



# Former Boronia Heights College Residential Rezoning Transport Impact Assessment

**Client //** Department of Treasury and Finance  
**Office //** VIC  
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# Former Boronia Heights College

## Residential Rezoning

## Transport Impact Assessment


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# 1. Introduction

## 1.1 Background & Proposal

The former Boronia Heights College site in Boronia is to be rezoned to allow for residential uses. The land is currently zoned as Public Use – Education (PUZ2).

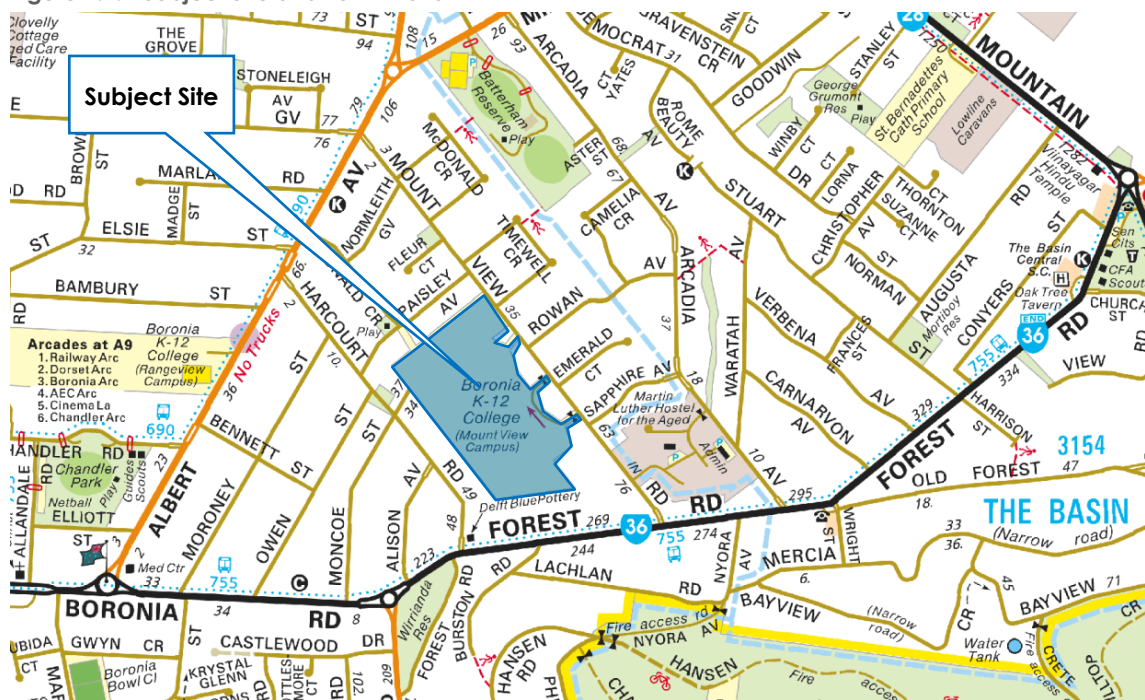
GTA Consultants (GTA) was commissioned by the Department of Treasury and Finance in April 2017 to undertake a high-level transport impact assessment of the proposed rezoning.

## 1.2 Subject Site

The Boronia Heights College Mount View Campus site is bound by Mount View Road to the northeast, Paisley Avenue to the northwest, Harcourt Road to the west and Forest Road to the south. Residential properties generally border the site between each road frontage.

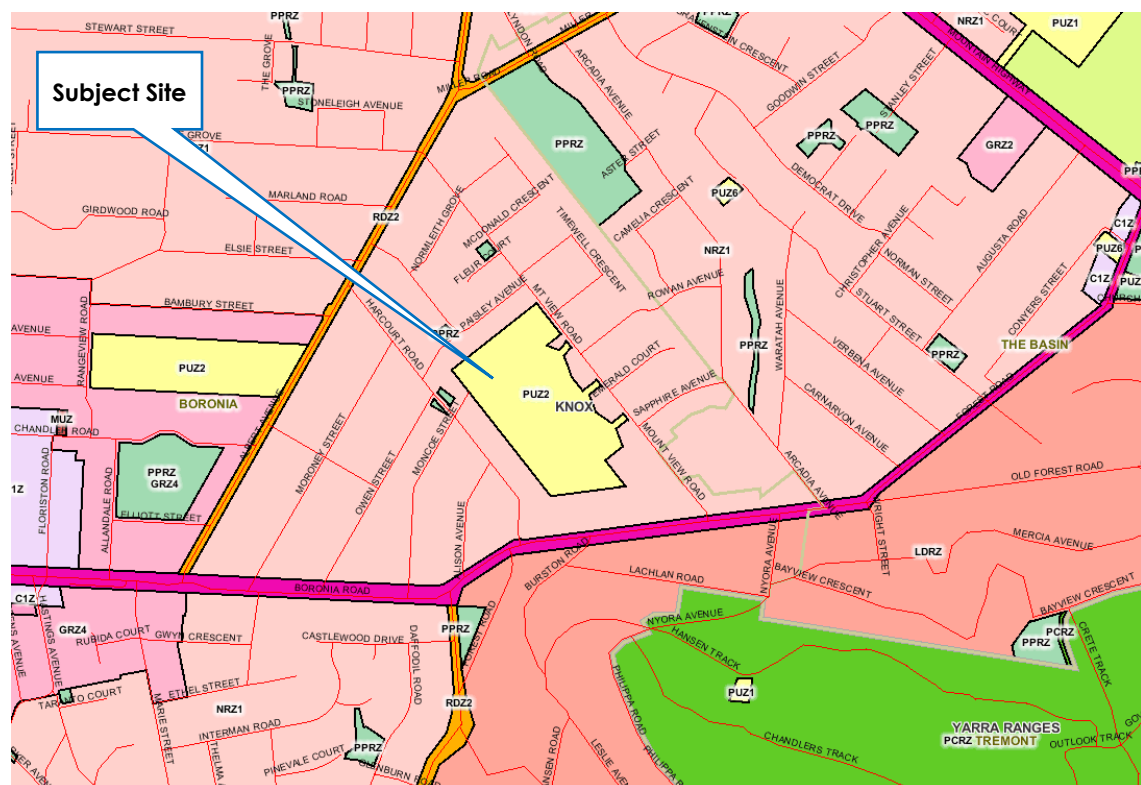
The surrounding properties are predominately residential in nature, excluding the land occupied by the subject site. The location of the subject site and the surrounding environs is shown in Figure 1.1, and the land zoning is shown in Figure 1.2.

Figure 1.1: Subject Site and its Environs



(Reproduced with Permission from Melway Publishing Pty Ltd)

Figure 1.2: Land Zoning Map



(Reproduced from Land Channel web site)

### 1.3 Purpose of this Report

The report sets out an assessment of the anticipated traffic and transport implications of the proposed rezoning, including:

- i Potential access opportunities to the site.
- ii The anticipated development generated traffic.
- iii The acceptability of the traffic impacts of the proposed development, including the need for mitigating road works and appropriate vehicular access.

The report also includes recommendations for:

- i Improving pedestrian and bicycle access arrangements to the site.
- ii Car parking provision for residents and their visitors.
- iii Adequate waste collection access to residential lots.

### 1.4 References

In preparing this report, reference has been made to the following:

- o Knox Planning Scheme
- o Knox City Council Road Management Plan
- o traffic surveys undertaken by GTA as referenced in the context of this report
- o an inspection of the site and its surrounds
- o other documents as nominated.

## 2. Existing Conditions

### 2.1 Road Network

#### 2.1.1 Surrounding Roads

##### Mount View Road

Mount View Road is a local collector road (Council controlled). It is a two-way road aligned in a northwest – southeast direction and configured with a two-lane, 7.5m wide carriageway set within a 15m wide road reserve (approximately). Kerbside car parking is permitted.

Mount View Road is shown in Figure 2.1 and Figure 2.2.

**Figure 2.1: Mount View Road (Looking North)**



**Figure 2.2: Mount View Road (Looking South)**



##### Paisley Avenue

Paisley Avenue is a local access road (Council controlled). It is a two-way road aligned in a northeast – southwest direction and configured with a two-lane, 7m wide carriageway set within a 15m wide road reserve (approximately). Kerbside car parking is permitted.

Paisley Avenue is shown in Figure 2.3 and Figure 2.4.

**Figure 2.3: Paisley Avenue (Looking East)**



**Figure 2.4: Paisley Avenue (Looking West)**



##### Harcourt Road

Harcourt Road is a local access road (Council controlled). It is a two-way road aligned in a northwest – southeast direction and configured with a two-lane, 7m wide carriageway set within a 15m wide road reserve (approximately). Kerbside car parking is permitted.

Harcourt Avenue is shown in Figure 2.5 and Figure 2.6.



**Figure 2.5: Harcourt Road (Looking North)**



**Figure 2.6: Harcourt Road (Looking South)**



### Forrest Road

Forrest Road is an arterial road located within a Road Zone (Category 1) in the Knox Planning Scheme and is controlled by VicRoads. It is a two-way road aligned in an east-west direction with a 10.5m wide carriageway set within a 30m wide road reserve (approximately). There are line marked bicycle lanes on both sides of the road.

The road carries approximately 11,000<sup>1</sup> vehicles per day. Kerbside car parking is permitted.

Forrest Road is shown in Figure 2.7 and Figure 2.8.

**Figure 2.7: Forrest Road (Looking East)**



**Figure 2.8: Forrest Road (Looking West)**



## 2.1.2 Traffic Volumes

GTA commissioned weeklong pneumatic tube count traffic surveys on Harcourt Road and Mount View Road between Wednesday 24 May 2017 and Tuesday 30 May 2017. The existing peak hour and daily traffic volumes on both roads are outlined in Figure 2.9.

<sup>1</sup> Based on 2017 AADT data available from the VicRoads online open data portal.



Figure 2.9: Existing Daily and Peak Hour Traffic Volumes



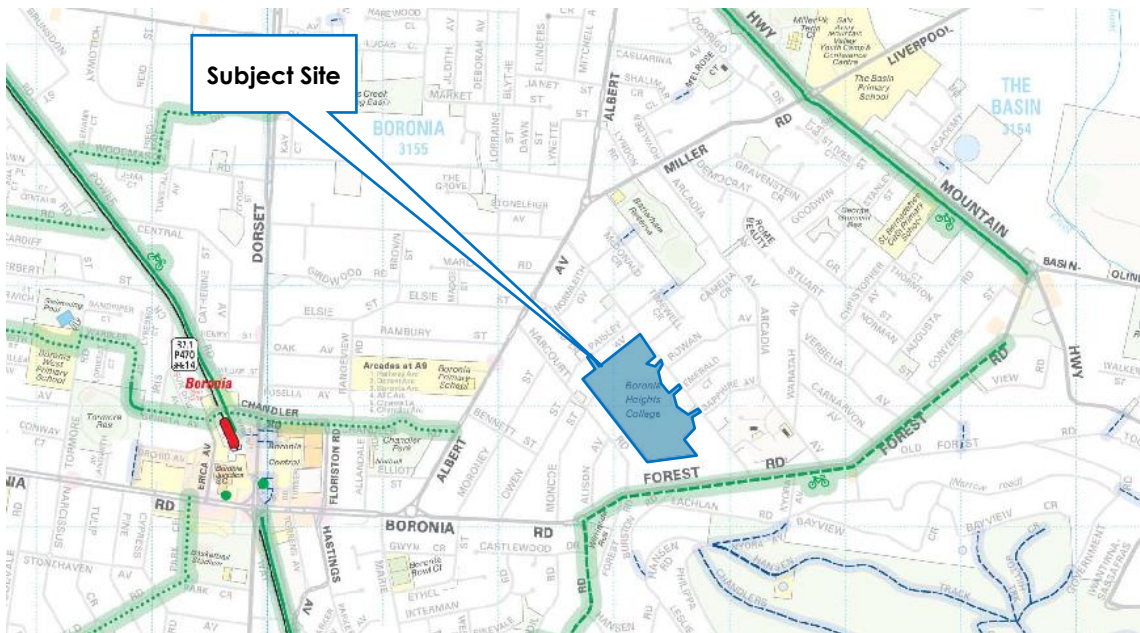
### 2.1.3 Pedestrian Infrastructure

Sealed pedestrian paths are located on all roads surrounding the subject site.

### 2.1.4 Bicycle Infrastructure

Forest Road and Albert Road are nominated bicycle routes in VicRoads Principle Bicycle Network. These routes provide connections to the wider bicycle network. Figure 2.10 shows the constructed bicycle paths and lanes in the surrounding Knox area, as recognised by Knox City Council.

Figure 2.10: Knox City Council Bicycle Path Network



## 2.2 Public Transport

Figure 2.11 shows the subject site in relation to existing public transport routes within its vicinity, whilst Table 2.1 summarises the road based routes and major destinations that can be reached using these services.

Figure 2.11: Public Transport Map



**Table 2.1: Public Transport within the vicinity of the site**

Service	Route Nos	Route Description	Distance to Nearest Stop (m)	Significant Destinations	Frequency On/Off Peak
Bus	755	Bayswater – Knox City	400m	Bayswater, The Basin, Boronia, Ferntree Gully, Knox	30 mins
	690	Croydon – Boronia	800m	Croydon, Kilsyth, Canterbury Gardens, Kilsyth South, Boronia	30/40 mins

In addition to road based public transport, Boronia train station on the Belgrave line is located approximately 2km from the site.



## 3. Indicative Development

### 3.1 Potential Residential Development

The Government has listed the College site among five sites that could be used to deliver social housing. For the purposes of this report it has been assumed that around 90 dwellings could be developed on the site. This is considered a conservative on the high side estimate.

### 3.2 Potential Vehicle Access Points

In determining the vehicle access points to the site, the following site characteristics have been considered:

- The location of vegetation/recreational parkland.
- The remaining site access points to the College.
- Other access points which do not impact on existing residential dwellings or rely on any third-party land nearby.
- Surrounding roads and nearby intersections.
- Traffic expected to be generated by the indicative development.

Due to the location of existing vegetation and the potential to retain the sports oval within the site, site access opportunities appear to be limited to the two existing accesses on Mount View Road that previously served the College car park. Potential site access points are shown below in Figure 3.1.

**Figure 3.1: Potential Site Access Points**



While a proposed residential development on the site could be served by two accesses, it could just as readily be served by a single point of access. It is noted that a single point of access could serve up to 100 houses if provided with a 7.0m wide carriageway; however, the carriageway width could be reduced to around 6.0m if serving fewer than 50 houses.



If the indicative development was to be accessed from a single location, it is recommended that the southern-most access on Mount View Road be chosen. This is due to intersection spacing between it and the nearby Sapphire Avenue being larger than the next site access to the north and its lesser spacing to Emerald Court.

### 3.3 Internal Road Network Design

#### 3.3.1 Overview

The internal road network should be designed in accordance with the requirements of Clause 56 of the Knox Planning Scheme, whilst also having regard to the Knox City Council Road Management Plan, and the Victorian Planning Authority (VPA) – Precinct Structure Plan (PSP) Design Guides. It is anticipated that this matter will be considered more fully at any planning permit stage.

##### Clause 56.06-08 Knox Planning Scheme

Clauses 56.06-08 of the Knox Planning Scheme provides details for the design of roads and neighbourhood streets within new residential subdivisions.

In addition to individual lot access and crossover requirements, the Clause also provides guidance on a roads configuration based on its proposed role in the road hierarchy. On the basis of likely traffic generation values, the formation of the internal road network using 'Access Streets' and 'Access Places' is considered an appropriate approach. For reference, 'Access Streets' and 'Access Places' have daily indicative traffic volume limits of up to 2,000 and up to 1,000 vehicles per day respectively.

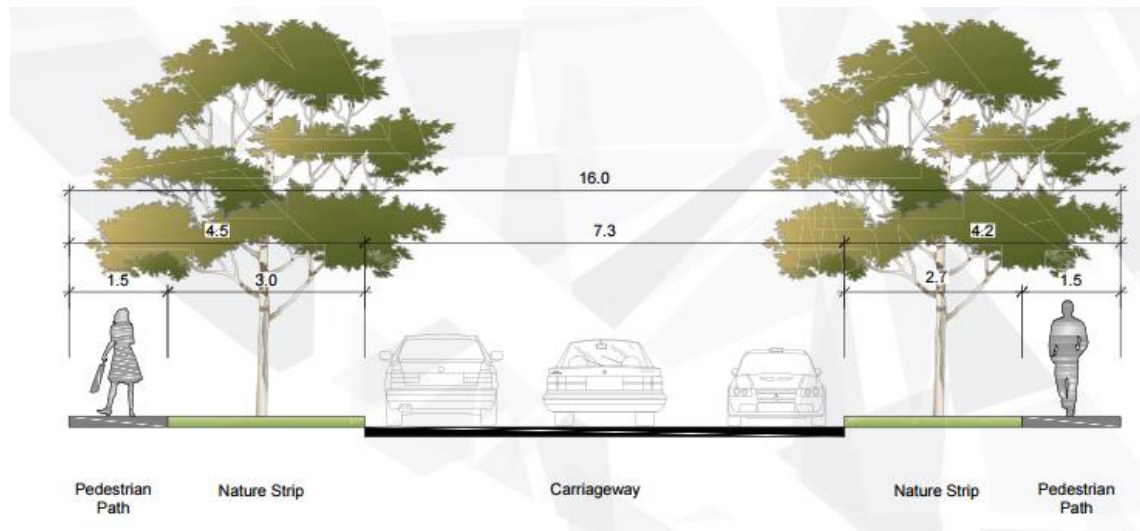
##### Knox City Council Road Management Plan

The Knox City Council Road Management Plan provides guidance for the classification of roads based on daily traffic volumes. Adopting these limits for new streets in this subdivision, the provision of 'Access Roads' is considered to be appropriate. As guided by Clause 56.06-08, these local roads have daily traffic volumes of up to 2,000 vehicles per day.

##### VPA – PSP Guidelines

The VPA Precinct Structure Plan (PSP) guidelines provide guidance on the classification of roads based on daily traffic volumes. These guidelines suggest that the provision of streets similar to the VPA 'Access Place/Access Street Level 1' is considered appropriate. A general cross section is shown in Figure 3.2.

Figure 3.2: Access Place/Access Street Level 1 (16.0m Road Reserve) <2,000 vehicles per day



Source VPA PSP Guidelines

### 3.4 Summary

Based on the foregoing discussions, it is evident that the road types outlined in Clause 56.06 of the Knox Planning Scheme are similar to those outlined in the Knox City Council Road Management Plan and the VPA PSP guidelines.

None of the roads in the indicative development layout are expected to exceed the maximum functional daily traffic volumes outlined in earlier sections of this report.

## 4. Potential Traffic Impact

### 4.1 Indicative Traffic Generation

An assessment of traffic generation for the former Boronia Heights College and the indicative 90 dwelling residential development has been undertaken. This assessment presents a comparison between the potential impact that the indicative residential development will have on the surrounding road network compared to the former College.

#### 4.1.1 Boronia Heights College

In order to determine an appropriate traffic generation of the former Boronia Heights College, traffic survey information obtained from similar land uses throughout metropolitan Melbourne has been reviewed. The survey data sources and resulting traffic generation values are shown in Table 4.1

**Table 4.1: Traffic Generation Rates for Schools**

School Name	Location	Size	Traffic Generation Rate per Student	
			AM Peak	PM Peak
Heatherton Christian College	Heatherton	88 students	1.05	1.07
Sohpia Munder Steiner School	Abbotsford	334 students	0.80	0.58
Eltham College	Research	1,057 students	0.40	0.39
Hillcrest Christian College Ayr Hill Campus	Clyde North	600 students	0.49	0.32
Penleigh & Essendon Grammar School	Keilor East	1,000 students	0.92	0.59
Heatherton Christian College	Clarinda	214 students	0.72	0.74
Aitken College	Greenvale	1,207 students	0.87	0.53

Based on the above assessment, the generation rates of the former College during the weekday AM peak period are expected to be between 0.4 and 1.05 vehicle movements per student, and during the weekday PM peak period between 0.39 and 1.07 vehicle movements per student.

For the purposes of this assessment, the daily traffic generation rate has been estimated using the sum of the peak hour traffic generation rates and applying a factor of 1.2. This is considered to be a conservatively low factor for comparing the like-for-like impact of the daily trip generation of the previous school to the proposed residential development zoning.

Table 4.2 shows the estimated upper and lower limit traffic generation of the former College, which previously accommodated 364 students.

**Table 4.2: Boronia Heights College Upper and Lower Traffic Generation Estimates**

Student Population	Empirical Generation Rates		Traffic Generation Estimates		Total Daily Movements
	AM	PM	AM	PM	
364 students	0.4	0.39	146vph	142vph	346vpd
	1.05	1.07	382vph	389vph	925vpd

vph denotes vehicles per hour vpd denotes vehicles per day.

Based on the above empirical assessment, the former College could have generated between 142 and 389 peak hour vehicle movements, and between 346 and 925 daily vehicle movements.

### 4.1.2 Indicative Residential Development

Guidance on an appropriate traffic generation rate for a potential residential development on the site has been sought from the Victorian Integrated Survey of Travel and Activity 2009 (VISTA09). This source suggests a traffic generation rate of 6.7 vehicle movements per day for dwellings within the Knox local government area (LGA). Peak hour rates are typically 10% of daily rates; resulting in an average peak hour traffic generation of 0.67 vehicle movements per dwelling.

For the purposes of this assessment, a peak hour and daily traffic generation of 0.7 and 7.0 vehicle movements per dwelling have been adopted respectively. The resulting traffic generation for the indicative upper limit of 90 dwellings is shown in Table 4.3.

**Table 4.3: Estimated Residential Traffic Generation Rates**

No. of Dwellings	Design Generation Rates		Traffic Generation Estimates	
	Peak Hour	Daily	Peak Hour	Daily
90 dwellings	0.7	7.0	63vph	630vpd

vph denotes vehicles per hour.

vpd denotes vehicles per day.

As presented in Table 4.3, the indicative development could potentially generate in the order of 63 vehicle movements during the weekday AM and PM peak hour periods and 630 daily vehicle movements.

## 4.2 Traffic Distribution and Assignment

Traffic is expected to split evenly in the north/south directions on Mount View Road. This is based on the accessibility of the arterial road network to the south and the employment opportunities to the north.

## 4.3 Potential Traffic Impact

Surveys were conducted from Wednesday 24 May 2017 to Tuesday 30 May 2017 to ascertain the number of vehicles currently using Mount View Road. During this period, Mount View Road had a maximum traffic volume of approximately 800 vehicle movements per day, and a maximum of 80 vehicle movements in the peak hours.

A comparative assessment between the existing peak hour and daily traffic volumes on Mount View Road, those that likely existed when the College was operational and those that could be expected with the indicative residential development, is presented in Table 4.4.

**Table 4.4: Comparative of Potential Vehicle Movements on Mount View Road**

Scenario	Two-Way Traffic Volumes		
	AM Peak Hour	PM Peak Hour	Daily
Existing	80vph	80vph	800vpd
With College	153vph – 271vph	151vph – 275vph	973vpd – 1,263vpd
with Indicative Residential Development	112vph	112vph	1,115vpd

vph denotes vehicles per hour    vpd denotes vehicles per day.

It is estimated that the indicative residential development will generate fewer peak hour vehicle movements than the former College. It is also estimated that the indicative residential development could generate a comparable number of daily traffic movements to the former College.



Post development, Mount View Road could be expected to carry 1,115 vehicles per day at any one point on the road (800 existing vehicle movements + 315 vehicles from the residential development and assuming a 50% north/50% south distribution split).

The Knox City Council Road Management Plan identifies Mount View Road as a 'Collector Road' with an expected functional daily traffic volume capacity of 6,000 vehicles per day. The estimated post development daily traffic volume on Mount View Road sits comfortably below this theoretical capacity.

## 4.4 Summary

Based on the above assessment, the indicative residential development is expected to generate fewer peak hour vehicle movements than the former College and comparable daily traffic volumes.

Furthermore, post development daily traffic volumes on Mount View Road are expected to remain comfortably below the theoretical daily capacity of a 'Collector Road'.

It is considered that the traffic from the indicative residential development could not be expected to materially impact on the performance and safety of the surrounding road network.

## 5. Other Matters

### 5.1 Car Parking Requirements

The provision and design of car parking should be in accordance with Clause 52.06 of the Knox Planning Scheme.

It is expected that the resident car parking would be provided within individual garages/car ports, with residential visitor car parking provided kerbside of the internal roads or within angled off-street car parking spaces.

### 5.2 Waste Collection

It is anticipated that waste will be stored within each individual lot and brought kerbside for collection as part of Council's regular service. The internal road network should be designed to accommodate Council's typical waste collection vehicle.

### 5.3 Emergency Vehicles

The internal road layout should be designed so that emergency vehicle access is available to any part of the development. Specifically, the internal road network should be designed to accommodate vehicles of a size up to and including 9.8m long fire trucks.

### 5.4 Bicycle Facilities

The indicative residential development is not expected to generate a statutory bicycle parking requirement. It is recommended that any garages and car ports provided with dwellings have sufficient dimensions to accommodate a resident's bicycle.

### 5.5 Pedestrian Facilities

Pedestrian footpaths with a minimum width of 1.5m should be provided on at least one side of the internal roads. The use of shared spaces (i.e. where pedestrians and vehicles occupy the same space but with priority to pedestrians) would be considered acceptable on those parts of the road network expected to carry low traffic volumes.

## 6. Conclusion

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

- i The indicative residential development delivering up to 90 dwellings could be expected to generate up to 63 vehicle movements during peak hours and up to 630 movements over the course of a day.
- ii When compared to the former College, the indicative residential development would generate fewer peak hour vehicle movements and a comparable number of daily vehicle movements.
- iii The traffic from the indicative residential development could not be expected to materially impact on the performance and safety of the surrounding road network.
- iv The internal road layout should be designed in accordance with Clause 56.06-08 of the Knox Planning Scheme, whilst having regard to the Knox City Council Road Network Management Plan and the VPA PSP Guidelines. The design of the internal roads should also have regard to access by waste collection and emergency vehicles.
- v The provision and design of car parking for the indicative residential development should be in accordance with Clause 52.06 of the Knox Planning Scheme.

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