

10/7/2018



Sutton Re-Zoning Project

Traffic Impact Assessment

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1. Introduction

1.1 Background

Ontoit were engaged by Tony Carey Consulting on behalf of Woodbury Ridge Estate to undertake a Traffic and Transport Impact Assessment (TIA) to assist with re-zoning of a parcel of land at Sutton, NSW. Ontoit were advised that the proposal is to re-zone Lot 5 DP838497 (see Figure 1), Sutton Road, Sutton from the current RU1 Primary Production zoning under the Yass Council LEP to a zoning to enable future residential development.



Figure 1 Lot 5 DP838497 Sutton Road, Sutton (credit: NSW Six Maps)

This TIA will inform and support the planning exercise for the re-zoning of Lot 5 DP838497. The purpose of the study is to examine existing traffic and transport network conditions and to assess the future traffic and parking impacts arising from the proposed development scenario for Lot 5 DP838497. The study has assessed existing and future traffic conditions to ensure the transport infrastructure has sufficient capacity to support future development.

This report presents a summary of the analysis and results that have been undertaken as part of the TIA. The assessment of traffic and parking impacts generated by the proposed development has been based on the following information and guidelines:

1. Proposed redevelopment plans and designs provided by Client;
2. The NSW Roads and Maritime (RMS) *Guide to Traffic Generating Developments* (Version 2.2, October 2002);
3. The Yass Council LEP; and
4. Review of existing traffic and parking conditions on the surrounding road network.

1.2 Site Context

The village of Sutton is located within Yass Valley Shire Council Local Government Area in NSW approximately 22km north east of Canberra and 17km south of Gundaroo. Currently home to approximately 1,660 residents, the area offers residents a rural lifestyle in close proximity to the Australian Capital Territory. Direct access to Canberra is via the Federal Highway interchange with Sutton Road located approximately 2km to the south of the village.

Figure 1 above illustrates the existing site which is approximately 180 hectares and is zoned RU1 Primary Production with a minimum lot size control of 40 hectares under the Yass Valley LEP 2013. The current site is located to the south of the village of Sutton and is bounded by Sutton Road to the west, the Old Federal Highway to the east, the Federal Highway to the South and Guise Street to the north. The site also has a number of important environmental features including Yass River bounding the north eastern edge of the site and a significant number of existing trees across the whole site. **Figure 2** illustrates photos of the existing site.



Figure 2 Proposed site for re-zoning, looking South off Guise Street, Sutton.

1.3 Report Structure

This report provides advice and analysis on the potential future traffic and transport conditions would potentially result from the proposed re-zoning options. The report has been structured as follows:

- Chapter 2 – Existing Situation – this section provides an overview of the current traffic and transport conditions in the vicinity of the site
- Chapter 3 – The Development Proposal – this section provides an overview of the re-zoning and master planning options for the proposed development site;
- Chapter 4 – Future Traffic Conditions – this section provides an overview of the likely impacts to the transport and traffic network as a result of proposed re-zoning; and
- Chapter 5 – Summary and Conclusion – this section summarises the analysis and key conclusions / recommendations of the study.

2. Existing Conditions

A comprehensive review of the transport and traffic network in the vicinity of the proposed development site has been undertaken to establish a baseline of conditions. This section outlines and summarises the findings from this review.

2.1 Road Network

The site under investigation is located to the south of the village of Sutton, NSW (as illustrated in **Figure 3**). The road network that bounds the site includes:

- Sutton Road to the west;
- The Old Federal Highway to the east;
- The Federal Highway to the South; and
- Guise Street to the north.

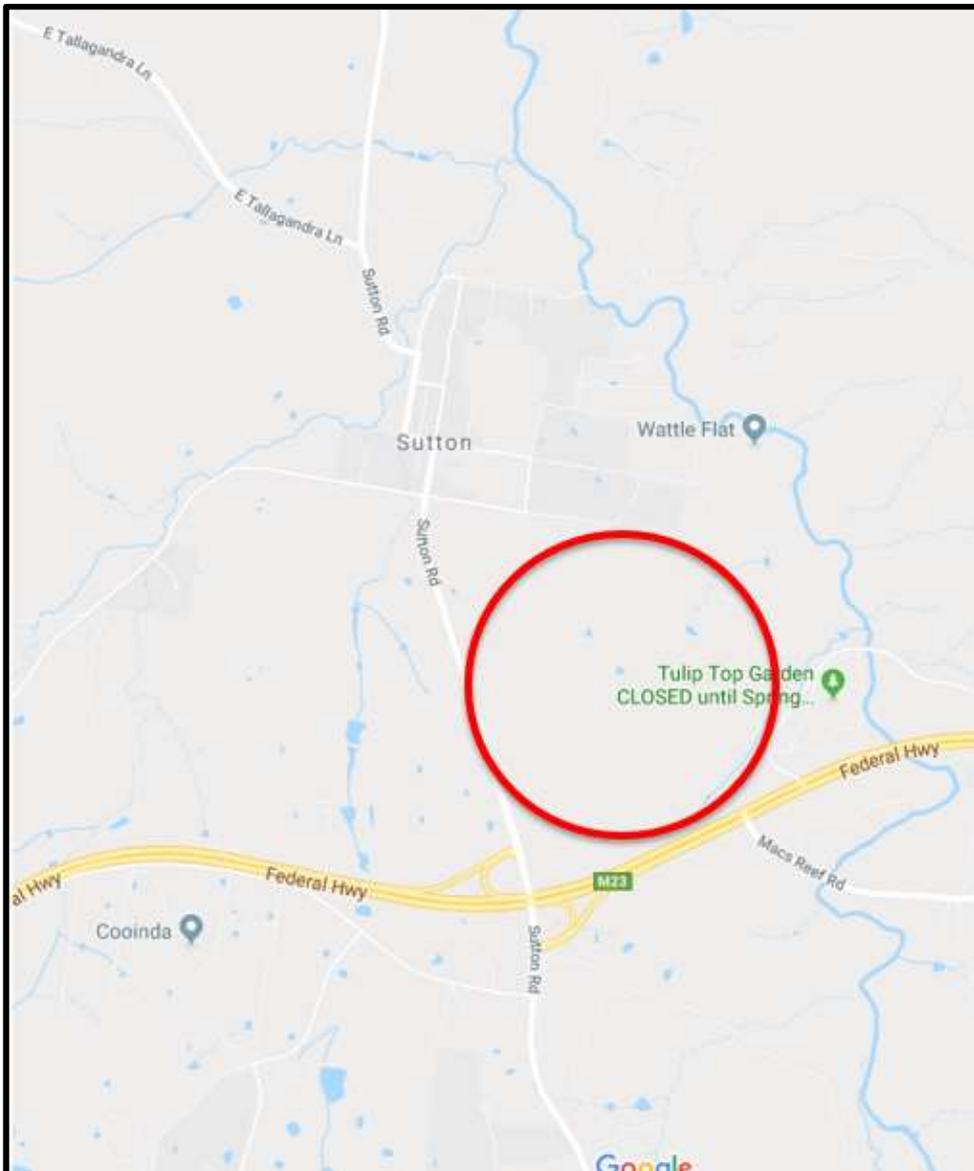


Figure 3 Site under investigation for re-zoning (credit: google maps)

All four roads around the site are classified differently and as such have different road characteristics, a summary of these is provided in the following sections.

2.1.1 The Federal Highway

The Federal Highway forms part of the national road network (see **Figure 4**) linking Canberra to Sydney via the Hume Highway. The NSW Roads and Maritime Service (RMS) has ultimate responsibility for this corridor. Being part of the national road network, the road reflects these characteristics:

- Sealed dual carriageway in both directions with approximately 7m width (2 x 3.5m traffic lanes);
- Segregated carriageways with wide medians (greater than 10m);
- Posted speed limit of 110kph; and
- Grade separated major intersection and at grade unsignalised minor intersections.

The Federal Highway has similar characteristics to a Motorway and as such would be expected to have similar vehicle capacity. RMS Road Design Guidelines suggest that the operational capacity of a road of this nature would be approximately 1 600 vehicles per hour per lane. This would give an approximate capacity of 6,500 vehicles per hour along this corridor.



Figure 4 RMS NSW Regional Road Map

Figure 4 illustrates the national RMS road network highlighting corridors that RMS has the operational and maintenance responsibility. Red corridors are part of the strategic National Road Network, blue corridors illustrate the State Road network and green corridors illustrate the Regional Road network.

2.1.2 The Old Federal Highway

The Old Federal Highway is classified as Local Access Road within the Yass Valley Council jurisdiction. Its primary purpose is to provide local access to residential and rural dwellings along its length. Characteristics include:

- Sealed single carriageway in each direction which is approximately 10m wide immediately off The Federal Highway and narrows to approximately 7m wide approaching the proposed development site;
- No central median;
- All intersections are priority controlled and are generally providing access to dwellings.

Typical road capacities along a road of this nature would be between 500-700 vehicles per hour per lane. **Figure 5** illustrates the existing road character at the entry to the Old Federal Highway immediately off (to the west) the Federal Highway.



Figure 5 Old Federal Highway looking north off the Federal Highway

2.1.3 Sutton Road

Sutton Road is classified as a Regional Road within the RMS road network hierarchy (see **Figure 4** above). It forms a vital link between the Federal Highway and Hume Highway. The road also serves as an important link for the areas to the north of Sutton such as Gundaroo and Gunning to Canberra, Queanbeyan and Sydney. Characteristics include:

- Sealed single carriageway in each direction with a corridor width of approximately 7m (2 x3.5m wide traffic lanes);
- Posted speed limit of 90kph for the majority of the corridor which reduced to 50kph through the villages such as Sutton and Gundaroo;
- No central median; and
- Priority controlled intersection for its entire length.

Typical road capacities along a road of this nature would be between 700-900 vehicles per hour per lane. **Figure 6** and **7** below illustrate the road corridor conditions along Sutton Road between the village of Sutton and the Federal Highway.



Figure 6 Sutton Road looking south towards the Federal Highway

Figure 7 Sutton Road looking north towards Sutton Village

2.1.4 Guise Street

Guise Street is a local access street within the village of Sutton. The road falls under the jurisdiction of Yass Valley Council. Characteristics include:

- Narrow sealed single carriageway width of approximately of 5m to 6m;
- No line markings;
- No central median; and
- Posted speed limit of 50kph.

Typical road capacities along a road of this nature would be between 500-700 vehicles per hour per lane. **Figure 8** illustrates the road characteristics of Guise Street in Sutton Village.



Figure 8 Guise Street looking east off Sutton Road

2.1.5 Existing Vehicle Volumes

To assist with the existing situation and future utilisation assessments, traffic surveys were commissioned for a week-long period between Thursday 3 May 2018 and Thursday 10 May 2018. Traffic counters were located along road corridors in close proximity and adjacent to the site as illustrated in **Figure 9**. The key corridors included:

- Sutton Road both north and south of the Federal Highway intersection;
- Federal Highway Northbound – on and off ramps to Sutton Road;
- Federal Highway Southbound – on and off ramps to Sutton Road;
- Old Federal Highway immediately to the north of the intersection with the Federal Highway; and
- Guise Street between Sutton Road and Moorong Street.

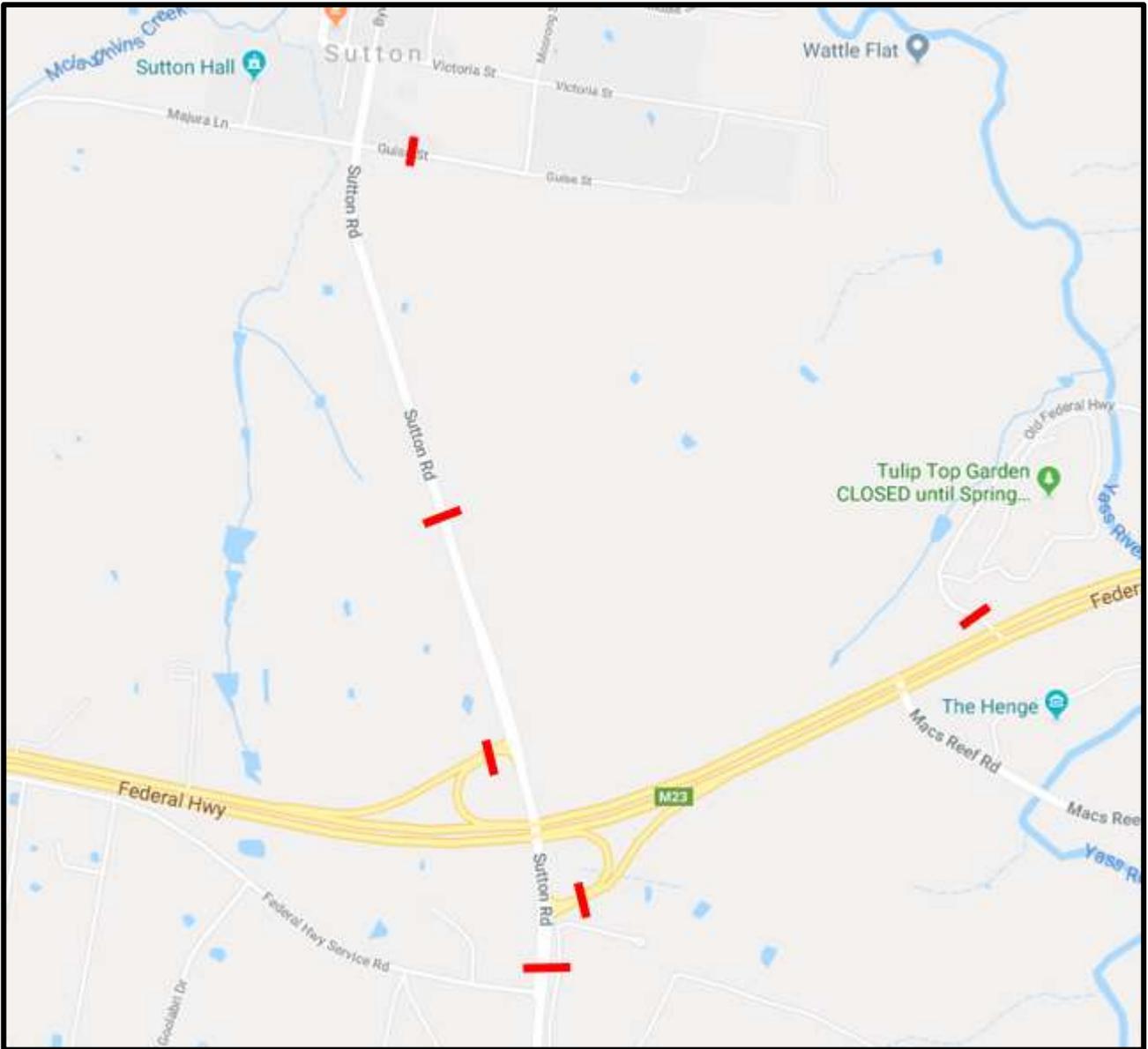


Figure 9 Traffic counter locations

The data collected during the traffic surveys is summarised in **Table 1**.

Table 1 Summary of traffic volumes by location

Location	Total Weekday Combined Direction Volume	Directional Daily Volume (Westbound / Northbound)	Directional Daily Volume (Eastbound / Southbound)
Guise Street	81	36	45
Sutton Road – south of Federal Highway	3,408	1,792	1,616
Sutton Road – north of Federal Highway	4,172	2,050	2,122

Federal Highway Northbound Off Ramp	1,539	N/A	N/A
Federal Highway Northbound On Ramp	1,051	N/A	N/A
Federal Highway Southbound Off Ramp	1,086	N/A	N/A
Federal Highway Southbound On Ramp	1,825	N/A	N/A
Old Federal Highway	47	24	23

In addition to the daily volumes, peak hour volumes were also recorded and are illustrated in **Figure 10**. Peak Periods for both AM and PM peak hours were very similar at all locations. AM Peak times are between 7am and 9am with PM peak periods between 3pm and 5pm.

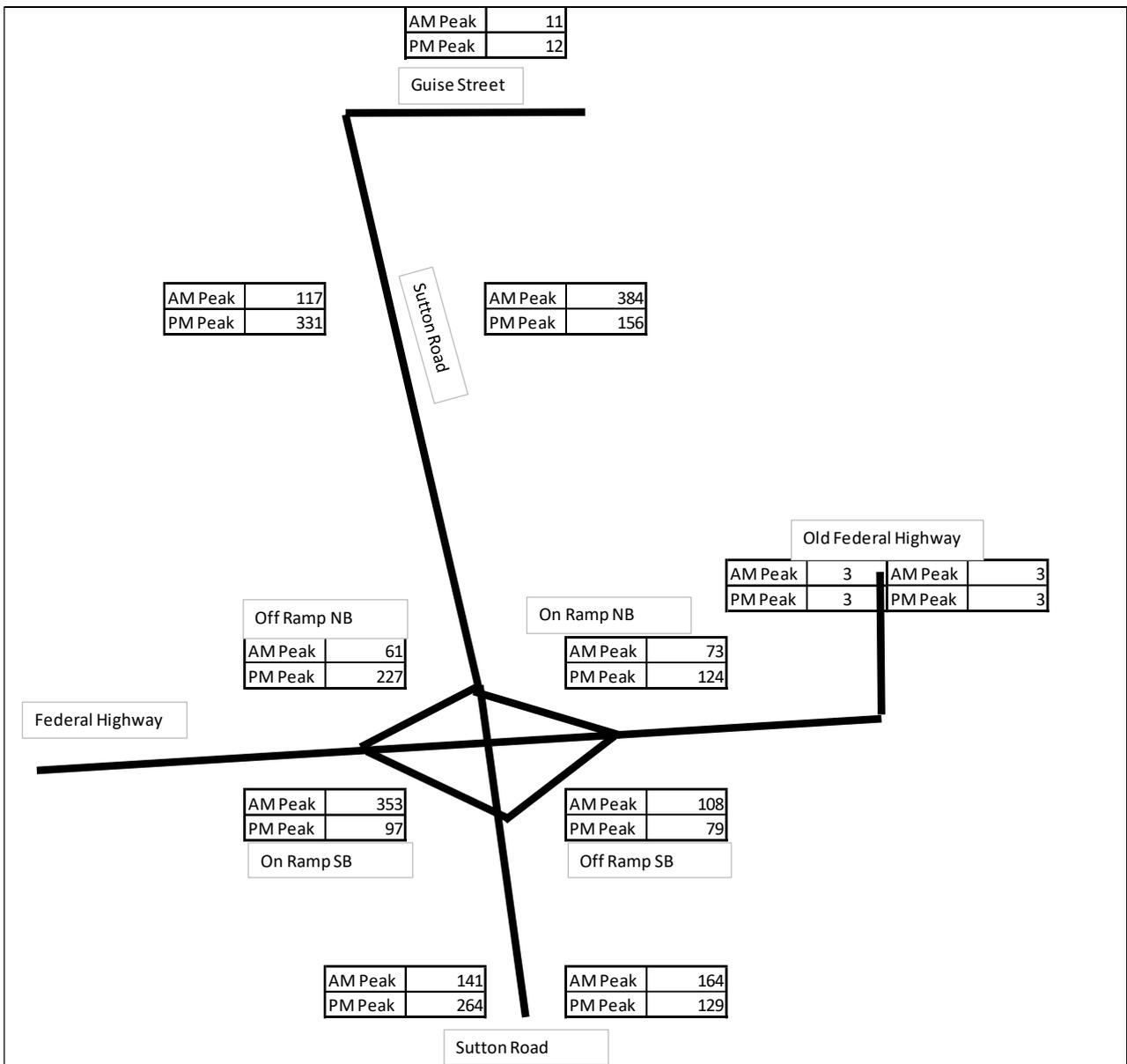


Figure 10 AM and PM Peak traffic volumes at survey locations

2.1.6 Vehicle Speeds

In addition to vehicle volumes, speed data was collected at all the traffic survey locations. Table 2 provides a summary of the average and 85th percentile speeds along the key corridors surveyed.

Location	Average Speed (Kph)	85 th Percentile (Kph)
Guise Street	50.1	55.6
Sutton Road – south of Federal Highway	74.8	94.8
Sutton Road – north of Federal Highway	84	93.4
Federal Highway Northbound Off Ramp	52.6	57.9
Federal Highway Northbound On Ramp	69.9	79.4
Federal Highway Southbound Off Ramp	53.3	59.4
Federal Highway Southbound On Ramp	48.1	52.4
Old Federal Highway	44.0	48.9

Table 2 Vehicle speeds data by corridor

2.1.7 Summary

An assessment of the existing road conditions has revealed the following key points:

- The traffic volume data collected has identified no existing issues along key access corridors;
- All road corridors are operating well within their operational capacity; and
- Traffic speed data has identified that driver behaviour within the study area appears to be in line with the road characteristics and posted speed limits.

2.2 Intersections / Access points

Due to the rural nature and existing land use the study site, there is no formal access point (paved / gravel roads). There does however appear to be two access trails onto the site off Sutton Road and Guise Street. These existing access points are via farm gates off each of the road corridors. Whilst there is no existing formal access point to the study site there are a number of key intersections in the vicinity which are illustrated in **Figure 11** and include:

- The priority controlled intersection between Guise Street and Sutton Road;
- The priority controlled intersection between Old Federal Highway and the Federal Highway; and
- The priority controlled intersections both northbound and southbound between Sutton Road and the Federal Highway.



Figure 11 Location of existing intersections (credit – six maps)

The traffic volume data collected, and site observations confirmed:

- There appears to be no operational issues with any of the existing intersections and all are operating within capacity during peak periods;
- No localised queuing on any of the arms is occurring at any of the intersections; and
- No delays were observed at any of the intersections.

2.3 Crash Data

Existing road crash data was sourced from the Transport for NSW road safety website available from: http://roadsafety.transport.nsw.gov.au/statistics/interactivecrashstats/lga_stats.html?tblga=4. A review of the crash data between 2012 and 2016 has indicated:

- A total of nine crashes on roads in the vicinity of the development site;

- A total of four of these crashes resulted in injury – two which were classified as minor and two which were moderate;
- Five non-injury crashes four of which were a result of a vehicle striking an animal and one crash which was a rear end; and
- The overall trend since 2012 has seen crashes declining each year.

A summary of the crash data is illustrated in **Figure 12**.

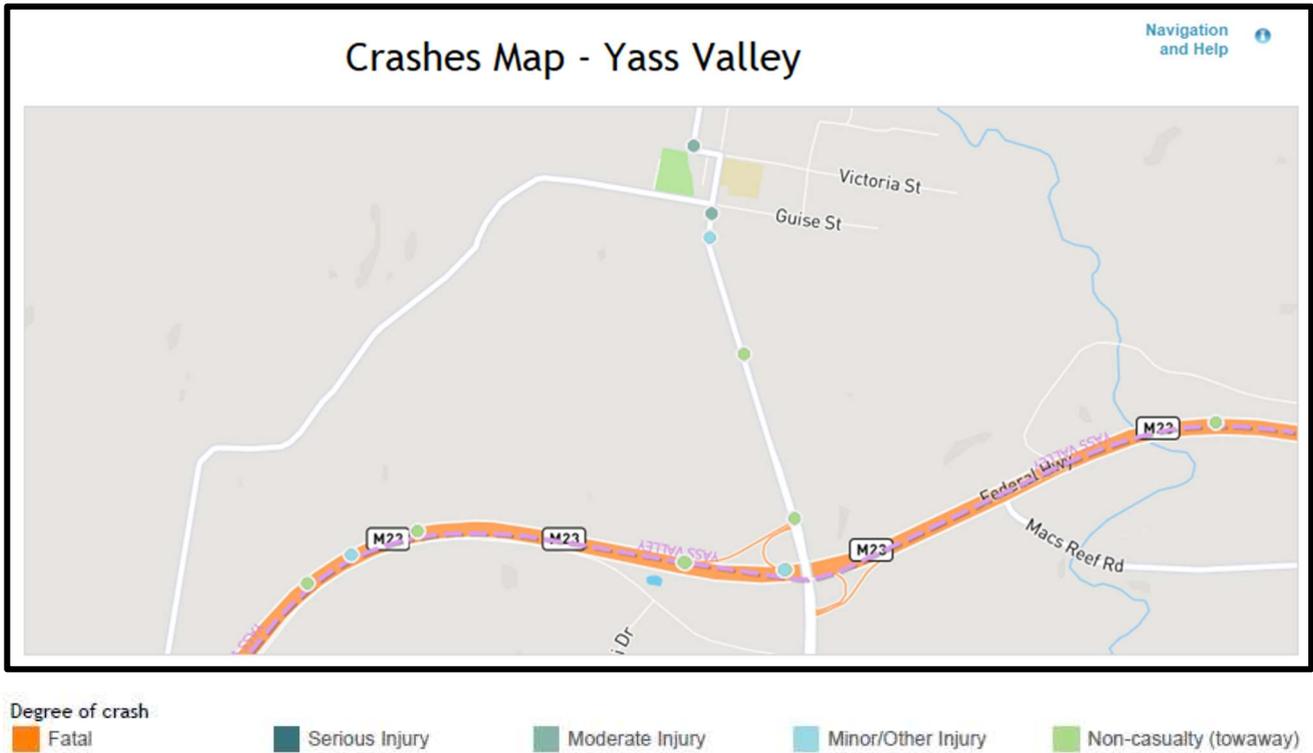


Figure 12 Crash data extraction from TfNSW road safety website

2.4 Parking

There are no existing parking facilities on the proposed development site or in close proximity. There are no formal parking arrangements along any of the access roads or adjacent road corridors.

2.5 Active Travel

There are no existing bicycle parking facilities in the vicinity of the proposed development site. Both Sutton Road and the Federal Highway have line markings to indicate road shoulders. These painter road shoulders are often used by cyclists. There are no other active travel facilities in the vicinity of the proposed development site (including footpaths).

2.6 Public Transport

There are currently no regular public transport routes that service the area or the adjacent village of Sutton. As such there are no bus stops located in close proximity of the site.

3. Proposed Development

Onto it were engaged by Tony Carey Consulting on behalf of Woodbury Ridge Estate to undertake a Traffic and Transport Impact Assessment (TIA) to assist with re-zoning of a parcel of land at Sutton, NSW. Onto it were advised that the proposal is to re-zone Lot 5 DP838497, Sutton Road, Sutton from the current RU1 Primary Production zoning under the Yass Council LEP to a zoning to enable future residential development. This section outlines the development proposal associated with the re-zoning options.

3.1 Re-zoning Options

We understand that the proposed development site has a total land area of approximately 180 hectares and is currently zoned RU1 Primary Production with a minimum lot size control of 40 hectares under the Yass Valley LEP 2013. We understand there is a preferred re-zoning option under consideration for Lot 5 DP838497. This includes:

- Option 1 – Complying Proposal, consisting of:
 - > Zone 1 – RU5 Village – 24.1 hectares – minimum lot size 5,000m²
 - > Zone 2 – R5 Large Lot Residential - 58.5 hectares – minimum lot size 5,000m²
 - > Zone 3 – E3 Environmental Management – 61 Hectares – minimum lot size 20 hectares
 - > Zone 4 – E3 Environmental Management – 40 hectares – minimum lot size 40 hectares
 - > Potential total yield 75 allotments – circa 32 allotments zoned RU5, 39 allotments zoned R5, 3 allotments zoned E3 with 20 hectare minimum lot size and 1 allotment zoned E3 with 40 hectare minimum lot size.

3.2 Conceptual Development Scheme

Onto it were provided with the Conceptual Design Scheme which provides an indicative layout for the proposed subdivision and supporting infrastructure. Figure 13 illustrates the conceptual design that was undertaken by AMC Architecture and represents the preferred re-zoning option. The key traffic and transport infrastructure features of the proposal include:

- The new intersections between the internal road network and existing external road network including:
 - > A new three-way intersection between the internal proposed road network and Sutton Road;
 - > A new three-way intersection between the internal road network and Old Federal Highway; and
 - > A new three-way intersection between the internal road network and the existing Guise Street.
- Five new intersections on the internal road network, including:
 - > Five new three-way intersections.
- A new fire trail between the internal road network and Guise Street
- A new fire trail linking the internal road network north-south; and
- A new fire trail linking the internal road network to Sutton Road.

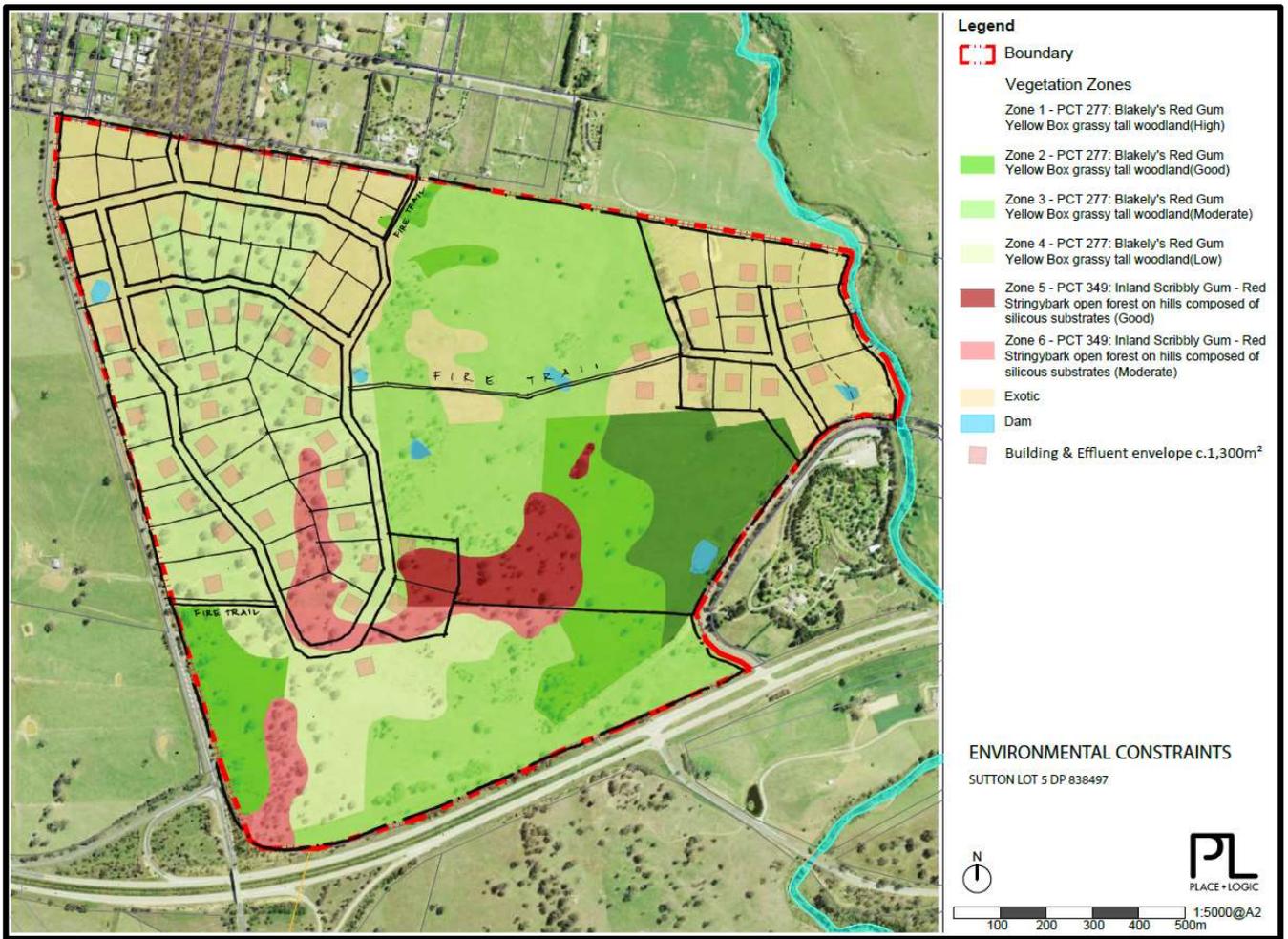


Figure 13 Conceptual Development Scheme – Option 1

There are currently no plans for further supporting infrastructure such as bus stops, cycle paths and on street parking.

4. Traffic and Parking Generation

4.1 Traffic Generation

The Roads and Maritime Services 'Guide to Traffic Generating Development' sets out specific trip generation rates for residential development. Section 3.3 - Residential stipulates when calculating trip generation rates for residential dwellings a trip generation rate per dwelling of 9 vehicle trips per day or 0.85 vehicle trips for 'peak' travel periods should be used. Utilising these trip rates, Table 3 presents the proposed vehicle trip generations for the preferred option.

Scenario	Number of Dwellings	Predicted Additional Daily Vehicle Trips	Predicted Additional Peak Vehicle Trips
Option 1 – Complying Proposal	75	675	64

Table 3 Traffic generation rates based on RMS Guide to Traffic Generating Development

It is noted within Section 3.3.1 Dwelling houses that approximately 25% of these trips would usually be assumed as internal to the development. However, due to the rural nature and location of this proposed development we have assumed that all trips would be external for the purpose of our traffic assessment provided later in this report.

4.2 Parking Generation

All parking is expected to be accommodated within the future individual blocks and there is no requirement for further on street or off-street parking facilities.

5. Transport and Traffic Impact Assessment

5.1 Future Road Capacity

As noted in **Section 2** of this report, the existing capacity of all the roads that the site interfaces with currently operate well within their operational capacity. Under the preferred re-zoning option, there is a predicted addition 66 peak hour vehicle trips that would enter the external road network. These trips were distributed in accordance with the existing traffic flow patterns for the areas. **Figure 14** illustrates the predicted traffic distribution post development implementation.

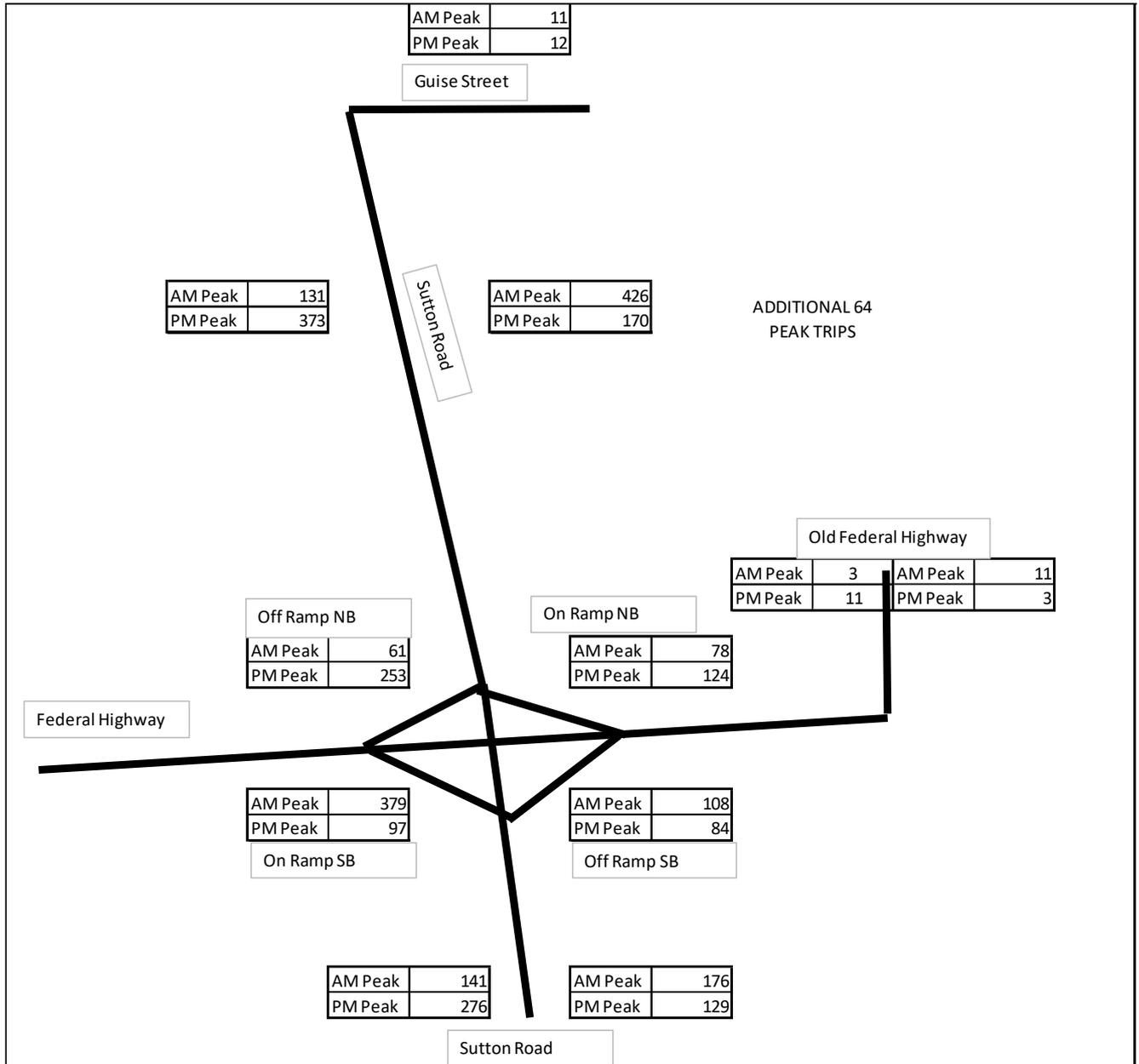


Figure 14 Preferred options - predicted traffic distribution post development implementation

Based on the predicted traffic distribution it is anticipated that all roads would continue to operate well within their operational capacity under the preferred option.

5.2 Intersection Arrangements

Three new intersections are proposed between the internal road network for the development and the external road network. As discussed earlier in this report, these intersections include:

- A new three-way intersection between the internal proposed road network and Sutton Road;
- A new three-way intersection between the internal road network and Old Federal Highway; and
- A new three-way intersection between the internal road network and the existing Guise Street.

Due to the relatively low peak period volumes on existing roads and the predicted low volumes that will result from the preferred development scenario, it is anticipated at this stage, that all intersections between the internal development road network and existing external road network would be priority controlled.

In addition, due to the low volume trip generation predicted for the preferred development scenario, the five new intersection proposed for the internal road network would be also anticipated to be priority controlled at this stage.

5.3 Road and Intersection Design

At this stage, only conceptual drawings have been provided to Ontoit for consideration and assessment. It is anticipated, following the re-zoning exercise, further detailed design would be undertaken for both the internal road network and proposed intersections with the existing external road network. All design will be required to conform with Austroads and RMS standards for road and intersection design.

In reviewing the conceptual layout for the proposed intersections with the external road network, the following advice is provided:

- Proposed Sutton Road intersection closest to Sutton Village:
 - > Based on the predicted traffic generation, volumes utilising the proposed side road entry to the development are anticipated to be minimal;
 - > The intersection is located within a low speed environment as the posted 50kph speed limit for Sutton Village starts at this location; and
 - > Based on a 50kph speed environment and a priority-controlled intersection, sight lines would appear at this stage to be satisfactory, however, this needs further consideration through the design phase.
- Proposed Sutton Road intersection closest to the Federal Highway:
 - > Based on the predicted traffic generation, this access is predicted to be the primary access for the development. Despite this, volumes are still predicted to be low during peak period – less than 60 vehicle movements;
 - > The proposed intersection is located within a 90kph speed environment on a long straight section of Sutton Road – approximately 1.2kms;
 - > Based on a 90kph speed environment and a priority-controlled intersection, sight lines would appear at this stage to be satisfactory due to the intersection being located on a long straight section of Sutton Road. This advice however is subject to further consideration through the design phase.
- Proposed fourth arm to the Guise Street / Moorong Street intersection:
 - > The predicted volumes at this location are predicted to be minimal;
 - > This intersection is anticipated to operate in a similar way to other four-way intersections within Sutton Village;

- > Predominately this intersection will cater for local movements within the village; and
- > No issues are anticipated with the operation or safety aspects of this intersection at this stage, however this advice is subject to further design later in the project.
- Proposed intersection onto Old Federal Highway:
 - > The predicated volumes at this located are predicted to be minimal;
 - > This intersection is anticipated to only cater for those dwelling located on the eastern edge of the proposed development; and
 - > No issues are anticipated with the operation or safety aspects of this intersection at this stage, however this advice is subject to further design later in the project.

5.4 Active Travel Impacts

No impacts are anticipated on pedestrian and cycle access to or from the site or adjacent Sutton Village.

6. Summary and Recommendations

6.1 Summary

A comprehensive traffic and transport assessment has been undertaken for a re-zoning option for Lot 5 DP838497, Sutton, NSW. In undertaking this assessment, Ontoit have assessed the likely impact to:

- Traffic conditions and adjacent road network;
- Intersection operation
- Parking requirements;
- Public Transport; and
- Pedestrian and Cycle Impacts.

The analysis has demonstrated the following key conclusions:

- There is sufficient road capacity along the primary access corridors that will be servicing the proposed development area;
- Traffic generation from the proposed development is likely to be minimal in relation to the preferred re-zoning option and as such impacts are likely to be negligible;
- The proposed access arrangements through intersections with the external road network have been located at logical points on the road network; and
- No impacts are anticipated on pedestrian and cycle access to the facility.

6.2 Recommendations

In undertaking this transport and traffic impact assessment, Ontoit have identified a number of recommendations for further consideration during the design phase:

- Proposed Intersections:
 - > Further consideration of the four proposed intersection with the external road network;
 - > Liaise with RMS around requirements in relation to intersection proposed on Sutton Road;
- Active Travel:
 - > Consideration of the interface between the proposed internal walking / horse trail from Guise Street to the Old Federal Highway and the Sutton Village.

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