot density of approximately 200sqm.

Figure 4.2: Subdivision Layout



4.3 External Intersections

As indicated in Figure 4.1, vehicle access to the subject site is initially proposed to occur solely via the two north-south connector roads from Dohertys Road at the northern end of the site. These intersections will initially be provided as unsignalised intersections however it is anticipated that these intersections will ultimately be signalised. In the interim, these intersections will form T-intersections, with priority afforded to Dohertys Road. Type C channelized right turn treatments will be provided along Dohertys Road.

As part of the broader PSP development, future signalisation is also proposed at the intersection of Derrimut Road and Dohertys Road. A number of secondary left-in, left-out access are also earmarked to be provided along both Derrimut Road and Dohertys Road in the ultimate scenario.

It is noted that provision has also been made for future connection of the connector road network to the major activity centre and also associated development to the south.

5. Integrated Transport Infrastructure

5.1 Preamble

The Truganina PSP will outline infrastructure requirements necessary to facilitate development of the area. These requirements include the provision of walking and cycling infrastructure, public transport infrastructure, and the road network. These requirements will provide future development with coherent guidelines which must be met to facilitate development within the precinct.

In this regard, reference is made to the PSP Notes "Our Roads: Connecting People" prepared by the GAA. This document indicates that the objective of the road network is:

"to provide guidance for developing road cross sections for PSPs that consider competing transport and community ideals and to provide balanced outcomes and promote more sustainable travel modes".

On the basis of the above, the following sections have been prepared to summarise the walking and cycling, public transport and road network provisions associated with the proposed development and demonstrate their compliance with the typical GAA guidelines.

5.2 Walking

Future PSP Requirements

The PSP Note indicates that the following outcomes for pedestrians should be achieved through the road network design:

- *"Continuous footpaths on both sides of all streets and roads;*
- *Regular crossing points, shade and rest points;*
- *Provision for users of all abilities;*
- *Pedestrian priority in areas of high foot traffic, (eg town centres - also known as activity centres and schools); and*
- *An attractive appearance to improve amenity and encourage walking."*

It is noted that there are no specific pedestrian requirements currently identified within the draft Future Urban Structure.

Compliance with Future PSP Requirements

Pedestrian footpaths will be provided on both sides of roads within the proposed subdivision, except roads with reserve frontages. Each of the roads within the subdivision will be designed in accordance with the requirements of the PSP Notes to include pedestrian and cyclist priority.

5.3 Cycling

Future PSP Requirements

The PSP Note indicates that the following outcomes for cyclists should be achieved through the road network design:

- *"Bicycle priority treatments over motorised traffic where appropriate;*
- *On-road bicycle lanes on all connector streets and arterial roads to facilitate travel by cyclists;*

- *Appropriate separation from motor vehicles on high demand cycle routes;*
- *On declared arterial roads, VicRoads may have additional requirements;*
- *Where provided, shared landscape trails on local and connector streets will complement the off road network of shared paths;*
- *Off road shared paths may also be needed on arterial roads; and*
- *Safe road crossing facilities."*

It is noted that there are no specific cyclist requirements currently identified within the draft Future Urban Structure.

Compliance with Future PSP Requirements

Each of the roads within the subdivision will be designed in accordance with the requirements of an 'Access Street level 1' which will have pedestrian and cyclist priority. In addition, the eastern north-south connector road through the subdivision will be provided with on-road cycle paths that will link the subdivision with land uses to the north and the major activity centre to the south.

It is anticipated that on road bike lanes and shared paths will be provided within the duplicated cross-sections of Derrimut Road and Dohertys Road.

5.4 Public Transport

Future PSP Requirements

The PSP Note indicates that the following outcomes for public transport should be achieved through the road network design:

- *"Bus routes planned for relevant connectors and arterial roads;*
- *Roads to cater for bus routes shall be designed to accord with the Department of Transport's Public Transport Guidelines for Land Use and Development;*
- *Bus priority treatments where appropriate;*
- *Roadside infrastructure to provide safe and accessible DDA compliant bus stops; and*
- *Safe crossing points to bus stops where appropriate."*

It is noted that there are no specific public transport requirements currently identified within the draft Future Urban Structure.

Compliance with Future PSP Requirements

There are two connector roads proposed to run through the site connecting the site to the major activity centre to south and other future residential areas to the north. It is therefore anticipated that bus services may operate on these lines through the site. Furthermore, reference to the West Growth Corridor plan indicates that Dohertys Road is earmarked to form part of the Principal Public Transport Network.

Given the above, it is envisaged that in the future there will be a high frequency of bus services through and past the site. The road network provided indicates that the PTV recommendation that dwellings be located within 400m of a bus route can be achieved assuming that buses operate along both connector roads.

5.5 Road Network

Future PSP Requirements

The PSP Note indicates that the following outcomes for private motor vehicle users should be achieved through the road network design:

- *"High mobility for through traffic with adequate capacity and speeds on arterial roads; and*
- *High accessibility for local traffic with a fine grained local road network, frequent intersections and good property access"*

In addition to the above road network features, the PSP notes recommend that the length of local access streets *"should be limited to approximately 240m"*. The PSP notes also provide guidance on recommended cross-sections for each of the various road types.

Proposed Road Hierarchy

The proposed future internal road hierarchy is illustrated in Figure 5.4. The future road hierarchy is anticipated to comprise a mix of access streets and connector streets.

Compliance with Future PSP Requirements

Table 5.1 provides a summary of the proposed internal road hierarchy. The proposed cross-sections are consistent with the standard GAA cross-sections.

Table 5.1: Proposed Internal Road Hierarchy

Street Type	Proposed Road Reservation	Carriageway Width	Parking Provision	Pedestrian and Cyclist Provisions	Anticipated Daily Volume
Access Lane	8m	8m	None	None	Up to 300vpd
Access Street – Level 1 (one way & reserve frontage)	8m	5.5m (one-way)	None	Pedestrian paths on development side only	Up to 2,000vpd
Access Street – Level 1 (reserve frontage)	12m	7.3m	Kerbside parking on both sides included in road carriageway width	Pedestrian paths on development side only	Up to 2,000vpd
Access Street – Level 1	16m	7.3m	Kerbside parking on both sides included in road carriageway width	Pedestrian paths provided on both sides of carriageway	Up to 2,000vpd
Access Street – Level 2	20m	6.0m	Parallel on-street parking (2.3m)	1.5m pedestrian paths provided on both sides of carriageway	2,000vpd-3,000vpd
Connector Street – Residential	25m	15.0m	2.3m wide parking – with outstand at intersections	1.7m bike lane and 1.5m pedestrian path provided on both sides of carriageway	3,000vpd-7,000vpd

A review of the anticipated daily traffic volumes on the internal road network indicates that the anticipated daily traffic volumes within the subdivision are within the theoretical capacities presented above.

Indicative cross-sections for an 'Access Street-Level 1', an 'Access Street-Level 2' and the Connector Street is shown in Figure 5.1, Figure 5.2 and Figure 5.3 respectively.

Figure 5.1: Access Street-Level 1 (16m)

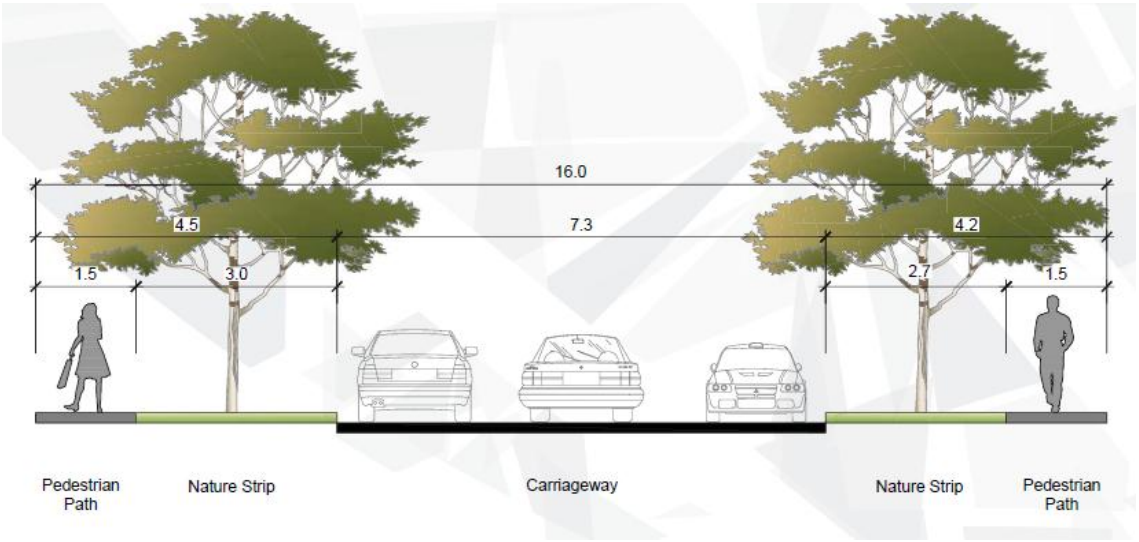


Figure 5.2: Access Street-Level 2 (20m)

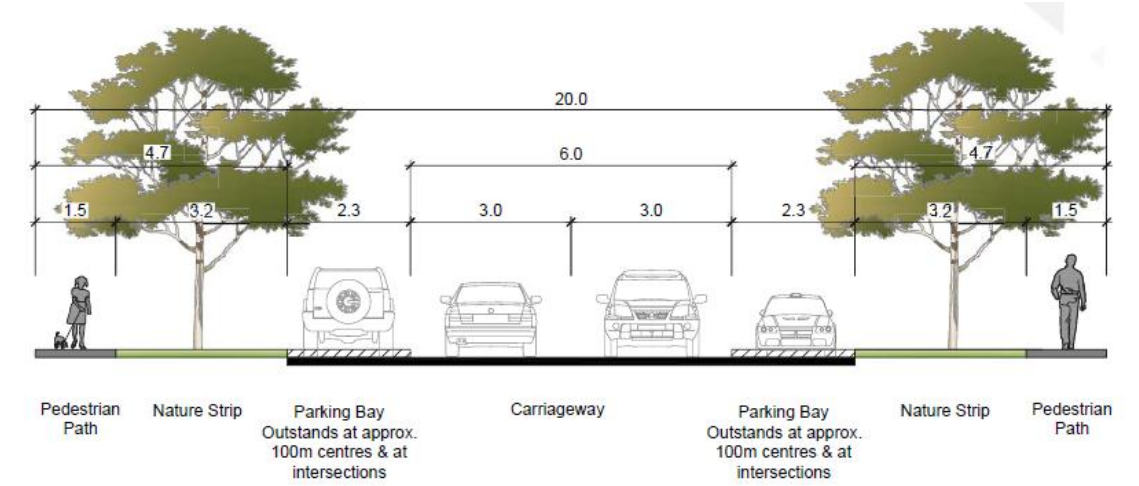


Figure 5.3: Connector Street – Residential (25m)

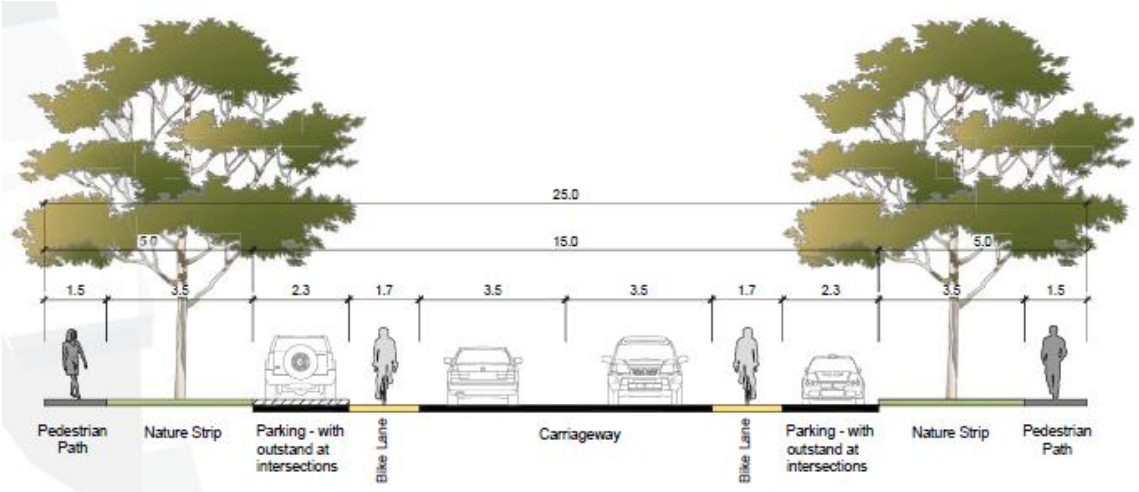
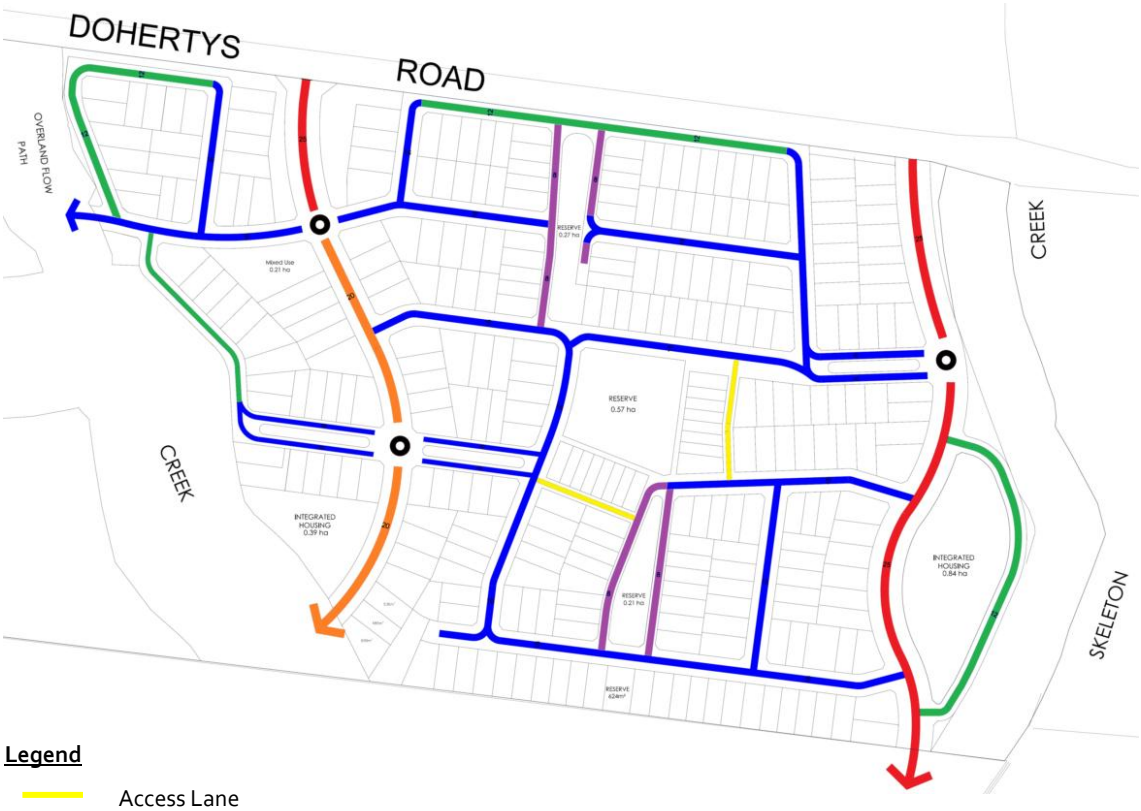


Figure 5.4 has been prepared to summarise the proposed road hierarchy within the subject site.

Figure 5.4: Proposed Road Hierarchy

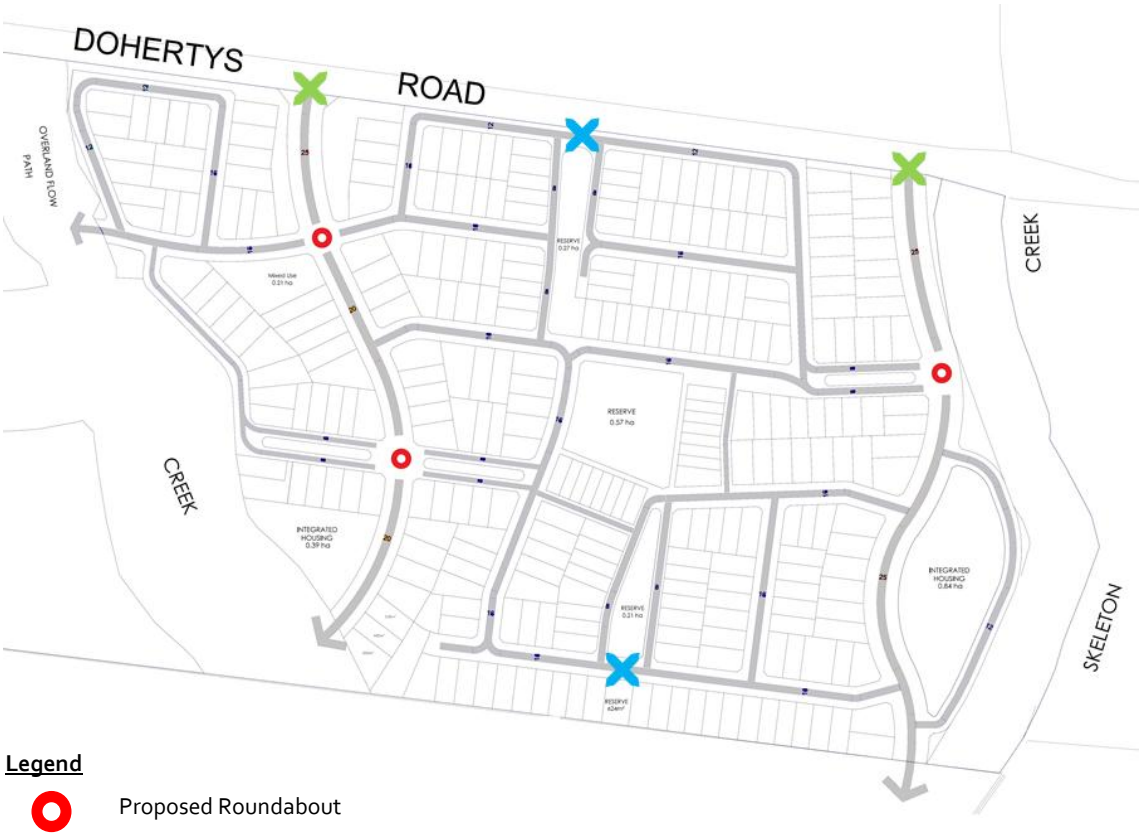


5.6 Speed Control

A review of the proposed development plan has been undertaken with regard to speed attenuation and control devices.

The current Clause 56 of the Planning Scheme is silent on speed control measures and the spacing between control points; however, guidance has been sought from the previous version of the Planning Scheme. This document suggests that speed mitigating controls or devices should generally be located at approximately 140m spacing for an 'Access Street'. As such, Figure 5.5 has been prepared to illustrate the location of the proposed speed attenuation measures.

Figure 5.5: Proposed Speed Mitigating Devices



Legend

- Proposed Roundabout
- External Access Point (Intersection)
- RecomendedSpeed Attenuation Device

5.7 External Intersections

As discussed in Section 4, two external intersections are proposed to provide access from the site to Dohertys Road. The proposed intersections to Dohertys Road are located 440m and 880m east of the nearby Derrimut Road/Dohertys Road intersection. It is understood that as part of the broader PSP, these intersections will ultimately be signalised.

6. Traffic Impact Assessment

6.1 Preamble

The subject site will initially adopt "interim" access arrangements which will be required to accommodate the traffic volume requirements of the subject site (Section 96a Application). These access arrangements will then be upgraded to accord with the overall 'ultimate' road network requirements outlined within the PSP, as future development of surrounding sites is completed.

The ultimate access arrangements are consistent with those included in the draft PSP, and will be assessed in detail as part of the PSP process. As such, no further analysis of the ultimate intersection operation has been conducted as part of this assessment.

6.2 Traffic Generation

The Victorian Integrated Survey of Travel Activity (VISTA) is a survey of personal travel for residents in each of the Melbourne municipalities and major regional centres in Victoria. Travel data collated provides data regarding the number of trips each household generated, including vehicle (passenger and driver), public transport, walking and cycling trips. Reference to the VISTA07 dataset indicates an average range of 2.5 to 7.2 car trips per household within Metropolitan Melbourne. Specifically the most recent data for Wyndham (2009) indicates a car generation rate of 6.0 movements per household. It is noted that this data does not distinguish between various housing types, i.e. detached, medium density or apartment types or indeed location (municipality wide).

In order to present a conservative assessment and having consideration for the initial 'isolation' of the site an initial traffic generation rate of 8 movements per day per lot has been assumed. In this regard it is anticipated that the traffic generation rate will reduce as the surrounding non-residential land uses are developed, at which point walking, cycling and public transport trips will become more attractive.

6.2.1 Integrated Housing

Having regard to the development plan, it is noted that 1.24ha has been set aside for integrated housing. For the purposes of this traffic assessment, a lot density of 200sqm has been assumed. On this basis, a total of 62 townhouses could potentially be developed in this area. Taking the traffic generation data above, a traffic generation rate of 6 movements per day per estimated lot has been assumed for the integrated housing sites.

6.2.2 Overall

Based on the above, Table 6.1 sets out traffic generation estimates for both peak hour and daily periods for the proposed development.

Table 6.1: Estimated Development Traffic Generation

Dwelling Type	No. of Dwellings	Design Generation Rates		Traffic Generation Estimates	
		Peak Hour [1]	Daily	Peak Hour	Daily
Integrated housing	62	0.6 vehicle movements / dwelling	6 vehicle movements / dwelling	37 vehicle movements / hour	372 vehicle movements / day
Standard Lots	297	0.8 vehicle movements / dwelling	8 vehicle movements / dwelling	238 vehicle movements / hour	2,376 vehicle movements / day
TOTAL	**359**			**275 vph**	**2,748 vpd**

[1] Adopting a peak to daily ratio of 10%.

Table 6.1 indicates the proposed development could be expected to generate approximately 2,750 vehicle movements per day and 275 vehicle movements during each respective peak hour on a typical weekday.

6.3 Traffic Distribution

The directional distribution and assignment of traffic generated by the proposed development will be influenced by a number of factors, including the:

i configuration of the arterial road network in the immediate vicinity of the site
ii existing operation of intersections providing access between the local and arterial road network
iii distribution of households in the vicinity of the site
iv surrounding employment centres, retail centres and schools in relation to the site
v configuration of access points to the site.

Having consideration to the above, for the purposes of estimating vehicle movements, the following directional distributions have been assumed:

- Dohertys Road (East) 30%
- Dohertys Road (West) 70%

In addition, the directional split of traffic (i.e. the ratio between the inbound and outbound traffic movements) have been assumed to be 80% out to 20% in during the AM peak hour, and 40% out to 60% in during the PM peak hour.

Based on the above, Figures 6.1 and 6.2 have been prepared to show the estimated marginal increase in turning movements in the vicinity of the subject property following full site development. It is noted that the figures represent either of the sites two connections to Dohertys Road to which the traffic is anticipated to be evenly distributed.

Figure 6.1: AM Peak Hour Traffic Volumes (Site Generated)

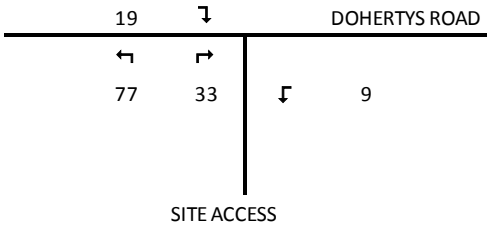
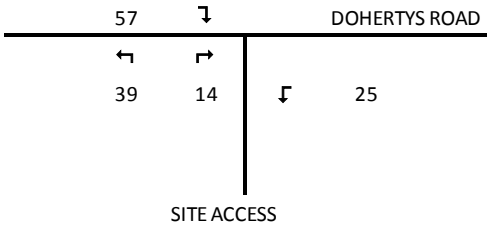


Figure 6.2: PM Peak hour Traffic Volumes (Site Generated)



6.4 Intersection Operation

6.4.1 Access Points

To assess the interim impact of this development on the external road network, the external connections of the subdivision with Dohertys Road have been assessed using *SIDRA INTERSECTION*[3], a computer based modelling package which calculates intersection performance.

As discussed, it is anticipated that a channelized right turn treatments will be required along Dohertys Road at these intersections to facilitate access in the interim period.

Utilising the existing traffic volumes presented in Section 2.2.3 of this report (growthed appropriately) and adding them to the site generated volumes presented in Figure 6.1 and Figure 6.2, we can obtain the "Design" or Post-Development traffic volumes. These volumes are outlined in Figure 6.3 and Figure 6.4. It is noted that the through volumes along Dohertys Road have been growthed by a factor of 82% in order to provide a ten year assessment of these intersections. This growth factor has been obtained from the VITM modelling produced for the area.

Figure 6.3: AM Peak Hour Traffic Volumes (Post) – Dohertys Rd / Site Access

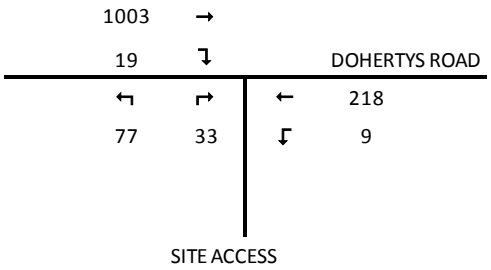
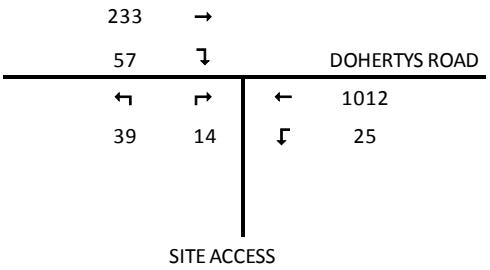


Figure 6.4: PM Peak hour Traffic Volumes (Post) – Dohertys Rd / Site Access



The results of this analysis are set out in Table 6.2, and indicate the proposed interim unsignalised access points can be expected to operate under excellent operating conditions. Full results are available in Appendix B

[3] Program used under license from Akcelik & Associates Pty Ltd.

Table 6.2: Dohertys Road / Site Access Points – Post Development Operating Conditions

Peak	Approach	Movement	DOS	Average Delay (sec)	95th Percentile Queue (m)
AM Peak	Site Access (South)	Left	0.21	13.5	5
		Right	0.21	13.7	5
	Dohertys Rd (East)	Left	0.12	8.2	-
		Through	0.12	-	-
	Dohertys Rd (West)	Through	0.55	-	-
		Right	0.02	9.4	-
PM Peak	Site Access (South)	Left	0.17	19.3	4
		Right	0.17	19.6	4
	Dohertys Rd (East)	Left	0.57	8.2	-
		Through	0.57	-	-
	Dohertys Rd (West)	Through	0.13	-	-
		Right	0.22	23.0	5

DOS – Degree of saturation, # - Intersection DOS

6.4.2 External Intersections

The interim impact of the development on the external road network has also been considered with the intersection of Derrimut Road and Dohertys Road assessed using *SIDRA*.

In order to provide a robust assessment of the post development operating conditions, the entire traffic generated by the site post development has been assumed to utilise the Derrimut Road / Dohertys Road intersection. Again, utilising the existing traffic volumes presented in Section 2.2.3 of this report and adding them to the site generated volumes Figure 6.5 and Figure 6.6 present the post-development traffic volumes at the intersection of Derrimut Road and Dohertys Road in the AM and PM peak periods respectively.

In line with VicRoads TIAR guidelines, no growth factor has been applied to the existing traffic volumes at this intersection whist the existing turning movement volumes have been used to distribute the site generation traffic appropriately

The results of the SIDRA analysis are summarised in Table 6.3 with full results available in Appendix B.

Figure 6.5: AM Peak Hour Traffic Volumes (Post) – Derrimut Rd / Dohertys Rd

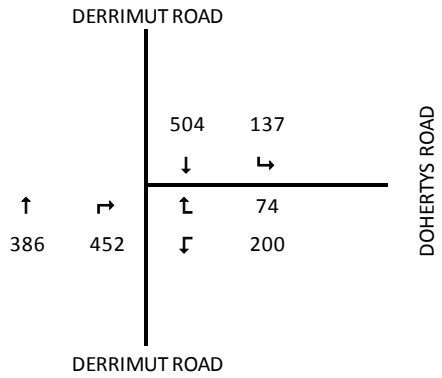


Figure 6.6: PM Peak Hour Traffic Volumes (Post) – Derrimut Rd / Dohertys Rd

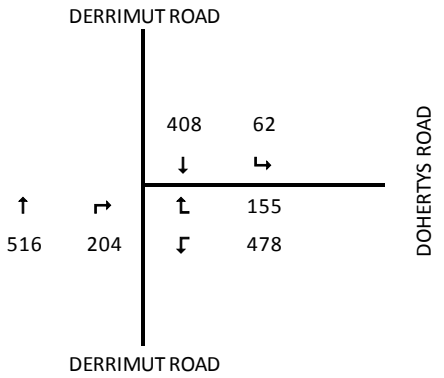


Table 6.3: Derrimut Road/ Dohertys Road Intersection – Post Development Operating Conditions

Peak	Approach	Movement	DOS	Average Delay (sec)	95th Percentile Queue (m)
AM Peak	Derrimut Rd (South)	Through	#0.73	2.9	56
		Right	#0.73	19.1	56
	Dohertys Rd (East)	Left	0.40	12.9	9
		Right	0.37	30.5	9
	Derrimut Rd (North)	Left	0.34	8.3	-
		Through	0.34	-	-
PM Peak	Derrimut Rd (South)	Through	0.41	3.2	32
		Right	0.41	13.0	32
	Dohertys Rd (East)	Left	#0.86	13.5	25
		Right	0.55	25.9	17
	Derrimut Rd (North)	Left	0.25	8.3	-
		Through	0.25	-	-

DOS – Degree of saturation, # - Intersection DOS

On the basis of the above assessment, the intersection of Derrimut Road and Dohertys Road is expected to continue to operate with an acceptable level of service following development of the subject site. It is again noted that these operating conditions represent an interim scenario with this intersection to ultimately become signalised.

6.5 Traffic Impact

On the basis of the anticipated site-generated traffic volumes the internal road network will be capable of accommodating the anticipated peak and daily traffic volumes.

The subject site as shown in the draft Future Structure Plan is earmarked for residential development with some minor mixed use commercial areas. The lot density adopted is consistent with that utilised in the modelling undertaken of the overall PSP area, therefore the proposal and its impacts have already been accounted for as part of the broader precinct with supporting infrastructure identified where necessary to support development during the interim (+10 years) and ultimate periods.

In the immediate future, the external intersections and site access points are anticipated to continue to operate at acceptable levels.

7. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

i A planning permit is currently being sought for a proposed residential subdivision known as Morton East on land located to the immediate south east of the Derrimut Road/Dohertys Road intersection in Tarneit under a Section 96a Application.

ii The Section 96a Application incorporates a residential subdivision of 297 traditional lots along with 1.24ha of integrated housing.

iii The proposed development would generate approximately 2,750 vehicle movements per day and 275 vehicle movements per hour in the peak periods.

iv The proposed road network is suitable to accommodate the anticipated daily and peak hour traffic movements.

v The proposed subdivision would include a walking and cycling network in accordance with PSP requirements.

vi The proposed subdivision is capable of providing a public transport network in accordance with the PTV recommendations.

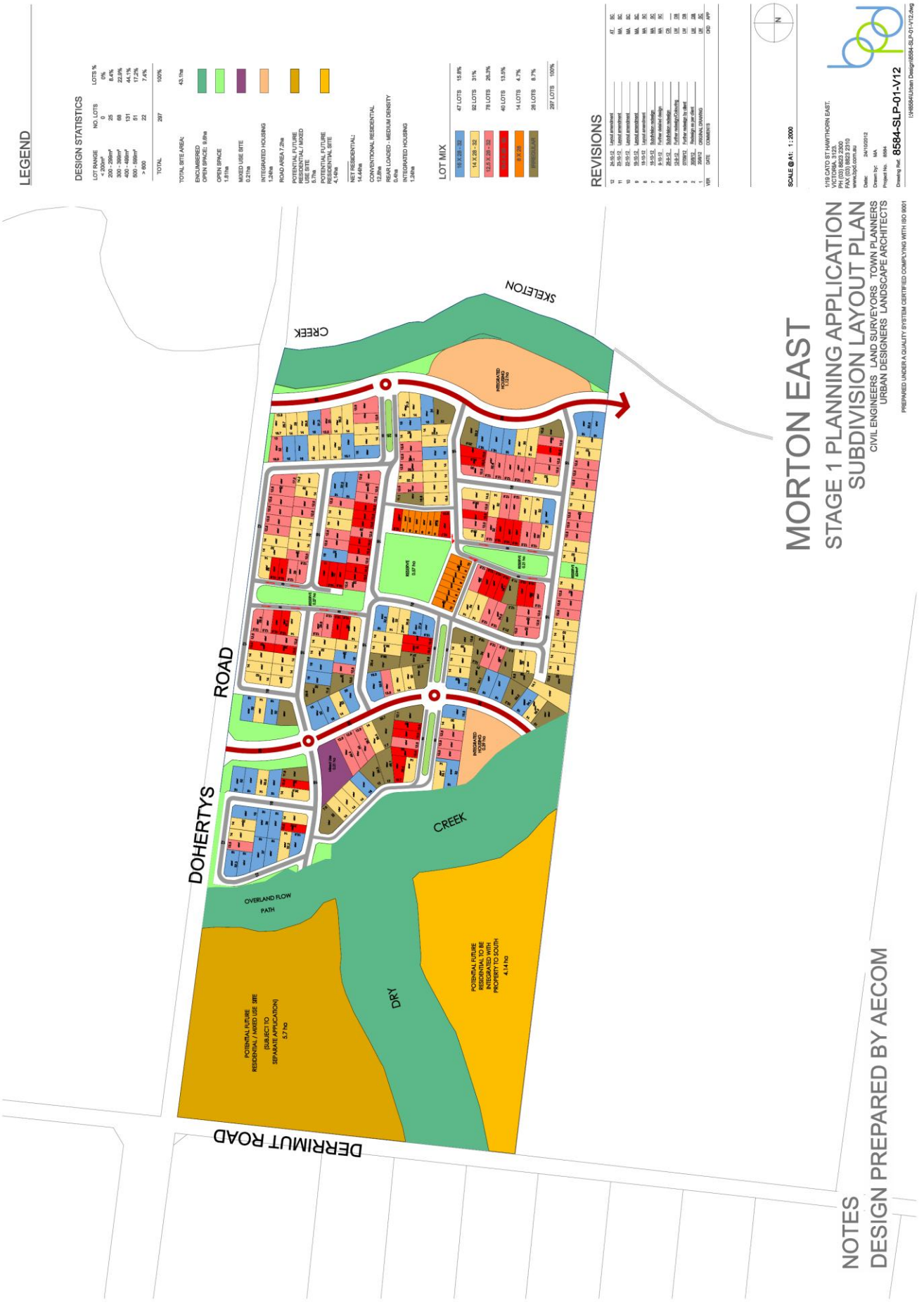
vii The proposed street network has been designed in accordance with the principle outlined in the PSP Notes "Our Roads: Connecting People" prepared by the GAA.

viii The proposed street network and external access points are reflective of the draft PSP Future Urban Structure.

ix The interim access arrangements to the subject site are anticipated to operate under good conditions with minimal queues and delays. External intersections are also anticipated to continue to operate within capacity.

Appendix A

Proposed Subdivision Layout


LEGEND
DESIGN STATISTICS
LOT MIX
REVISIONS
SCALE @ A1: 1:2000
MORTON EAST
STAGE 1 PLANNING APPLICATION
SUBDIVISION LAYOUT PLAN
CIVIL ENGINEERS LAND SURVEYORS TOWN PLANNERS
URBAN DESIGNERS LANDSCAPE ARCHITECTS
PREPARED UNDER A QUALITY SYSTEM CERTIFIED COMPLYING WITH ISO 9001
1/19 CATO ST HAWTHORN EAST, VICTORIA, 3123.
PH (03) 9822 2300
FAX (03) 9822 2310
www.bpd.com.au
Drawing Ref: 8584-SLP-01-V12
I:\H8584\Urban Design\8584-SLP-01-V12.dwg
SKELTON
CREEK
ROAD
DOHERTYS
DERRIMUT ROAD
CREEK
DRY
OVERLAND FLOW PATH
POTENTIAL FUTURE RESIDENTIAL / MIXED USE SITE (SUBJECT TO SEPARATE APPLICATION) 5.7 ha
POTENTIAL FUTURE RESIDENTIAL TO BE INTEGRATED WITH PROPERTY TO SOUTH 4.1 ha
NOTES
DESIGN PREPARED BY AECOM

Appendix B

SIDRA Analysis

MOVEMENT SUMMARY

Site: Derrimut Road / Doherty Rd (AM - Existing Conditions)

Derrimut Road / Doherty Rd
Giveway / Yield (Two-Way)

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Derrimut Rd											
2	T	386	2.0	0.691	3.0	LOS A	7.2	51.3	0.30	0.00	52.6
3	R	429	2.0	0.691	18.0	LOS C	7.2	51.3	0.96	1.25	40.7
Approach		815	2.0	0.691	10.9	NA	7.2	51.3	0.64	0.66	45.6
East: Dohertys Rd											
4	L	108	2.0	0.182	10.7	LOS B	0.5	3.2	0.55	0.77	46.4
6	R	12	2.0	0.058	24.4	LOS C	0.2	1.3	0.83	0.95	35.8
Approach		120	2.0	0.182	12.1	LOS B	0.5	3.2	0.57	0.79	45.1
North: Derrimut Rd											
7	L	122	2.0	0.328	8.3	LOS A	0.0	0.0	0.00	0.97	49.0
8	T	504	2.0	0.328	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		626	2.0	0.328	1.6	NA	0.0	0.0	0.00	0.19	57.5
All Vehicles		1561	2.0	0.691	7.3	NA	7.2	51.3	0.38	0.48	49.7

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: Derrimut Rd / Doherty Rd (PM - Existing Conditions)

Derrimut Road / Doherty Rd
Giveway / Yield (Two-Way)

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Derrimut Rd											
2	T	516	2.0	0.326	2.5	LOS A	3.1	22.3	0.48	0.00	51.0
3	R	112	2.0	0.326	11.7	LOS B	3.1	22.3	0.64	0.96	47.6
Approach		628	2.0	0.326	4.1	NA	3.1	22.3	0.51	0.17	50.4
East: Dohertys Rd											
4	L	432	2.0	0.647	12.9	LOS B	3.3	23.8	0.58	0.92	44.3
6	R	124	2.0	0.358	20.3	LOS C	1.5	10.3	0.79	1.00	38.4
Approach		556	2.0	0.647	14.5	LOS B	3.3	23.8	0.63	0.94	42.9
North: Derrimut Rd											
7	L	16	2.0	0.221	8.3	LOS A	0.0	0.0	0.00	1.07	49.0
8	T	408	2.0	0.221	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		424	2.0	0.221	0.3	NA	0.0	0.0	0.00	0.04	59.5
All Vehicles		1608	2.0	0.647	6.7	NA	3.3	23.8	0.42	0.40	49.4

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: Derrimut Road / Doherty Rd (AM Post Dev)

Derrimut Road / Doherty Rd
Giveway / Yield (Two-Way)

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Derrimut Rd											
2	T	386	2.0	0.733	2.9	LOS A	7.9	56.1	0.26	0.00	53.0
3	R	452	2.0	0.733	19.1	LOS C	7.9	56.1	0.98	1.31	39.9
Approach		838	2.0	0.733	11.6	NA	7.9	56.1	0.65	0.71	45.0
East: Dohertys Rd											
4	L	200	2.0	0.389	12.9	LOS B	1.3	8.7	0.59	0.92	44.4
6	R	74	2.0	0.373	30.5	LOS D	1.3	8.8	0.89	1.02	32.5
Approach		274	2.0	0.389	17.6	LOS C	1.3	8.8	0.67	0.94	40.4
North: Derrimut Rd											
7	L	137	2.0	0.337	8.3	LOS A	0.0	0.0	0.00	0.96	49.0
8	T	504	2.0	0.337	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		641	2.0	0.337	1.8	NA	0.0	0.0	0.00	0.20	57.2
All Vehicles		1753	2.0	0.733	9.0	NA	7.9	56.1	0.42	0.56	47.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: Derrimut Road / Doherty Rd (PM Post Dev)

Derrimut Road / Doherty Rd
Giveway / Yield (Two-Way)

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Derrimut Rd											
2	T	516	2.0	0.409	3.2	LOS A	4.5	31.8	0.50	0.00	50.5
3	R	191	2.0	0.409	13.0	LOS B	4.5	31.8	0.71	1.04	46.2
Approach		707	2.0	0.409	5.8	NA	4.5	31.8	0.56	0.28	49.2
East: Dohertys Rd											
4	L	503	2.0	0.867	13.5	LOS B	3.7	24.9	0.78	0.98	43.8
6	R	163	2.0	0.546	25.9	LOS D	2.5	16.7	0.87	1.08	34.9
Approach		666	2.0	0.867	16.6	LOS C	3.7	24.9	0.80	1.00	41.2
North: Derrimut Rd											
7	L	62	2.0	0.246	8.3	LOS A	0.0	0.0	0.00	1.01	49.0
8	T	408	2.0	0.246	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		470	2.0	0.246	1.1	NA	0.0	0.0	0.00	0.13	58.3
All Vehicles		1843	2.0	0.867	8.5	NA	4.5	31.8	0.50	0.50	47.8

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: Dohertys Road / Site Access (AM Peak)

Dohertys Rd / Site Access
Giveway / Yield (Two-Way)

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Site Access											
1	L	81	0.0	0.205	13.5	LOS B	0.7	5.2	0.48	0.64	43.7
3	R	35	0.0	0.205	13.7	LOS B	0.7	5.2	0.48	0.86	43.6
Approach		116	0.0	0.205	13.5	LOS B	0.7	5.2	0.48	0.71	43.7
East: Dohertys Road											
4	L	9	0.0	0.124	8.2	LOS A	0.0	0.0	0.00	1.06	49.0
5	T	229	2.0	0.124	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		239	1.9	0.124	0.3	NA	0.0	0.0	0.00	0.04	59.5
West: Dohertys Road											
11	T	1056	2.0	0.548	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R	19	0.0	0.017	9.4	LOS A	0.1	0.4	0.33	0.65	47.4
Approach		1075	2.0	0.548	0.2	NA	0.1	0.4	0.01	0.01	59.7
All Vehicles		1430	1.8	0.548	1.3	NA	0.7	5.2	0.04	0.07	58.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: Dohertys Road / Site Access (PM Peak)

Dohertys Rd / Site Access
Giveway / Yield (Two-Way)

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	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Site Access											
1	L	41	0.0	0.174	19.3	LOS C	0.6	4.1	0.83	0.94	39.1
3	R	15	0.0	0.174	19.6	LOS C	0.6	4.1	0.83	0.95	39.1
Approach		56	0.0	0.174	19.4	LOS C	0.6	4.1	0.83	0.95	39.1
East: Dohertys Road											
4	L	26	0.0	0.568	8.2	LOS A	0.0	0.0	0.00	1.07	49.0
5	T	1065	2.0	0.568	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		1092	2.0	0.568	0.2	NA	0.0	0.0	0.00	0.03	59.7
West: Dohertys Road											
11	T	245	2.0	0.127	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R	57	0.0	0.223	23.0	LOS C	0.7	5.1	0.86	0.97	36.6
Approach		302	1.6	0.223	4.3	NA	0.7	5.1	0.16	0.18	53.6
All Vehicles		1450	1.8	0.568	1.8	NA	0.7	5.1	0.07	0.09	57.2

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

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