

7 ICETON PLACE, YASS Lot 2 DP1243702 & Lots 13 & 14 DP786575

Traffic Impact Assessment

25 June 2020

7 Iceton Place, Yass

Genium Civil Engineering Pty Ltd – Traffic Impact Assessment

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1. Introduction

1.1 Background

The subject site is located south-east of Yass and is adjacent to the band of existing rural residential development that surrounds the township. The land is comprised of the following parcels:

- Lot 2 DP 1243702 (72.95ha);
- Lot 13 DP 786575 (42.27ha);
- Lot 14, DP 786575 (58.08ha).

The land has a total area of 173.3ha and has road frontage to Yass Valley Way, Iceton Place, and Gums Lane, as well as a direct connection to Rayner Place. The land is mostly undulating with some steeper areas and is split by O'Briens Creek which runs through the site in a northerly direction. The land has historically been used for agricultural purposes with grazing and cropping/pasture improvement activities undertaken on the site.

The land is currently zoned R5 – Large Lot Residential, under the Yass Valley Local Environmental Plan 2013, with a minimum lot size of 10ha. The proponent intends to lodge a Planning Proposal to change the minimum lot size to a mix of 2ha and 1 ha lots to better fit with surrounding land uses and to help achieve the lot targets set by the Yass Settlement Strategy 2036.

Figure 1 below provides a locality plan of the site:



Figure 1 – Site Locality Plan

Site location, description of site (zoning etc), proposed development

1.2 Scope and Objectives

The purpose of this Traffic Impact Assessment (TIA) is to assess the impacts of the proposed development on the transport network and identify appropriate mitigation measures to address these impacts.

This report has been prepared to provide supporting evidence to accompany a Planning Proposal and Development Application for the site. Specifically the objectives of this report are to:

- Identify existing traffic conditions around the site;
- Assess the likely traffic generation of the proposed development;

- Assess the impact of this traffic generation on existing road service levels and safety;
- Recommend any works or mitigation measures that should be implemented.

The assessment focuses on immediate access and egress to/from the site onto Iceton Place and Yass Valley Way and does not consider wider impacts on the overall road network.

2. Existing Traffic Conditions

2.1 Road Hierarchy

The site is located south-east of Yass township adjacent to large areas of existing rural residential development. The site has direct road frontage to Yass Valley Way, Rayner Place, Iceton Place, and Gums Lane.

Environmental investigations indicate that access from Rayner Place and Gums lane are likely to have significant biodiversity impacts and as such it is not proposed to provide road links to these existing roads.

Yass Valley Way is an arterial road which is also gazetted as a Regional Road. It carries traffic to and from Yass to the Barton and Hume Highways east of Yass which provide access to other regions including the ACT, Sydney, and the NSW South Coast. Access to the Barton Highway and Canberra is a big attractor for traffic movement given 50% of the population of the Yass Valley LGA work in Canberra (2016 Census).

Yass Valley Way is a 10m wide sealed road (2 x 3.5m travel lanes with 1.5m shoulders) which is in good-fair condition. The road contains centreline and edge line markings and traffic management arrangements at existing intersections generally include Channelised turn treatments. The existing posted speed limit adjacent to the proposed development is 100km/h, however numerous sections of the road either side of Yass have recently been reduced to 70km/h.

Iceton Place is a low standard access road which is currently unsealed with an approximate formation width of 5-7m. This road currently services two dwellings and the existing standard of the road is commensurate with this level of road use. The current posted speed limit on Iceton place is 100km/h although due to its short length it is unlikely that vehicle speeds would exceed 60km/h.

Cusack Place is a sealed access road with a current seal width of 6m. It currently services 17 lots including those on Iceton Place which joins the road half way along its length. The road has a relatively straight alignment and is in fair condition with some isolated pavement defects. The current posted speed limit on Cusack Place is 100km/h.

Iceton place intersects with Cusack Place which then allows access to Yass via Gums Lane and Wee Jasper Road.

2.2 Current Traffic Flows

Traffic counts were sourced from Yass Valley Council where available and estimates were made where specific counts were not available. Detailed hourly data was not available at the time of preparation of this report and as such peak hourly traffic data is not available. For the purposes of this assessment an industry standard value of 10% of Average Annual Weekday Traffic (AAWT) volumes has been adopted for peak hour traffic volumes.

<u>Yass Valley Way</u>

The latest count for Yass Valley Way was undertaken in September 2016 and this data is included as Attachment B. For the purposes of this report, 2016 traffic figures have been projected forward to 2022 using an annual growth factor of 2.5%. 2016 and projected 2022 & 2030 traffic figures are provided below:

Traffic Criteria	2016	2022	2030
Annual Average Daily Traffic (AADT)	3405 vpd 3949 vpd 4811 vpd		
Annual Average Weekday Traffic (AAWT)	3924 vpd 4551 vpd 5545 vpd		
% Heavy Vehicles	23.2%		
85 th Percentile Speed	101.2 km/h		
AM Peak (assume 10% of AAWT)	392 vph 455 vph 555 vph		
PM Peak (assume 10% of AAWT)	392 vph	455 vph	555 vph

Table 1 – Existing Traffic Data, Yass Valley Way

No traffic distribution data was available, and it has been assumed that there is a 60/40 spilt with 60% of traffic assumed to travel toward Canberra in the AM peak and back toward Yass in the PM peak.

Iceton Place

No traffic counts were available for Iceton Place but based on traffic generation identified in the RMS Guide to Traffic Generating Developments

Traffic Criteria	Iceton Place
Number of Lots accessed	2
RMS daily traffic generation per lot	7.4 trips/day
Calculated Daily Traffic Generation	15 vpd
RMS AM weekday peak per lot	0.72 trips/hr
AM Peak	1 vph
RMS PM weekday peak per lot	0.78 trips/hr
PM Peak	2 vph

Table 2 – Estimated Traffic Data, Iceton Place

Cusack Place

No traffic counts were available for Cusack Place but based on traffic generation identified in the RMS Guide to Traffic Generating Developments

Traffic Criteria	Cusack Place
Number of Lots accessed	17
RMS daily traffic generation per lot	7.4 trips/day
Calculated Daily Traffic Generation	91 vpd
RMS AM weekday peak per lot	0.72 trips/hr
AM Peak	12 vph
RMS PM weekday peak per lot	0.78 trips/hr
PM Peak	13 vph

Table 3 – Estimated Traffic Data, Cusack Place

Gums Lane

Yass Valley Council provided basic traffic count information for Gums Lane from 2004 and a copy if this data has been included in Attachment B. The traffic count data was projected to 2022 & 2030 values utilising a traffic growth rate of 1.5%. This value was adopted on the basis that very little development has occurred along Gums Lane and as such only moderate growth in traffic volumes would be expected.

Projected traffic figures are shown in the table below:

Traffic Criteria	2004	2022	2030	
Annual Average Daily Traffic (AADT)	51 vpd	67 vpd	75	
% Heavy Vehicles		7.6%		
85 th Percentile Speed		N/A		
AM Peak (assume 10% of AADT)	5 vph	7 vph	8 vph	
PM Peak (assume 10% of AADT)	5 vph	7 vph	8 vph	

Table 4 – Existing Traffic Data, Gums Lane

Wee Jasper Road

Available traffic counts for Wee Jasper Road were obtained from Yass Valley Council. The count was taken in 2010 and has been used as the basis for determining approximate 2020 & 2030 values. A traffic growth rate of 1.5% was used in this instance.

Projected 2020 traffic figures are shown in the table below:

Traffic Criteria	2010	2022	2030	
Annual Average Daily Traffic (AADT)	627 vpd	750 vpd	844 vpd	
% Heavy Vehicles		8.0%		
85 th Percentile Speed		N/A		
AM Peak (assume 10% of AADT)	63 vph	75 vph	84 vph	
PM Peak (assume 10% of AADT)	63 vph	75 vph	84 vph	

Table 5 – Existing Traffic Data, Wee Jasper Road

2.3 Traffic Safety

A review of the Transport for NSW Centre For Road Safety interactive crash statistics website was undertaken to identify the crash history of the above roads. Data available on the website at the time of preparing this report was for the five years 2014-2018.

There is no recorded crashes on Iceton Place, Cusack Place, or Gums Lane during the five year period for which data was available.

There was one recorded crash on Wee Jasper Road in the vicinity of the site during the five year reporting period. This occurred in 2016 and is recorded as a casualty crash with two injured persons. The crash involved the vehicle type was off carriageway to left on a right hand bend.

A map showing the location of the recorded crash is shown below:



Figure 2 – Wee Jasper Road Crash Location (2014-2018)

Crash statistics for Yass Valley Way indicate that there have been eight reported crashes in the period 2014-2018 between Yass and the Barton Highway. Of these there were zero fatalities, two serious injury crashes, four minor injury crashes, and two non-casualty crashes.

A map showing the location of the recorded crash is shown below:



Figure 3 – Yass Valley Way Crash locations (2014-2018)

A summary of these crashes is presented in the table below:

Year	Crash Degree	Description	Day/Night
2014	Serious injury	On road out of control	Night
	Minor Injury	Off road left hit object	Night
	Non-casualty	U turn	Dawn
2015	Non-casualty	Other crash on straight	Day
2016	Minor Injury	Left rear	Day
2017	Serious injury	Struck animal	Night
	Minor Injury	Off road left hit object	Day
	Minor Injury	Off road left hit object	Night

Table 6 – Yass Valley Way Crash Summary (2014-2018)

The recorded crashes on Yass Valley Way are fairly evenly spread along the road. There is a small cluster of minor crashes on or adjacent to Pearces Bridge over the Yass River. There are three separate run off road to left crashes and given the relatively straight alignment it is more likely that these are related to animals on the road or fog rather than to the road alignment itself.

Whilst there are eight recorded crashes, there does not appear to be a defined pattern and the crashes are generally of a minor nature. The number of crashes along this stretch is not considered high in relation to the traffic volumes that use the road on a daily basis.

2.4 Existing Pedestrian Network

There is no specific pedestrian network on any of the adjoining roads and given their distance from Yass it is expected that demand from pedestrians for specific footpath facilities would be low.

2.5 Other Proposed Developments in the Vicinity

Based on the Yass Valley Local Environmental plan 2013, there is not expected to be significant other development in the direct vicinity of the proposed development at 7 Iceton Place. It is expected however, that there will be continued growth in Yass as a result of high demand driven by the Canberra property market.

There is also a large rural residential development approved adjacent to the Wee Jasper Rd/Good Hope Rd intersection which in time will impact traffic numbers utilising Wee Jasper Road. Potential growth has been considered in subsequent sections of this report by incorporating growth factors into future traffic numbers used in assessing the various roads and intersections.

3. Assessment of Proposed Development

3.1 **Proposed Development**

The subject site is located south-east of Yass and is adjacent to the band of existing rural residential development that surrounds the township. The land is comprised of the following parcels:

- Lot 2 DP 1243702 (72.95ha);
- Lot 13 DP 786575 (42.27ha);
- Lot 14, DP 786575 (58.08ha).

The land has a total area of 173.3ha and is currently zoned R5 – Large Lot Residential, under the Yass Valley Local Environmental Plan 2013, with a minimum lot size of 10ha

It is proposed to lodge a planning proposal to reduce the minimum lot size to a mix of 1ha and 2ha lots. A preliminary Plan of Subdivision has been prepared for the site and this has been included as Attachment A.

The proposed rezoning would allow for subdivision of the site into 72 rural residential lots and one community lot along O'Briens Creek for environmental management purposes. The 72 total rural residential lots are made up of 23 lots with a minimum lot size of 1ha, and 49 lots with a 2ha minimum lot size.

The proposed plan of subdivision provides for two road access points to the site, being a primary access from Yass Valley Way, and a secondary access from Iceton Place.

3.2 Access

The primary access to the site will be provided via the construction of a new intersection with Yass Valley Way. The access is intended to be located approximately 275m east of O'Briens Creek. Sight distance at this location has been visually checked and was measured to be 265m to the east and 400m to the west. These values meet the requirements of Safe Intersection Sight Distance (SISD) as specified by Austroads Guide to road Design -Part 4A.

A secondary access is intended to be provided via the extension of Iceton Place. This will provide access to Yass via the existing route along Cusack Place, Gums Lane and Wee Jasper Road.

Individual lots within the development will be provided with driveways constructed in accordance with Council standards. Preferred locations will be determined as part of future design processes and will comply with Council site distance requirements.

3.3 Traffic Generation

Traffic generation for the proposed development has been based on RMS Technical Direction, *TDT 2013/04a - Guide to Traffic Generating Developments, Updated Traffic Surveys.*

This technical direction provides updated traffic generation rates based on additional surveys undertaken by RMS subsequent to the release of the current RMS Guide in 2002. This document specifies a traffic generation rate of 7.4 daily vehicle trips per dwelling for regional areas, with a weekday morning peak generation of 0.71 trips per dwelling and evening peak generation of 0.78 trips per dwelling.

Staging of the proposed development is not yet known but it has been assumed that the development will be undertaken in five stages over an 8 year period (18 months per stage) commencing in 2022.

Estimated traffic generation for the development is as follows:

Year	Lots	Traffic	Traffic Distribution		
	Released	Generation (vpd)	Yass Valley Way	Iceton Place	
2022	16	118	118	0	
2024	14	104	104	0	
2026	12	89	53	36	
2028	13	96	58	38	
2030	17	126	76	50	
Totals	72	533	409	124	

Table 7 – Estimated Traffic Generation from Proposed Development

AM & PM peaks have also been determined utilising guidance provided in technical direction *TDT* 2013/04a. Estimated peak hourly traffic volumes for 2022 and 2030 are provided in the table below:

Year	Yass Valley Way		lceton	Place
	AM Peak	PM Peak	AM Peak	PM Peak
2022	11	12	0	0
2030	39	43	12	13

Table 8 – Estimated Peak Hourly Traffic Generation from Proposed Development

There is limited existing data on which to base traffic distribution estimates at each intersection however given approximately 50% of the population of the Yass Valley work in the ACT, access to and from the Barton Highway is expected to be the major attractor affecting traffic movements.

For the purposes of this report it has been assumed that 60% of traffic from the proposed development that utilise the Yass Valley Way intersection in AM and PM peaks will travel east toward the Barton highway in the morning and west from the Barton highway in the afternoon.

3.4 Traffic Impacts

3.4.1 **Roadway Capacity**

Table 4.5 of the RTA Guide to Traffic Generating Developments 2002 (RTA Guide), identifies rural road peak flow capacities for traffic flows in both directions. The Guide recommends the adoption of Level of Service (LoS) C as an acceptable performance standard. Table 4.5 of the RTA Guide is reproduced below:

Terrain	Level of Service	Percent of Heavy Vehicles			
Terrain		0	5	10	15
	В	630	590	560	530
Level	С	1030	970	920	870
Level	D	1630	1550	1480	1410
	E	2630	2500	2390	2290
	В	500	420	360	310
Dolling	С	920	760	650	570
Rolling	D	1370	1140	970	700
	E	2420	2000	1720	1510
	В	340	230	180	150
Mariatala	С	600	410	320	260
Mountainous	D	1050	680	500	400
	E	2160	1400	1040	820

Figure 4 – Peak Hour Flow on Two Lane Rural Roads (RTA Guide - Table 4.5)

The terrain for Yass Valley Way and the section of Wee Jasper Road in question would be considered flat and although traffic counts for Yass Valley Way indicate an overall 23.2% proportion of heavy vehicles it is likely that this is significantly less in the peak hour due to the high proportion of commuters. As such a value of 15% has been adopted for Yass Valley Way and 10% Heavy Vehicles adopted for Wee Jasper Road.

Based on these inputs the following Level of Service results were obtained for the first and last projected year of the development:

Yass Valley Way Year		ear
Item	2022	2030
Peak Hourly Traffic on Road	455	555
Level of Service without development	В	C
Additional Traffic From Development	12	43
Total peak Hourly traffic	467	598
Level of Service with development	В	С

Tuble 5				
Wee Jasper Road		Year		
lter	n	2022	2030	

Table 9 – Vass Valley Way Levels of Service

Level of Service with development	В	В
Total peak Hourly traffic	75	97
Additional Traffic From Development	0	13
Level of Service without development	В	В
Peak Hourly Traffic on Road	75	84

Table 10 – Wee Jasper Road Levels of Service

The above tables indicate that Levels of Service are not impacted by the development with future projected LoS of B & C identified for Wee Jasper Road and Yass Valley Way. LoS C is considered acceptable (RTA Guide).

Note that specific analysis of capacity has not been undertaken for Iceton Place, Cusack Place, & Gums Lane as traffic movements on these roads are so low and fit well below the range for LoS B. the development is considered to have negligible impact on levels of service on these roads.

3.4.2 Intersection Capacity

Projected traffic movements at the Yass Valley Way intersection were compared to the warrants in Appendix A.8 of the Austroads Guide to Road Design, *Part 4: Intersections and Crossings - General (Austroads).* The traffic numbers identified for the 2030 PM peak provide the worst case scenario and have therefore been used for this analysis.

The following assumptions were used in the intersection analysis:

- The directional split on Yass Valley Way in the PM peak hour is 60/40 with 60% of traffic heading toward Yass;
- It is assumed that all traffic movements in the peak hour that are generated from within the development are leaving the site in the AM peak and returning in the PM peak. This is considered very conservative and overestimates traffic movements;
- 60% of traffic from the proposed development that utilise the Yass Valley Way intersection will travel east toward the Barton highway in the morning and West from the Barton highway in the afternoon.

For the AM peak, vehicle movements are leaving the development with 26 vehicle movements (60%) making the right turn onto Yass Valley Way toward the Barton Highway and 17 vehicle movements (40%) turning left toward Yass. The following diagram shows hourly traffic volumes for each movement during the AM peak:

Figure 5 – Vehicle Movements During AM Peak

In the PM peak, the majority of vehicle movements on Yass Valley Way are heading back toward Yass, and there are 26 & 17 vehicle movements respectively making the left and right turns into the proposed development. The following diagram shows hourly traffic volumes for each movement during the PM peak:







Figure 6 – Vehicle Movements During PM Peak

Based on the PM peak values, the following values were adopted for the determination of an appropriate intersection type:

Parameter	Left Turn	Right Turn		
Main Road Traffic Volume (Q _M)	359	624		
Left Turn Volume (Q _L)	26	-		
Right Turn Volume (Q _R)	-	17		
Turning Treatment Req'd	AUL(S)	CHR		

Table 11 – Yass Valley Way Intersection -

Figure A 10 from Austroads Part 4 has been reproduced below showing the required intersection treatments for the left and right turns:



Figure 7 – Warrants for Turn Treatments (Austroads Part 4 – Figure A 10)

Projected traffic movements from the development utilising Iceton Place and intersections at Cusack Place, Gums Lane, and Wee Jasper Road are considered insignificant in terms of likely traffic impacts. Major Road traffic volumes would need to reach around 200 vehicles per hour before intersection upgrades would be warranted at any of these locations and based on the figures provided above in Section 2.2, traffic volumes in 2030 are likely to be less than 50% of this value. As such a more detailed assessment of each intersection has not been carried out and it is assumed that no upgrades would be necessary at these intersections.

Iceton Place is currently an unsealed road and would not be considered suitable for use as an access to the development without being upgraded. In accordance with Yass Valley Council's Road Standards Policy RD-POL-9, the appropriate standard for this road is "Local Minor" which requires a 7m wide road formation and 6.5m wide sealed road pavement. RD-POL-9 indicates that this standard of road is appropriate for traffic volumes of 101-200 vehicles per day and as such would be considered suitable for the estimated traffic volumes generated by the development.

3.5 Internal Roads

Internal roads have been designed to provide as much circulation as possible and to comply with Council and NSW Rural Fire Service requirements.

The main road that accesses off Yass Valley Way and runs through to connect to Iceton Place is intended to be constructed as a 'Local - Secondary' road in accordance with Yass Valley Council Policy RD-POL-9 – Road Standards. This road category requires an 8m road formation and 7m sealed road surface within a 25m wide road reserve, and can cater for an AADT of up to 500 vehicles per day.

All other roads within the development are proposed to be designed as 'Local - Minor' roads which can cater for an AADT of up to 200 vehicles per day. Local – Minor roads require a 7m road formation with 6.5m seal width within a 20m wide road reserve.

The design speed will be 70km/h as required by Council Road Standards Policy and internal intersections will be designed with BAR/BAL turning treatments as required by Austroads.

A bridge or culvert crossing structure is required over O'Briens Creek and this will be designed and constructed to meet the requirements of AS5100 and any Council requirements.

4. Recommended Works/Mitigation Measures

The following works are suggested to ensure the mitigation of any impacts as a result of the proposed development:

- All internal roads and traffic facilities be designed and constructed in accordance with Yass Valley Council design and construction standards;
- To cater for existing traffic volumes on Yass Valley Way and projected traffic from the proposed development, the intersection of the new subdivision road and Yass Valley Way should be designed and constructed as a minimum to the standard of a CHR/AUL(S) intersection.
- That Iceton Place be upgrade to the standard of :"Local Minor" in accordance with Yass Valley Council Road Standards Policy RD-POL-9.

5. Conclusion

The proposed development at Iceton Place is expected to generate a total of 533 additional daily vehicle movements. The majority of these (409 vpd) are expected to access the existing road network at Yass Valley Way. Secondary access will be provided via Iceton Place and subsequently Cusack Place, Gums Lane, and Wee Jasper Road which all currently carry relatively low volumes of traffic.

Yass Valley Way has been shown to have sufficient additional capacity to cater for the increased demand of the proposed development, and a suitable intersection is able to be provided to manage access and egress to and from the development site.

Iceton Place, Cusack Place, Gums Lane, and Wee Jasper Road all have significant additional capacity and as a result impacts to these roads will have an insignificant impact on road capacity.

Subject to implementation of the proposed mitigation measures, the proposed development is not expected to have a significant impact on safety or road network efficiency.



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sting	Utility	Services

Attachment B – Yass Valley Way Traffic Count 2016

	<u>\</u>	'ass Valle	y Coun	ncil							
Location:	Yass Valley Way just at 100km sign <100>										
Site name:	Yass Valley Way Lo	cation:									
Direction:	North, South (bound)									
Survey duration:	0:00 Friday, 16 Sep	0:00 Friday, 16 September 2016 to 0:00 Tuesday, 27 September 2016 (11 days)									
Speed limit:	100 km/h										
Profile:	Cls(1 2 3 4 5 6 7 8 9	Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NS) Sp(10,160) Headway(>0) Span(0 - 100), Class scheme = AustRoads94									
Total No. Vahialaa	07457										
Total No. Vehicles	37457										
Total North	17848										
Total South	19609										
ADT	3405										
% Heavies (Cl 3-12)	23.2										

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	AWDT	AWET	ADT	ADT North	ADT South
Daily Total	3133	6369	4146	3846	3422	2773	2221	3924	2497	3405	1623	1783
	_	_	_	_	_	_	_					
Mean	84.4	85.0	78.3	78.3	85.2	85.6	82.7	83.0	84.3	83.3	95.9	71.9
Speed 85th %	102.6	101.9	94.0	92.5	103.0	104.4	100.8	100.4	103.0	101.2	107.6	78.8
Exceeding	626	1170	332	271	698	624	369	631	496	582	577	5
Percent Ex	20.0	18.4	8.0	7.0	20.4	22.5	16.6	16.1	19.9	17.1	35.6	0.3
Mean Ex	107.8	108.1	107.3	106.7	108.1	108.6	108.1	107.9	108.4	108.1	108.1	107.4
No. of Days								7	4	1 1		
Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	
2541	77	669	52	2	22	20	6	13	4	0	0	
74.6	2.3	19.6	1.5	0.1	0.7	0.6	0.2	0.4	0.1	0.0	0.0	N

