

**Prepared for**  
18 Pty Ltd

**Prepared by**  
Stephen Hunt

17 July 2017

**Amendments C192 and C193  
Greater Shepparton Planning  
Scheme and Planning Permit  
2016-269**

**Proposed Shopping Centre  
Development**

177-193 Numurkah, Shepparton.

traffic: evidence

**ratio:**consultants

9 Clifton Street  
Richmond VIC 3121  
ABN 93 983 380 225

**Prepared for:**

Lascorp Development Group (Aust)  
Pty Ltd

Our reference 14414Trep01

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# Table of contents:

Chapter / Section	Page No.
<b>1 Statement of Witness:</b>	<b>5</b>
<b>2 Introduction:</b>	<b>8</b>
<b>3 Existing Conditions:</b>	<b>9</b>
3.1 Existing Site and Surrounds	9
3.2 Approved Development	12
<b>4 Current Planning Applications:</b>	<b>14</b>
4.1 Overview	14
4.2 Stage 1 Application	14
4.3 Stage 2 Application	21
<b>5 Peer Review of Traffic Impact Assessments:</b>	<b>24</b>
5.1 Instructions and Methodology Adopted	24
5.2 Review of Methodology Adopted in TIA Reports	24
5.3 Traffic and Parking Generation Rates	25
5.4 Numurkah Road / Hawkins Street intersection	30
5.5 Access Implication to Abutting Properties	31
<b>6 Additional Retail Development Implications :</b>	<b>33</b>
6.1 Scope of Review	33
6.2 Overview Assessment of the Lascorp Proposal	33
6.3 Retail Catchments and Access Implications	34
6.4 Public Transport Access	36
6.5 Traffic and Access Implications of “Dual” Neighbourhood Centres	37
<b>7 Conclusions:</b>	<b>38</b>

Appendices:

**Appendix A – RFI and VicRoads Correspondence**

**Appendix B SIDRA Analysis**

List of Figures:

Figure 3.1 – Existing Fairley's IGA Supermarket .....	9
Figure 3.2 Numurkah Road / Hawkin Street Intersection .....	11
Figure 3.3 Hawkin Street in vicinity of Subject Site .....	11
Figure 3.4 Public Transport Network.....	12
Figure 3.5 Approved Development – Endorsed Site and Car Park Plan ..	13
Figure 4.1 Stage 1 Application Plans.....	15
Figure 4.2 Proposed Concept Signal Plan - Stage 1 Application. ....	18
Figure 4.3 – Stage 2 Application Plans .....	22
Figure 5.1- Car Parking Demand Assessment.....	29
Figure 5.2 – Hawkins Street Frontage – Access Arrangements ( <i>Source: Stage 1 TIA</i> ).....	31
Figure 6.1 Shepparton North Primary Catchment Sector- <i>Source Location Pty Ltd June 2017</i> .....	35
Figure 6.2 Shepparton North East Precinct Structure Plan Area .....	36

List of tables:

Table 4.1 – Stage 1 Development Components .....	14
Table 4.2 - Stage 2 Development Proposal .....	21
Table 5.1 Traffic Generation Summary –Thursday PM Peak (Trafficworks Assessment) .....	26
Table 5.2 - Traffic Generation Summary –Saturday Peak (Trafficworks Assessment) .....	27
Table 6.1 Lascorp Proposa ( <i>Source:GTA Report Table 3.1</i> ) .....	34

# 1 Statement of Witness:

## Reference

- 1.1.1 Greater Shepparton Planning Scheme Amendments C192 and C193
- 1.1.2 Planning Permit Application 2016-269

## Name

- 1.1.3 Stephen John Hunt

## Position

- 1.1.4 Principal – Traffic, Ratio Consultants

## Address

- 1.1.5 9 Clifton Street, Richmond, VIC 3121

## Qualifications

- Bachelor of Engineering (Civil), 1975, Swinburne University of Technology.
- Graduate Diploma of Highway and Traffic Engineering, 1981, Chisholm Institute of Technology.

## Experience

- 2017 – Present: Principal – Traffic, Ratio Consultants.
- 2010 – 2016 :Group Manager – Cardno Victoria
- 2007 – 2010: Consultant, Cardno Grogan Richards.
- 1988 – 2006: Director, Grogan Richards.
- 1975 – 1988: Traffic Engineer with Cities of Doncaster and Templestowe, Caulfield and Prahran.

## Professional Expertise

- 1.1.6 I have worked in the area of Traffic and Transportation Engineering throughout my career. My area of expertise includes traffic advice and assessment of a wide range of land use and development proposals for planning authorities, government agencies, corporations and developers.
- 1.1.7 My training, qualifications and experience including involvement with a wide variety of developments over a number of years, qualifies me to comment on the traffic and parking implications of this proposal.

## Instructions which define the scope of this report

- 1.1.8 I have been instructed by Minter Ellison that 18 Pty Ltd are the perspective purchasers of 177-193 Numurkah Road.
- 1.1.9 My instructions, by Minter Ellison on behalf of 18 Pty Ltd, are to prepare a traffic expert evidence statement for submission and presentation to Planning Panels Victoria convened to consider Amendments C192 and C193 to The Greater Shepparton Planning Scheme and Planning Permit Application 2016-269.

1.1.10 In particular I have been requested to

- Undertake a peer review of the Traffic Engineering Assessments prepared by Trafficworks Pty Ltd in association with Planning Applications currently being considered by Council in relation to amended Stage 1 and Stage 2 development proposals of the existing Fairley's IGA Supermarket site located at 177-193 Numurkah Road, Shepparton (corner Hawkins Street), and
- Review the traffic and access implications of future development of additional retail floor area in Shepparton North, as contemplated in the *Commercial Activity Centres Strategy 2015* (sought to be implemented into the Planning Scheme by Amendment C192), should additional floor area beyond the approved development levels at the Fairley's IGA site be developed at a site located approximately 600 metres to the north, on a site which is the subject of Amendment C193 and Planning Application 2016-269.

### **Facts, Matters and Assumptions Relied Upon**

- 1.1.11 In the course of preparing this report the facts, matters and assumptions I have relied upon are outlined as follows:
- Site visit, Friday 30 June 2017
  - Traffic Impact Assessment Report for *Proposed Neighbourhood Centre, Stage 1* at 177-193 Numurkah Road, Shepparton North prepared by Trafficworks Pty Ltd, dated 2<sup>nd</sup> May 2017.
  - Traffic Impact Assessment Report for *Proposed Neighbourhood Centre, Stage 2* at 177-193 Numurkah Road, Shepparton North prepared by Trafficworks Pty Ltd, dated 14<sup>th</sup> June 2017
  - Retail Floorspace Potential Report, prepared for 18 Pty Ltd by Location Pty Ltd, dated June 2017
  - Amendment C192 as exhibited, including the *City of Greater Shepparton Commercial Activity Centres Strategy 2015* prepared by Essential Economics
  - Amendment C193 as exhibited including a Traffic Engineering Assessment prepared by Traffix Group for Lascorp Developmnet Group dated January 2017 and a peer review Transport Impact Assessment prepared by GTA Consultants for Lascorp dated 15<sup>th</sup> February 2017.
  - Greater Shepparton Planning Scheme

### **Identity of Persons Undertaking the Work**

- 1.1.12 Stephen Hunt of Ratio Consultants, assisted by Tanya Chen also of Ratio Consultants.

### **Declaration**

- 1.1.13 I confirm that I have read and that I understand the Planning Panels Victoria's 'Guide to Expert Evidence' and that I comply with the provisions of that guide.
- 1.1.14 I have no relationship with the client other than a business engagement to comment on this matter.
- 1.1.15 My involvement in this project commenced in May 2017 and I was not involved in the preceding application process in any way.
- 1.1.16 I have made all the inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the Panel.



**Stephen Hunt**  
**Principal - Traffic**  
**Ratio Consultants**

## 2 Introduction:

- 2.1.1 I have been instructed by Minter Ellison on behalf of 18 Pty Ltd to prepare a traffic expert evidence statement for submission and presentation to Planning Panels Victoria which has been convened to consider Amendments C192 and C193 to The Greater Shepparton Planning Scheme and Planning Permit Application 2016-269.
- 2.1.2 In particular I have been requested to
- Undertake a peer review of the Traffic Engineering Assessments prepared by Trafficworks Pty Ltd in association with Planning Applications currently being considered by Council in relation to amended Stage 1 and Stage 2 development proposals of the existing Fairley's IGA Supermarket site located at 177-193 Numurkah Road, Shepparton (corner Hawkins Street), and
  - Review the traffic and access implications of future development of additional retail floor area in Shepparton North, as contemplated in the *Commercial Activity Centres Strategy 2015* (sought to be implemented into the Planning Scheme by Amendment C192), should additional floor area beyond the approved development levels at the Fairley's IGA site be developed at a site located 800 metres to the north, on a site which is the subject of Amendment C193 and Planning Application 2016-269.
- 2.1.3 This report has been prepared in accordance with the Planning Panels Victoria's 'Guide to Expert Evidence'.
- 2.1.4 In the course of preparing this assessment, I have:
- Inspected the subject site and surrounding road network,
  - Reviewed the traffic engineering assessments of the proposed Stage 1 and Stage 2 development of 177-193 Numurkah Road prepared by Trafficworks and subsequent correspondence with VicRoads related to required accommodating roadworks, including signalisation of the Numurkah Road / Hawkins Rod intersection.
  - Reviewed plans of the proposal prepared by Doig Architecture dated 13<sup>th</sup> April 2017 circulated at the direction of the Panel, which will be relied on at the Panel Hearing, and
  - Assessed other material relevant to the proposal outlined in Section 1.1.11.
- 2.1.5 My opinions with respect to the proposal are set out in the following report.



### 3.1 Existing Site and Surrounds

#### Site Location and Existing Development

- 3.1.1 Fairley's IGA Supermarket and associated specialty shops is an existing Neighbourhood Centre located on the north-east corner of Numurkah Road and Hawkins Street in Shepparton North as shown in Figure 3.1.

**Figure 3.1 – Existing Fairley's IGA Supermarket**



- 3.1.2 The existing development on the site is situated in the south west corner of the overall site and consist of a main supermarket building of approximately 3,500 sqm of floor area, 500 sqm of associated retail uses including a café, lottery sales outlet and liquor sales and a support warehouse containing 1200 sqm of floor space.
- 3.1.3 Car parking for 197 cars is provided on site accessed via a two fully directional access points from Hawkins Street and a left out only access from Numurkah Road.
- 3.1.4 The site is located within the Commercial 1 Zone. The Schedule to the zone contained at Clause 34.01 of the Planning Scheme, allows up to 8,000 sqm of shop uses on the site without a permit being required.
- 3.1.5 Land to the north and south of the site fronting Numurkah Road, and on the west side of Numurkah Road is zoned Commercial 2, while land to the immediate east is within the Industrial 1 zone. To the east and south-east land has been developed within the Neighbourhood Residential Zone, while undeveloped land to the north east is within the General Residential Zone.
- 3.1.6 Land use in the immediate vicinity include a McDonalds restaurant on the south side of Hawkins Street, a boat sales outlet to the north and a BP service station on the opposite side of Numurkah Road opposite Hawkins Street.
- 3.1.7 Shepparton Sports Precinct is located to the south west, with vehicular access provided via access roads from Numurkah Road and Brauman Street to the south.

## **Existing Road Network**

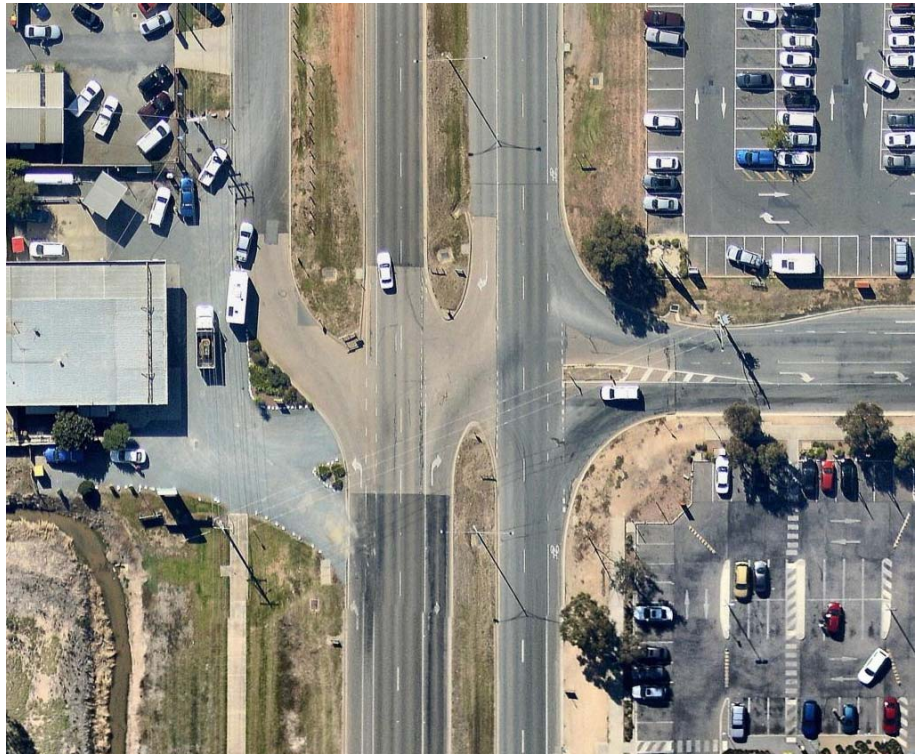
### Numurkah Road (Goulburn Valley Highway)

- 3.1.8 Numurkah Road, which is part of the Goulburn Valley Highway, is an Arterial Road and State Highway under the control and management of VicRoads.
- 3.1.9 Adjacent the subject site, the road is constructed with a divided carriageway, providing two traffic lanes and a bicycle lane in each direction with a variable width central median and a one way service road running north from opposite Hawkins Street.
- 3.1.10 Further north, various sections of one-way service roads have been developed on both sides of the road to facilitate / control access to abutting development. Turning lanes and breaks in the median have been provided at several locations to provide access to sections of the service road.
- 3.1.11 Traffic counts undertaken by Trafficworks in June 2016 show that Numurkah Road currently carries between 12,500 and 13,000 vehicles per day.
- 3.1.12 Hawkins Street intersects with Numurkah Road to form a T junction, with a break in the median and right turn auxiliary turn lanes accommodating turning traffic. Access to the BP service station and ingress to the service road on the western side Numurkah Road is also available through the intersection as shown in Figure 3.2.
- 3.1.13 Hawkins Street traffic is controlled by a Give Way sign assigning priority to Numurkah Road, with a central splitter island constructed on the approach to the intersection limiting traffic to a single lane in each direction.

### Hawkins Street

- 3.1.14 Hawkins Street is a Connector Road under the control and management of Council, running in a west to east direction between Numurkah Road and Verney Road.
- 3.1.15 The road is constructed with a carriageway width of approximately 8.2 metres providing a single traffic lane in each direction.
- 3.1.16 Across the frontage of the subject site, the road has been widened on the northern side to provide for a central turning lane, providing right turn access into the western access to the subject site and to the McDonalds outlet to the south as shown in Figure 3.3.
- 3.1.17 Traffic volume data collected by Trafficworks in June 2016 shows that Hawkins Street currently carries in the order of 4,000 vehicles per day at the Numurkah Road intersection.

**Figure 3.2 Numurkah Road / Hawkin Street Intersection**



**Figure 3.3 Hawkin Street in vicinity of Subject Site**



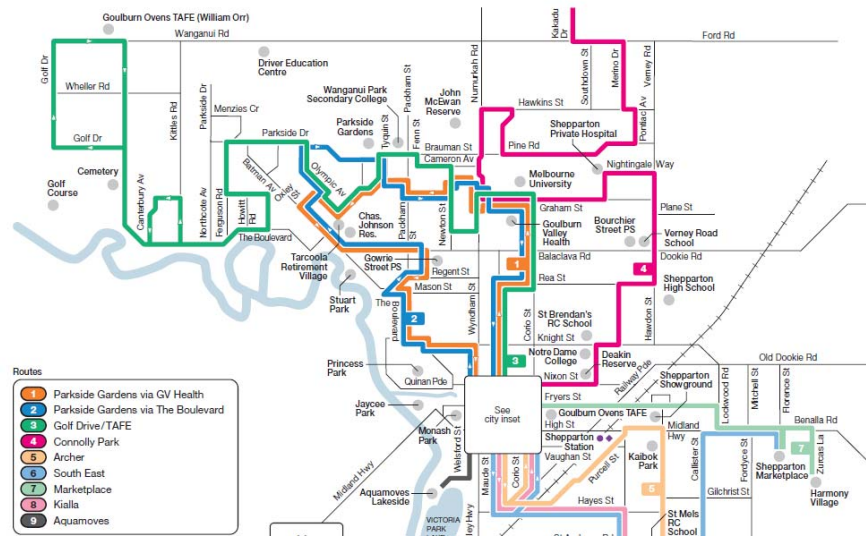
### **Existing Public Transport Network**

- 3.1.18 The site enjoys relatively good access to public transport, with Shepparton Transit Route No 4 operating between the CBD and Connolly Park running along Numurkah Road and Hawkins Road adjacent to the site.
- 3.1.19 As shown in Figure 3.4, the route provides a direct connection between the centre and the local residential catchment to the south, east and north east.



**Figure 3.4 Public Transport Network**

### Shepparton bus network

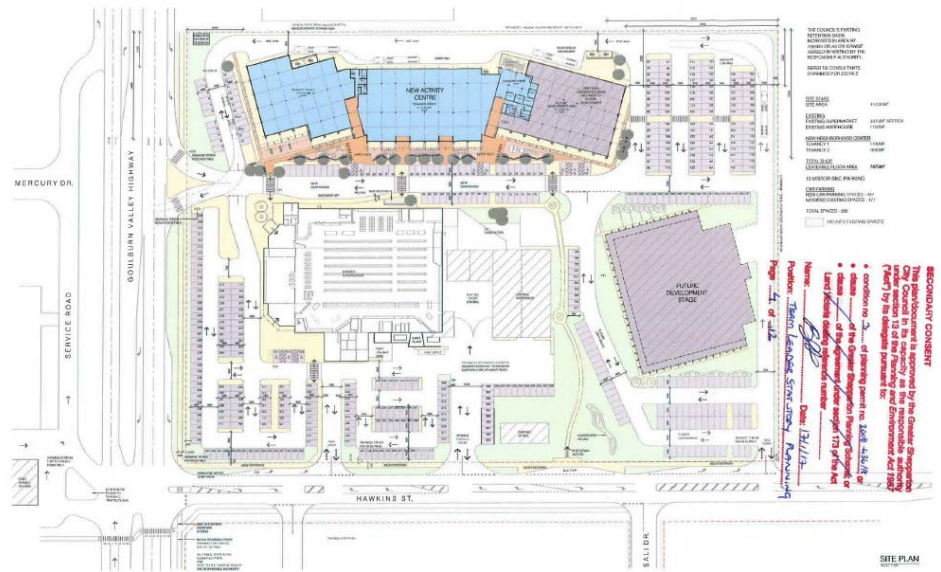


## 3.2 Approved Development

### Approved Development

- 3.2.1 Planning Permit 2008-436 and associated endorsed plans dated August 2016 and revised in January 2017 allows for the development of the subject site including the following:
- Retention of the existing supermarket and warehouse building,
  - Development of a new retail building with a total area of 2,750 sqm allowing for a total retail floor area of **7,875** sqm (marginally below the maximum retail floor area allowed as of right under the current zoning).
  - Reconfiguration of the existing car park and development of new parking areas to increase total parking supply on site to **398** spaces.
  - Development of a new left in/left out access to Numurkah Road and retention of the existing access points to Hawkins Street.
- 3.2.2 The endorsed plans showing the Site and Car Park Plan of the approved development are provided in Figure 3.5.

**Figure 3.5 Approved Development – Endorsed Site and Car Park Plan**



- 3.2.3 The development was also approved subject to the construction of traffic signals at the intersection of Numurkah Road and Hawkins Street in accordance with conditions imposed by VicRoads on the permit.
- 3.2.4 I am instructed that works have commenced works in accordance with the existing permit.

## 4.1 Overview

- 4.1.1 18 Pty Ltd has lodged Planning Permit applications with the City of Greater Shepparton which effectively propose to develop the site as currently permitted but to reconfigure the layout when compared to the existing permit.
- 4.1.2 The amended development is proposed in two stages, with separate Planning Applications lodged for each Stage as follows:
- **Stage 1** application, lodged initially in January 2017 and amended in May 2017 to remove an Aldi supermarket initially included in the proposal. The Stage 1 application contemplates **7,690** sqm of retail floor area and **368** car spaces.
  - **Stage 2** application, lodged in June 2016, proposing an additional **5,550** sqm of retail (and a total retail floor space of **13,230** sqm) including a second supermarket and **270** additional car spaces increasing parking supply to **638** spaces.

## 4.2 Stage 1 Application

### Application Proposal

- 4.2.1 The Stage 1 application plans as submitted are shown in Figure 4.1.
- 4.2.2 The plans propose the following components as summarized in Table 4.1.

**Table 4.1 – Stage 1 Development Components**

Component	Size
Supermarket	3,750 sqm
Support Warehouse	250 sqm
Large Format Retail Store	1,680 sqm
Specialty Shops (21 Total)	1,620 sqm
Community Centre	195 sqm
Major Tenant (Retail)	640 sqm
<b>Total Floor Area</b>	<b>8135 sqm</b>
<b>Total Retail Floor Area</b>	<b>7,690 sqm</b>
Car Spaces	368 spaces

- 4.2.3 Access to the site in association with the Stage 1 Development is proposed as follows:
- Closure of the existing left turn egress from the site and creation of a new left turn ingress from Numurkah Road, including provision of a left turn deceleration lane in Numurkah Road.
  - Retention of the existing western access from Hawkins Street, widened to provide two exit lanes and construction of a left turn deceleration lane from Hawkins Street.
  - Creation of a left in / left out loading access from Numurkah Road

**DEVELOPMENT SUMMARY**

DEVELOPMENT TYPE	LAND AREA (M <sup>2</sup> )
TOTAL SITE AREA	16,520 M <sup>2</sup>
PROPOSED DEVELOPMENT	16,520 M <sup>2</sup>
IGA SUPERMARKET	4,000 M <sup>2</sup>
LARGE FORMAT RETAIL	1,800 M <sup>2</sup>
SPECIALTY FOOD STORES	2,000 M <sup>2</sup>
COMMUNITY CENTRE	500 M <sup>2</sup>
TOTAL AREA	8,300 M <sup>2</sup>

**LAND AREA: 16,520 SQM**  
(FUTURE DEVELOPMENT - SEE DRAWING NO. TP 003)

**NOTE:**

1. TRANSIT BUS STOP/STATION IS INDICATED AND SUBMITTED TO LANSING REQUIREMENTS
2. LANDS WITHIN THE EXCLUSION ZONE ARE REQUIRED TO BE REMOVED BEFORE USE OF ROAD OR CARPARKS
3. ALL CAR PARKING MUST BE SUBMITTED AND 10.0 M<sup>2</sup> (10.0 M<sup>2</sup> CAR PARKING) FOR ALL OTHERS

**OPTIONAL MATERIALS LISTED:**

- 1. ROAD PAVING WITH REQUIRED SLP
- 2. SLP PAVING WITH REQUIRED SLP
- 3. ASPHALT PAVING WITH REQUIRED SLP
- 4. ASPHALT PAVING WITH REQUIRED SLP
- 5. ASPHALT PAVING WITH REQUIRED SLP
- 6. ASPHALT PAVING WITH REQUIRED SLP
- 7. ASPHALT PAVING WITH REQUIRED SLP
- 8. ASPHALT PAVING WITH REQUIRED SLP
- 9. ASPHALT PAVING WITH REQUIRED SLP
- 10. ASPHALT PAVING WITH REQUIRED SLP

**NOTE:**

- 1. ALL CARPARKS MUST BE SUBMITTED

**FOR INTERSECTION DETAILS REFER TO TRAFFIC SIGNAL PLAN**

**COMMERCIAL 2 ZONE (C2Z)**

**NEIGHBOURHOOD RESIDENTIAL ZONE 1 (NRZ1)**

**TOWN PLANNING**

[illegible]



## Stage 1 Traffic Impact Assessment Report

- 4.2.4 A Traffic Impact Assessment Report of the Stage 1 Development Proposal was prepared by Trafficworks Pty Ltd, dated 2<sup>nd</sup> May 2017 which was submitted in association with the planning application.
- 4.2.5 The report updated an earlier report prepared in January 2017 which accompanied the original Stage 1 application, with the updated report modifying the analysis to reflect the deletion of the Aldi Supermarket and consequential modifications to access and site layout.
- 4.2.6 As detailed in the report, Trafficworks has undertaken an assessment of the car parking and traffic implications of the Stage 1 development adopting the following methodology:
1. An assessment of existing traffic conditions on the surrounding road network including documenting existing traffic movements including:
    - Tube counts undertaken by Council in Numurkah Road and Hawkins Street by Council in June 2016,
    - Intersection counts undertaken at Numurkah Road / Hawkins Street on Friday 7<sup>th</sup> October 2016.
  2. Estimates of future traffic and parking generation rates for the proposed development levels proposed based on case studies documented and recommended rates in the *RTA NSW Guide to Traffic Generating Developments*, (October 2002).
  3. Estimates of future traffic volumes and distributions by direction through access points to the site at peak design times, nominated as the Thursday PM peak hour and the Saturday lunchtime peak.
  4. Review of sight distance adequacy at the proposed access point locations.
  5. Determination of the required treatment at access points to the site having regard to the *Austroads Guide to Road Design – Part 4A*
  6. Review of intersection capacity and operation at Numurkah Road / Hawkins Street using SIDRA for the following scenarios
    - “Base” conditions derived by deducting existing shopping centre generated traffic from the recorded PM peak count data undertaken at the intersection on Friday 7<sup>th</sup> October 2016, with the resultant volumes factored up by 2% per annum compound for 12 years to represent conditions in 2028 without the development
    - Future design conditions following Stage 1 development, undertaken by superimposing additional traffic generated by the proposed development to the calculated 2028 “base” volumes through the intersection. This analysis assumed that, for this scenario, traffic signals were installed at the intersection.
    - Future design conditions following an assumed future Stage 2 development using a similar methodology to the Stage 1 assessment but assuming higher traffic volumes commensurate with the assumed increase in floor area and



additional growth of base volumes to 2036, being 10 years beyond the assumed completion of a possible Stage 2.

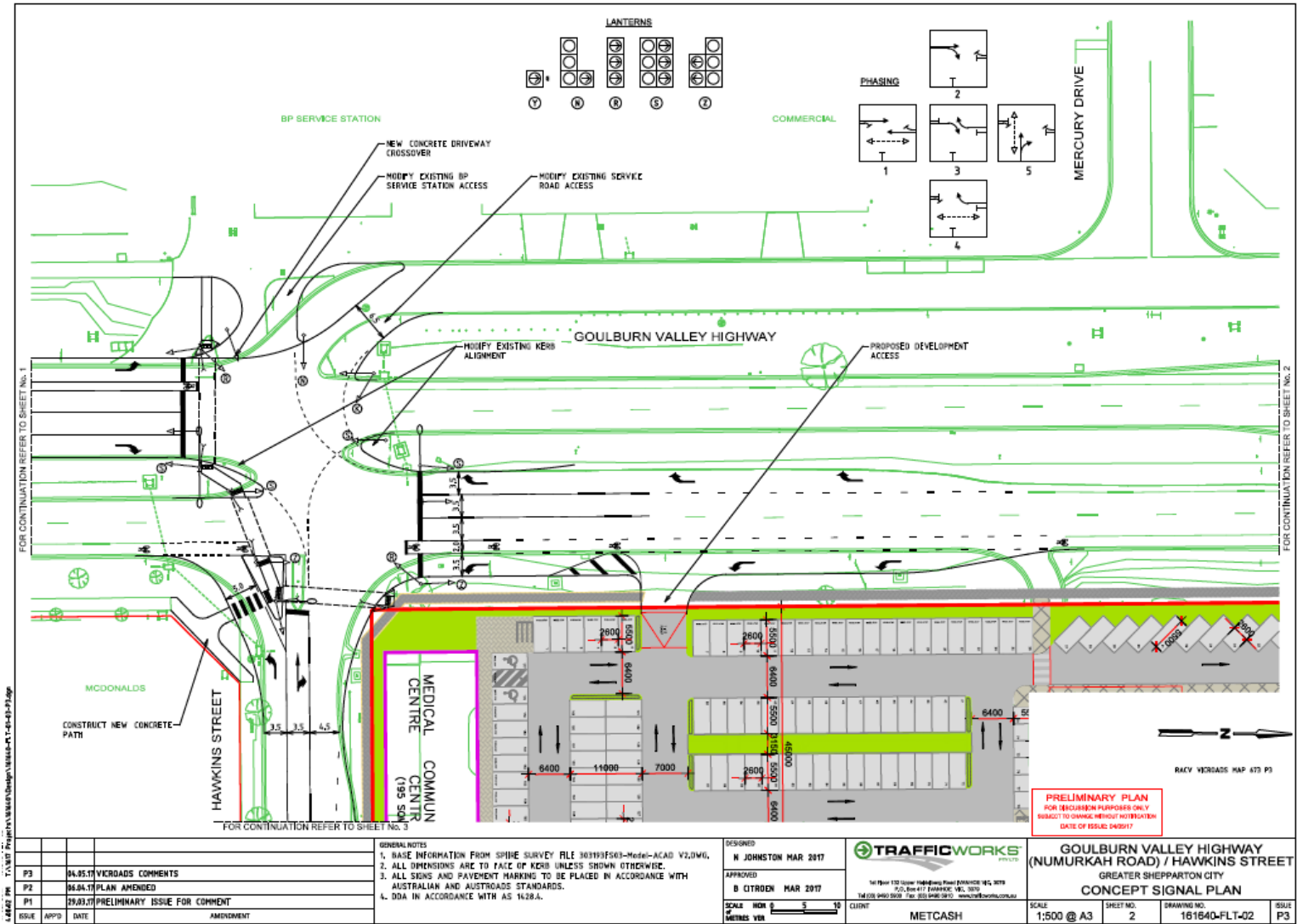
7. Review of external impacts of the proposal including implications of future development of the Shepparton Sports Precinct and access requirements for the existing BP service station opposite Hawkins Street.
8. Analysis of car parking requirements and adequacy of the proposed supply against the provisions of Clause 52.06 of the Greater Shepparton Planning Scheme and parking rates for component uses nominated in the RTA NSW Guide.
9. Assessment of the functionality of the car parking areas and loading arrangements against Planning Scheme requirements and the relevant Australian Standards.
10. Assessment of other relevant matters including pedestrian and cycle access, public transport access including the option for the existing bus service to circulate through the site, heavy vehicle circulation and impact on access to the McDonalds site on the south side of Hawkins Street.
11. Assessment of the potential impact of the construction of the Shepparton Bypass with reference to VicRoads modelling, the likely staging of the bypass to Wanganui Road and the upgrading of Ford Road / Wanganui Road as an arterial link, with the commensurate downgrading of Balaclava Road and New Dookie Road to the south.

4.2.7 As a result of the analysis undertaken, the report concludes, within the Executive Summary, as follows:

- *“The operation of the Hawkins Street intersection with Numurkah Road is unable to cater for the anticipated traffic generation from the development under current control and will require the installation of traffic signals.*
- *Visibility is adequate at all the proposed driveways for the development.*
- *On-site provision for staff and customer parking satisfies expected demand.*
- *The site plan layout satisfactorily caters for semi-trailer delivery vehicle access to the loading docks at the rear of the development.*
- *Provision for traffic in Hawkins Street requires extension of the present painted three lane treatment to accommodate sheltered right turn lanes into Access Points C, D and to Sali Drive.”*

4.2.8 The proposed concept plan for the proposed traffic signals at the intersection of Hawkins Street and Numurkah Road is shown in Figure 4.2.

Figure 4.2 Proposed Concept Signal Plan - Stage 1 Application.



## **VicRoads Referral Response**

- 4.2.9 Following the initial Stage 1 application in January 2017, the application was referred to VicRoads by Council as a referral authority under the provisions of Clause 55 of the Planning and Environment Act 1987.
- 4.2.10 Vic Roads, in a letter dated 8<sup>th</sup> March 2017, requested further information in relation to the proposal, summarised as follows:
1. A scaled functional plan of the intersection of Numurkah Road and Hawkins Street showing details of proposed works and access arrangements to abutting properties and local roads.
  2. Reconfiguration of the internal car park layout to movements into parking spaces are clear of the access from Numurkah Road in accordance with Section 3.4 of AS2890.1.
  3. Submission of swept path analyses for appropriate design vehicles at the proposed access points, upgraded or altered intersections and existing accesses and local road intersections.
- 4.2.11 Specific design issues were also raised in relation to the submitted plans and the location and design of the access points and accommodating works on the road network.
- 4.2.12 In addition, updated design year assessments, considering 2028 design volumes for the surrounding road network were requested , together with electronic SIDRA files.
- 4.2.13 A copy of the VicRoads RFI is attached in Appendix A.
- 4.2.14 The matters raised were considered by Trafficworks and I understand that several meetings were held to discuss the issues raised and possible design responses. A formal response to the issues raised was subsequently provided to Council in a letter dated 8<sup>th</sup> May 2017. A copy of the response is also provided in Appendix A.
- 4.2.15 It is noted that the RFI response was undertaken in conjunction with the preparation with the amended Stage 1 Traffic Impact Assessment Report, with both being lodged with Council on 15<sup>th</sup> May 2017 with the Amended Plan Application.
- 4.2.16 The RFI response provides a detailed assessment of issues raised, with design based concerns sought to be addressed in the amended Stage 1 plans and resultant modifications to the access configuration and design.
- 4.2.17 VicRoads, having considered the RFI response responded to the Stage 1 Application in a letter dated 16<sup>th</sup> June 2017, offering No Objection to the proposed application subject to conditions.
- 4.2.18 A copy of the letter is attached in Appendix A.
- 4.2.19 Conditions sought by VicRoads are as follows:

### **“Conditions**

1. Access to the proposed development from Numurkah Road shall be via the accesses located as detailed on the plan appended to this application (Site Plan, prepared by doig.architecture pty ltd, drawing No: TP002 dated 9 March 2017) as follows:
  - a. At the northern boundary of the subject land access must be left in and left out only.

- b. The access located approximately 45 m north of the southern boundary of the subject land shall be entry only from Numurkah Road to the subject land.
- 2. Prior to the development coming into use the applicant must construct the mitigating works to the satisfaction of and at no cost to Roads Corporation as follows:
  - a. Traffic Signal at Numurkah Road/Hawkins Street intersection and generally in accordance with Trafficworks Concept Signal Plans Drawing No.s 161640-FLT-01, 161640-FLT-02 & 161640-FLT-03 Issue P2 dated 06/04/2017 including street lighting to Category V3 Standard.
  - b. Access crossover and an AUL(s) left turn lane including left in/left out treatment at the proposed access located at the northern end of the subject land.
  - c. Access crossover and an AUL left turn treatment at the entry only access located approximately 45 m north of the southern boundary of the subject land including pavement marking in the car parking isle adjacent to Numurkah Road to ensure that vehicles in the isle are required to give way to vehicles entering from Numurkah Road to allow free flowing access into the development."

4.2.20 VicRoads also note, with respect to potential issues relating to the future traffic generation from the Shepparton Sports Precinct as follows:

*"VicRoads has reviewed and generally supports the findings of the Traffic Impact Assessment Report prepared by Trafficworks. However, VicRoads does not support the findings of the report that conclude that future traffic generation from the Shepparton Sports Precinct is unlikely to increase the number of vehicles undertaking a U-turn from the southern approach to Hawkins Street intersection. VicRoads considers that this issue is not attributable to the application for the proposed development and will require Council to address this issue at a later date as part of the Sports Precinct Development."*

## 4.3 Stage 2 Application

### Application Proposal

- 4.3.1 The Stage 2 Application Plans as submitted are shown in Figure 4.3.
- 4.3.2 The plans propose the following components within Stage 2 and the resultant development as a whole.

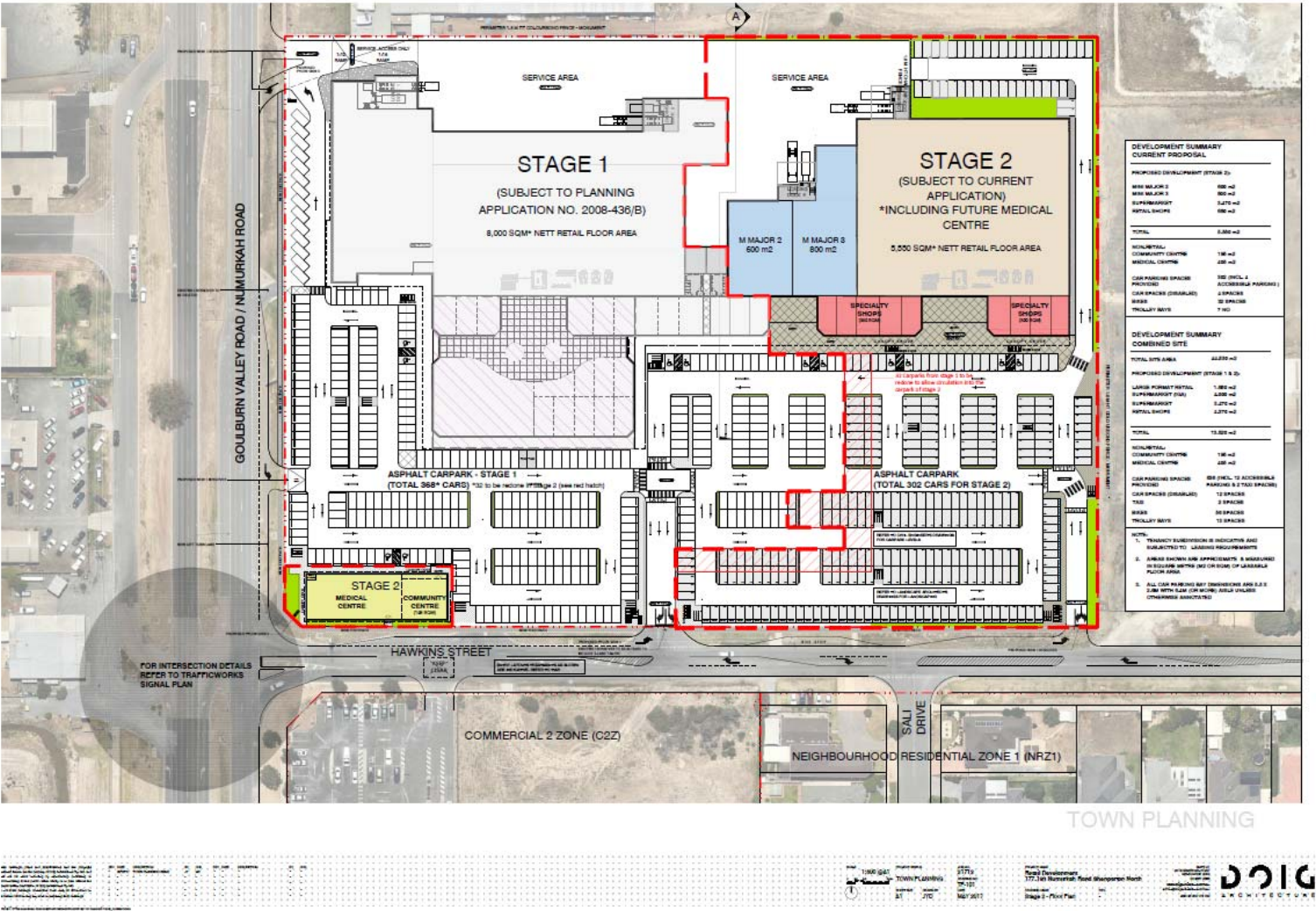
**Table 4.2 - Stage 2 Development Proposal**

Component	Stage 2 Application	Stages 1 and 2
Supermarket	3,470 sqm	7,470 sqm
Mini Majors	1,400 sqm	1680 sqm
Specialty Shops	680 sqm	4,370 sqm
Community Centre	195 sqm	195 sqm
Medical Centre	405 sqm	405 sqm
<b>Total Floor Area</b>	<b>6,150 sqm</b>	<b>14,120 sqm</b>
<b>Total Retail Floor Area</b>	<b>5,550 sqm</b>	<b>13,520 sqm</b>
Car Spaces	302 spaces	638 spaces

- 4.3.3 Access to the site is proposed in accordance with the access arrangements contemplated in the Stage 1 application, supplemented by an additional fully directional access point to Hawkins Street located adjacent to the eastern boundary of the site.



Figure 4.3 – Stage 2 Application Plans



## Stage 2 Traffic Impact Assessment Report

- 4.3.4 A Traffic Impact Assessment Report of the Stage 2 Development Proposal was prepared by Trafficworks Pty Ltd, dated 14<sup>nd</sup> June 2017 which was submitted in association with the planning application.
- 4.3.5 The report adopted the same methodology as utilized in the Stage 1 report, with additional traffic generation resulting from the Stage 2 development superimposed onto the design volumes for Stage 1 to provide revised design volumes for the combined proposals.
- 4.3.6 Traffic distribution to and from the site was adjusted having regard to the additional access point provided and assigned to the surrounding road network as additional traffic to a design 2032 “base” volumes reflecting 10 years growth beyond the nominated completion date of 2022 for Stage 2.
- 4.3.7 It was also assumed that the traffic signals at the intersection of Numurkah Road and Hawkins Street, recommended to be installed in association with the Stage 1 application, are in place at the completion of Stage 2.
- 4.3.8 As a result of the analysis undertaken in the Stage 2 Traffic Impact Assessment Report, Trafficworks concluded within the Executive summary as follows:
- *“The signalized operation of the Hawkins Street intersection with Numurkah Road installed under Stage 1, will continue to operate satisfactorily to the anticipated design life of 2032*
  - *Visibility is adequate at the driveways to the development*
  - *On-site provision for staff and customer parking satisfies expected demand for Stage 2*
  - *The Site Plan layout satisfactorily caters for semi-trailer delivery access to the loading docks at the rear of the development.”*
- 4.3.9 I am unaware if any response has been made to date from either VicRoads or Council in relation to the Stage 2 application or the accompanying Stage 2 Traffic Impact Assessment Report.

### 5.1 Instructions and Methodology Adopted

- 5.1.1 I have been requested by Minter Ellison on behalf of 18 Pty Ltd to undertake a peer review assessment of the Traffic Impact Reports prepared in association with the Stage 1 and Stage 2 proposals for the existing site at 177-193 Numurkah Road in the context of the implications of the proposal which will be considered by the Panel convened to consider Amendments C192 and C193 to the Greater Shepparton Planning Scheme.
- 5.1.2 I understand that the terms of reference of the Panel are not to consider the Stage 1 and Stage 2 applications per se, with the applications for Stage 1 and Stage (and accompanying analysis) effectively informing the Panels consideration in relation to:
- a) The likelihood, and acceptability, of development of the site 117-193 Numurkah Road occurring as proposed and, if so, the consequent impact and implications in accordance with the *Greater Shepparton Commercial Activity Centres Strategy* sought to be incorporated into the Planning Scheme through Amendment C192.
  - b) The implications in traffic terms, of development at 177-193 Numurkah Road on consideration of the traffic implications of proposed development at 221 – 229 Goulburn Valley Highway and 10 Ford Road, being considered through Amendment C193.
- 5.1.3 I have hence confined my review of the Stage 1 and Stage 2 applications to assessing the expected traffic implications in the context of the above considerations.
- 5.1.4 In relation to the acceptability of the analysis undertaken in association with the Stage 1 and Stage 2 applications I have reviewed:
- the acceptability of the methodology adopted against stand best practice.
  - traffic and parking generation rates adopted for analysis purposes.
  - Sidra outputs and the in relation to the appropriateness of the mitigating roadworks at Numurkah Road / Hawkins Street proposed in association with the applications.
  - The impact of the proposal on traffic conditions in the area, including the operation of Numurkah Road and Hawkins street and access to nearby properties and land use.
- 5.1.5 In relation to the proposed development at 221-229 Goulburn Valley Highway, I have confined my review to the potential implications of development on the site at 177-193 Numurkah Road as it may impact on traffic conditions or access to that site.

### 5.2 Review of Methodology Adopted in TIA Reports

- 5.2.1 The methodology adopted by Trafficworks in the Stage 1 report is summarized in Section 4.1.6 of this report.
- 5.2.2 I am satisfied that the methodology adopted is appropriate and conforms with current best practice for assessing the implication of developments of the size and type contemplated in the Stage 1 and Stage 2 applications.
- 5.2.3 In particular I note the following:



1. The design periods adopted, representing the weekday afternoon commuter peak, represents the likely critical period, when high levels of traffic generation from the development will coincide with measured peak volumes of traffic on the abutting road network.
  2. Existing conditions volumes, collected on Friday 7th October 2016, are likely to represent an appropriate design base, having regard to seasonal factors and variations.
  3. Traffic generation estimates for the proposed development are derived from recommended rates in the *RTA NSW Guide to Traffic Generating Developments 2002*. The rates adopted represent the peak generation of the use, which has then been conservatively superimposed onto the peak hour base volumes, effectively assuming coincident peaks.
  4. Traffic growth rates adopted have been based on historical data based derived from VicRoads database.
  5. Assessment of the implications of the proposal and the appropriateness of mitigating works proposed, based on a ten year design life beyond the completion of Stage 1 by 2018 and Stage 2 by 2022 respectively is in line with VicRoads normal requirements for assessment of mitigation requirements for traffic generating developments.
  6. The design of the traffic signal works at Numurkah Road and Hawkins Street and access treatments to Numurkah Road and Hawkins Street have been designed in accordance with Austroads Guidelines and to VicRoads satisfaction.
- 5.2.4 Overall, I am satisfied that the methodology adopted, which is consistent in both the Stage 1 and Stage 2 reports, is appropriate and thorough.

## 5.3 Traffic and Parking Generation Rates

### Traffic Generation Rates

- 5.3.1 Traffic generation rates adopted for assessing the proposed development have been sourced from the *RTA NSW Guide to Traffic Generating Developments 2002*.
- 5.3.2 The rates in the Guide are often adopted for assessment of traffic generation characteristics of proposals in Victoria and are generally accepted by VCAT and Planning Panels where appropriate.
- 5.3.3 The rates adopted in the Trafficworks assessments are based on rates for various classes of retail facilities summarized as follows.

**Table 5.1 Traffic Generation Summary –Thursday PM Peak (Trafficworks Assessment)****Stage 1**

RTA Category	Use	Floor Area (sqm)	Rate (mov/100sqm)	Volume (vph)
A(SM)	Supermarket	3750	15.5	581
A(F)	Large Format Retail	1680	5.1	86
	Major Tenant 1	640	5.1	33
A(SS)	Specialty Retail	1680	4.6	77
A(OM)	Community	195	2.2	4
Unspecified	Warehouse	250	4.0	10
<b>Stage 1 Floor Area</b>		<b>8195 sqm</b>	<b>9.7 mov / 100sqm</b>	<b>791 vph</b>
<b>Stage 1 Retail Floor Area</b>		<b>7750 sqm</b>	<b>10.0 mov / 100sqm</b>	<b>777 vph</b>

**Stage 2**

RTA Category	Use	Floor Area (sqm)	Rate (mov/100sqm)	Volume (vph)
A(SM)	Supermarket	3470	15.5	538
A(F)	Major Tenant 2	600	5.1	31
	Major Tenant 3	800	5.1	41
A(SS)	Specialty Retail	680	5.1 <sup>1</sup>	35 <sup>1</sup>
A(OM)	Medical	405	22	9
<b>Stage 2 Floor Area</b>		<b>5955 sqm</b>	<b>11.0 mov / 100sqm</b>	<b>649 vph</b>
<b>Stage 2 Retail Floor Area</b>		<b>5550 sqm</b>	<b>11.6 mov / 100 sqm</b>	<b>641 vph</b>

<b>Total Stage 1 and 2 Floor Area</b>		<b>14,150 sqm</b>	<b>10.2 mov / 100sqm</b>	<b>1440 vph</b>
<b>Total Stage 1 and 2 Retail Floor Area</b>		<b>13,300 sqm</b>	<b>10.7 mov / 100 sqm</b>	<b>1418 vph</b>

<sup>1</sup>Rate as adopted different from RTA rate for Category

**Table 5.2 - Traffic Generation Summary –Saturday Peak (Trafficworks Assessment)**

**Stage 1**

RTA Category	Use	Floor Area (sqm)	Rate (mov/100sqm)	Volume (vph)
A(SM)	Supermarket	3750	14.7	551
A(F)	Large Format Retail	1680	14.7 <sup>1</sup>	247
	Major Tenant 1	640	1.3	8
A(SS)	Specialty Retail	1680	10.7	180
A(OM)	Community	195	2.2 <sup>2</sup>	4
Unspecified	Warehouse	250	4.0	10
<b>Stage 1 Floor Area</b>		<b>8195 sqm</b>	<b>12.7 mov / 100sqm</b>	<b>1039 vph</b>
<b>Stage 1 Retail Floor Area</b>		<b>7750 sqm</b>	<b>12.7 mov / 100sqm</b>	<b>986 vph</b>

<sup>1</sup> RTA supermarket rate incorrectly applied

<sup>2</sup> RTA office rate applied

**Stage 2**

RTA Category	Use	Floor Area (sqm)	Rate (mov/100sqm)	Volume (vph)
A(SM)	Supermarket	3470	14.7	510
A(F)	Major Tenant 2	600	1.3	8
	Major Tenant 3	800	1.3	10
A(SS)	Specialty Retail	680	10.7	73
A(OM)	Medical	405	22	9
<b>Stage 2 Floor Area</b>		<b>5955 sqm</b>	<b>10.2 mov / 100sqm</b>	<b>610 vph</b>
<b>Stage 2 Retail Floor Area</b>		<b>5550 sqm</b>	<b>10.8 mov / 100 sqm</b>	<b>601 vph</b>

<b>Total Stage 1 and 2 Floor Area</b>		<b>14,150 sqm</b>	<b>11.7 mov / 100sqm</b>	<b>1649 vph</b>
<b>Total Stage 1 and 2 Retail Floor Area</b>		<b>13,300 sqm</b>	<b>11.9 mov / 100 sqm</b>	<b>1587 vph</b>

<sup>1</sup>Rate adopted is supermarket rate, lower than RTA rate used for Major Tenant 1

<sup>2</sup>Rate at variance to RTA rate but considered appropriate.

- 5.3.4 Accordingly, the analysis, based on traffic generation rates for component land uses interpreted from the RTA NSW Guidelines, the following design traffic volume estimates have been derived:

<b>Stage 1</b>	Weekday PM Peak	800 vph
	Saturday Peak	1050 vph
<b>Stage 1 and 2</b>	Weekday PM Peak	1440 vph
	Saturday Peak	1650 vph

- 5.3.5 For analysis purposes higher rates of **1000** vehicle per hour for Stage 1 and **1600** vehicles per hour for Stage 1 and 2 combined, have been adopted, superimposed onto Friday afternoon peak hour base volumes, factored up at a rate of 2% per annum over 10 years.
- 5.3.6 The traffic volumes adopted are equivalent to a rate of **12.9** movements per 100 sqm of retail floor area for Stage 1 and **12.0** movements per 100 sqm for the completed centre.
- 5.3.7 In my experience, for a centre of the size proposed, the rates adopted are appropriate.
- 5.3.8 It is noted that the rates adopted are in excess of the rate of 11.0 movements per 100 sqm adopted in the Traffix Group in the assessment of the proposed development at 221- 229 Goulburn Valley Highway dated January 2017, based on surveys at an existing supermarket based centre on the corner of Benalla Road and Archer Street, Shepparton.
- 5.3.9 In addition, GTA have adopted RTA NSW rates, effectively identical to the rates adopted by Trafficworks, in the peer review assessment report for the 221 -229 Goulburn Valley Highway site dated February 2017.

#### **Traffic Distribution**

- 5.3.10 Trafficworks, in association with the analysis of both the Stage 1 and Stage 2 applications and the associated impacts on the Numurkah Road / Hawkins Street intersection, have adopted the following:
- To and from the North (Numurkah Road) – 20%
- To and from the South (Numurkah Road) – 60%
- To and from the East (Hawkins Street) – 20%
- 5.3.11 It is considered that, given the status of the centre as a Neighbourhood Centre with a principle catchment in the North Shepparton area, and the existing and growing residential catchment to the east, that a higher proportion of generated traffic, over time will be attracted from the east and north east.
- 5.3.12 As such, in my opinion, the analysis overestimates the future generated traffic through the Numurkah Road / Hawkins Street intersection, providing a very conservative assessment as to the future operation of the proposed signalized intersection.

#### **Parking Generation Rates**

- 5.3.13 In assessing the adequacy of carparking provision proposed on site, Trafficworks have adopted parking generation rates recommended in the RTA NSW Guide as a benchmark.

- 5.3.14 As shown in the following table, the proposed parking provision exceeds these rates, with the overall provision meeting the statutory requirements of Clause 52.06 of the Greater Shepparton Planning Scheme.

**Figure 5.1- Car Parking Demand Assessment**

**Stage 1**

Use	Floor Area (sqm)	RTA Rate Spaces / 100 sqm	RTA Demand (spaces)	Clause 52.06 Rates Spaces / 100 sqm	Clause 52.06 Demand	Provision
Supermarket	3750	4.2	158	5.0	188	
Large Format Retail	2320	4.0	93	4.0	92	
Specialty Retail	1680	4.5	75	4.0	67	
Warehouse	250	0.33 <sup>1</sup>	1	1.5	3	
Community	195	0.9	2	3.5	7	
Stage 1	8195		329		357	368

**Stage 2**

Use	Floor Area (sqm)	RTA Rate Spaces / 100 sqm	RTA Demand (spaces)	Clause 52.06 Rates Spaces / 100 sqm	Clause 52.06 Demand	Provision
Supermarket	3470	4.2	145	5.0	173	
Large Format Retail	1400	4.0	56	4.0	56	
Specialty Retail	680	4.5	30	4.0	27	
Medical	405	0.9 <sup>2</sup>	3	3.5 <sup>3</sup>	14	
Stage 2	5955		234		270	368
Total	14150		563		627	638

- 5.3.15 Based on the above analysis, the proposed parking provision for both the Stage 1 development and for the subsequent Stage 2 proposal, exceeds the demands predicted by the application of the rates.
- 5.3.16 The proposed parking provision also exceeds the statutory requirement under the provisions of Clause 52.06 of the Planning Scheme, and as such, on my assessment, a permit for parking dispensation is not required for either the Stage 1 or Stage 2 applications.

## 5.4 Numurkah Road / Hawkins Street intersection

### Sidra Analysis

- 5.4.1 In association with the identification of required works at the Numurkah Road / Hawkins Street intersection for the Stage 1 and subsequent Stage 2 applications, Trafficworks have modelled the future operation of the intersection (assuming traffic signal control) using Sidra.
- 5.4.2 Sidra output printouts for the various scenarios tested are provided at Attachment E to the Stage 2 application report, as follows:
- Weekday PM Peak
- 2016 Conditions (Unsignalised)
  - 2028 Stage 1 Development 2028 (Signalised)
  - 2032 Stage 1 and 2 Development (Signalised)
- Saturday AM Peak
- 2028 Stage 1 Development 2028 (Signalised)
  - 2032 Stage 1 and 2 Development (Signalised)
- 5.4.3 I have assessed the SIDRA outputs contained in the Stage 2 reports and note that there are minor discrepancies in the modeling undertaken when compared to the VicRoads endorsed plan shown in Figure 3.2., specifically:
- The left turn slip lane from Hawkins Street south into Numurkah Road has not been included, and
  - Pedestrian movements across Numurkah Road have been modelled across the northern leg, which is now proposed across the southern leg.
- 5.4.4 These changes appear to have been incorporated into options tested in the Stage 1 report, however different design years have been adopted, (2036 instead of 2032 in the Stage 2 report, which changed as a consequence of a revised anticipated completion date for Stage 2.
- 5.4.5 In order to independently review the analysis Ratio has undertaken, Sidra analysis for the future scenarios listed in Section 5.4.2 above, incorporating the proposed signal layout plan including the left turn slip lane.
- 5.4.6 The results are attached in Appendix B.
- 5.4.7 A review of the outputs shows that, consistent with the analysis undertaken by Trafficworks and the subsequent ratification by VicRoads, the intersection will operate satisfactorily, providing satisfactory levels of service for Numurkah Road traffic as well as for turning traffic entering and leaving from Hawkins Street, including shopping centre generated movements.
- 5.4.8 In my opinion, the analysis is extremely conservative in that assumes:
- coincident peaks of shopping centre generated traffic and overall traffic on the surrounding road network
  - incremental growth on the surrounding road network based on historical growth rates over a 10 year design period

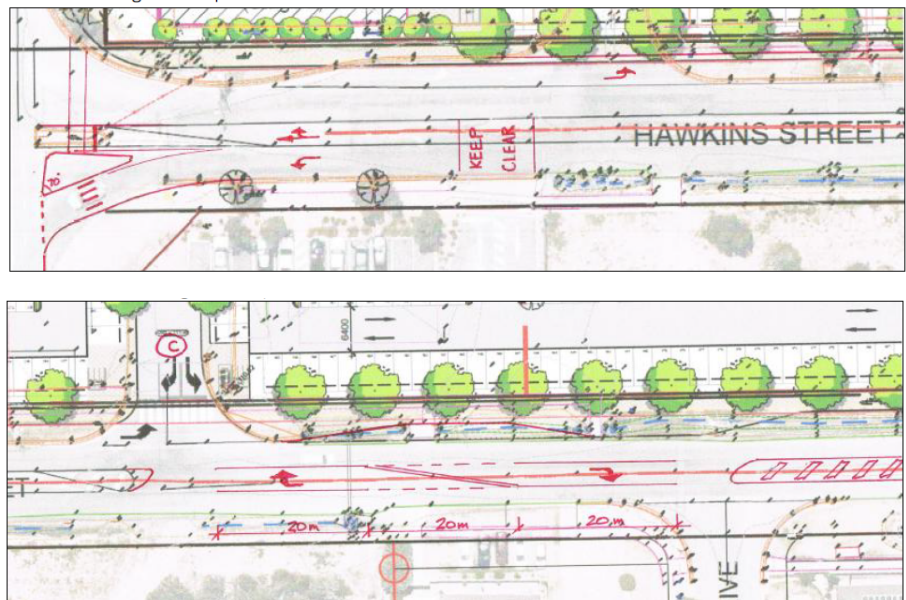
- 80% of traffic generated by the development will utilise the intersection, regardless of the significant existing and future residential catchments to the east and north east.
  - Discounts for linked trips and diverted trips not being applied to traffic generation estimates.
- 5.4.9 I also agree that sufficient capacity will be delivered at the intersection to comfortably absorb additional traffic which may be generated as a consequence of development of the Shepparton Sports Precinct, including U – turn movements from the south.
- 5.4.10 The expected overall level of service delivered to Numurkah Road traffic will remain satisfactory, with the proposed traffic signals not impacting on access to 221 – 229 Numurkah Road to the north as may be considered in conjunction with Amendment C193 and Planning Application 2016-269.

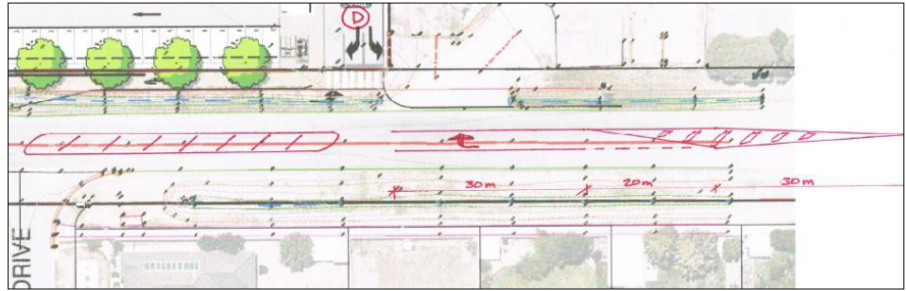
## 5.5 Access Implication to Abutting Properties.

### Hawkins Street

- 5.5.1 The signalisation of the Numurkah Road / Hawkins Street, together relocation of the existing access to the site from Hawkins Street and a new access adjacent to the eastern boundary, will require widening of Hawkins Street and reconfiguration of the access arrangements to the McDonalds site to the south and the Sali Drive intersection, a local street running to the south opposite the site.
- 5.5.2 Sketches showing the recommended configuration of Hawkins Street along the site frontage and the proposed access points is shown in a series of sketches contained within the Stage 1 application report and reproduced in Figure 5.2

**Figure 5.2 – Hawkins Street Frontage – Access Arrangements (Source: Stage 1 TIA)**





- 5.5.3 The proposals include:
- Provision of separate left and right turning lanes into the site from each of the proposed access points
  - Incorporation of a right turn lane into Sala Drive accommodated between the access points
  - Widening on the northern side within the road reserve to accommodate the proposed left turn lanes
  - Widening on the approach to the Numurkah Road intersection to provide for two approach lanes, including provision of a left turn slip lane into Numurkah Road as required by VicRoads
  - Removal of the existing right turn lane into the McDonalds access, necessary in conjunction with the traffic signal proposal at the intersection, and marking of “Keep Clear” across the eastbound lanes to facilitate access to the McDonalds from Hawkins Street.
- 5.5.4 I have reviewed the concepts as proposed against the relevant Austroads Guidelines and consider that the arrangements are generally satisfactory in relation to access to the subject site and to Sali Drive.
- 5.5.5 The impact of the reconfigured access to the McDonalds site, in my view, requires further analysis, including assessment of the potential queueing at the McDonalds entry and impact on eastbound movements in Hawkins Street downstream from the Numurkah Road intersection.
- 5.5.6 In my opinion, these matters can be dealt with appropriately as a condition on any permit issued for Stage 1 and consequent approval of functional plans showing the layout of Hawkins Street to the satisfaction of Council (as the road authority).



### 6.1 Scope of Review

- 6.1.1 I have been requested to review the traffic and access implications of future development of additional retail floor area in Shepparton North, as contemplated in the *Commercial Activity Centres Strategy 2015*, should additional floor area beyond the approved development levels at the Fairley's IGA site be developed at a site located 800 metres to the north, on a site which is the subject of Amendment C193 and Planning Application 2016-269 ("The Lascorp Proposal")
- 6.1.2 In the course of conducting this review I have assumed as follows:
1. Development of the Fairleys IGA site proceeds as per the currently permit such that a total of **7,875** sqm of retail floor area is established on the site, including 398 car spaces, a new left in / left out access point to Numurkah Road and installation of traffic signals at the intersection of Numurkah Road / Hawkins Street as required as a condition on permit.
  2. The recommendations of the *City of Greater Shepparton – Commercial Activity Centre Strategy* are incorporated into the Planning Scheme, such that additional retail floor space in Shepparton North is limited to **6,000** sqm (or a total of **14,000** sqm).
  3. The additional retail floor space is developed on the site located on the south-east corner of Numurkah Road (Goulburn Valley Highway) and Ford Road which is the subject of Amendment C193 of the Planning Scheme and associated Planning Application 2016-269.
  4. Access to the site is developed generally in accordance with the application proposal contemplated in the planning application and described in the accompanying traffic reports prepared by Traffix Group and GTA Consulting, specifically
    - A left in / right in only access to the Numurkah Road eastern service Road from Goulburn Valley Highway connecting to an entry point from the service road and left in left out access from Doody Road,
    - Two fully directional access points to Ford Road with appropriate channelization,
    - Two car park access points to Doody Street connecting to the Numurkah Road service road, and
    - Upgrading of the Goulburn Valley Highway / Wanganui Road / Ford Road intersection and provision of traffic signals, generally in accordance with the GTA Plan V102560-2 Issue P1, attached as Appendix C of the GTA draft report dated 15<sup>th</sup> February 2017.

### 6.2 Overview Assessment of the Lascorp Proposal

- 6.2.1 I have broadly reviewed application 2016-269 including traffic reports prepared by Traffix Group dated January 2017 and GTA Consultants dated 15<sup>th</sup> February 2017.
- 6.2.2 It is noted that the proposal included the following components as described in the GTA Report.

**Table 6.1 Lascorp Proposa (Source:GTA Report Table 3.1)**

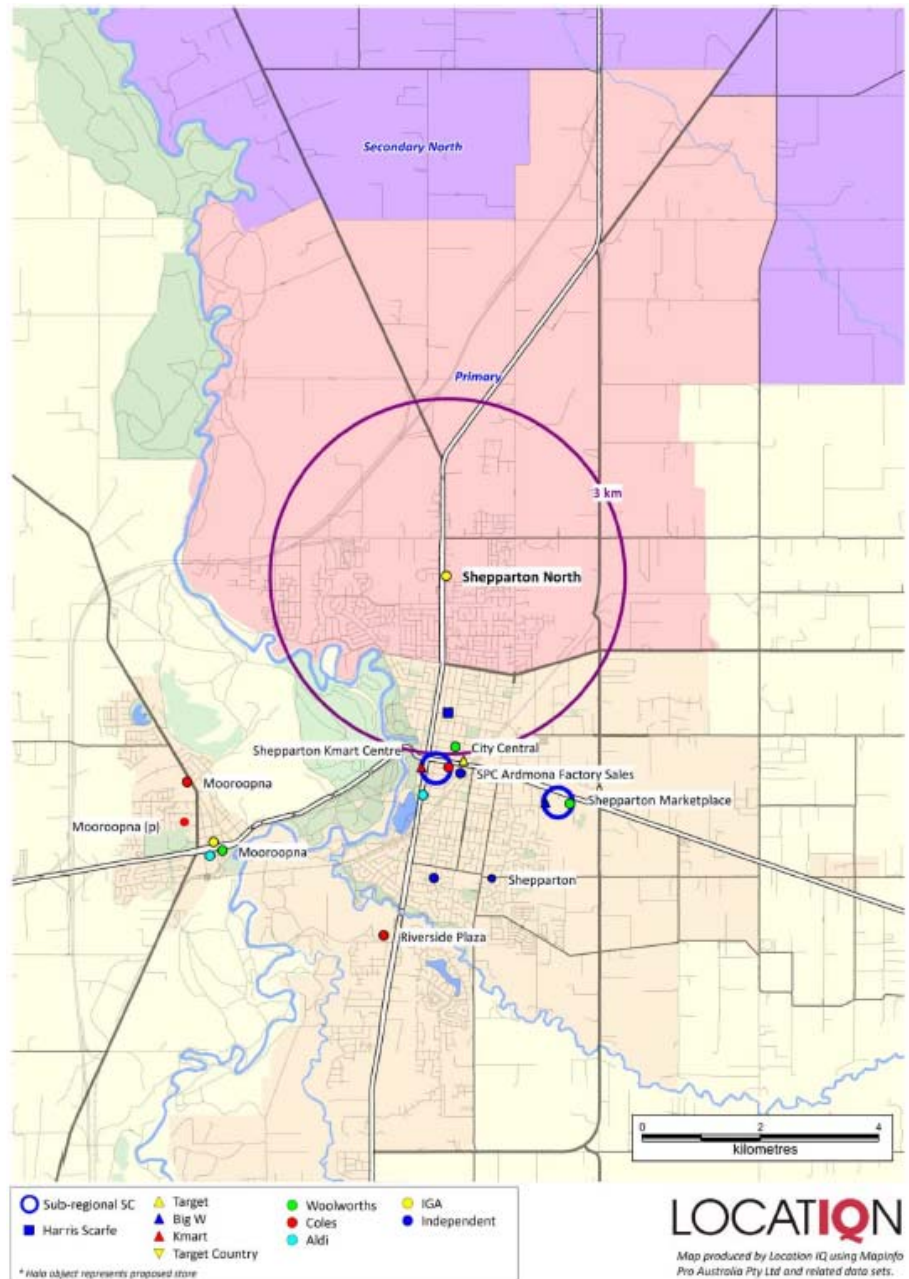
Use	Size
Supermarket	3960 sqm
Specialty Retail	2030 sqm
Medical Centre	6 practitioners (300 sqm)
Council / Community Centre	100 sqm
Pad Site 1 : KFC Restaurant	2602 sqm
Pad Site 2 ; Petrol Station	1904 sqm incl. convenience store
Pad Site 3: Childcare Centre	90 children
Pad Site 4 – Bulky Goods Retail	2,000 sqm

- 6.2.3 It is noted that the retail uses within the proposal total 5,990 sqm, which corresponds to the “additional” retail space for Shepparton North beyond the permitted retail floor area at the existing centre contemplated in the Commercial Area Retail Strategy.
- 6.2.4 As such, I have assessed the traffic and access issues that I have been asked to review in the context of a development similar in content and access arrangements being developed on the Lascorp site.
- 6.2.5 I have reviewed the traffic impact assessments undertaken in support of the proposed development, particularly the additional analysis undertaken by GTA with respect to the pad sites and the requirements for mitigating works at the intersection of Goulburn Valley Highway / Ford Road / Wanganui Road
- 6.2.6 I am of the opinion that the traffic generated by the proposed development could be satisfactorily accommodated, subject to access point design being undertaken to the satisfaction of VicRoads and Council and the upgrading and signalisation of the intersection of Goulburn Valley Highway / Ford Street/ Wanganui Road to mitigate the impacts of the proposal.

### **6.3 Retail Catchments and Access Implications**

- 6.3.1 The expected catchment for retail facilities in the Shepparton North Area has been assessed by Location Pty Ltd in an economic report prepared in association with the Stage 2 application for the Fairley's site.
- 6.3.2 The anticipated primary catchment is shown in Map 2.2 of that report, reproduced below.

**Figure 6.1 Shepparton North Primary Catchment Sector- Source Location Pty Ltd June 2017**



- 6.3.3 The plan indicates that the primary catchment is located within existing and future residential precincts to the east and west of Numurkah Road and extending in the future to planned growth areas.
- 6.3.4 In particular residential growth within the catchment is currently being planned within the Shepparton North East Precinct Structure Plan area located east of Verney Road as shown in Figure 6.2

The map displays the 'Proposed North East Growth Corridor' in Greater Shepparton. Key features include:

- Proposed North East Growth Corridor:** A red-outlined area running north-south through the center of the map.
- Land Use Zones:**
  - LDR2 (Low Density Residential):** Shaded in light red, located in the northern part of the corridor.
  - R1Z (Residential):** Shaded in light pink, located to the west of the corridor.
  - R2Z (Residential):** Shaded in light green, located to the east of the corridor.
  - IN1Z (Industrial):** Shaded in light orange, located to the south of the corridor.
  - PU2Z (Public Use):** Shaded in light yellow, located to the west of the corridor.
- Major Roads:**
  - Ford Road:** A major road running north-south on the eastern side of the map.
  - Shepparton Highway:** A major road running east-west through the center of the map.
  - P24:** A road running north-south on the far eastern side of the map.
- Other Labels:** 'GREATER SHEPPARTON' is labeled in the center-right area. 'LDR2' and 'R1Z' are also labeled within their respective zones.

- ## 6.4 Public Transport Access

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## **6.5 Traffic and Access Implications of “Dual” Neighbourhood Centres**

- 6.5.1 In broad terms, in the scenario that I have been asked to consider, retail facilities serving the Shepparton North Catchment would be split, with approximately 8,000 sqm (including two supermarkets) located at the existing centre at Hawkins Street, with 6,000 sqm, including a third supermarket, located at Ford Road 600 metres to the north. (as measured between the proposed supermarkets on each site.
- 6.5.2 Effectively, given the spacing between the two centres, in access terms the centres would operate independently, with very limited connections available to suggest that the sites could operate as an “integrated” neighbourhood centre.
- 6.5.3 Pedestrian paths are currently not constructed along the east side of Numurkah Road between Hawkins Street and Ford Road.
- 6.5.4 In reality, access to facilities on each site will require patrons to drive between sites.

## 7 Conclusions:

7.1.1 Based on my review of Amendments C192 and C193 to the Greater Shepparton Planning Scheme and traffic impact reports prepared in association with development proposals by Trafficworks at the Fairley's site and Traffix Group and GTA Consultants at the Lascorp Site, I have concluded as follows:

1. The analysis undertaken by Trafficworks Pty Ltd in reports dated 2<sup>nd</sup> May 2017 for the Stage 1 application and 14<sup>th</sup> June 2017 for the Stage 2 application, demonstrates satisfactorily that, subject to installation of traffic signals the intersection of Numurkah Road and Hawkins Street and access arrangements to Numurkah Road and Hawkins Street as proposed, projected traffic increases will be comfortably absorbed by the surrounding road network.
2. There are no traffic engineering reasons why permits for the Stage 1 and Stage 2 applications should not be issued.
3. Traffic increases associated with the proposed development at 221-229 Goulburn Valley Highway and 10 Ford Road as contemplated in Amendment C193 and Planning Permit Application 2016 269 could be satisfactorily accommodated, subject to access point design being undertaken to the satisfaction of Council and VicRoads and the upgrading and signalisation of the Goulburn Valley Highway / Wanganui Road / Ford Road intersection to mitigate the impacts of the proposal.
4. The existing Fairley's site is very well located to provide convenient access via Hawkins Street and Verney Road by all transport modes for existing and planned residential precincts within the Shepparton North retail catchment and the Shepparton North PSP area.
5. Access to the Lascorp site by private vehicle is well facilitated by Ford Road and Wanganui Road from the east and west.
6. Given the spacing between the two sites, in access terms the proposed centres would operate independently, with very limited connections available to suggest that the sites could operate as an "integrated" neighbourhood centre.
7. Pedestrian paths are currently not constructed along the east side of Numurkah Road between Hawkins Street and Ford Road.
8. Access to facilities on each site will require patrons to drive between sites.

## Appendix A – RFI and VicRoads Correspondence



Project No. 161640

8 May 2017

Ronan Murphy  
Senior Statutory Planner  
Greater Shepparton City Council  
Locked Bag 1000  
Shepparton Victoria 3632

Dear Ronan,

**Planning Application No: 2008-436/B**  
**Property Address: 177-193 Numurkah Road, Shepparton**  
**VicRoads Reference No: 20754/17**

#### **Section 55 – Request for Further Information (RFI)**

I refer to the VicRoads letter dated 8 March 2017, in response to the planning permit application for the above development, which requested provision of additional information as noted below. By way of response to many of the matters raised in the VicRoads RFI, the Traffic Impact Assessment Report (TIAR) has been updated. A copy of the revised TIAR (Revision B) is attached.

1. A scaled concept signal plan (or FLP) of the proposed traffic signals for the intersection of Goulburn Valley Highway (Numurkah Road) with Hawkins Street. This plan (161640-FLT-01-03-P3) has recently been submitted to VicRoads for comment prior to undertaking detailed signal design for the intersection. The plan is now included in the updated TIAR and a copy is also attached for reference. It includes existing features and proposed works and is accompanied by swept path diagrams.

In addition the TIAR has been updated to include discussion and plans that demonstrate:

- a. How the proposed accesses interact with the abutting roads as well as driveways abutting and opposite the development.
  - b. Additional swept path diagrams showing vehicle movements at the proposed access points.
2. The car park layout has been modified to change the orientation of car parking spaces 118, 119, 146 & 147 to provide four east-west aligned spaces for which access does not interfere with the main east-west aisle. Compliance of the modified layout with Section 3.4 of AS/NZS 2890.1 relating to unencumbered queuing is now discussed in Section 5.6.4 of the updated TIAR.
  3. The swept paths included in the TIAR of January 2017 demonstrated that the largest anticipated vehicle (19m semi-trailer) could enter and exit the site in a forward direction. These diagrams were contained in Attachment C to the TIAR.



Additional swept path analyses are provided in the updated TIAR for movements by the largest design vehicle at the development's proposed access points. This includes requested modifications to the island treatment at Access A.

Apart from Access C, which is to be maintained but modified, all existing access points to the site are to be closed. Their interactions are irrelevant and these are not shown.

4. In an additional item outlined in the VicRoads email dated 25 April 2017, VicRoads expressed concern over the location of Access B within the "Functional Area of an Intersection" as defined in AGRD04 Section 7.2.1.

Reference to the above guide is acknowledged. It is pointed out that the primary safety concerns dealt with in the guide relate to vehicle entry movements onto the carriageway. Access point B exclusively caters for vehicle egress from the carriageway by way of a dedicated left turn lane separated from the through lane by a bicycle lane. The proposed Type AUL treatment is of adequate length for the deceleration and turn movements to be undertaken clear of through traffic, thereby avoiding conflict with other vehicle manoeuvres and without impact on the left turn movements into Hawkins Street.

Moreover, agreement-in-principle was given to the format of this access by Ian Ridgwell at the inception meeting held at Benalla on 1 October 2016 and confirmed by Raelene Stratton at the pre-application meeting on 13 October 2016. The internal site development has been based on this premise. It will be difficult to change without compelling reason.

In addition to the above request for further information, the VicRoads letter of 8/3/2017 discussed a number of issues identified in the VicRoads assessment of the proposals. The following responds to these comments in the same sequence as they appeared in the VicRoads letter.

## **1. Access A**

- a. The updated site layout plans now incorporate an enlarged island that prevents entry to the abutting staff car park and the removal of the painted turn arrow in the left turn lane. Appropriate signing will be provided in detailed design.
- b. Original Figure C5 of the TIAR clearly showed the swept path of a U-turning 19m semi-trailer. The swept path diagram has been relabelled and amended to show this vehicle entering the site.
- c. The inclusion of the enlarged island under item a) removes any potential conflict between entering and exiting vehicles. The swept path diagram in new Figure C5 of the TIAR confirms this.

## **2. Access B**

- a. The updated site plan shows a re-orientation of car parking spaces 118, 119, 146 & 147 to provide four east-west aligned spaces for which access does not interfere with the main east-west entry aisle. Provision of unencumbered access is now discussed in Section 5.6.4 of the TIAR.

### 3. Accesses C & D

We agree that issues relating to the access points to Hawkins Street are matters to be managed by Council. However, comments on VicRoads concerns are provided for Council's reference as follows. These comments are based on a mean speed in the order of 50km/h for this section of Hawkins Street, as discussed in Section 3.4 of the updated TIAR:

- a. The TIAR stipulates provision of Type AUL(S) and CHR treatments at both of these access points. The VicRoads assessment has confirmed this requirement.

The nominated AUL(S) treatments are in accordance with Figure 8.10 of Austroads GRD Part 4A in that their length D is at least 25m, **including** the taper T.

The nominated CHR treatments are in accordance with Figure 7.19 (not 8.10) of Austroads GRD Part 4A, with the deceleration length D at Access C = 45m and at Access D = 42m.

Figure 7.19 requires that D be determined from Table 5.2 of the Guide, which indicates that, for a design approach speed of 50km/h and a stop condition at the entry, comfort criteria require a deceleration length D of 40m, **including** taper T. This can be reduced to 30m for a maximum rate of deceleration of 3.5m/sec<sup>2</sup>.

The above shows that the layout design for Hawkins Street complies with Austroads criteria.

### 4. Sali Drive

Again this is a local road matter. Nevertheless, if assessed on the basis of a Type CHR treatment in accordance with Figure 7.19, the deceleration length D is 40m, as determined in the above analysis. The right turn lane length to be provided at Sali Drive is 48m and satisfies this criterion.

### 5. Goulburn Valley Highway/Hawkins Street

- a. The updated FLP is now included in the TIAR. This incorporates a Type CHL treatment for the Hawkins Street east approach (with a pedestrian crossing).
- b. Figure B2 of the TIAR provides existing total and peak hour traffic conditions (as at October 2016). These reflect current access arrangements to the present IGA supermarket on the site, which require all entry to the site from Hawkins Street and exit only access to Numurkah Road. This inflates the left turn volumes at the Hawkins Street intersection approaching from the north.

The proposed layout removes from these left turn movements into Hawkins Street all delivery vehicle traffic (site entry via Access A) and the majority of customers approaching from the north (site entry via Access B). Resultant SIDRA modelling indicates no requirement for a southbound Type CHL treatment at Hawkins Street and the proposed Type AUL left turn lane is considered adequate, with an estimated 95% queue length of 31m in 2036.

- c. It is noted that VicRoads does not support a U-turn prohibition at Hawkins Street. In the context of all the data and analysis made available by VicRoads and Council, it is concluded that the volume of U-turn movements from the stadium exit can be managed with the spare signal capacity at the Hawkins Street intersection.
- d. The proposed modification of the western service road, as outlined in the VicRoads letter, would result in denial of direct access to the BP service station from the north and east approaches. It would result in the implementation of the original service road design developed at the time of highway duplication, which was altered to maintain the desired level of access to the service station. It is our intention to honour the earlier undertaking in our intersection design.

Subsequent discussion of this matter with VicRoads staff has indicated that the proposed layout for the intersection is acceptable, subject to the submission of swept path diagrams to confirm satisfactory operation and agreement from VicRoads signal group.

Detailed design of the layout (following feedback from VicRoads signal group) will include appropriate signs and pavement markings that prevent egress from the BP site direct to Numurkah Road.

- e. Section 5.6.5 of the updated TIAR outlines the need for the Hawkins Street intersection with Numurkah Road to be configured as proposed. This is to include an eastbound urban Type BAR basic right turn provision at the McDonalds Access. It is noted that turn arrows and line marking refinements will need to be incorporated in the detailed design for the Hawkins Street changes.
- f. The updated FLP shows:
  - i. All existing and proposed footpaths
  - ii. The 5m x 5m splay at the northeast corner of the intersection. It is intended that this splay be excised and declared "ROAD" through an appropriate permit condition that requires a plan of subdivision to be approved and lodged at the titles office at an appropriate time.

## **6. Updated design year traffic volumes**

The revised TIAR includes the escalation of traffic estimates to show growth to and assess traffic impacts at 2028 (10 years post completion of Stage 1). There have been no appreciable changes in outcomes as a result of this additional analysis.

## **7. Electronic copy of SIDRA files**

These will be provided to VicRoads when finalised.

## **8. Consistency of plans**

Inconsistencies between the FLP and the architect's masterplan have been addressed.

I trust that the above discussion and attached documentation satisfies the VicRoads RFI requirements and provides the design rationale that will result in the VicRoads approval necessary to progress this application.

It is noted that much of the above discussion involves matters of detailed design. It is pointed out that this documentation is to accompany a Planning Application and, as such, covers the broader issues that ensure the design will meet acceptable traffic parameters and comply with relevant standards. It does not intend to provide or seek approval to detailed design.

Please contact me on 0417 688 045 if you would like to discuss the above matters further.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Bob Citroën", with a stylized, sweeping flourish extending to the right.

Bob Citroën  
**Associate Traffic Engineer**

Greater Shepparton City Council  
Locked Bag 1000  
SHEPPARTON VIC 3632  
Attention: Ronan Murphy

Dear Ronan,

**PLANNING APPLICATION No.:** 2008-436/B, EPATHWAY  
**VICROADS REFERENCE NO:** 20754/17  
**PROPERTY ADDRESS:** 177 NUMURKAH ROAD, SHEPPARTON

### **Section 55 – No objection subject to conditions**

Thank you for your letter dated 18 May 2017 referring details of the above application to the Roads Corporation (VicRoads) pursuant to Section 55 of the Planning and Environment Act 1987.

The application is for buildings and works associated with the construction of a neighbourhood centre.

VicRoads notes while the proposed development is not without some merit, there are a number of deficiencies as follows:

*VicRoads has reviewed and generally supports the findings of the Traffic Impact Assessment Report prepared by Trafficworks. However VicRoads does not support the findings of the report that conclude that future traffic generation from the Shepparton Sports Precinct is unlikely to increase the number of vehicles undertaking a u-turn from the southern approach to Hawkins Street intersection. VicRoads considers that this issue is not attributable to the application for the proposed development and will require Council to address this issue at a later date as part of the Sports Precinct Development.*

If Council regards the proposed development favourably, VicRoads would require that the following conditions be included in any Notice of Decision to issue a Planning Permit or Planning Permit:

### **Conditions**

1. Access to the proposed development from Numurkah Road shall be via the accesses located as detailed on the plan appended to this application (Site Plan, prepared by doig.architecture pty ltd, drawing No: TP002 dated 9 March 2017) as follows:
  - a. At the northern boundary of the subject land access must be left in and left out only.
  - b. The access located approximately 45 m north of the southern boundary of the subject land shall be entry only from Numurkah Road to the subject land.
2. Prior to the development coming into use the applicant must construct the mitigating works to the satisfaction of and at no cost to Roads Corporation as follows:
  - a. Traffic Signal at Numurkah Road/Hawkins Street intersection and generally in accordance with Trafficworks Concept Signal Plans Drawing No.s 161640-FLT-01, 161640-FLT-02 & 161640-FLT-03 Issue P2 dated 06/04/2017 including street lighting to Category V3 Standard.
  - b. Access crossover and an AUL(s) left turn lane including left in/left out treatment at the proposed access located at the northern end of the subject land.
  - c. Access crossover and an AUL left turn treatment at the entry only access located approximately 45 m north of the southern boundary of the subject land including pavement marking in the car parking isle adjacent to Numurkah Road to ensure

that vehicles in the isle are required to give way to vehicles entering from Numurkah Road to allow free flowing access into the development.

**Planning Notes**

1. Separate consent for works within the road reserve and the specifications of these works will be required under the Road Management Act.
2. It should be noted that the consent application will be treated as a developer funded application which requires fees and detailed plans and specifications.

Once Council makes its decision, please forward a copy of the decision to VicRoads as required under Section 66 of the Planning and Environment Act 1987.

Should you have any enquiries regarding this matter, please contact Ian Ridgwell on 03 5761 1874 or [ner.ppr@roads.vic.gov.au](mailto:ner.ppr@roads.vic.gov.au)

Yours sincerely

Signed Ian Ridgwell, 16/06/2017

**IAN RIDGWELL**  
SENIOR STATUTORY PLANNING ENGINEER  
Cc Permit Applicant

## Appendix B SIDRA Analysis

LANE SUMMARY

 Site: 101 [GVHS-2028-ThurPM]

Goulburn Valley Highway/Hawkins Street  
2028 Thursday PM  
Signals - Fixed Time Isolated    Cycle Time = 115 seconds (User-Given Cycle Time)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Goulburn Valley Highway (South)													
Lane 1	49	5.0	276	0.178	100	52.3	LOS D	2.4	17.8	Short	40	0.0	NA
Lane 2	375	5.0	823 <sup>1</sup>	0.456	100	21.4	LOS C	13.7	100.3	Full	500	0.0	0.0
Lane 3	409	5.0	896	0.456	100	21.9	LOS C	15.3	111.7	Full	500	0.0	0.0
Lane 4	319	5.0	468 <sup>1</sup>	0.682	100	46.0	LOS D	16.0	116.8	Short	65	0.0	NA
Approach	1152	5.0		0.682		29.7	LOS C	16.0	116.8				
East: Hawkins Street													
Lane 1	335	5.0	1060	0.316	100	12.0	LOS B	6.6	48.5	Full	500	0.0	0.0
Lane 2	92	5.0	189	0.486	100	60.1	LOS E	5.1	37.0	Full	500	0.0	0.0
Approach	427	5.0		0.486		22.3	LOS C	6.6	48.5				
North: Goulburn Valley Highway (North)													
Lane 1	105	5.0	748	0.140	100	17.7	LOS B	2.3	17.1	Short	60	0.0	NA
Lane 2	515	5.0	744 <sup>1</sup>	0.692	100	15.9	LOS B	15.0	109.4	Full	500	0.0	0.0
Lane 3	545	5.0	788	0.692	100	16.2	LOS B	16.3	118.7	Full	500	0.0	0.0
Lane 4	98	5.0	424	0.231	100	41.7	LOS D	4.3	31.4	Short	100	0.0	NA
Approach	1263	5.0		0.692		18.2	LOS B	16.3	118.7				
Intersection	2842	5.0		0.692		23.5	LOS C	16.3	118.7				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
Lane LOS values are based on average delay per lane.  
Intersection and Approach LOS values are based on average delay for all lanes.  
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.  
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

<sup>1</sup> Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.



# LANE SUMMARY

 Site: 101 [GVHS-2032-PM]

Goulburn Valley Highway/Hawkins Street  
2032 PM Peak  
Signals - Fixed Time Isolated    Cycle Time = 115 seconds (User-Given Cycle Time)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Goulburn Valley Highway (South)													
Lane 1	54	5.0	422	0.128	100	43.6	LOS D	2.4	17.6	Short	40	0.0	NA
Lane 2	408	5.0	1020 <sup>1</sup>	0.400	100	14.0	LOS B	12.2	89.0	Full	500	0.0	0.0
Lane 3	438	5.0	1095	0.400	100	14.3	LOS B	13.4	97.6	Full	500	0.0	0.0
Lane 4	574	5.0	537 <sup>1</sup>	1.068	100	143.6	LOS F	60.8	443.8	Short	65	0.0	NA
Approach	1474	5.0		1.068		65.7	LOS E	60.8	443.8				
East: Hawkins Street													
Lane 1	526	5.0	1215	0.433	100	15.4	LOS B	13.4	97.7	Full	500	0.0	0.0
Lane 2	182	5.0	189	0.962	100	87.9	LOS F	13.2	96.3	Full	500	0.0	0.0
Approach	708	5.0		0.962		34.1	LOS C	13.4	97.7				
North: Goulburn Valley Highway (North)													
Lane 1	114	5.0	515	0.222	100	26.7	LOS C	3.7	27.2	Short	60	0.0	NA
Lane 2	572	5.0	542	1.055	100	101.2	LOS F	43.2	315.7	Full	500	0.0	0.0
Lane 3	572	5.0	542	1.055	100	101.2	LOS F	43.2	315.7	Full	500	0.0	0.0
Lane 4	105	5.0	260	0.404	100	53.7	LOS D	5.4	39.5	Short	100	0.0	NA
Approach	1363	5.0		1.055		91.3	LOS F	43.2	315.7				
Intersection	3545	5.0		1.068		69.2	LOS E	60.8	443.8				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
Lane LOS values are based on average delay per lane.  
Intersection and Approach LOS values are based on average delay for all lanes.  
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.  
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

<sup>1</sup> Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

# LANE SUMMARY

 Site: 101 [GVHS-2028-SatAM]

Goulburn Valley Highway/Hawkins Street  
2028 Saturday AM  
Signals - Fixed Time Isolated    Cycle Time = 115 seconds (User-Given Cycle Time)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Goulburn Valley Highway (South)													
Lane 1	79	5.0	227	0.348	100	56.7	LOS E	4.2	30.6	Short	40	0.0	NA
Lane 2	381	5.0	809 <sup>1</sup>	0.471	100	19.4	LOS B	13.3	97.0	Full	500	0.0	0.0
Lane 3	429	5.0	911 <sup>1</sup>	0.471	100	20.1	LOS C	15.5	112.9	Full	500	0.0	0.0
Lane 4	363	5.0	477 <sup>1</sup>	0.761	100	43.7	LOS D	18.1	131.9	Short	65	0.0	NA
Approach	1252	5.0		0.761		29.0	LOS C	18.1	131.9				
East: Hawkins Street													
Lane 1	431	5.0	1143	0.377	100	12.3	LOS B	9.0	65.6	Full	500	0.0	0.0
Lane 2	122	5.0	189	0.645	100	61.8	LOS E	6.9	50.6	Full	500	0.0	0.0
Approach	553	5.0		0.645		23.2	LOS C	9.0	65.6				
North: Goulburn Valley Highway (North)													
Lane 1	61	5.0	655	0.093	100	20.1	LOS C	1.5	11.0	Short	60	0.0	NA
Lane 2	486	5.0	666 <sup>1</sup>	0.729	100	19.1	LOS B	15.9	115.7	Full	500	0.0	0.0
Lane 3	503	5.0	690	0.729	100	19.4	LOS B	16.6	121.4	Full	500	0.0	0.0
Lane 4	45	5.0	383	0.117	100	42.9	LOS D	2.0	14.4	Short	100	0.0	NA
Approach	1095	5.0		0.729		20.3	LOS C	16.6	121.4				
Intersection	2900	5.0		0.761		24.6	LOS C	18.1	131.9				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
Lane LOS values are based on average delay per lane.  
Intersection and Approach LOS values are based on average delay for all lanes.  
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.  
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

<sup>1</sup> Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

LANE SUMMARY

Site: 101 [GVHS-2036-AM]

Goulburn Valley Highway/Hawkins Street  
2036 AM Peak  
Signals - Fixed Time Isolated    Cycle Time = 115 seconds (User-Given Cycle Time)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Goulburn Valley Highway (South)													
Lane 1	78	5.0	519	0.150	100	38.9	LOS D	3.3	24.0	Short	40	0.0	NA
Lane 2	401	5.0	1224 <sup>1</sup>	0.327	100	9.3	LOS A	9.7	70.8	Full	500	0.0	0.0
Lane 3	407	5.0	1245	0.327	100	9.3	LOS A	9.9	72.3	Full	500	0.0	0.0
Lane 4	474	5.0	472 <sup>1</sup>	1.004	100	104.2	LOS F	41.8	305.4	Short	65	0.0	NA
Approach	1360	5.0		1.004		44.1	LOS D	41.8	305.4				
East: Hawkins Street													
Lane 1	556	5.0	1115	0.499	100	18.4	LOS B	16.4	120.0	Full	500	0.0	0.0
Lane 2	187	5.0	189	0.989	100	98.5	LOS F	14.5	105.6	Full	500	0.0	0.0
Approach	743	5.0		0.989		38.6	LOS D	16.4	120.0				
North: Goulburn Valley Highway (North)													
Lane 1	72	5.0	608	0.118	100	22.5	LOS C	2.0	14.9	Short	60	0.0	NA
Lane 2	638	5.0	640	0.995	100	84.7	LOS F	46.7	341.0	Full	500	0.0	0.0
Lane 3	638	5.0	640	0.995	100	84.7	LOS F	46.7	341.0	Full	500	0.0	0.0
Lane 4	45	5.0	137	0.329	100	62.2	LOS E	2.5	18.3	Short	100	0.0	NA
Approach	1392	5.0		0.995		80.8	LOS F	46.7	341.0				
Intersection	3495	5.0		1.004		57.5	LOS E	46.7	341.0				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).  
Lane LOS values are based on average delay per lane.  
Intersection and Approach LOS values are based on average delay for all lanes.  
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.  
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

<sup>1</sup> Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.