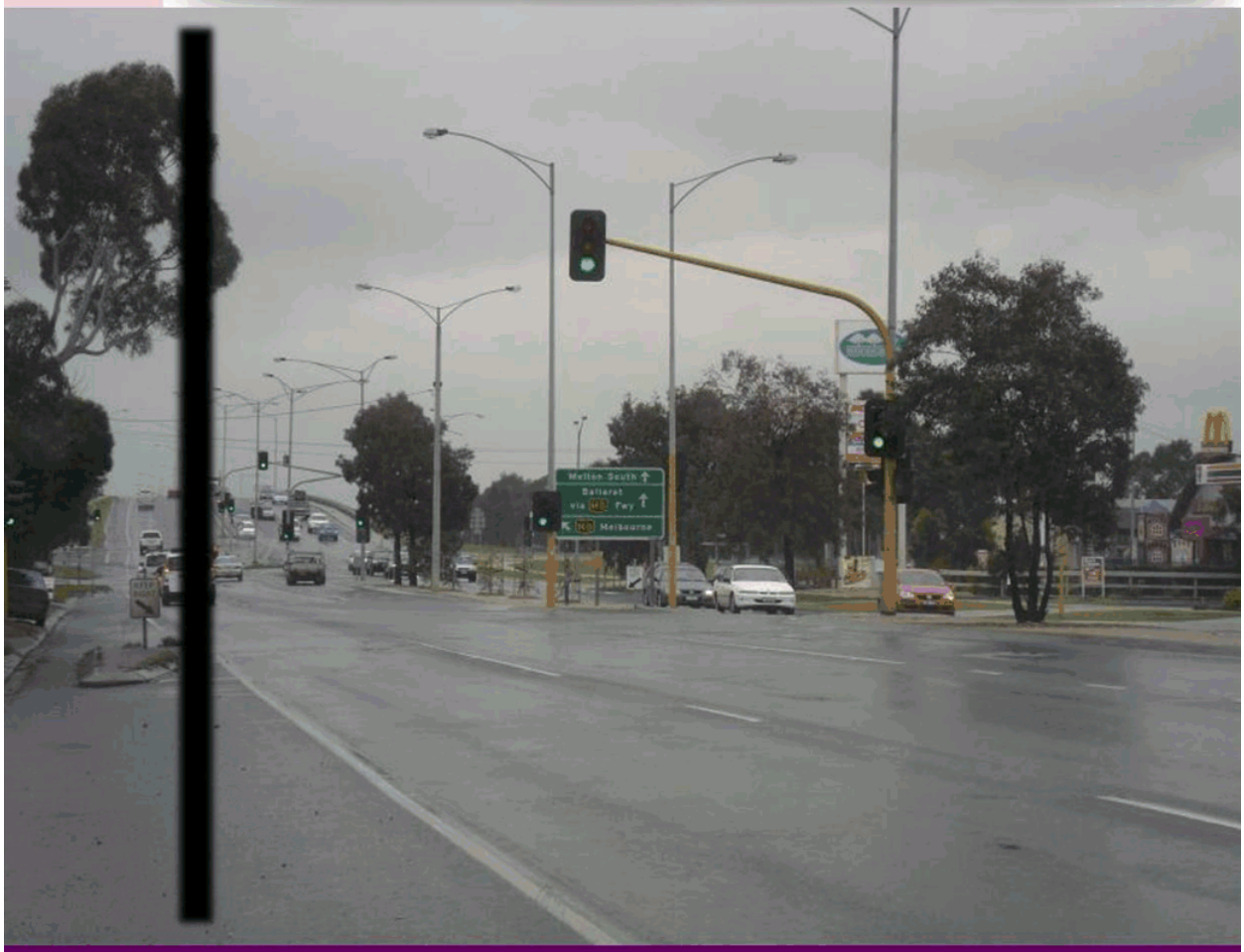
Coburns Road, Melton
Traffic and Parking Assessment
Rezoning - Mixed Use Zone



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CONTENTS

1 INTRODUCTION

1.1 OVERVIEW

This report presents a Traffic and Parking Assessment for a proposed rezoning in Coburns Road, Melton. The City of Melton (Council) is seeking to rezone an area on the east side of Coburns Road, from Residential Growth Zone to Mixed Use Zone. The rezoning affects even-numbered properties from 126 to 156, as shown in Figure 1 (bounded by a red line). In pursuing this rezoning, Council wishes to understand, and make an assessment of, the current and future traffic and car parking needs. In particular, Council needs to determine whether the proposed rezoning will be supported by (and will not cause significant impact or detriment to) the surrounding road network.

Figure 1: Land Affected by Proposed Rezoning

1.2 KEY FINDINGS

This report concludes that there are no traffic engineering reasons why the proposed rezoning should not be allowed. In particular:

- The overall **traffic volume generated** by the rezoning (under a worst-case maximum development scenario) is forecast to be modest and can be **readily accommodated** onto Coburns Road and the surrounding intersections with the **traffic impact** expected to be **insignificant**.
- At the 'busiest time' (5pm) **more than half of the available parking** supply (both on-site and on-street) is **unoccupied**. While current **parking utilisation is comparatively modest**, this is partly a reflection of generous supply (particularly on-street). The 'measured' parking demand appears consistent with Planning Scheme requirements. Within this context, the application of **standard planning scheme parking requirements** for any future development should ensure that all **future parking demand can be satisfied on-site**.

2 BACKGROUND – PLANNING SCHEME CONTEXT

2.1 CONSIDERATION OF PARKING AND TRAFFIC IMPACTS

When considering the traffic and parking aspects associated with the proposed rezoning, it is important to reflect on the differences between a 'static' requirement to accommodate parked vehicles (which can be addressed entirely on private property within development sites) and a 'dynamic' requirement to manage moving vehicles (which can only be accommodated on a public road system). In this context, changes to the Planning Scheme (such as a rezoning) should not, in theory, result in adverse parking consequences. The reason is that the Planning Scheme explicitly places requirements on developments to provide parking on-site and at supply-levels that are set to contain all parking demand off surrounding public roads. Only Council (or VCAT on review) can provide an exception to the requirement to provide on-site parking. These exceptions normally only arise where developers can satisfy Council that lower (or no) levels of on-site parking are required (in accordance with a justification process set out in the Planning Scheme) – and the Council grants a planning permit to allow that on-site parking exemption to take place. In other words, increased development should not translate to increases in on-street parking demand unless Council deliberately allows that to occur by dispensing with statutory parking requirements for a development. In contrast, there is no explicit mechanism in the Planning Scheme that requires developers to 'provide roads' to manage traffic impacts or manage traffic within the development site. By its very nature, traffic travels to and from an area using existing public roads. Hence, traffic is typically the 'unknown quantity' that needs careful consideration when examining Planning Scheme Amendments. The adequacy of road networks servicing a precinct is typically resolved in the very early subdivisional stages of planning communities – a process normally conducted as a precinct structure plan (PSP) in Victoria. The PSP process 'sets' the transport network that will service communities in future years.

2.2 PARKING REQUIREMENTS UNDER THE PLANNING SCHEME

The administration and enforcement of the Melton Planning Scheme is the duty of the City of Melton. "Clause 52.06 – car parking" of the Melton Planning Scheme, states that its "Purpose" is to:

- ensure that car parking is provided in accordance with the State Planning Policy Framework and Local Planning Policy Framework;
- ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality;
- support sustainable transport alternatives to the motor car;
- promote the efficient use of car parking spaces through the consolidation of car parking facilities;
- ensure that car parking does not adversely affect the amenity of the locality; and
- ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.

2.3 ON-SITE PARKING PROVISION

Clause 52.06-5 of the Melton Planning Scheme sets out the number of parking spaces required for a range of land uses. Moreover, the Planning Scheme stipulates that the number of car parking spaces required under Clause 52.06-5 must be provided to the satisfaction of the responsible authority in one or more of the following ways:

- on the land; or
- in accordance with a permit issued under Clause 52.06-3 (discussed below); or
- in accordance with a financial contribution requirement specified in a schedule to the Parking Overlay (this does not apply on the land affected by the rezoning – as there is no Parking Overlay).

Thus, the Planning Scheme requires that **all developments provide the required car parking on site**, unless the Council resolves to relax that 'on-site parking requirement' by issuing a planning permit (under Clause 52.06-3).

2.4 CIRCUMSTANCES FOR REDUCING THE REQUIRED PARKING PROVISION

Clause 52.06-3 states that a permit is required to:

- Reduce (including reduce to zero) the number of car parking spaces required under Clause 52.06-5 or in a schedule to the Parking Overlay;
- Provide some or all the car parking spaces required under Clause 52.06-5 or in a schedule to the Parking Overlay on another site; and
- Provide more than the maximum parking provision specified in a schedule to the Parking Overlay (this does not apply on the land affected by the rezoning – as there is no Parking Overlay).

In addition, the Planning Scheme requires that an application to reduce (including reduce to zero) the number of car parking spaces required under Clause 52.06-5 or in a schedule to the Parking Overlay must be accompanied by a Car Parking Demand Assessment. The Application requirements and decision guidelines for permit applications are provided under Clause 52.06-6. This clause describes that the Car Parking Demand Assessment must assess the car parking demand likely to be generated by the proposed:

- new use; or
- increase in the floor areas or site area of the existing use; or
- increase to the existing use by the measure specified in Column C of Table 1 in Clause 52.06-5 for that use.

In other words, any future development application (for any of the properties within the rezoned area off the east side of Coburns Road) that would seek to reduce (including reduce to zero) the number of car parking spaces required under the Planning Scheme would need to prepare a Car Parking Demand Assessment that must address the following matters, **to the satisfaction of the responsible authority** (the City of Melton):

- The likelihood of multi-purpose trips within the locality which are likely to be combined with a trip to the land in connection with the proposed use.
- The variation of car parking demand likely to be generated by the proposed use over time.
- The short-stay and long-stay car parking demand likely to be generated by the proposed use.
- The availability of public transport in the locality of the land.
- The convenience of pedestrian and cyclist access to the land.
- The provision of bicycle parking and end of trip facilities for cyclists in the locality of the land.
- The anticipated car ownership rates of likely or proposed visitors to or occupants (residents or employees) of the land.
- Any empirical assessment or case study.

Before granting a permit to reduce the number of spaces, the responsible authority must consider the following, as appropriate:

- The Car Parking Demand Assessment.
- Any relevant local planning policy or incorporated plan.
- The availability of alternative car parking in the locality of the land, including:
- Efficiencies gained from the consolidation of shared car parking spaces.
- Public car parks intended to serve the land.
- On street parking in non-residential zones.
- Streets in residential zones specifically managed for non-residential parking.
- On street parking in residential zones in the locality of the land that is intended to be for residential use.
- The practicality of providing car parking on the site, particularly for lots of less than 300 square metres.
- Any adverse economic impact a shortfall of parking may have on the economic viability of any nearby activity centre.
- The future growth and development of any nearby activity centre.
- Any car parking deficiency associated with the existing use of the land.
- Any credit that should be allowed for car parking spaces provided on common land or by a Special Charge Scheme or cash-in-lieu payment.
- Local traffic management in the locality of the land.
- The impact of fewer car parking spaces on local amenity, including pedestrian amenity and the amenity of nearby residential areas.
- The need to create safe, functional and attractive parking areas.
- Access to or provision of alternative transport modes to and from the land.
- The equity of reducing the car parking requirement having regard to any historic contributions by existing businesses.
- The character of the surrounding area and whether reducing the car parking provision would result in a quality/positive urban design outcome.
- Any other matter specified in a schedule to the Parking Overlay.
- Any other relevant consideration.

Within this context (where formal mandatory processes of thorough examination/justification/review are embedded in the Planning Scheme), it is unlikely that parking-supply issues would arise in association with any new development on the east side of Coburns Road, as the Council (and the Tribunal on review) controls the statutory mechanism to govern the level of parking associated with such future development. The only manner in which new demands may arise over on-street parking is if Council (after consideration of the requirements and decision guidelines for permit applications as provided under Clause 52.06-6) is satisfied that the impact can be satisfactorily managed and resolves to issue a planning permit that grants a full or part reduction of parking requirements to an individual development application (as envisaged under Clause 52.06-3, and described above).

3 EXISTING CONDITIONS

3.1 CONTEXT & STUDY AREA

The subject area is located off the east side of Coburns Road, between High Street and Barries Road. It is currently zoned as Residential Growth Zone (RGZ) – which is designed to facilitate, interalia, residential development at increased densities. All the properties affected by the proposed rezoning have frontages to Coburns Road. The properties are opposite the Woodgrove Shopping Centre Precinct (a Regional Level Activity Centre) which includes Woodgrove Shopping Centre, Coburns Central Shopping Centre, supermarkets, retail outlets, service stations, Bunnings and several take away outlets on 'pad sites' on the edges of the main shopping precinct.

The Western Freeway interchange is located approximately 100m to the south of the area. There are also a number of community uses both within the Woodgrove precinct and along High Street, which include Centrelink, Medicare, Council Youth Centre, the Melton Specialist School and Melton Indoor Recreation Centre. The surrounding areas to the north, south and east have a residential focus – characterised by predominantly conventional low-density residential development. The subject area exhibits many commercial-type uses, often accommodated within residential dwelling-like structures (medical and related services as well as office/drafting services). Existing uses along the Coburns Road frontage (east side between High Street and Barries Road) are evenly split between businesses and residences. In Council's view, the presence of numerous commercial uses indicates that a Residential Growth Zone may not be fulfilling its intended aim. The proposed conversion to a Mixed Use Zone would both complement the existing retail/commercial uses to the west and provide a 'soft' buffer from the Woodgrove Shopping Centre precinct, for those residents located further east.

The Study Area is shown in Figure 2 over the page.

3.2 THE EXISTING LAND USES

There are 16 buildings erected on the 15 lots located between 126 and 156 Coburns Road – 8 are houses while the other 8 are buildings used for commercial/medical uses. The summary of land uses by address is provided below.

PROPERTY NUMBER	CURRENT LAND USE	LAND PARCEL SIZE (square metres)
126	house	557
128	medical centre (dentist)	541
1/130 & 2/130	2 houses	165 & 221.52
132	Physio/massage "Melton Physiotherapy Clinic"	546.63
134	Podiatrist "Melton Foot Clinic"	549.24
136	Denture clinic (on call)	542.48
138	house	549.91
140	house	544.88
142	house	546
144	medical centre "Health by Chiropractic"	539.29
146	home office (drafting) "Draft Comps Services"	542.46
148	home office (drafting/permits) "Simple Permits Building Consultants"	544.10
150-152	Medical centre "Melton Western Region Osteopathy"	1081
154	house	534.44
156	house	872.21
	Total Land Area	**8877.16 m^2**

Table 1: Current Land Uses

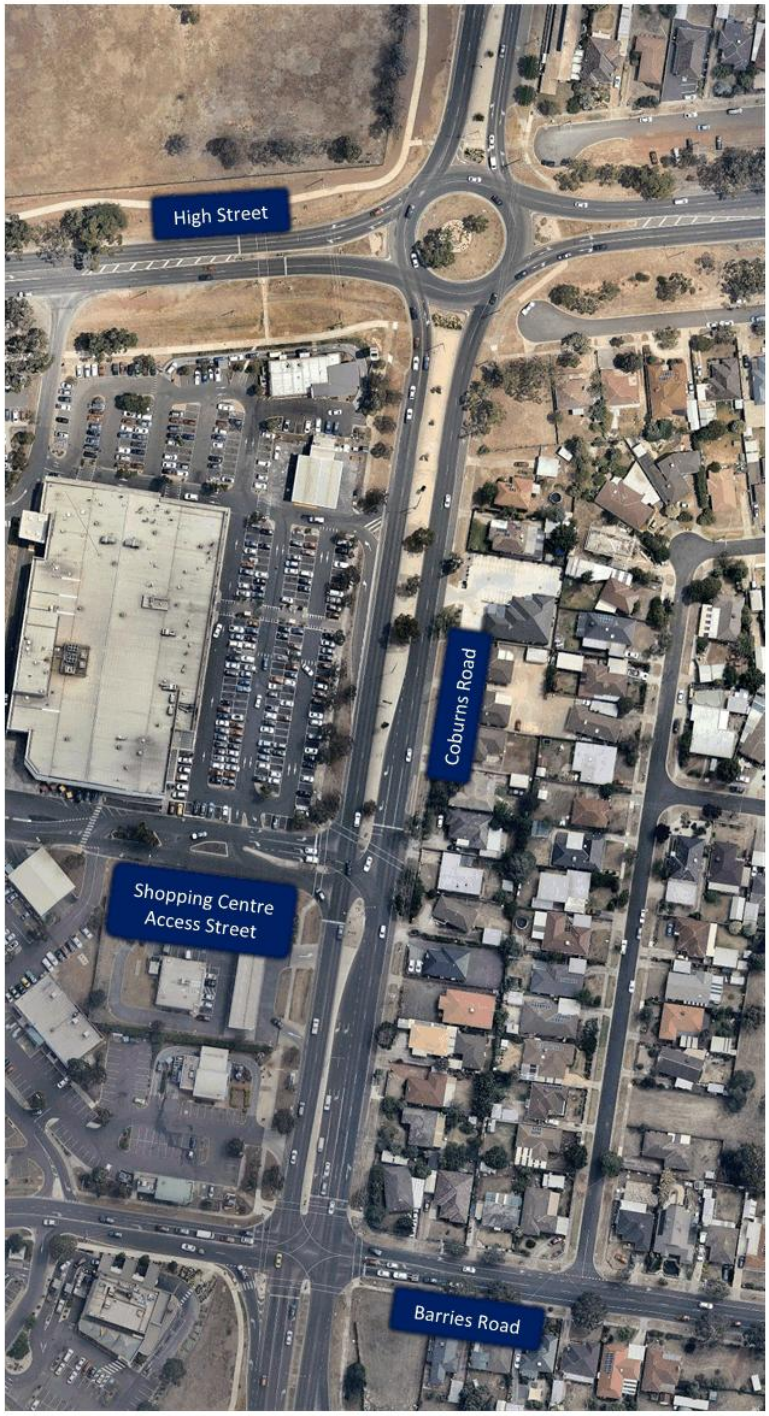


Figure 2: Study Area

3.3 PARKING SURVEYS

To determine current parking demand in the area servicing the properties affected by the rezoning, parking surveys were undertaken on a Wednesday in mid-October 2016. Eleven parking occupancy sweeps were conducted to measure the number of vehicles parked on-street on Coburns Road and on-site within the various commercial properties of interest. The sweeps were conducted at 8am, 9am, 10am, 11am, 12noon, 1pm, 2pm, 3pm, 4pm, 5pm and 6pm. The total number of parking spaces surveyed was 94 – which included:

- The 40 on-street parking spaces on the east side of Coburns Road between High Street and Barries Road
- The 54 off-street parking spaces servicing the following properties:
  - 132 Coburns Road – Melton Physiotherapy Clinic
  - 134 Coburns Road – Melton Foot Clinic
  - 144 Coburns Road – Health by Chiropractic
  - 146-148 Coburns Road – Draft Comps Service and Simple Permits Building Consultants
  - 150-152 Coburns Road – Melton Western Region Osteopathy

There are an additional two commercial properties in the block of Coburns Road affected by the development – but they were not in operation at the time of the surveys. The property at 128 Coburns Road was closed for renovations, while the property at 136 Coburns Road was signposted as an on-call denture clinic but no vehicles were parked and no people entered of departed during the survey periods.

In summary, there are a total of 94 parking spaces available (40 on-street and 54 off-street carparking spaces at the commercial developments) to service the properties affected by the redevelopment. The overwhelming majority of the parking demand associated with the commercial properties occurred on-site – only a small number of motorists elected to use on-street spaces during the survey periods. Those motorists presumably made such choices based on perceived 'convenience' as there was always abundant spare capacity in the on-site carparking areas servicing individual commercial properties.

At the absolute busiest time (5pm) there were 13 vehicles parked on-street (representing 33% of the total number of available on-street spaces) and 30 off-street (representing 56% of the total number of available on-site spaces). Overall, there were 43 vehicles parked at 5pm, representing 46% occupancy (less than half) of the 94 parking spaces available in the area.

Detailed survey findings are shown in Table 2.

Location	Parking Occupancy (number of spaces occupied)										
	Time Period										
	8am	9am	10am	11am	12 noon	1pm	2pm	3pm	4pm	5pm	6pm
Melton Physiotherapy Clinic *(Parking Capacity = 6 spaces)*	1	1	2	3	4	5	5	5	5	4	3
Melton Foot Clinic *(Parking Capacity = 8 spaces)*	0	0	2	3	2	3	3	2	2	3	2
Health by Chiropractic *(Parking Capacity = 4 spaces)*	0	1	1	2	2	2	2	2	1	1	1
Draft Comps Services & Simple Permits Building Consultants *(Parking Capacity = 18 spaces)*	1	7	9	8	9	11	12	13	14	13	1
Melton Western Region Osteopathy *(Parking Capacity = 18 spaces)*	1	3	5	8	9	7	8	7	8	9	7
On-Street (east side Coburns Road) *(Parking Capacity = 40 spaces)*	0	1	4	7	6	8	9	10	11	13	12
TOTAL	**3**	**13**	**23**	**31**	**32**	**36**	**39**	**39**	**41**	**43**	**26**

Table 2: Parking Occupancy Results

Note: at the busiest period (5pm) 10 out of the 13 vehicles parked on-street were associated with the medical practices. The total peak parking demand associated with the four medical practices was thus 27 spaces.

3.4 COMMERCIAL PROPERTIES' TRAFFIC GENERATION

Morning and evening peak hour traffic movement data was captured for entries and exits at the existing on-site carparks servicing the commercial properties affected by the rezoning. In addition, the destination of motorists parking on-street (on the east side of Coburns Road) was monitored and recorded – in order to assign the 'traffic generation' characteristic to the 'correct' property.

From Council's planning permit records it was established that 7 practitioners are authorised to operate at the four medical practices which were open (and actually generated traffic movements on the day of the traffic-generation survey). One property (the Denture Clinic at 136 Coburns Road) did not generate and vehicular movements on the day of the survey. The four properties that generated traffic movements were:

- No 132 (Melton Physiotherapy Clinic)
- No 134 (Melton Foot Clinic)
- No 144 (Health by Chiropractic)
- Nos 150-152 (Melton Western Region Osteopathy)

From the recording of the traffic movements at these properties, it has been possible to derive a peak traffic generation rate reflective of real characteristics in this part of the municipality and thus appropriate for the purposes of representing traffic generation in association with '*medical centre and related uses*'.

At the busiest period there were 26 trips generated by these 7 practitioners operating at the four subject properties. This occurred in the PM peak hour (5.00 to 6.00pm).

Thus the 'empirical' traffic generation rate for the PM peak, expressed as hourly trips per practitioner, was determined to be 3.7 peak hour trips per medical practitioner (this rate was found to be broadly consistent throughout 'opening hours' – except the morning peak between 8.00 and 9.00; as most practices were not open and the traffic rate was less than 1.5 peak hour trips per medical practitioner). The traffic generation rate for the office uses ("Draft Comps Service" and "Simple Permits Building Consultants" at 146-148 Coburns Road) was found to be much lower – with the absolute peak value being 2 vehicle movements per property in the AM peak hour.

3.5 ROAD FUNCTION & GEOMETRY

Coburns Road is a declared arterial road (from the Western Freeway until High Street) and runs in a north-south direction and has two mid-block traffic lanes in each direction. There is an on-road bike lane on the west side and on-street parking on the east side. Additional turning lanes are provided at the signalised intersections of Coburns Road with the shopping centre access street and Barries Road. VicRoads is the agency responsible for Coburns Road.

High Street runs in an east-west direction and Street has two traffic lanes in each direction. Its intersection with Coburns Road is governed by a roundabout. High Street is a local street west of Coburns Road and that section is under the City of Melton's control. East of Coburns Road, High Street is a declared arterial road and is under VicRoads' control.

Barries Road is a local street under the Council's control. It runs east-west and its intersection with Coburns Road is signalised. Barries Road has one mid-block traffic lane in each direction with on-road bike lanes east of Coburns Road. There are additional turning lanes at the intersection with Coburns Road to assist turning manoeuvres.

An access street into the shopping centre is located off the west side of Coburns Road approximately halfway between High Street and Barries Road. The resultant intersection is signalised to assist with safe access into and out of the shopping centre.

The following sections provide more detail about each of the three intersections in the study area.

3.5.1 COBURNS ROAD AND HIGH STREET ROUNDABOUT

The overall layout of this roundabout is shown in Figure 3.

Figure 3: Coburns Road and High Street Intersection

The Coburns Road and High Street intersection exhibits the following geometry:

North Leg

- One "long" shared left/through lane
- One "long" shared right/through lane

South Leg

- One "long" shared left/through lane
- One "long" shared right/through lane

East Leg

- One "long" shared left/through lane
- One "long" shared right/through lane

West Leg

- One "long" shared left/through lane
- One "long" shared right/through lane

3.5.2 COBURNS ROAD AND SHOPPING CENTRE ENTRANCE INTERSECTION

The overall layout of this signalised intersection is shown in Figure 4.

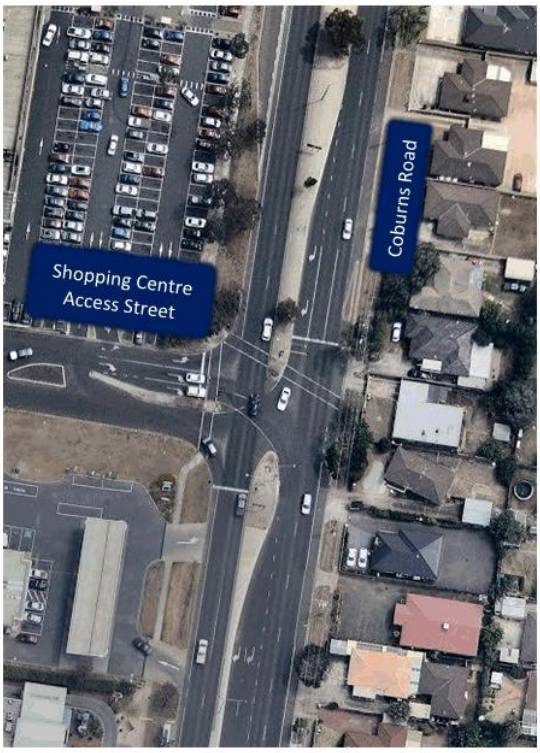


Figure 4: Coburns Road and Shopping Centre Entrance

The signalised access point to the Woodgrove Shopping Centre is located off the west side of Coburns Road, approximately halfway between High Street and Barries Road. This intersection features the following geometry:

North Leg

- Two "long" through lanes
- One 30m long shared right turn lane

South Leg

- One "long" through lane
- One "long" shared left/through lane
- One Bike lane (about 1.5m wide)

West Leg

- One "long" left turn lane
- One "long" right turn lane
- One 12m long right turn lane

Pedestrian Crossings

- One North-South crossing on the west side of the intersection (around 25m long)
- One East-West (angled) crossing on the north side of the intersection (around 30m long)

3.5.3 COBURNS ROAD AND BARRIES ROAD INTERSECTION

The overall layout of this signalised intersection is shown in Figure 5.

Figure 5: Coburns Road and Barries Road Intersection

The Coburns Road and Barries Road intersection exhibits the following geometry:

North Leg

- One "long" shared left/through lane
- One "long" through lane
- One 75m long right turn lane (12 vehicles in an hour were observed performing U-Turns at this location)
- One 62m long right turn lane

South Leg

- Two "long" through lanes
- One 35m long left turn slip lane
- One 40m long right turn lane
- One Bike lane (about 1.8m wide)

East Leg

- One "long" left/through lane
- One 18m long right turn lane

West Leg

- One "long" left/through lane
- One 80m long right turn lane

Pedestrian Crossings

- One North-South crossing on the west side of the intersection (around 20m long)
- One North-South crossing on the east side of the intersection (around 14m long)
- One East-West crossing on the north side of the intersection (around 26m long)
- One East-West crossing on the south side of the intersection (around 26m long)

3.6 TRAFFIC SURVEYS

Comprehensive traffic volume data has been collected at the three intersections along Coburns Road, within the study area, in both the average weekday morning and evening peak periods – namely 8.00 to 9.00am and 5.00 to 6.00pm.

The surveys were undertaken on a Wednesday in mid-October 2016.

Traffic volumes are summarised in Figure 6, Figure 7 and Figure 8.

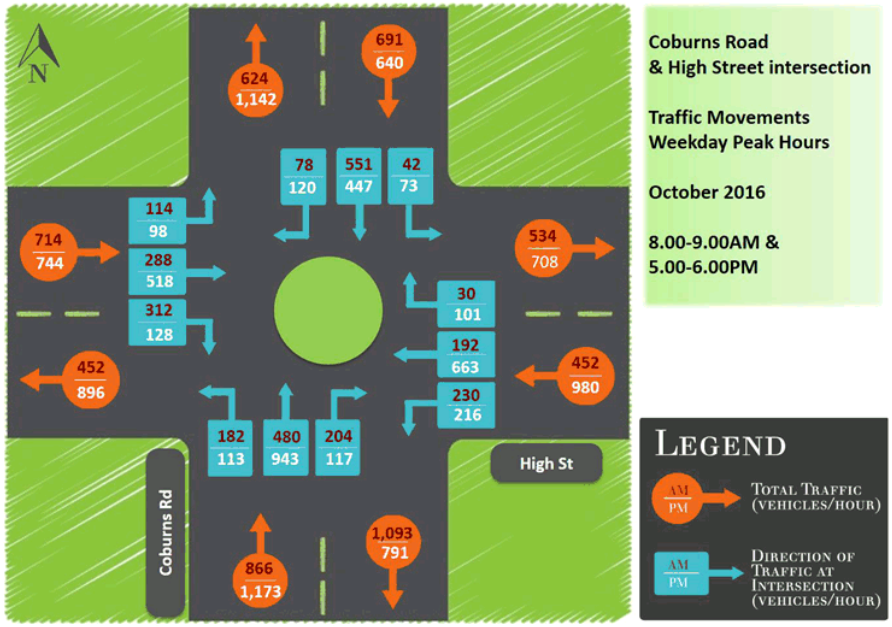


Figure 6: Peak Hour Traffic Movement Data – Coburns Road / High Street Roundabout

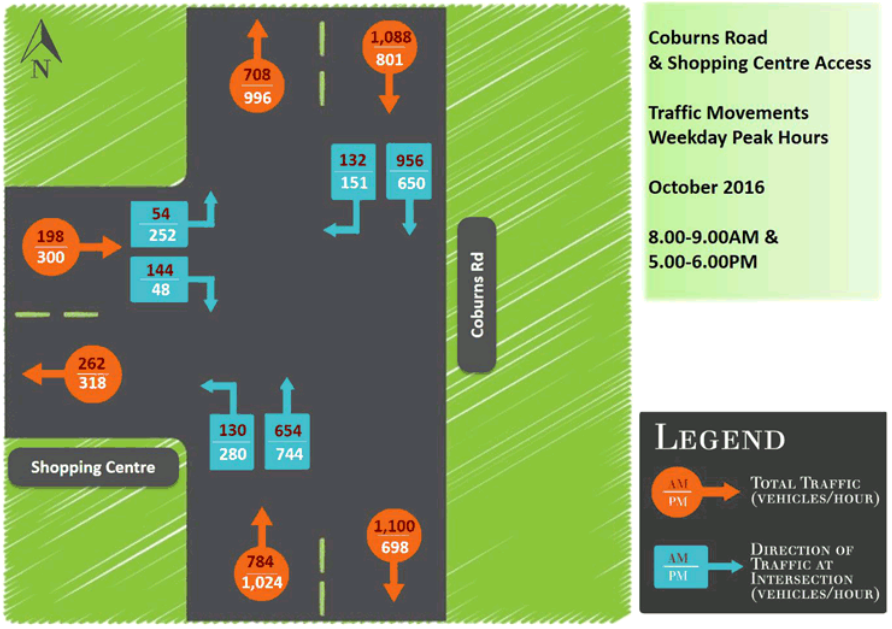


Figure 7: Peak Hour Traffic Movement Data – Coburns Road / Shopping Centre Access

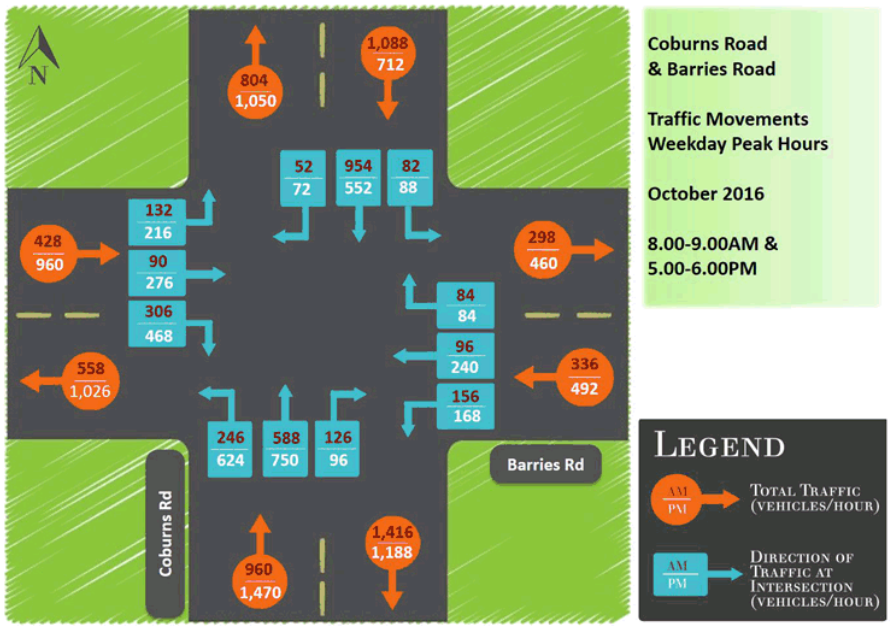


Figure 8: Peak Hour Traffic Movement Data – Coburns Road / Barries Rd Intersection

The Coburns Road / Barries Road intersection exhibited the highest traffic volumes of all three intersections surveyed. Total traffic volumes 'entering' each of the 3 intersections are summarised below:

PERIOD	Total Traffic Volume – all approaches combined (vehicles per hour)		
	Coburns Rd / Barries Rd	Coburns Rd / Shopping Centre	Coburns Rd / High St
AM PEAK	2,812	2,310	2,723
PM PEAK	3,634	2,125	3,537

Table 3: Comparison of Peak Hour 'Entry' Traffic Volumes at Coburns Rd Intersections

Despite being the busiest intersection, there were no significant operational issues identified at Coburns Road / Barries Road. The east and west legs of the intersection (Barries Road) exhibited essentially no queuing/congestion; with only a few instances observed when vehicles wishing to turn right (west to south) were not able to clear on a single green signal cycle (being unable to find a gap in the opposing traffic flow during the 'filter' stage of the partial-control right turn governing this movement).

On Coburns Road, no issues were observed on the north leg (vehicles travelling southbound). On the south leg, there were a few queuing episodes observed, but these were always short-lived. In some cases, the queues would extend to a point south of the start of the left turn slip-lane (south to west) and momentarily impede vehicles trying to turn left. Importantly, none of these occurrences lasted more than one of two traffic signal cycles and there were no long-term operational impacts observed as the intersection rapidly recovered and no residual queuing or congestion issues arose.

The images from Figure 9 onwards illustrate typical peak period operation on Coburns Road.

Figure 9: Coburns Road at Shopping Centre Access Point – PM Peak Hour
(View looking north towards High Street – from east side of road)

Figure 10: Coburns Road at Shopping Centre Access Point – AM Peak Hour
(View looking north towards High Street – from middle of road)

Figure 11: Coburns Road at Shopping Centre Access Point – AM Peak Hour
(View looking at eastern carriageway; north towards High Street – from middle of road)

Figures 12 and 13 show the variability in traffic conditions on Coburns Road in the AM peak hour – highlighting that any congestion is modest and short lived. Figure 12 shows the typical free flowing uncongested conditions that prevail travelling towards the Western Freeway. Figure 13 shows the occasional queuing and congestion – of very short duration.

Figure 12: Coburns Road at Shopping Centre Access Point– AM Peak Hour
(View looking south towards Barries Road – from west side of road)

Figure 13: Coburns Road at Shopping Centre Access Point– AM Peak Hour
(View looking south towards Barries Road – from west side of road)

3.7 PEDESTRIAN DATA

Existing pedestrian volumes across Coburns Road are very low. Figure 14 show the pedestrian movements measured in the AM and PM peak hours at the two signalised intersections in the study area.

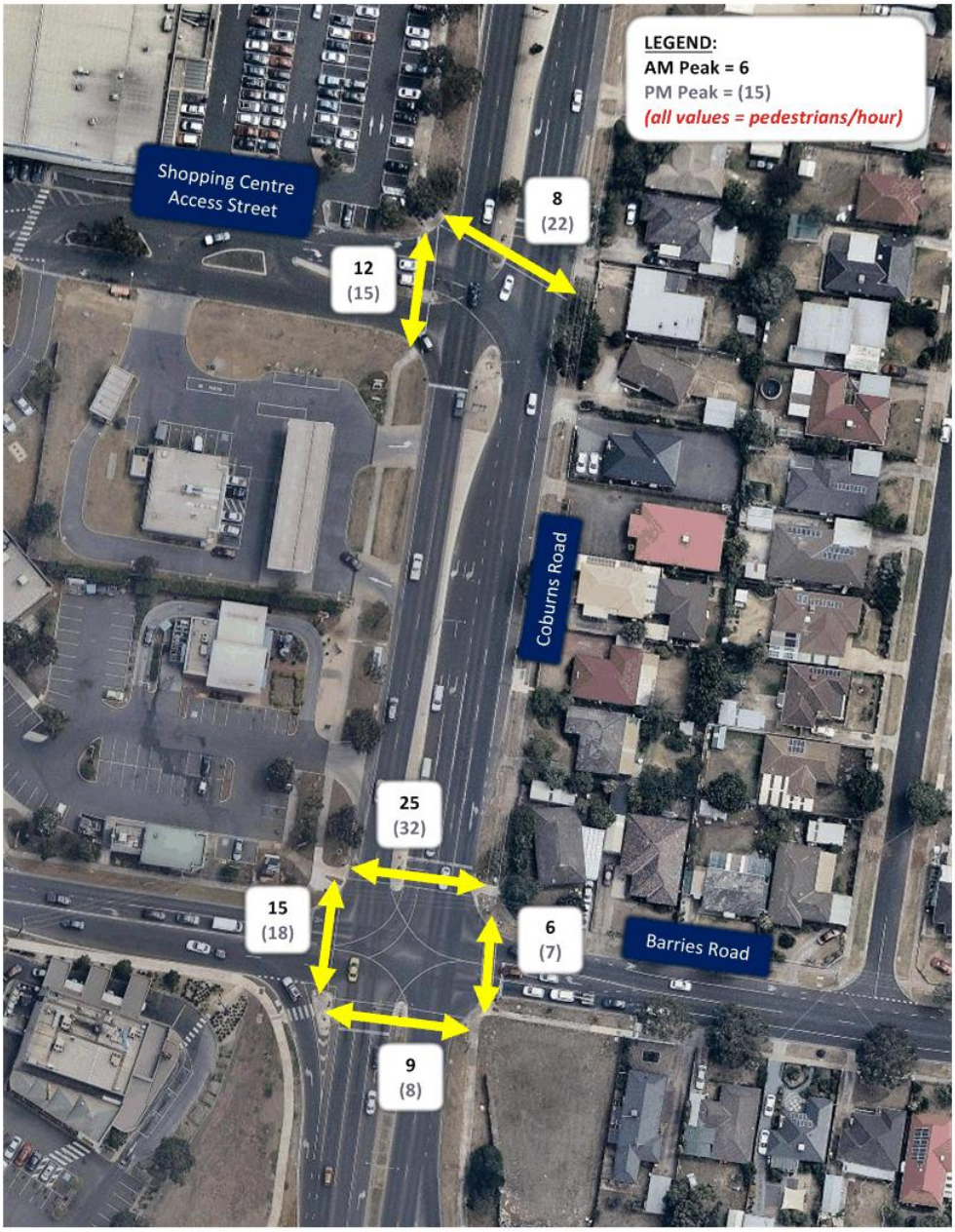


Figure 14: Existing Pedestrian Volumes

3.8 TRAFFIC SIGNALS

There are traffic signals at the intersections of Coburns Road / Shopping Centre and Coburns Road / Barries Road. The traffic signal operational details are as follows.

3.8.1 AM PEAK

Coburns Road and Shopping Centre Intersection

There are 3 traffic signal phases with total cycle time 140 seconds:

- **Phase 1:** Partially-controlled right turn from north leg (Coburns Road) into east leg (Shopping Centre)
  Duration = 15 seconds; concurrent with southbound through movement
- **Phase 2:** Coburns Road – northbound through movement
  Duration = 79 seconds; concurrent with southbound through movement (followed by 7 seconds intergreen before phase 3)
- **Phase 3:** Shopping Centre
  Duration = 32 seconds (followed by 7 seconds intergreen before phase 1)

Coburns Road and Barries Road Intersection

There are 4 Phases with total cycle time 140 seconds

- **Phase 1:** Fully-controlled right turns from both approaches on Coburns Road
  Duration = 12 seconds (followed by 7 seconds intergreen before phase 2)
- **Phase 2:** Coburns Road through movements from both approaches
  Duration = 60 seconds (followed by 7 seconds intergreen before phase 3)
- **Phase 3:** Partially controlled right turn from west leg of Barries Road (with eastbound 'through')
  Duration = 17 seconds; concurrent with westbound through movement (incorporates 3 seconds 'closure' of right-turn with red-display arrow)
- **Phase 4:** Barries Road through movements from both approaches
  Duration = 30 seconds (followed by 7 seconds intergreen before phase 1)

3.8.2 PM PEAK

Coburns Road and Shopping Centre Intersection

There are 3 traffic signal phases with total cycle time 105 seconds:

- **Phase 1:** Partially-controlled right turn from north leg (Coburns Road) into east leg (Shopping Centre)
  Duration = 14 seconds; concurrent with southbound through movement
- **Phase 2:** Coburns Road – northbound through movement
  Duration = 64 seconds; concurrent with southbound through movement (followed by 7 seconds intergreen before phase 3)
- **Phase 3:** Shopping Centre
  Duration = 13 seconds (followed by 7 seconds intergreen before phase 1)

Coburns Road and Barries Road Intersection

There are 4 Phases with total cycle time 105 seconds

- **Phase 1:** Fully-controlled right turns from both approaches on Coburns Road
  Duration = 8 seconds (followed by 7 seconds intergreen before phase 2)
- **Phase 2:** Coburns Road through movements from both approaches
  Duration = 34 seconds (followed by 7 seconds intergreen before phase 3)
- **Phase 3:** Partially controlled right turn from west leg of Barries Road (with eastbound 'through')
  Duration = 15 seconds; concurrent with westbound through movement (incorporates 3 seconds 'closure' of right-turn with red-display arrow)
- **Phase 4:** Barries Road through movements from both approaches
  Duration = 27 seconds (followed by 7 seconds intergreen before phase 1)

4 LAND USES UNDER PROPOSED MIXED USE ZONE

4.1 ANALYSIS OF LAND USES

For the purposes of the traffic and parking analyses presented in this report, a determination of likely future land uses is required. Thus, the starting point for the 'impact assessment' is to consider the range of uses that are currently allowed under a Residential Growth Zone and to compare those uses to the broader listing of permitted uses under a Mixed Use Zone. This comparison is necessary to determine:

- What land uses are possible under a Mixed Use Zone but were not allowed under a Residential Growth Zone?
- Are those land uses likely to be built in this part of Melton and on the lot sizes available?
- Are any land uses that are permitted under both the current and future zoning but that are allowed to be 'bigger' in a Mixed Use Zone?

Table 4 shows the land uses allowed under the current and proposed zones. The contents in the table have been sourced from the Melton Planning Scheme clause 32.07 (Mixed Use Zone) and 32.04 (Residential Growth Zone) specifically the sections in those clauses that list uses for which a 'permit is not required'.

Land Uses Allowed (No Permit Required)	
Residential Growth Zone	**Mixed Use Zone**
Animal keeping (other than Animal boarding)	Animal keeping (other than Animal boarding)
Bed and breakfast	Bed and breakfast
Dependent person's unit	Dependent person's unit
Dwelling (other than Bed and breakfast)	Dwelling (other than Bed and breakfast)
Home occupation	Home occupation
Informal outdoor recreation	Informal outdoor recreation
Medical centre (Max gross floor area 250m^2)	Medical centre (Max gross floor area 250m^2)
Minor utility installation	Minor utility installation
Place of worship (Max gross floor area 250m^2)	Place of worship (Max gross floor area 250m^2)
Railway	Railway
Residential aged care facility	Residential aged care facility
Tramway	Tramway
Food and drink premises (other than Convenience restaurant, Hotel and Tavern) (Max leasable floor area 100m^2)	Food and drink premises (other than Convenience restaurant, Hotel and Tavern) (Max leasable floor area 150m^2)
Shop (other than Adult sex bookshop and Bottle shop) (Max leasable floor area 100m^2)	Shop (other than Adult sex bookshop and Bottle shop) (Max leasable floor area 150m^2)
	Convenience restaurant (Max leasable floor area 150m^2)
	Hotel and Tavern (Max leasable floor area 150m^2)
	Bottle shop (Max leasable floor area 150m^2)
	Office (other than Medical centre) (Max leasable floor area 250m^2)

Table 4: Land Uses Allowed (without requiring a permit)

There are a number of land uses in Table 4 that can be excluded from any future analysis due to the following reasons:

- They are inapplicable/unrealistic and/or have no practical traffic /parking impact in the context of the land in question (tramway, railway, minor utility installation)
- They appear as 'permitted uses' under both zone scenarios – hence as they could be equally developed with no change to the current zoning (and, importantly, are unlikely to be more 'intense' if the zoning changes – for example a "Bed and breakfast" is likely to be of a rather modest scale irrespective of the zoning)

While most of the uses that appear as 'permitted uses' under both zoning-scenarios have been excluded from the analysis in this impact assessment report, two of those permitted land uses will be considered as potentially having an impact due to a 'greater intensity of use'. These two uses are 'dwelling' (where higher density will be assumed on a per lot basis, replacing the current single dwelling structure that is dominant) and 'medical centre' (higher density will also be assumed on a 'practitioners per lot' basis, representing an increase compared to the existing number of practitioners).

In summary, the list of land uses that are considered as 'realistic' future development in this area (for the purposes of assessing peak period traffic and parking impacts) is much smaller than what is shown in Table 4. The short-list of potential future uses is shown in Table 5.

Potential Future Land Uses for Assessment Purposes Under a Mixed Use Zone	Comment
Dwelling	Already permitted under RGZ
Medical centre (max 250m^2)	Already permitted under RGZ (same size)
Food & drink premises (max 150m^2)	Already permitted under RGZ (greater size under MUZ – up from 100m^2)
Shop (max 150m^2)	Already permitted under RGZ (greater size under MUZ – up from 100m^2)
Office (max 250m^2)	Newly permitted land use

Table 5: Future Land Uses under Mixed Use Zone

4.2 FUTURE SCENARIO

The traffic generation characteristics of each of the land uses shown in Table 5 are discussed in chapter 5 and a 'worst-case' scenario (for assessment purposes only) has been presented. This scenario envisages that under the Mixed Use Zone the following scenario is developed with three of the identified land use types:

- Five **medical centres**, with **4 practitioners each** (the maximum number of practitioners that can be accommodated under the permissible gross floor area of 250 square metres)
- Five **residential medium-density** developments with **9 two-bedroom dwellings each**
- Five **food and drink** premises – **each of maximum size 150 square metres** of leasable floor area (the maximum permissible area)

The three land use categories in this scenario are not only plausible in this part of Melton but also feature higher traffic generation potential than the two land uses that are excluded (shop and office). The adoption of these land uses therefore provides a worst-case conservative basis for assessment of traffic impacts.

VicRoads officers have reviewed this future scenario and offered no objection – for the purpose and in the interests of undertaking a conservative traffic analysis. VicRoads have commented that the "*proposed combination of land uses for Coburns Road seems reasonable and realistic*".

5 TRAFFIC CONSIDERATIONS

5.1 OVERVIEW

The section examines potential traffic impacts associated with the proposed rezoning by undertaking a conventional trip generation/trip distribution/capacity assessment analysis. The starting point for calculating the traffic generation component has been the use of the future development scenario (under a Mixed Use Zone) discussed with and endorsed by VicRoads officers. After calculation of a possible traffic generation volume, the next step has involved the 'distribution' of traffic onto the road network using a logical and 'common sense' approach (where people are most likely to be coming from and going to). Finally, the question of whether the 'distributed' traffic will have a material impact on Coburns Road (or any given intersection in the study area) has been based on a **structured three-tiered assessment framework**, as follows.

1. Is the 'forecast' change in traffic volume greater than 10%? Such a proportional increase is regarded as inconsequential in terms of road network performance – as the accepted industry-practice in Victoria is that traffic volume increases below 10% are generally considered to be insignificant given that daily variations in background traffic flow may fluctuate by this amount – and even much greater. Therefore, any changes in traffic that fall under 10% are commonly assumed to result in no discernible impact – as they are within the range of normal daily fluctuations identified for roads within the metropolitan Melbourne area by VicRoads.
2. The second level of analysis involves the determination of capacity-impact using agreed traffic capacity limits for streets based on commonly-accepted traffic lane capacity parameters adopted in Melbourne (e.g. – arterial road = 1,000 vehicles per traffic lane per hour). In other words, if the forecast traffic volume increase, under the development scenario, pushes the traffic on a road section beyond the accepted lane-carrying thresholds – an impact would be regarded as possibly material.
3. The third, and most 'rigorous' level of modelling involves detailed intersection analysis using SIDRA modelling software. SIDRA allows not only comprehensive assessment of the future performance of intersections in isolation, but also allows an analysis that links the two signalised intersections with the roundabout, e.g. it has been used to model the three sites operating together – as a small network. SIDRA also been used to test the effects of signalisation at the High Street intersection.

In summary, using the three-tiered impact-analysis approach outlined in this section, the assessment will help Council understand whether the rezoning is practical on traffic grounds.

5.2 FEATURES OF SIDRA

SIDRA is the most common and reliable software package – used for intersection and network capacity, level of service and performance analysis. Typical SIDRA outputs include Degree of Saturation, Level of Service and Average Delay. These characteristics are defined as follows:

Degree of Saturation: is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The Degree of Saturation ranges from close to zero for varied traffic flow up to one for saturated flow or capacity.

Average Delay: is the average of all travel time delays for vehicles through the intersection.

Level of Service: is the qualitative measure describing operational traffic conditions and their perception by motorists and/or passengers. In general, there are 6 levels of service, designated from A to F, with Level of Service A representing the best operating condition (i.e. free flow) and Level of Service F the worst (i.e. forced or breakdown flow). SIDRA adopts the A to F score system based on vehicle control delays – and the corresponding qualitative ranking is summarised below in Table 6.

Level of Service (LOS)	Average Vehicle Control Delay	Expected Operation
A	≤10 seconds	Free Flow
B	10–20 seconds	Stable Flow (slight delays)
C	20–35 seconds	Stable flow (acceptable delays)
D	35–55 seconds	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	55–80 seconds	Unstable flow (intolerable delay)
F	≥80 seconds	Flow breakdown (jammed)

Table 6: SIDRA Level of Service Rating

5.3 TRAFFIC ASSOCIATED WITH MIXED USE ZONE

The key question when considering traffic generation associated with any rezoning is to establish what proportion of future traffic can be legitimately as traffic generated solely as a result of the rezoning. In theory, any potential traffic generation increases attributable to the proposed rezoning on Coburns Road can only materialise if there are '*new permitted*' land uses under the Mixed Use Zone that were previously not permitted or were subject to a smaller size limitation under the Residential Growth Zone. Any of the land uses 'permitted' in the Mixed Use Zone that are already 'permitted' under the Residential Growth Zone can, by definition, be equally developed in the same manner under both zoning alternatives. It thus cannot be argued that any material increase in traffic will take place as a result of the rezoning. In other words all such developments that are equally listed in Table 4 for both the existing and proposed zonings – do not require a zoning amendment to be built.

Notwithstanding the above, given that the likely realistic future land use scenario (set up purely for traffic assessment purposes) features four land use categories that are already permitted under the Residential Growth Zone – it is necessary to resolve how to treat the future traffic associated with those uses. For example – where a property today is occupied by a single medical practitioner (under the Residential Growth Zone) and that land use intensifies to four medical practitioners at some stage in the future (when the land is rezoned as Mixed Use) – it can be argued that the traffic impact is "nil" – given that the ability to construct a medical practice for four practitioners is equally available under both zoning options. Similarly, where a single detached dwelling exists on a lot – and it is replaced by a nine-dwelling redevelopment, it can also be argued that the traffic impact, as a result of the rezoning, is "nil" – given that it is possible to develop that same 9-dwelling property with the existing zone controls.

However, in the interests of conducting a conservative traffic impact analysis, this report will instead assume that the existing mix of uses provides the baseline conditions for comparison. The future growth scenario described in chapter 4 (*five medical centres, with total of 20 practitioners, five residential medium-density developments with 45 two-bedroom dwellings and five food and drink premises for a total of 750 square metres of leasable floor*) will be assumed to be responsible for a net increase in traffic attributable to the rezoning. Essentially this approach assigns the additional traffic movements associated with intensification of land uses to the proposed Mixed Use zoning, despite the fact that the same intensification can already occur, for some of the envisaged land uses, under the existing Residential Growth Zone. Hence it will be an exceptionally conservative analysis.

5.4 ANALYSIS PERIODS

The analysis presented in this section focuses on the traditional commuter peak hours that characterise this part of metropolitan Melbourne – namely 8am to 9am (AM peak) and 5pm to 6pm (PM peak). These peak hours are also consistent with much of the busiest 'activity' expected in association with future land uses in the land to be rezoned (medical, food/drink premises, residential) – for example employees arriving to work and residents departing in the morning and the reverse pattern in the evening.

Accordingly, adoption of the traditional AM and PM peak hours (for the purposes of traffic impact analysis) will provide the 'worst case' combination of site-generated trips plus background trips on the adjacent road network. To reliably estimate the traffic generation potential of a given development, the well-established industry practice across Australia is to utilise the New South Wales Roads and Traffic Authority (now known as Roads and Maritime Services) 'Guide to Traffic Generating Developments' (the RTA Guide) together with local surveys/data, if available and as appropriate. Within this context, the trip generation rates adopted for the purposes of this assessment, are discussed in the sections that follow.

5.5 EXISTING AND NEW TRIPS

The proposed amendment area lies adjacent to the Woodgrove Regional Activity Centre and it is therefore reasonable to expect that many of the trips that will be attracted to new development will be made by individuals already passing by or visiting the broader Activity Centre. It is also worth noting that certain development types (irrespective of their location within or outside of Activity Centres) generate relatively few totally new trips; such developments include petrol stations and some fast food outlets. Most of their customers are drawn from cars directly passing, or passing very close to, the Activity Centre. When considering the future development scenario, outlined in this report, with respect to the traffic generation characteristics of the rezoned land (a mix of *five medical centres, five residential medium-density developments and five food / drink premises* – as described in chapter 4) it is therefore likely that many of the trips to the fast food outlets will be made by individuals already passing by or visiting the broader Activity Centre, whereas that will not necessarily be the case for medical and residential uses. It is expected that most trips to the medical uses, would be trips made specifically to those premises for appointments and not associated with the presence of the nearby Woodgrove Regional Activity Centre.

In summary, not all trips attracted to the Mixed Use Zone in Coburns Road will be new to the surrounding road network. Accordingly, the analysis of vehicle trips associated with the proposed rezoning, requires detailed consideration of the 'composition' of future trips to the rezoned area – specifically the identification of which trips are completely 'new' versus those trips that are 'already present' on the network (those that are on Coburns Road passing directly in front of or nearby the rezoned land and will simply 'divert in'). Section 5.9 assesses in more detail the likely trip characteristics associated with the three development components (medical centres, residential developments and food / drink premises) and presents the context and separate assumptions adopted for future trips in association with each use.

Agencies in Australia and worldwide – AustRoads, the NSW Road and Maritime Services and the Institution of Transport Engineers (ITE) – have undertaken in depth research into the nature of trips that may be attracted to certain land use types. Of particular interest in this *traffic impact assessment* analysis are the characteristics of trips associated with 'shopping centre' environments – as the proposed rezoning deals with such an environment. Much of the aforementioned research has examined this matter in some detail – and the main conclusions are outlined below. Key findings from ITE's research are reported in the publication 'Trip Generation Handbook' (ITE March 2001). The publication suggests that the incidence of 'pass-by' type trips, in shopping centre scenarios, would be in the range of 50-70%. In other words, the ITE's findings would suggest that a significant proportion of the trips (attracted to, in particular, the food/drink premises envisaged under the future traffic assessment scenario) will be from vehicles already within the general area.

Complementing the ITE research, AustRoads' *Guide to Traffic Management Part 12 – Traffic Impacts of Development (2009)* draws conclusions on linked trips (Commentary 8). Table C8.1 (reproduced in Table 7) sets out … '*a typical example of the segmentation of traffic generation for shopping centres*'.

Development Type	Trip Segmentation		
	New (%)	Diverted drop-in (%)	Undiverted drop-in (%)
Shopping centres > 20,000 m^2	63	18	19
Shopping centres 3,000 m^2 - 20,000 m^2	50	22	28
Shopping centres < 3,000 m^2	50	32	18
Fast Food Outlets	40	25	35

Table 7: Segmentation of Traffic Generation for Shopping Centres

Table 7 highlights the three trip types defined in the AustRoads Guide. They are as follows:

New (unlinked) trips: these are trips attracted to a development and without that specific development would not have been made.

Diverted (drop-in) trips: a linked trip from an origin to a destination that has made a significant network diversion to use the new development.

Undiverted (drop-in) trips: a linked trip from an origin to a destination that previously passed the development site. It is also referred to as a **pass-by trip** and some of the new developments on the rezoned land represent an intermediate stop on a trip that is made from an origin to a destination.

The proportion of each trip type depends upon the specific characteristics and location of any given development.

Thus, when considering future development as part of the rezoning in Coburns Road, the following initial assumptions can be made with respect to trips attracted to the Mixed Use Zone:

1. Employee Trips – it will be assumed that **85% of these are new trips** (as they largely represent workers that are not working in the broader Woodgrove Activity Centre area at present – except for staff at the existing commercial premises)
2. Resident Trips – it will be assumed that **85% of these are new trips** (as they largely represent residents that are not living in the properties on the east side of Coburns Road at present – except for existing residents)
3. Visitor / Shopper Trips to Food/Drink Premises – it will be assumed that these are **partly undiverted trips** in accordance with guidance from the ITE and AustRoads research

The determination of "*Undiverted drop-in*" trips for the future visitors and shoppers to the food/drink premises is based on the *Trip Segmentation* characteristics from Table 7. Based on the discussion presented, it would therefore be appropriate to adopt the *Trip Segmentation* characteristics shown in Table 8 – for the food/drink premises.

Land use Component in the Activity Centre	Initial Assumption – Visitor / Shopper Trip Segmentation		
	New	Diverted drop-in	Undiverted drop-in
Fast Food Outlets	40%	25%	35%

Table 8: Trip Segmentation Characteristics for the Activity Centre

5.6 LINKED TRIPS

In addition to identifying the likely proportion of 'new' and 'pass-by' trips (as discussed above) allowance must be made for a phenomenon known as 'trip linking' – where a person arrives at a centre for one purpose and uses the opportunity to visit one or more other establishments in that centre. This occurrence is typical in activity centres such as Woodgrove. Linked trips thus have the potential to further reduce the overall traffic generation rates adopted for the proposed rezoning.

When examining trip linking manifestations, the RTA Guide and ITE (2001) have both found that where additional retail activities are built within existing centres or areas of existing commercial development (such as the proposed land in Coburns Road) the total number of trips to the centre can be further reduced due to 'trip linking' – by as much as 24%.

More specifically, the RTA Guide provides trip rates for a range of shopping centre sizes which incorporate the 'trip linking' allowance – generally the larger the area, the lower the trip rate. Shopping centres the size of the Woodgrove Activity Centre can exhibit trip rates as low as 2 to 3 trips/100m^2 during the weekday PM peak period and 1 to 2 trips/100m^2 during the weekday AM peak period.

5.7 LAND USES FOR TRIP GENERATION

Chapter 4 described the 'short-list' of five possible land uses categories that may be developed under the proposed Mixed Use Zone. These are:

- Dwelling
- Medical centre (max 250m^2)
- Food & drink premises (max 150m^2)
- Shop (max 150m^2)
- Office (max 250m^2)

These potential five land uses were subsequently short-listed to three – deemed the most realistic/likely for the purposes of assessing a worst-case scenario in terms of traffic generation. A discussion of the land uses 'excluded' and 'adopted' in the future scenario is presented below.

5.8 TRIP GENERATION – EXCLUDED LAND USES

The two 'excluded' land uses exhibit traffic generation rates that are lower than the 'adopted' land uses.

5.8.1 COMMERCIAL

The RTA Guide advises that office (commercial) trip rates are as follows:

- Morning peak hour vehicle trips = 1.6 per 100 m2 gross floor area.
- Evening peak hour vehicle trips = 1.2 per 100 m2 gross floor area.

5.8.2 RETAIL (SHOP)

As already discussed, by virtue of its locational context adjacent to the Woodgrove Activity Centre, any future retail development in the rezoned land can be expected to capture a significant level of customers from adjacent land uses – these are the linked trips. The RTA Guide, as previously indicated, provides trip rates for shopping centres the size of Woodgrove as low as 2 to 3 trips/100m^2 during the weekday PM peak period and 1 to 2 trips per 100m^2 during the weekday AM peak period.

5.9 TRIP GENERATION – ADOPTED LAND USES

5.9.1 RESIDENTIAL

In order to calculate the worst-case future traffic generation for dwellings on a lot it will be assumed that the five lots assumed to be redeveloped for medium density housing are developed to maximum capacity. The typical lot size is around 15.5m wide by 35.5m long. Assuming that a two-bedroom unit requires 100m^2 of floor space, and taking into account the mandated building setback requirements, the realistic maximum number of dwellings that could be built on a typical lot has been estimated at nine.

The RTA guide advises that for medium density residential flats with two or fewer bedrooms there will be 0. 5 peak hour trips generated per dwelling (this applies for both the morning and evening peak hours).

Based on this maximum lot capacity of 9 dwellings and the RTA guide trip rate the worst case total number of peak hour trips expected to be generated is: 4.5 trips per lot per hour. In contrast, the existing baseline traffic generation characteristics associated with single detached dwellings is generally accepted to be 1 trip per lot per hour. Thus, the net increase in traffic generation potential is 3.5 trips per lot per hour (this applies for both the morning and evening peak hours).

Overall, the five lots to be developed into medium density housing would therefore generate an additional 17.5 trips per peak hour – assume 18.

5.9.2 MEDICAL CENTRE

The maximum hourly traffic generation rate associated with existing medical centres on the subject land has been measured (from survey work conducted over an entire weekday at all such properties) to be 3.7 peak hour trips per medical practitioner in the evening peak hour. In the morning peak hour period (8.00am to 9.00am) most of the businesses were still closed and thus 'customer arrivals' had not commenced as yet. The morning rate was much lower at 1.5 peak hour trips per medical practitioner. For the purposes of this assessment, a conservative traffic generation rate of 2 peak hour trips per medical practitioner in the morning peak hour has been adopted.

Using the future worst-case scenario of 4 medical practitioners per medical centre (on a single lot) and the above traffic rates yields 8 AM peak hour trips and 14.8 PM peak hour trips per medical centre. Accordingly, the five medical centres (with 20 practitioners) will generate 40 trips/hour in the AM peak and 74 trips/hour in the PM peak. However, there are already 7 practitioners operating on the subject land – which would be generating 14 trips/hour in the AM peak and 26 trips/hour in the PM peak (using the same traffic generation rates). Thus, the net increase in traffic – for the purposes of this report – would be 26 trips/hour in the AM peak and 48 trips/hour in the PM peak. Notwithstanding the lower 'net' increase volume, the analysis presented in subsequent sections will adopt the 'full' values of 40 trips/hour in the AM peak and 74 trips/hour in the PM peak – in the interests of a conservative analysis.

5.9.3 FOOD/DRINK PREMISES

Extensive surveys of traffic generation characteristics of fast food outlets in outer suburban contexts (with drive-in facilities) has been previously undertaken by *movendo Pty Ltd* at a number of established premises. The following traffic generation rates were determined:

- Morning peak hour trips generated (per 100m^2 of leasable floor area): 3.8
- Evening peak hour trips (per 100m^2 of leasable floor area): 14.4

For the purposes of this traffic analysis, it is a safe assumption that a drive-in fast food outlet will have higher traffic generation rates than other food / drink premises. Therefore, the rate identified in the *movendo* surveys can be conservatively used as the traffic generation rate for food and drink premises on Coburns Road.

The Melton Planning Scheme specifies that food and drink premises cannot exceed a leasable floor area of 150m^2 (in mixed use zones). Using the above traffic generation rate and maximum allowable leasable floor area of 750m2 (for the future development scenario with five food / drink premises) yields to the following number of peak hour trips generated on a "per food / drink premises" basis:

- 6 morning peak hour trips and 22 evening peak hour trips per single food / drink premises.

In total, the five food / drink premises will generate:

- 30 trips in the AM peak hour
- 110 trips in the PM peak hour

However, application of the "shopping centre trip adjustment factors" previously described – whereby 65% of trips in this location would be expected to be 'new' or 'diverted' trips – yields the following traffic forecasts:

- 20 trips in the AM peak hour
- 72 trips in the PM peak hour

Finally, adopting the 24% discount for 'linked trips' described earlier provides a final traffic estimate for the future five food / drink premises as follows:

- 15 trips in the AM peak hour
- 55 trips in the PM peak hour

5.10 TRAFFIC FORECAST

5.10.1 POTENTIAL TRAFFIC GENERATION BY DIFFERENT LAND USES

Table 9 summarises the traffic generation potential by the five land use categories (originally identified in chapter 4 and discussed in more detail in the preceding sections) obtained by multiplying the traffic rates for those uses by the development potential on each lot. As shown in the table the highest traffic generation potential is typically associated with dwellings, medical centres and food/drink premises. This is the reason that those land uses have been selected for the purposes of modelling a future 'worst-case' scenario (in terms of traffic generation).

Comparison of Peak Hour Traffic Generation (Vehicles Per Hour Per Lot)		
Land Use	**AM Peak Hour**	**PM Peak Hour**
Dwelling (Assuming 9 on lot)	4.5	4.5
Medical centre (250m^2 – 4 practitioners)	8	14.8
Food and drink premises (150m^2)	3	11
Shop (150m^2)	3	4.5
Office (250m^2)	4	3

Table 9: Summary of Net Increase in Traffic Generated by Land Use Category

5.10.2 FUTURE TRAFFIC

The calculation of additional traffic generated in the rezoned land has been undertaken by applying the traffic rates discussed in the previous sections and using the following combination of future land uses:

- 5 medical centres
- 5 medium-density residential developments
- 5 food / drink premises

AM Peak Hour

Total AM peak hour trips have been determined to be 73 trips/hour, as follows:

- 40 associated with medical centres (conservatively using the full traffic values – not allowing a discount for the presence of existing medical practices)
- 18 associated with medium-density residential developments (net traffic values – after discounting existing movements associated with existing homes)
- 15 associated with food / drink premises (traffic values appropriately discounted for proximity to shopping centre)

For the purposes of 'directional traffic split', 40 trips are assumed 'incoming' and 33 'outgoing', as follows:

- medical centres – 30 incoming trips (75%) and 10 outgoing trips (25%)
- medium-density residential developments – 2 incoming trips (11%) and 16 outgoing trips (89%)
- food / drink premises – 8 incoming trips (53%) and 7 outgoing trips (47%)

PM Peak Hour

Total PM peak hour trips have been determined to be 147 trips/hour, as follows:

- 74 associated with medical centres (conservatively using the full traffic values – not allowing a discount for the presence of existing medical practices)
- 18 associated with medium-density residential developments (net traffic values – after discounting existing movements associated with existing homes)
- 55 associated with food / drink premises (traffic values appropriately discounted for proximity to shopping centre)

For the purposes of 'directional traffic split', 84 trips are assumed 'incoming' and 63 'outgoing', as follows:

- medical centres – 37 incoming trips (50%) and 37 outgoing trips (50%)
- medium-density residential developments – 14 incoming trips (78%) and 4 outgoing trips (22%)
- food / drink premises – 33 incoming trips (60%) and 22 outgoing trips (40%); the higher proportion of arrivals is based on an expectation that comparatively more customers arrive and 'eat-in' during the 5-6pm peak hour; thus departing after 6pm

5.11 DISTRIBUTION OF FUTURE TRAFFIC

Traffic movements attracted to the proposed rezoned land are likely to be distributed based on the location of residential catchments in the surrounding region. Given that residential neighbourhoods are well established in all directions, it will be assumed that traffic is approximately distributed 4 ways – north, south, east and west. This pattern (together with the incoming/outgoing split described in the preceding section) yields the traffic distribution shown in Figure 15.

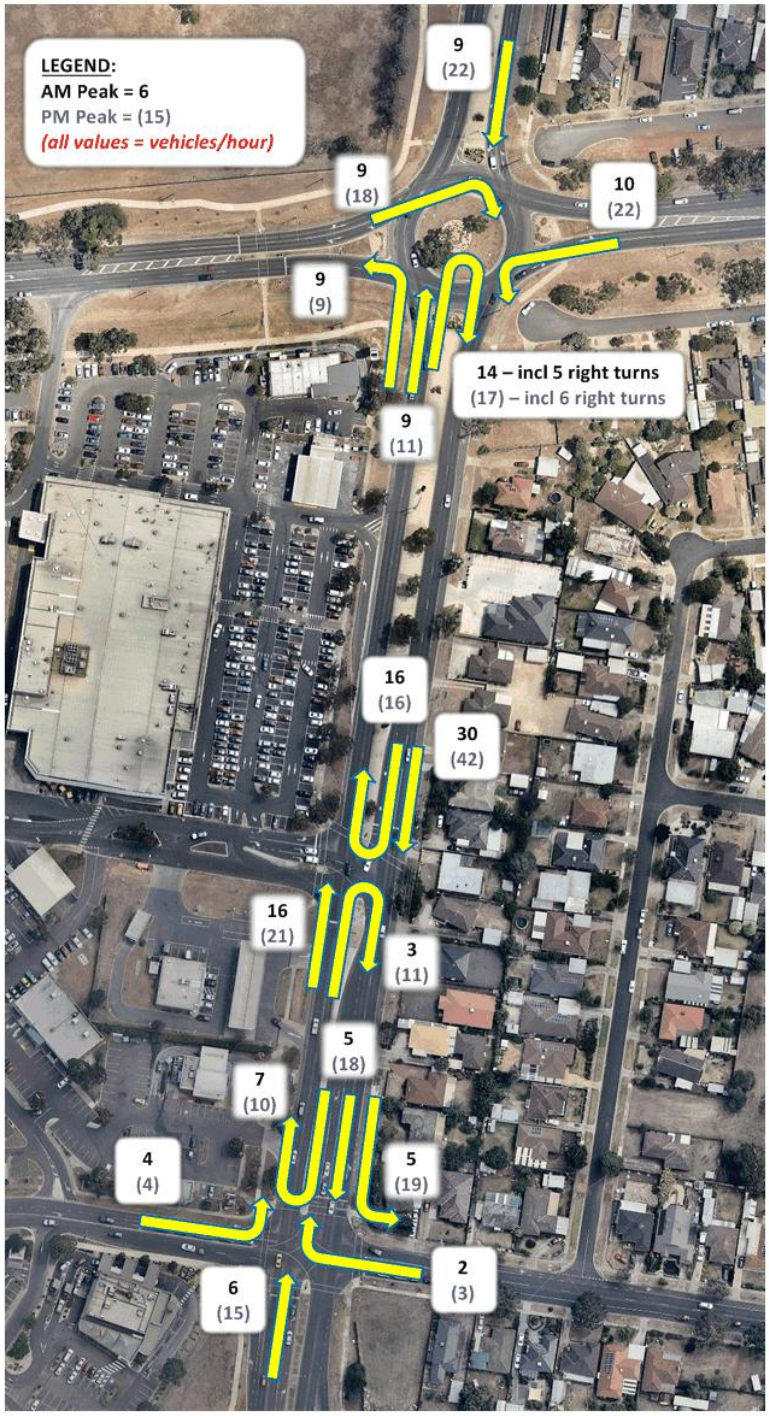


Figure 15: Traffic Volume Increases at Full Development (AM & PM peak hours) – Forecast Distribution

5.12 TRAFFIC IMPACT

5.12.1 OVERVIEW

At the southern end of the study area, the Coburns Road and Barries Road intersection is the most important one from a traffic perspective (as it is the busiest and it provides the main connection between the Activity Centre and the Western Freeway and areas to the south). Despite being the busiest intersection, it is generally operating well under capacity for most of a typical weekday, as well as both the AM and PM peak periods. The intersection load (or total traffic entering the intersection from all directions – north, south, east and west) at this location is 2,812 vehicles in the AM peak hour (8-9am) and 3,634 vehicles in the PM peak hour (5-6pm) (see detailed traffic surveys in chapter 3). In a practical sense, this intersection load is manifested in generally free flowing traffic conditions, with occasional / short-lived congestion and queueing for certain traffic movements.

In the development scenario presented in this report (the worst-case situation from a traffic perspective) the Coburns Road and Barries Road intersection is forecast to experience 29 additional vehicles in the AM peak hour and 69 additional vehicles in the PM peak hour at maximum build-out.

5.12.2 GROWTH SCENARIO

As previously discussed, it was agreed with VicRoads that the adoption of the 'realistic' future scenario would have the following combination of future uses:

- 5 medical centres
- 5 medium-density residential developments
- 5 food / drink premises

This mix leads to the following worst-case total number of morning and evening peak hour trips for the rezoned land:

- 73 morning peak hour trips; and
- 147 evening peak hour trips

Application of the three-tiered assessment framework (described at the start of this chapter) is presented in the sections that follow:

5.12.3 PROPORTIONAL TRAFFIC INCREASE

Accepted industry-practice in Victoria is that traffic volume increases below 10% are generally considered to be insignificant given that daily variations in background traffic flow may fluctuate by this amount – and even much greater. Therefore, any changes in traffic flows below this 10% level are commonly assumed to result in no discernible impact. In this regard, it is relevant to note that the Traffic Monitor 2012-13 report published by VicRoads in September 2014 recognises that traffic volumes vary based on the day of the week and time of the year. More specifically, the report determined that "there is as much as a 10% variation in weekday traffic volumes depending on the day of the week". In fact, site-specific studies by VicRoads and other agencies have identified that daily traffic volumes can vary by more than 10% from Monday to Friday. Within this context VicRoads has concluded that variations in traffic that fall under 10% can be considered insignificant as they are within the range of normal daily fluctuations identified by for roads within the metropolitan Melbourne area. Since the 'forecast' change in traffic volume associated with the residential and retail/commercial development under the upper scenario is within the 10% range identified by VicRoads as 'insignificant', it is considered that the traffic impact will be inconsequential.

The forecast increase of 73 morning peak hour trips and 147 evening peak hour trips (at full build-out, under the rezoning development scenario adopted) distributed by the pattern identified in Figure 15 yields a range of proportional increases well below the 10% variation threshold identified by VicRoads a 'significant'. The forecast increases at each of the three intersections in the study area are shown in Table 10 and vary from a low of 1% to a high of 4.2%.

In summary, even when considering the worst-case development scenario, the estimated increase in traffic at all intersections is well under 10% – the threshold for the presence of a material traffic impact. Therefore, it is concluded that any additional traffic generated by the rezoned land can be easily absorbed onto the surrounding road network with no overall adverse operational impact expected.

PERIOD	Proportional Traffic Volume Increase At Intersections on Coburns Road (measured as increase in vehicles per hour across all approaches)		
	Coburns Rd / Barries Rd	Coburns Rd / Shopping Centre	Coburns Rd / High St
AM PEAK	1%	2.8%	1.9%
PM PEAK	1.9%	4.2%	2.5%

Table 10: Proportional Traffic Volume Increase – Intersections on Coburns Road

5.12.4 TRAFFIC LANE CAPACITY

The second level of traffic -impact testing involves an analysis of the vehicle-carrying capacity of traffic lanes on roads in the study area. Austroads' Guide to Traffic Management Part 3: Traffic Studies and Analysis provides guidance on the "*Typical mid-block capacities for urban roads with interrupted flow*" (roads such as those in the study area). Table 5.1 of the Austroads Guide indicates that the "*one-way mid-block capacity*" on "divided roads" (such as High Street and Coburns Road) is 1,000 vehicles per hour per lane.

Furthermore, Austroads indicates that peak period mid-block traffic volumes may increase to 1200 to 1400 vehicles/hour/lane on any approach road when the following conditions exist or can be implemented:

- adequate flaring at major upstream intersections
- uninterrupted flow from a wider carriageway upstream of an intersection approach and flowing at capacity
- control or absence of crossing or entering traffic at minor intersections by major road priority controls
- control or absence of parking
- control or absence of right turns by banning turning at difficult intersections
- high volume flows of traffic from upstream intersections during more than one phase of a signal cycle
- good co-ordination of traffic signals along the route.

Many of these circumstance as apply to the study area – and it is therefore reasonable to expect that lane capacity on Coburns Road would likely exceed 1,000 vehicles per hour.

In order to gauge the current and forecast lane carrying task in the study area, existing and future traffic volumes (arising from the rezoning) have been shown in Table 11. As can be seen from the table, the maximum existing volume of traffic carried **by an individual lane** is well within the theoretical lane-carrying capacity of 1,000 vehicles per hour throughout the study area and in both peak hours. The highest value is 735 vehicles per hour per lane (in the PM peak) northbound on Coburns Road (just south of Barries Road). This is forecast to increase to 743 vehicles per hour per lane. All other sections of road analysed are also forecast to remain well under 1,000 vehicles per hour per lane (with most carrying 400-500 vehicles per hour per lane – in peak periods).

LOCATION	AVERAGE TRAFFIC VOLUME PER LANE (vehicles per lane per hour)			
	AM PEAK (8.00 to 9.00am)		PM PEAK (5.00 to 6.00pm)	
	Existing	Forecast	Existing	Forecast
Coburns Rd – Northbound				
South of Barries Road	480	483	735	743
North of Barries Road	402	412	525	541
South of Shopping Centre	392	402	512	528
North of Shopping Centre	354	370	498	517
South of High Street	433	449	587	606
North of High Street	312	317	571	577
Coburns Rd – Southbound				
South of Barries Road	708	711	594	603
North of Barries Road	544	553	366	390
South of Shopping Centre	550	567	349	376
North of Shopping Centre	544	567	402	431
South of High Street	547	566	396	433
North of High Street	346	351	320	331
Barries Rd – Eastbound				
West of Coburns Road	214	216	480	482
East of Coburns Road	149	152	230	240
Barries Rd – Westbound				
West of Coburns Road	279	279	513	513
East of Coburns Road	168	170	246	249
High Street – Eastbound				
West of Coburns Road	367	372	372	381
East of Coburns Road	267	270	354	357
High Street – Westbound				
West of Coburns Road	226	231	448	453
East of Coburns Road	226	231	490	501

Table 11: Comparison of Existing & Future Traffic Volumes in Study Area – on a Traffic Lane Basis

5.12.5 SIDRA ANALYSIS

The SIDRA analysis considers the traffic performance at three intersections along Coburns Road, namely the signalised sites at Barries Road and the Woodgrove shopping centre access point, as well as the roundabout at High Street. The geometry adopted in the SIDRA model and the traffic signal phasing characteristics are provided in Appendix A. At each of these locations the performance has been measured under three scenarios:

- Existing Operation
- Future Operation under a development scenario with rezoning to Mixed Use Zone
- Future Operation under a development scenario with rezoning to Mixed Use Zone and signalisation at the High Street roundabout

The comparative performance is tabulated below. Table 12 summarises relevant operational parameters for the AM peak hour, whereas Table 13 summarises the PM peak hour.

Intersection	Analysis Period: AM Peak Hour			
	Parameter	Scenario		
		Existing Conditions	Future Mixed Use	Signalisation at High Street
Coburns Rd / High St				
	Degree of Saturation	0.402	0.414	0.886
	Level of Service	A	A	D
	Queue Distance (metres)	16.3	17.2	159.3
Coburns Rd / Shopping Centre				
	Degree of Saturation	0.709	0.758	0.816
	Level of Service	B	C	C
	Queue Distance	151.8	172.3	230.9
Coburns Rd / Barries Rd				
	Degree of Saturation	0.890	0.890	0.890
	Level of Service	D	D	D
	Queue Distance	209.8	210.5	220.3

Table 12: AM Peak Hour – Summary of SIDRA Results (Existing Conditions and Future Scenarios)

The comparative assessment summarised in Table 12 reveals how, during the AM peak hour, the impact associated with the rezoning in Coburns Road is insignificant. Under the future scenario where existing intersection controls are retained, all key intersection operational parameters remain at current levels with only minor changes reported. In contrast, the signalisation of the Coburns Road / High Street intersection results in less favourable parameters, particularly with respect to 'Level of Service' and maximum 'Queue Distance' – both of which are intrinsically a reflection of the different operation of signals compared to a roundabout. Under a roundabout operation traffic is 'free to proceed' upon the presence of a suitable gap. Thus, significant queueing rarely forms at the Coburns Road / High Street intersection. However, under traffic signal control traffic is forcibly kept stationary by the red signal control for a comparatively long period of time – thus allowing queue formation and increasing average delays (which are reflected by lower 'Level of Service' values). It is nonetheless important to note that the Degree of Saturation for Coburns Road / High Street intersection remains consistent with the corresponding values at the Coburns Rd / Shopping Centre and Coburns Rd / Barries Rd intersections. This indicates that it is possible to operate the three sets of traffic signals seamlessly in a linked arrangement.

Intersection	Analysis Period: PM Peak Hour			
	Parameter	Scenario		
		Existing Conditions	Future Mixed Use	Signalisation at High Street
Coburns Rd / High St				
	Degree of Saturation	0.765	0.796	0.908
	Level of Service	A	A	C
	Queue Distance (metres)	48.9	54.4	208.8
Coburns Rd / Shopping Centre				
	Degree of Saturation	0.585	0.585	0.67
	Level of Service	B	B	B
	Queue Distance	86.3	86.3	89.6
Coburns Rd / Barries Rd				
	Degree of Saturation	0.928	0.928	0.928
	Level of Service	D	D	D
	Queue Distance	198.3	209.6	209.6

Table 13: PM Peak Hour – Summary of SIDRA Results (Existing Conditions and Future Scenarios)

Table 13 shows that traffic impacts in the PM peak hour are minor – with no changes reported to the Level-of-Service at any of the three intersections assessed.

Importantly, the maximum queue length in the right turn lane on the north leg of the Coburns Rd / Shopping Centre intersection reached 61.8 metres – with only modest probability of blockage occurring.

Similar to the AM peak hour, the signalisation of the Coburns Road / High Street intersection results in less favourable parameters, particularly with respect to 'Level of Service' and maximum 'Queue Distance' – for the same reasons previously outlined. However, it is also noted that the PM peak hour Degree of Saturation at the Coburns Road / High Street intersection remains consistent with the corresponding values for the Coburns Rd / Shopping Centre and Coburns Rd / Barries Rd intersections. This confirms the finding from the AM peak, that it would be possible to operate the three sets of traffic signals seamlessly in a linked arrangement.

Images showing Degree of Saturation on the network are provided for both peak periods in Figure 16 to Figure 20.

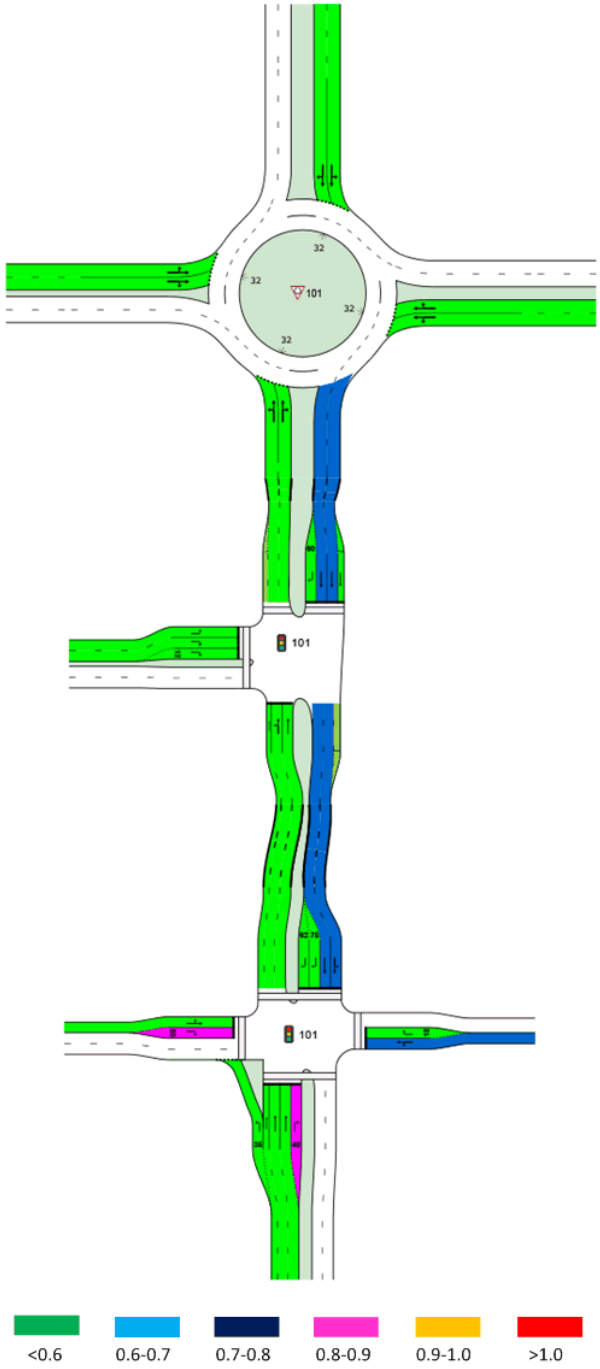


Figure 16: AM Peak Hour Existing Conditions – Degree of Saturation Summary

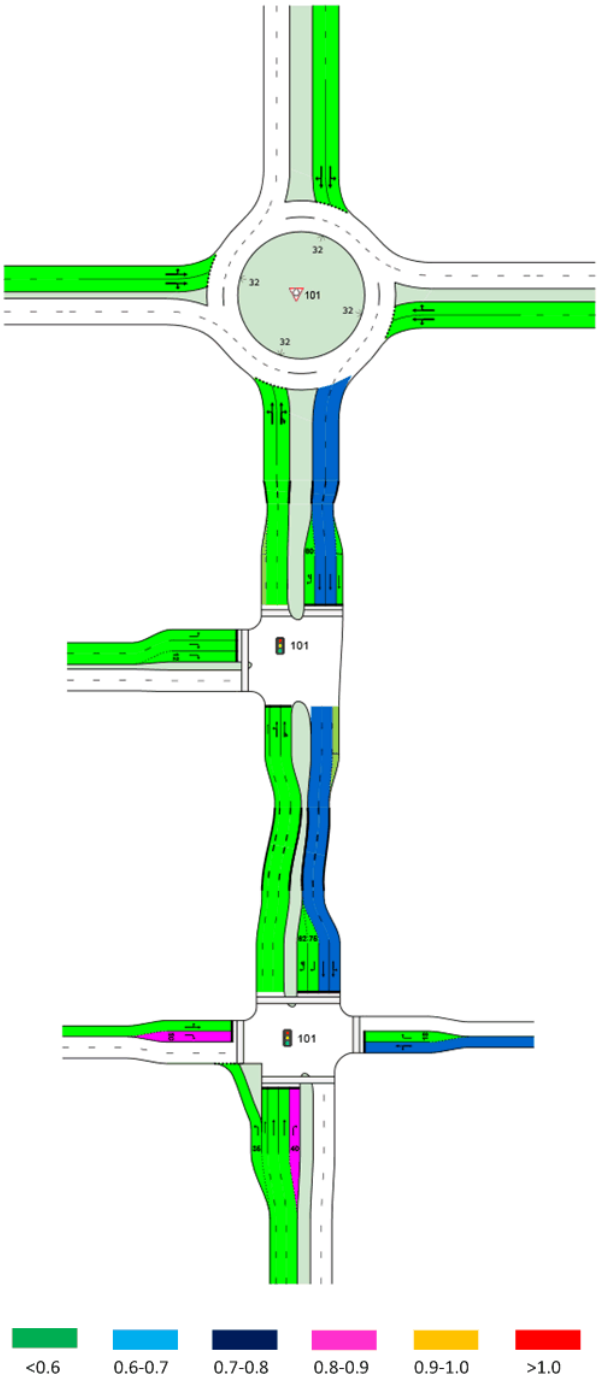


Figure 17: AM Peak Hour Future Increased-Traffic Conditions – Degree of Saturation Summary

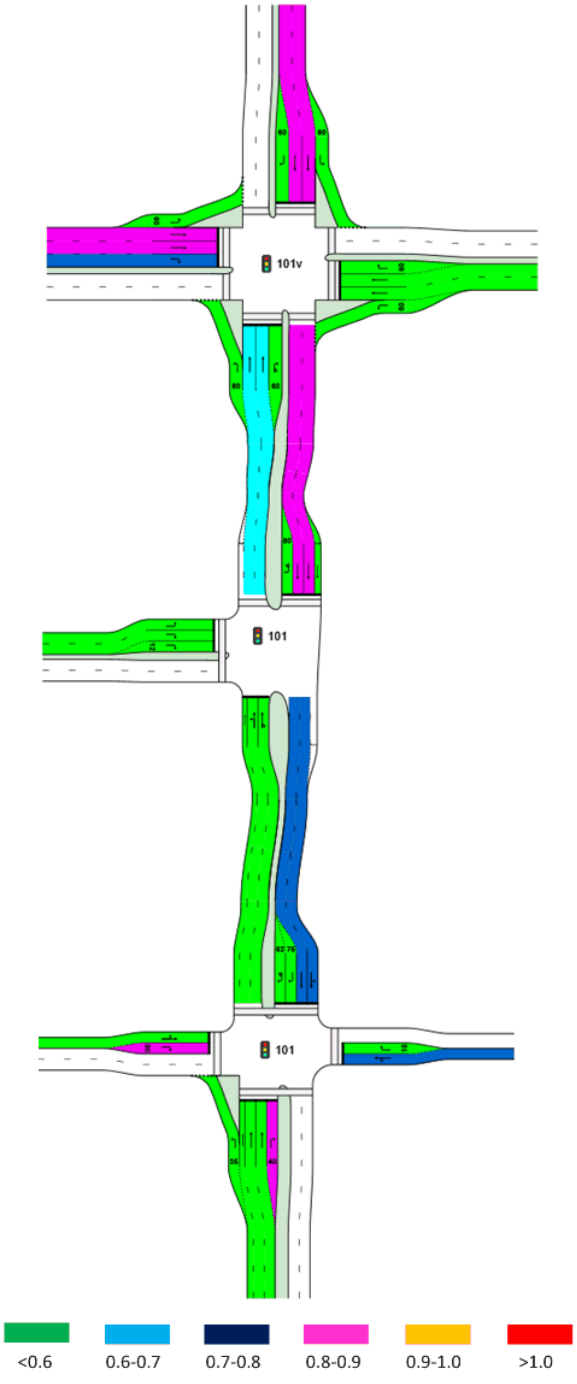


Figure 18: AM Peak Hour Future Increased-Traffic Conditions & Signalisation at High Street Degree of Saturation Summary

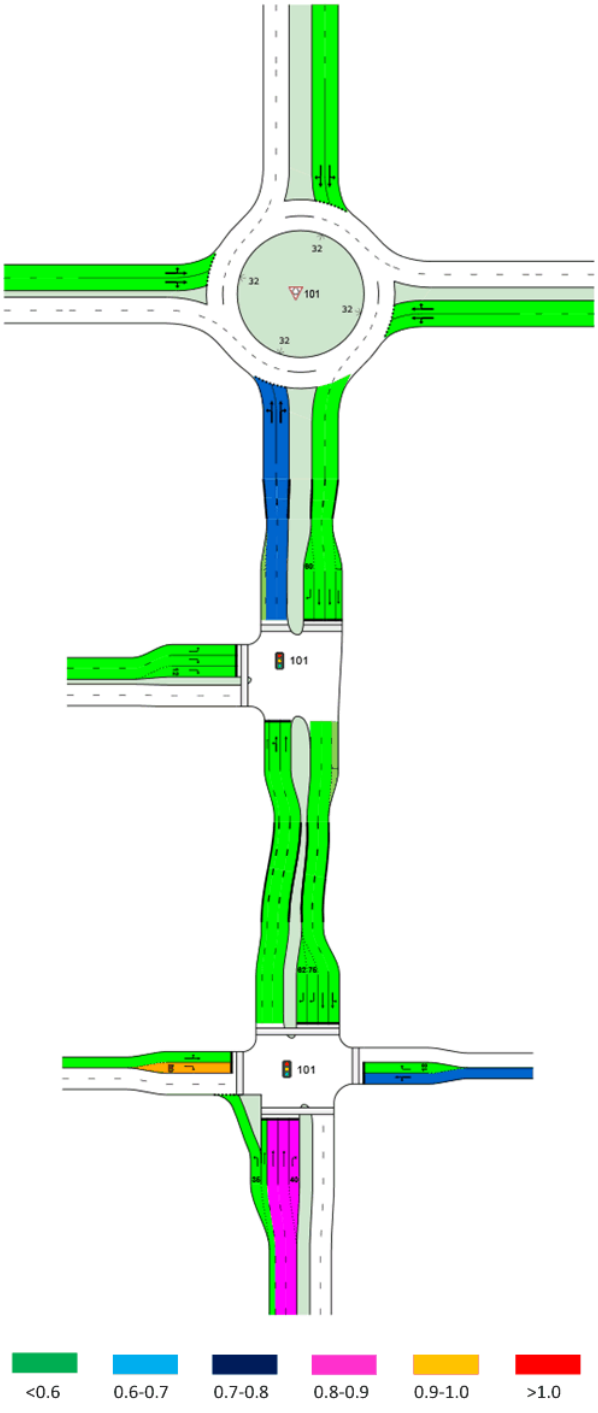


Figure 19: PM Peak Hour Existing Conditions – Degree of Saturation Summary

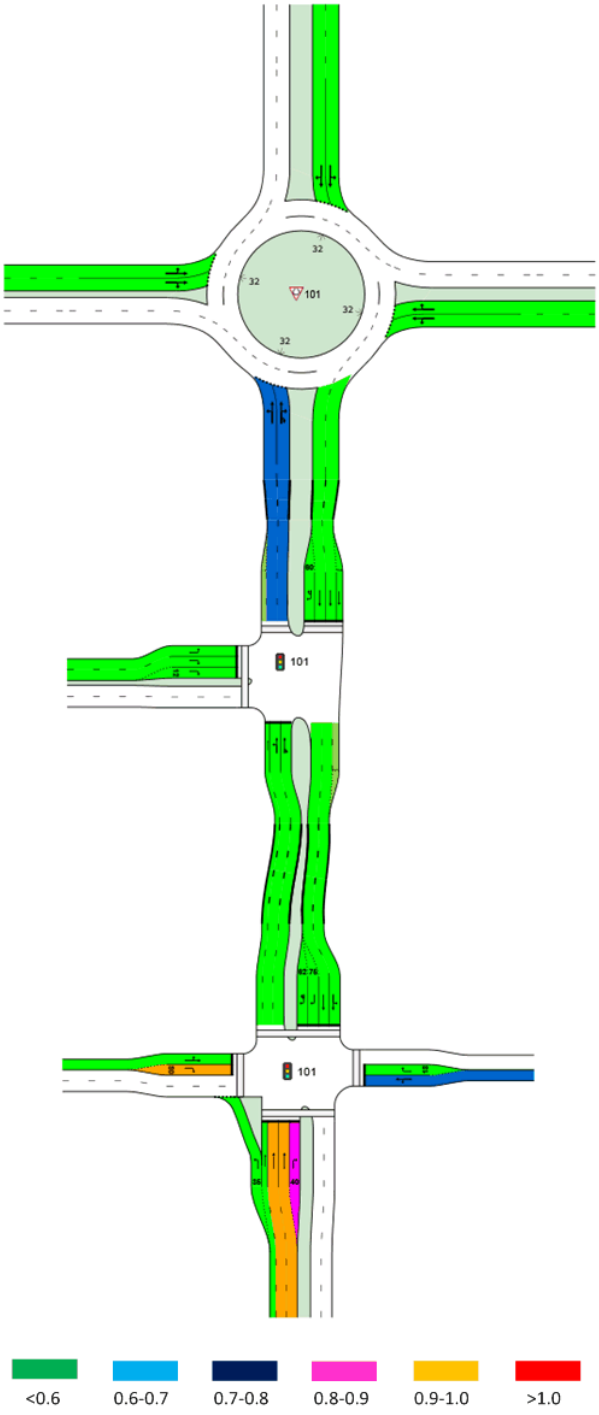


Figure 20: PM Peak Hour Future Increased-Traffic Conditions – Degree of Saturation Summary

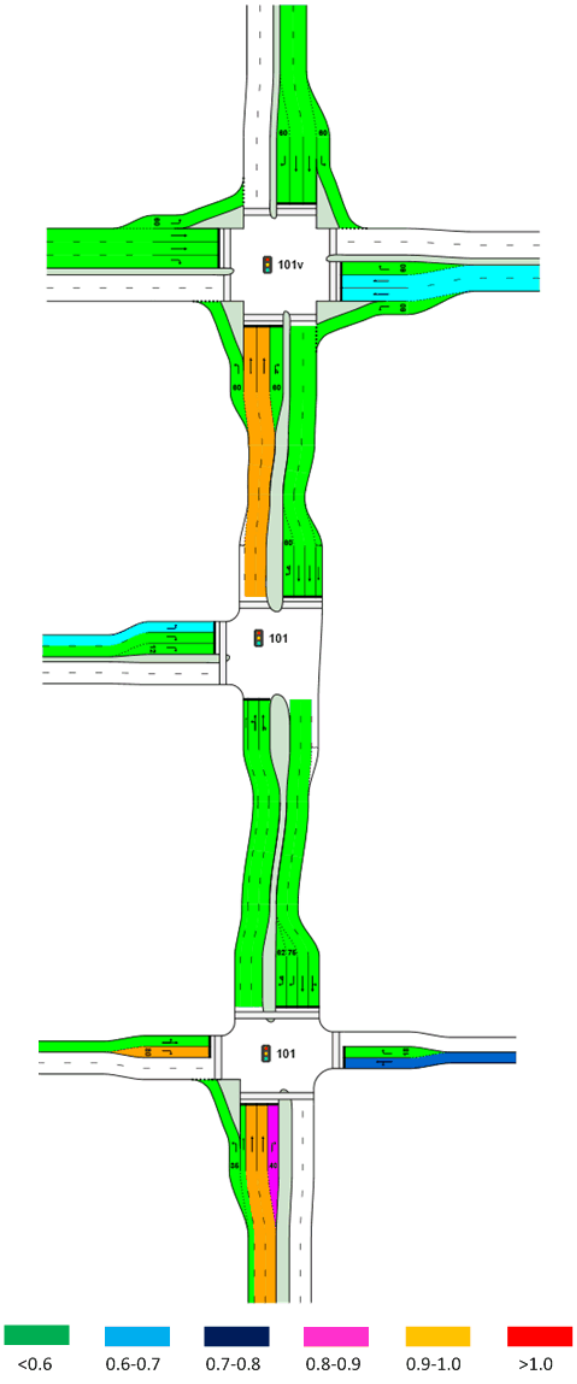


Figure 21: PM Peak Hour Future Increased-Traffic Conditions & Signalisation at High Street Degree of Saturation Summary

5.13 SUMMARY OF TRAFFIC IMPACTS

The number of additional vehicle trips generated by the worst-case development scenario under a mixed-use zone (45 dwellings, 20 medical practitioners and 750m^2 of food & drink premises) is forecast to be very low and will have no material impact on the operation of Coburns Road and surrounding intersections. Specifically, the additional number of traffic movements has been forecast at 73 trips/hour and 147 trips/hour vehicles in the AM and PM peak hours respectively.

The **three-tiered assessment framework** has demonstrated that the traffic impacts are likely to be insignificant in association with the rezoning from Residential Growth Zone to Mixed Use Zone. In particular

1. The 'forecast' change in traffic at all intersections on Coburns Road is less than the industry-accepted threshold of 10% variation in the traffic volume – over which a change may be viewed as material. The maximum forecast traffic change on Coburns Road is 2.8% in the AM peak hour (at the intersection with the Shopping Centre access road) and 4.2% in the PM peak hour – at the same location. At the other locations, the proportional increase is only around 1-2%. Such proportional increases are regarded as inconsequential in terms of road network performance.
2. The increased traffic will not give rise to a situation where existing mid-block traffic lanes are expected to carry more than 1,000 vehicles per hour capacity (the accepted lane-carrying capacity threshold around Melbourne). The highest value is 735 vehicles per hour per lane (in the PM peak) northbound on Coburns Road (just south of Barries Road). This is forecast to modestly increase to 743 vehicles per hour per lane. All other sections of road analysed are also forecast to remain well under 1,000 vehicles per hour per lane (with most carrying 400-500 vehicles per hour per lane – in peak periods).
3. SIDRA network analysis of the future performance of the three intersections under examination has revealed satisfactory performance. More specifically, the SIDRA analysis indicates that all intersections on the Coburns Road corridor are expected to operate with similar levels of service to current conditions. Under the scenario where a signalised intersection is created at the intersection with High Street, it will be possible to retain satisfactory operation at this location – consistent with the operation of the other signalised intersections.

6 PARKING CONSIDERATIONS

6.1 STATUTORY PARKING REQUIREMENT

The Melton Planning Scheme (Table 1 in clause 52.06-5) stipulates required parking rates for different land uses. These rates provide the basis for determining parking demand – which has been calculated for the three land use categories already identified (as the realistic future scenario) in the previous traffic assessment chapter.

6.1.1 PARKING DEMAND – DWELLING

For calculation of the worst-case future parking requirements for dwellings, the estimate of "nine dwellings per lot" (previously described in the traffic assessment chapter) will be used.

The Melton Planning Scheme specifies that there should be 1 parking space for every one or two-bedroom dwelling and an additional 1 parking space for every 5 dwellings on the lot.

Based on these statutory requirements, each medium density multi-unit development with nine dwellings will require 10 parking spaces. The total requirement for five residential developments is 50 parking spaces.

6.1.2 PARKING DEMAND – MEDICAL CENTRE

Discussions were held with VicRoads officers who have endorsed the assumption that in a future scenario that causes the most traffic the number of medical practitioners can be assumed to be 4 per medical centre (this is based on the maximum allowable gross floor area of 250m^2).

The Melton Planning Scheme specifies that there should be 5 parking spaces for the first person providing health services plus 3 parking spaces for every additional person providing health services.

Based on 4 medical practitioners per medical centre and the Melton Planning Scheme parking rates the worst case number of required parking spaces per lot is 14 spaces. This applies for both residential growth zones and mixed use zones. The total requirement for five medical centre is 70 parking spaces.

The empirical parking surveys undertaken with the existing four medical practices indicate that the statutory parking rates are consistent with the parking demand measured on site – as generated by the current uses. At the peak time (5pm) there were 27 vehicles parked in association with the seven existing medical practitioners operating out of the four premises.

6.1.3 PARKING DEMAND – FOOD AND DRINK PREMISES

The Melton Planning Scheme specifies that there should be 4 parking spaces provided for every 100m^2 of leasable floor area. Under a Mixed Use Zone, the leasable floor area cannot exceed 150m^2.

Based on this maximum leasable floor area, and using the Melton Planning Scheme parking rates, the worst case number of required parking spaces per lot is 6 spaces. The total requirement for five food/drink premises is 30 parking spaces.

6.2 TOTAL PARKING DEMAND

The total parking demand arising from a future mix of 5 lots used for dwellings, 5 used for medical centres and 5 used for food / drink premises is 150 spaces.

It is likely that this demand will be manifested in full – given the location and the empirical work undertaken as part of this study, which confirms the representativeness of the statutory parking rates.

6.3 SUMMARY OF PARKING ISSUES

Current parking utilisation, across the subject land, is comparatively modest. At the 'busiest time' on a weekday (5pm) more than half of the available parking supply (both on-site and on-street) is unoccupied. Whilst there is an overall reasonably generous level of parking supply – part of it is in the form of on-street parking (and should not be relied upon in the future). Parking surveys of the existing uses suggest that the existing Planning Scheme statutory parking rates are appropriate. Within this context, the application of standard planning scheme parking requirements for any future development should ensure that all future parking demand can be satisfied on-site.

7 CONCLUSIONS

7.1 OVERALL SUMMARY

This report has set out to analyse the potential impacts associated with the introduction of a Mixed Use Zone on the east side of Coburns Road. The report concludes that there are no traffic engineering reasons why the proposed rezoning should not be allowed, as:

- The overall **traffic volume generated** by the rezoning (under a worst-case maximum development scenario) is forecast to be modest and can be **readily accommodated** onto Coburns Road and the surrounding intersections with the **traffic impact** expected to be **insignificant**.
- Future **signalisation of the Coburns Road / High Street intersection** provides **satisfactory operation**.
- Current **parking utilisation is comparatively modest**, at most times on a standard weekday. Even at the 'busiest time' (5pm) **more than half of the available parking** supply (both on-site and on-street) is **unoccupied** (though there should be no reliance on the use of on-street parking in the future). Within this context, the application of **standard planning scheme parking requirements** for any future development should ensure that all **future parking demand can be satisfied on-site**.

More specifically he following considerations are relevant.

7.2 TRAFFIC

Specific emphasis has been placed on understanding the potential traffic consequences; whether the proposed rezoning has any material consequence on the operation of the Coburns Road corridor. Particular attention has been placed on the operation of the roundabout at High Street / Coburns Road and the two signalised intersections at Barries Road and at the Woodgrove Shopping Centre access point. Various modelling tools were utilised to help determine expected traffic impacts. The analysis presented in this report has revealed that:

- The number of additional vehicle trips generated by the worst-case development scenario under a mixed-use zone (45 dwellings, 20 medical practitioners and 750m^2 of food & drink premises) is forecast to be very low and will have no material impact on the operation of Coburns Road and surrounding intersections. Specifically, the additional number of traffic movements has been forecast at **73 and 147 vehicles in the AM and PM peak hours respectively**.
- The three-tiered assessment framework has demonstrated that the traffic impacts are likely to be insignificant in association with the rezoning from Residential Growth Zone to Mixed Use Zone. In particular
  - The 'forecast' change in traffic on Coburns Road is less than the industry-accepted threshold of 10% variation in the traffic volume – over which a change may be viewed as material. The **maximum forecast traffic increase** on Coburns Road is only **2.8% in the AM peak hour** and **4.2% in the PM peak hour** – this is predicted to occur at the intersection of Coburns Road with the Woodgrove Shopping Centre access point . Such proportional increases are regarded as **inconsequential in terms of road network performance**.
  - The increased traffic will not give rise to a situation where existing mid-block traffic lanes are expected to carry more than 1,000 vehicles per hour capacity (the accepted lane-carrying capacity threshold around Melbourne). Most sections of road are forecast to carry **400-500 vehicles per hour per lane** (thus operating at **half their potential traffic-carrying capacity**).
  - SIDRA network analysis of the future performance of the three intersections under examination has revealed **satisfactory performance throughout**. If a signalised intersection is created at the intersection with High Street, it will be possible to retain satisfactory operation at this location – consistent with the operation of the other signalised intersections.

7.3 PARKING

Parking demands associated with future development have been estimated at 150 spaces. It is considered that these can be readily accommodated on-site as part of individual development proposals (existing lot dimensions will allow the establishment of at-grade and/or multi-level parking structures), given that:

- Current land uses that may intensify in the future (such as medical practices) are exhibiting 'real' empirically-measured parking demand rates that are similar to the statutory Planning Scheme rates. The maximum collective parking demand measured both on-street and in the various on-site carparking areas servicing the existing medical centre properties on the east side of Coburns Road was measured at 27 parked vehicles. Application of the Planning Scheme rates to these properties would have generated a requirement for 29 parking spaces (the demand thus represents 93% of the statutory parking requirement).
- As such – there is compelling reason to exercise a relaxation of statutory on-site parking requirements (despite existing generous supply levels, particularly with the availability of 40 on-street spaces). The application of the Planning Scheme parking rates to any future expansion of medical uses is likely to guarantee that parking demand can be fully contained on-site.
- The expectation is therefore that parking for future development, unless demonstrated otherwise, will be entirely catered for off-street (through provision of on-site parking in accordance with the Planning Scheme requirements).
- The Planning Scheme places no reliance or expectation on the use of any on-street parking unless the Council deems it is appropriate to do so (on a case-by-case basis).

8 APPENDIX A – SIDRA MODEL

8.1 NETWORK LAYOUT

Figure 22 shows the layout of the network used for the existing SIDRA modelling and for the future scenario where the High Street roundabout is retained.

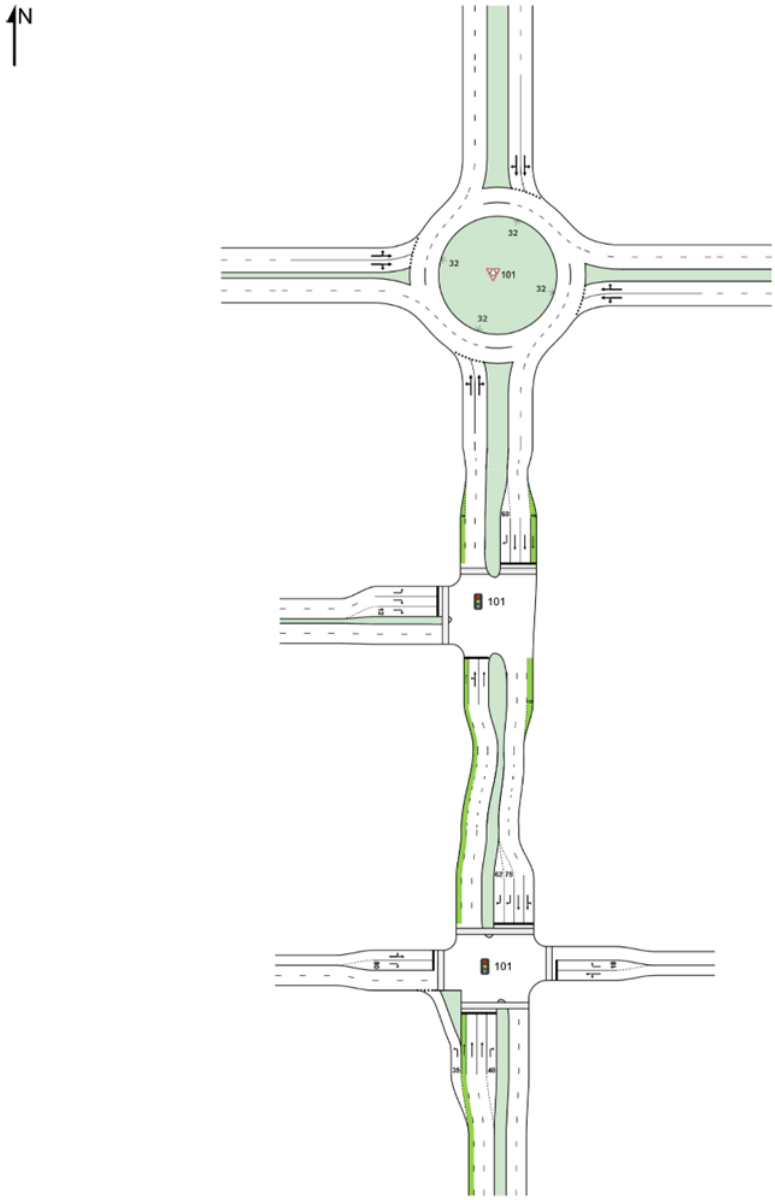


Figure 22: Geometry Used for SIDRA model (with existing and forecast future traffic)

Figure 23 shows a possible conceptual traffic signal layout to replace the High Street roundabout. This layout has been used for the SIDRA model for the future scenario where the roundabout is replaced.

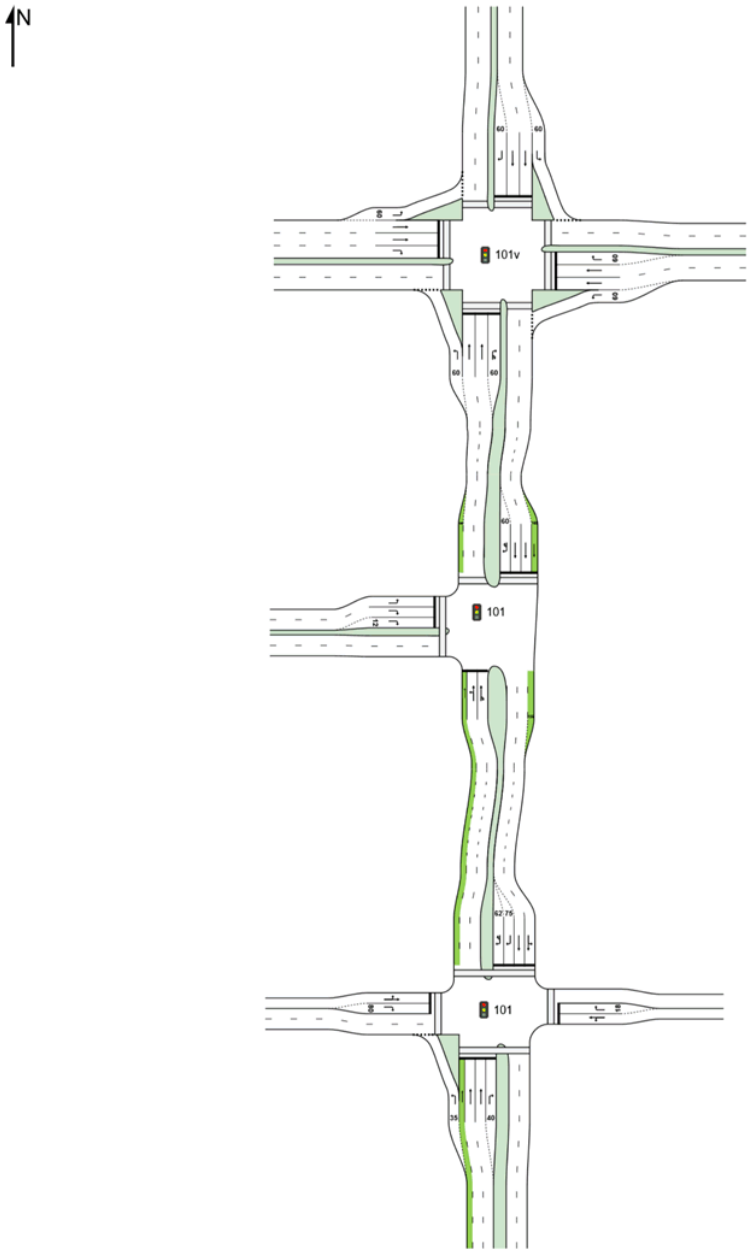
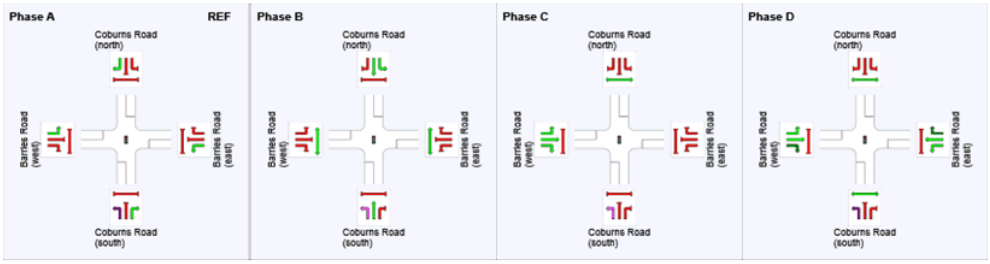


Figure 23: Coburns Road corridor incorporating traffic signal control at Coburns Road/ High Street (Geometry used for SIDRA model)

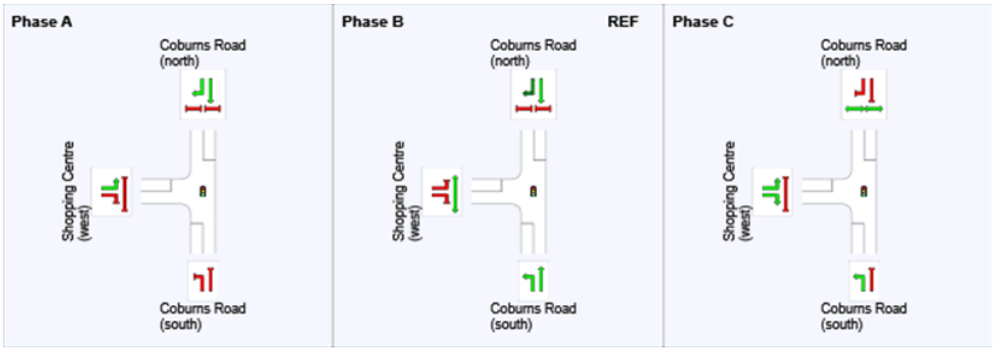
8.2 TRAFFIC SIGNAL PHASING

Details of all traffic signal phasing used in the SIDRA modelling are provided below.

Coburns Road / Barries Road



Coburns Road / Shopping Centre Access



Coburns Road / High Street