



Traffic Engineers and Transport Planners

Traffic Engineering Assessment

Proposed Shopping Centre

at

**221-229 Goulburn Valley Highway and 10 Ford Road,
Shepparton**

Prepared For

Lascorp Development Group (Aust) Pty Ltd

January, 2017

G19863R-01E

Traffic Engineering Assessment

221-229 Goulburn Valley Highway and 10 Ford Road, Shepparton: Proposed Shopping Centre

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Shepparton**

Document Control

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1 Introduction

Traffix Group has been engaged by Lascorp Development Group (Aust) Pty Ltd to undertake a traffic engineering assessment and prepare a report for the proposed shopping centre located at 221-229 Goulburn Valley Highway and 10 Ford Road in Shepparton.

In preparing this report, the subject site and environs have been inspected, relevant data has been collected and reviewed, plans of the proposed development have been perused and the traffic engineering implications of the proposed development have been assessed.

2 Existing Conditions

2.1 The Site

The subject site is located on the east side of Goulburn Valley Highway and the south side of Ford Road in Shepparton, as shown in the locality plan at Figure 1 below.

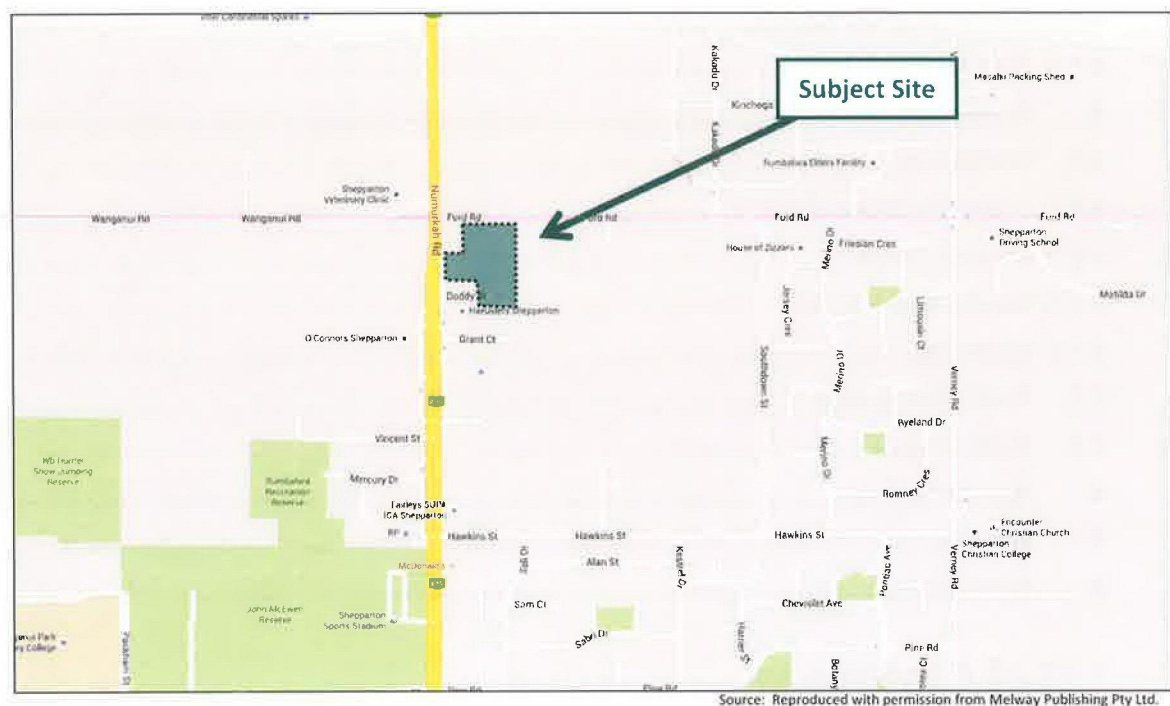


Figure 1: Locality Map

The site is currently undeveloped. It is irregular in shape with an area of approximately 4.05 hectares and frontages to Ford Road and Goulburn Valley Highway of approximately 178 metres and 74 metres respectively.

An aerial view (2016) of the subject site photographs of the site and from Ford Road and Goulburn Valley Highway are shown in Figures 2 to 6 below.

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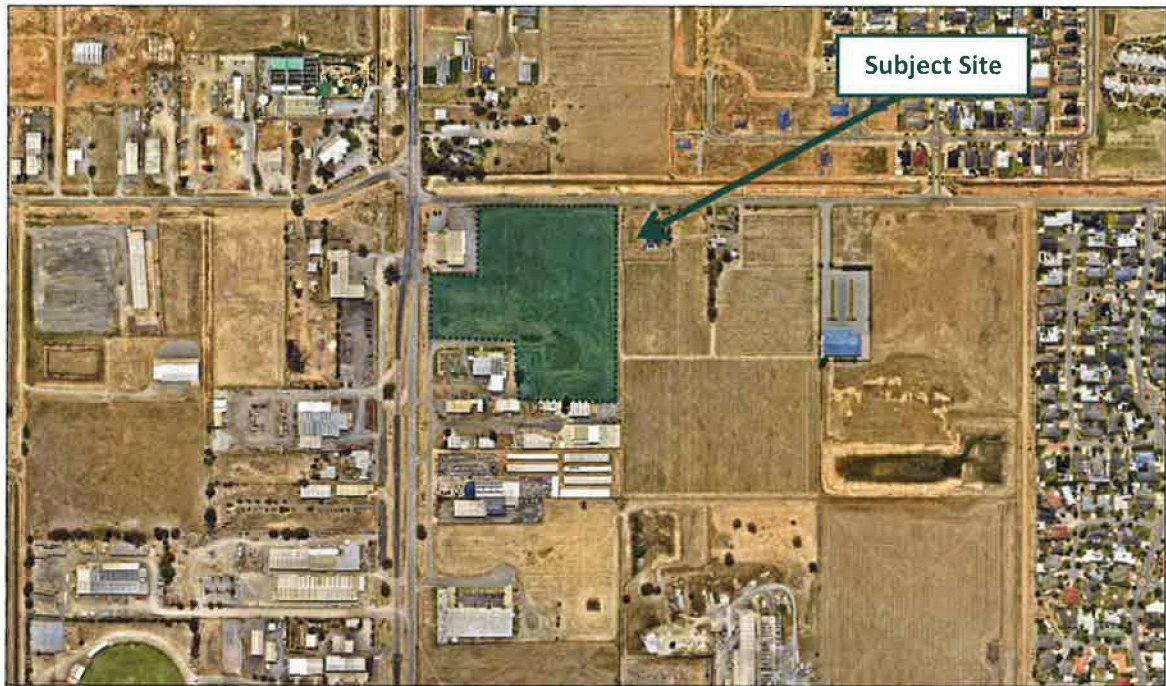


Figure 2: Aerial View



Figure 3: Subject Site viewed from Ford Road



Figure 4: Subject Site viewed from Ford Road



Figure 5: Subject Site viewed from
Goulburn Valley Highway



Figure 6: Subject Site viewed from
Goulburn Valley Highway

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2.2 Land Use

The subject site is within a Commercial Zone – Schedule 2 (C2Z) as shown in the Land Use Zone Map at Figure 7.

Surrounding uses are currently predominantly a residential and farm to the east and north. Land uses along Goulburn Valley Highway are commercial including fast food tenancies, supermarkets, service stations and restaurants/eateries.

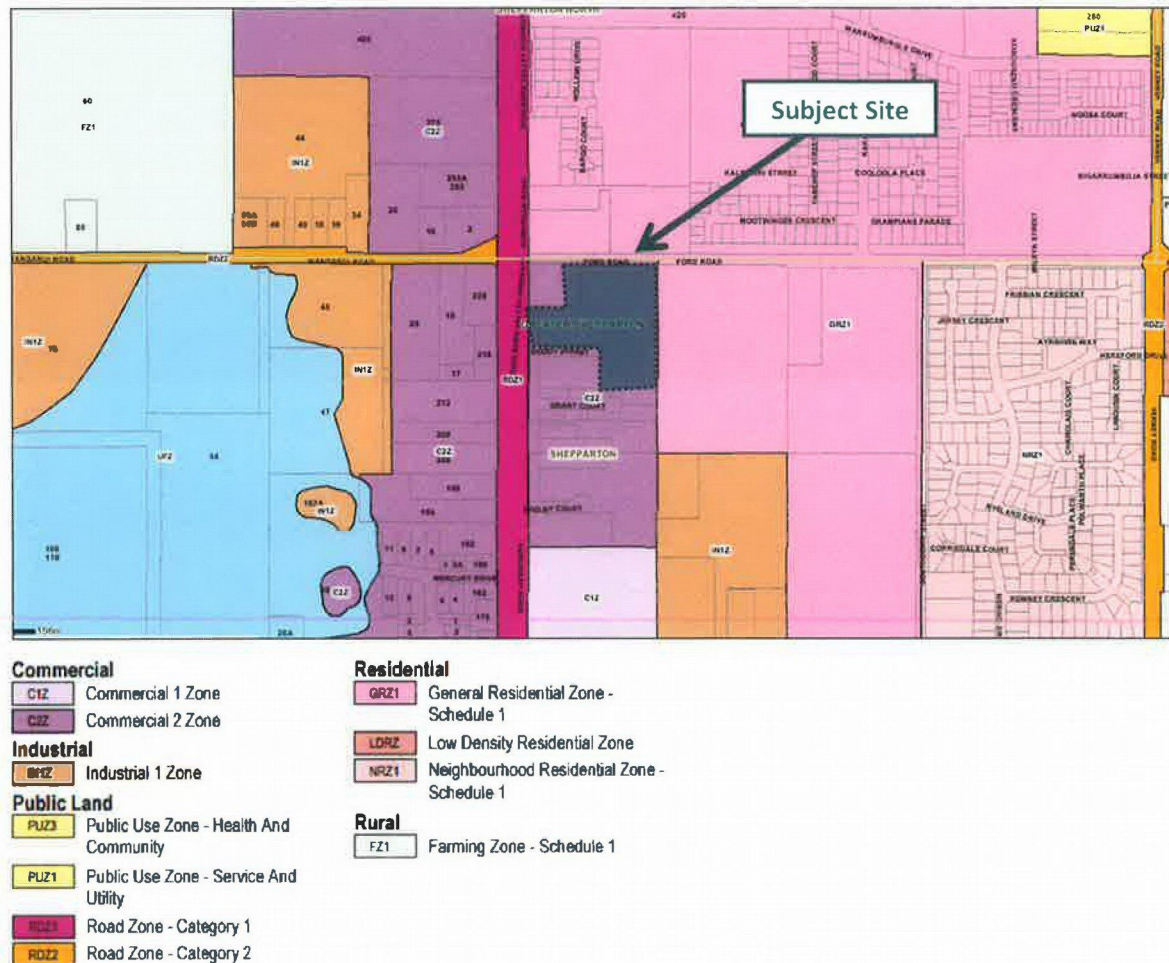


Figure 7: Land Use Zoning Map

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2.3 Road Network

Goulburn Valley Highway in the vicinity of the subject site is a VicRoads declared road (Road Zone Category 1). Goulburn Valley Highway extends in a north-south direction from Hume Highway to Murray Valley Highway.

In the vicinity of the subject site, Goulburn Valley Highway is constructed with a divided carriageway comprising 2 lanes of through traffic in each direction and bicycle lanes on each side.

A posted speed limit of 60km/h applies to Goulburn Valley Highway.



Figure 8: Goulburn Valley Highway view North



Figure 9: Goulburn Valley Highway view South

Ford Road is a local road which extends approximately 5.4 kilometres in an east-west direction between Lemnos N Road (where it continues as Lemnos – Cosgrove Road) and Goulburn Valley Highway.

Ford Road is constructed with a 7.5 metre (approx.) carriageway comprising one traffic lane in each direction.

A posted speed limit of 60km/h applies to Ford Road.

We understand from VicRoads that as part of the Shepparton North Growth Corridor, Ford Road and the intersection of Goulburn Valley Highway/Wanganui Road/Ford Road are to be upgraded. No plans are yet available detailing the extent of works that VicRoads will be undertaking as part of the upgrade, but we understand that it will include the signalisation of the intersection.



Figure 10: Ford Road view West



Figure 11: Ford Road view East

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2.4 Sustainable Modes of Transport

2.4.1 Public Transport

There are currently no public transportation services available within reasonable walking distance of the subject site.

2.4.2 Bicycle Network

There are several on- and off-road bicycle routes provided throughout Shepparton. In addition, several new paths, including priority routes along Wyndham Road and Midland Highway connecting to Mooroopna, have been identified as part of future bicycle route planning. Figure 12 below shows the VicRoads' Bicycle Network Planning map for Shepparton.

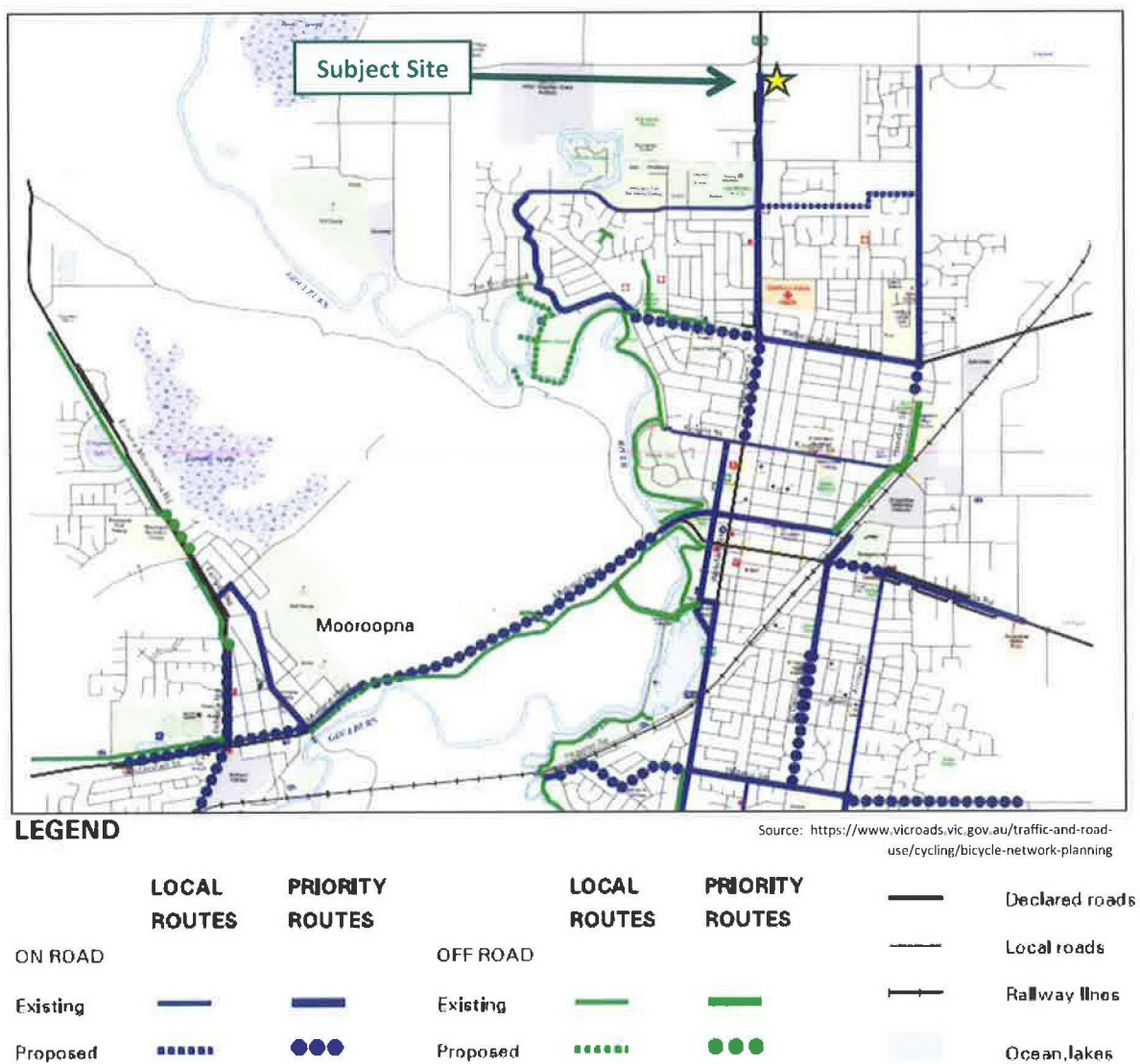


Figure 12: Shepparton Bicycle Network Planning Routes

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3 Proposal

The proposal is to develop the subject site for the purposes of a mixed-use development comprising a supermarket, specialty shops, medical centre and community facilities.

A schedule of uses for the proposed development is provided at Table 1.

Table 1: Schedule of Uses

Use	Quantity / Size
Supermarket	3,960m ²
Specialty Retail	2,030m ²
Medical Centre	6 practitioners (300m ²)
Community Centre	100m ²

A total of 446 car parking spaces are to be provided on-site for the proposed development.

Three loading bays are provided on-site, a dedicated loading space is provided to the supermarket at the rear of the supermarket and two shared loading areas are provided for the retail uses, one on the south side of the supermarket and one to the east of retail tenancy 14.

Vehicle access to the site is to be taken from new crossovers via Ford Road, Doddy Street and a new access directly via Goulburn Valley Highway.

A copy of the proposed development plan is attached at Appendix A.

4 Car Parking Assessment

4.1 Statutory Car Parking Requirements

Clause 52.06 of the Planning Scheme sets out the statutory requirements for car parking as summarised at Table 2. The purpose of Clause 52.06 is:

- To ensure that car parking is provided in accordance with the State Planning Policy Framework and Local Planning Policy Framework.
- To 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.
- To support sustainable transport alternatives to the motor car.
- To promote the efficient use of car parking spaces through the consolidation of car parking facilities.
- To ensure that car parking does not adversely affect the amenity of the locality.
- To 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.

Table 2: Statutory Car Parking Requirements

Use	Measure	Rate ⁽¹⁾	Requirement ⁽²⁾
Supermarket	3,960m ²	5 spaces per 100m ² of leasable floor area	198 spaces
Shop	2,030m ²	4 spaces per 100m ² of leasable floor area	81spaces
Medical Centre	6 Practitioners	5 spaces to the first person providing health services and 3 spaces to each other person providing health services	20 spaces
Community Centre	100m ² (34 patrons)	0.3 per patron permitted	10 spaces
TOTAL			309 spaces

(1) We note that Clause 21.04-6 specifies parking rates for medical centres within residential areas. The site is not located in a residential area and the update to Clause 52.06 postdates those sections of the Planning Scheme.

(2) Clause 52.06-5 states ... "If in calculating the number of car spaces the result is not a whole number, the required number of car parking spaces is to be rounded down to the nearest whole number."

The proposed development has provision for 446 parking spaces which exceeds the statutory requirement under Clause 52.06 and accordingly, the application is not seeking a permit to reduce the statutory car parking requirement.

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4.2 Car Parking Layout

The proposed car parking layout and access arrangements have been assessed under the relevant sections of the Planning Scheme and the relevant Australian Standards.

Key elements of the design include:

Design Standard 1 – Accessways

- All vehicles can exit the site in a forwards direction in accordance with the requirements of the Planning Scheme.
- Adequate pedestrian sight triangles will be available at all the proposed crossovers.
- Articulated vehicles (i.e. 19m semi-trailer) are expected to enter the site via Ford Road and exit via Doddy Street for the purposes of deliveries for the supermarket.

Design Standard 2 – Car Parking Spaces

- All standard car spaces are provided with dimensions in excess of the minimum requirements of the Planning Scheme.
- The proposed disabled car spaces are provided in accordance with AS/NZS 2890.6:2009.

Based on the foregoing, we are satisfied that the proposed car parking layout arrangements are satisfactory and will work well.

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4.3 Site Access

4.3.1 Goulburn Valley Highway Access

Traffix Group has prepared a concept access layout plan for an amended access treatment from Goulburn Valley Highway. This amended access includes a lengthening of the existing channelised right turn deceleration lane on Goulburn Valley Highway turning to the service road.

Based on an operating speed of 60km/h the right turn deceleration lane has been designed at 85 metres (including 25 metres taper and 30 metres of storage). The treatment has been designed in accordance with the specifications in the Austroads Guide to Road Design Part 4A.

This access will provide left-in and right-in movements only.

South of Doddy Street, a new egress will provide left-out only into the southbound lanes on Goulburn Valley Highway.

In addition, at the request of VicRoads, the left-in to the service road, just north of Grant Court is to be removed.

A copy of the functional layout plan for the proposed access via Goulburn Valley Highway is attached at Appendix B.

4.3.2 Ford Road Access

Traffix Group has prepared a concept access layout plan for the proposed access points via Ford Road directly into the site.

Based on an operating speed of 60km/h the left turn deceleration lanes have been designed at 55 metres (including 20 metres taper) in accordance with the Austroads Guide to Road Design Part 4A.

For simplicity of design and construction, Ford Road is to be widened on the north side for majority of the site's frontage. These will allow for AUR type treatments at each access point.

A copy of the functional layout plan for the proposed access points via Ford Road is attached at Appendix C.

5 Traffic Considerations

5.1 Traffic Generation

5.1.1 Supermarket and Shops

Traffix Group has undertaken detailed turning movement counts of a similar site on the corner of Archer Street and Benalla Road at the direction of VicRoads. Extensive surveys were carried out from 12:30pm-6:00pm. The peak hour was from 4:00pm-5:00pm when 751 vehicle movements were recorded. An estimate of approximately 6,800m² for the floor area of the shops and supermarket was based on aerial photography of the site.

Accordingly, given the site's location and similar characteristics, a peak afternoon vehicle generation rate of 11 vehicles per 100m² has been adopted. This equates to up to 659 movements in the PM peak hour.

5.1.2 Medical Centre

The likely traffic generation for the proposed medical centre development is estimated from first principles, based on the following assumptions:

- consultations will be by appointment with an average consultation time of 12 minutes, and
- all patients will drive to the site, i.e. up to 10 vehicle trip-ends per practitioner each hour (5 arriving and 5 leaving).

Based on the above assumptions, it is anticipated that a maximum of 60 vehicle trip-ends may be generated by the site during any one hour. Staff would typically arrive prior to the scheduled appointment times, and depart after the last appointment, and accordingly the staff vehicle movements would not coincide with the busiest hour.

5.1.3 Nearby Development

Childcare Centre

We understand that a childcare centre has recently been approved in the immediate vicinity of the subject site. Accordingly, we believe it is appropriate to include this traffic given that it will form part of the existing traffic on the road network.

The RTA Guide to Traffic Generating Developments (2002) (RTA Guide) sets out traffic generation rates based on survey data collected in New South Wales for a range of land uses. This guide is referred to in the Austroads Guide which is used by VicRoads, and is generally regarded as the standard for metropolitan development characteristics.

The RTA Guide sets out the following relevant rates:

Childcare Centre:	AM peak hour: 0.8 vehicle trip-ends per child
	PM peak hour: 0.7 vehicle trip-ends per child

Accordingly, the childcare centre is estimated to generate up to 74 movements in the PM peak hour.

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5.1.4 Summary

We note that it is highly unlikely that the PM peak traffic generation of each of the above uses will coincide. Nevertheless, for the purposes of a robust assessment, we have assumed that all peak rates will overlap and accordingly, up to 793 vehicle movements will be generated by the proposed development in the PM peak period.

5.2 Traffic Distribution

An economic impact assessment report has been prepared by MacroPlan Dimasi dated January 2017. At section 4.2 to this report are detailed numbers regarding the origin of sales for the proposed development. For traffic distribution purposes, we have adopted the conclusions from the report. Traffic will be distributed to and from the site in the following way:

- 50% of traffic will enter and 50% will exit in the peak periods,
- 5% of traffic will arrive from and depart to the west,
- 27% of traffic will arrive from and depart to the north,
 - 80% will access the site from Goulburn Valley Highway, south of Ford Road, and
 - 20% will access the site via Ford Road.
- 16.5% of traffic will arrive from and depart to the east or southeast via Ford Road
 - 85% of traffic to and from the east will enter/exit via the western access on Ford Road, and
 - 15% of traffic to and from the east will enter/exit via the eastern access on Ford Road,
- 51.5% of traffic will arrive and depart to the south.
 - 25% from the southwest quadrant,
 - 10% from beyond the trade area, and
 - 16.5% from east/southeast
 - 10% of exiting southbound traffic will turn left from Ford Road onto Goulburn Valley Highway,
 - 90% of exiting southbound traffic will turn left from Doddy Street onto Goulburn Valley Highway.

Based on the above assumptions, the anticipated peak hour turning movements generated by the proposed mixed-use development is summarised in Figure 13 below.

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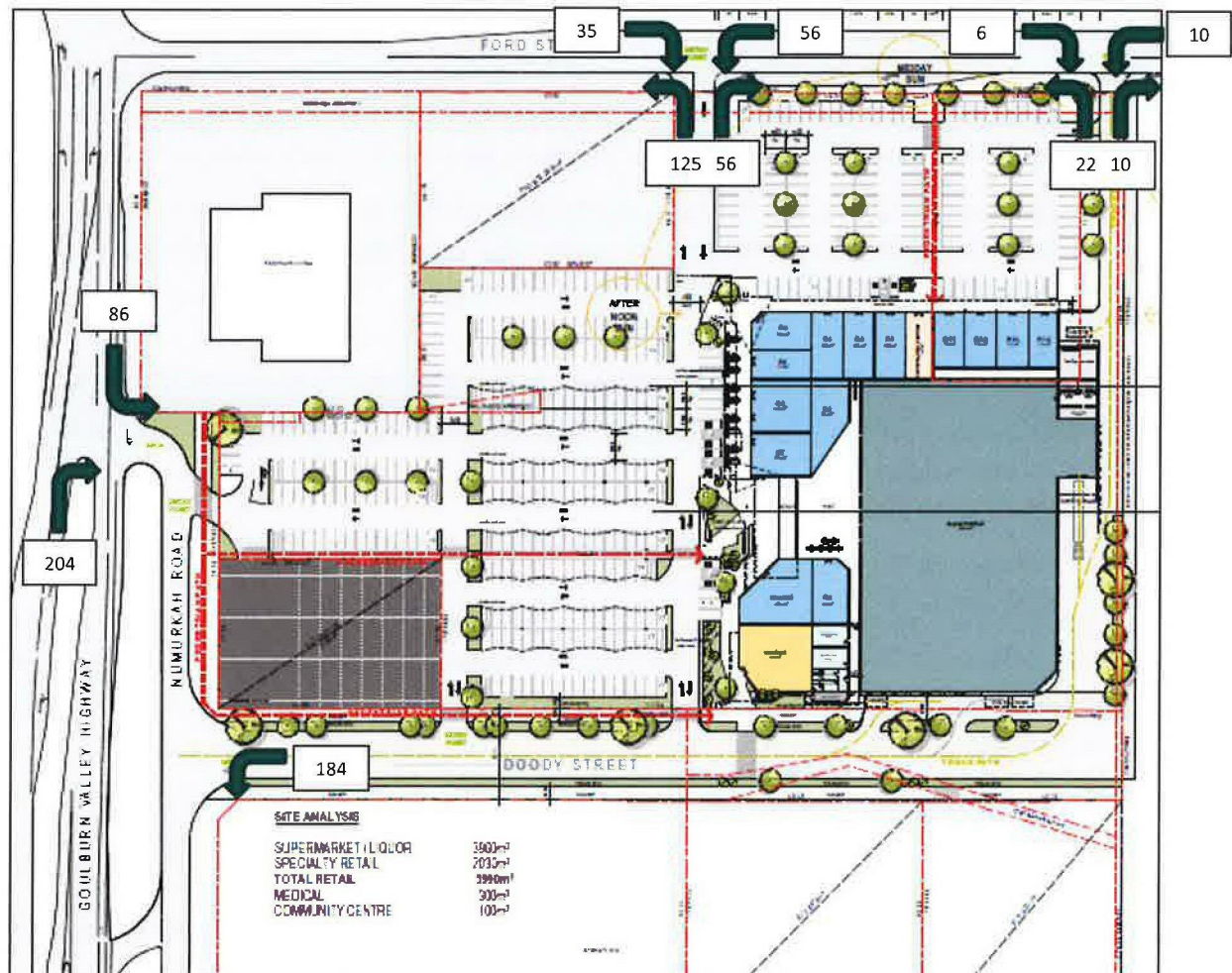


Figure 13: Expected Traffic Generation and Distribution

5.3 Traffic Impact

Goulburn Valley Highway/Wanganui Road/Ford Road Intersection

Traffix Group has discussed the future operation of Goulburn Valley Highway/Wanganui Road/Ford Road intersection with VicRoads' officers.

We understand that the intersection of Ford Road, Wanganui Road and Goulburn Valley Highway will be realigned to form a cross-intersection that will be signalised. Furthermore, it is likely that traffic volumes and expansion of the area will result in upgrade works to Goulburn Valley Highway in the vicinity of the subject site, giving additional capacity.

We have been advised that the applicant will provide a monetary contribution to be used at the discretion of Council/VicRoads for interim works at the intersection of Goulburn Valley Highway/Wanganui Road/Ford Road intersection until the ultimate intersection is constructed as part of the Shepparton Bypass.

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Goulburn Valley Highway Access

The proposed development may result in up to 204 right-turn entry movements and 86 left-turn entry movements from Goulburn Valley Highway. Traffic surveys undertaken by GTA Consulting show that there are in the order of 500 southbound movements in the midweek PM peak hour.

A SIDRA intersection analysis has been undertaken to determine the performance of the new access via Goulburn Valley Highway to the development site in the PM peak hour under post development conditions. A peak flow factor of 95% has been adopted.

Table 3: SIDRA Summary

Approach	Degree of Saturation	Average Delay (sec)	Queue Length (m)
Goulburn Valley Highway (south)	0.339	2.6	9.7
Goulburn Valley Highway (north)	0.271	0.9	0.0

The SIDRA analysis indicates that the proposed access has ample capacity on each approach to accommodate the number of entry movements, and there will be only a very minor delay for vehicles turning right into the site.

Significantly, Degrees of Saturation (DOS) less than 0.8 are considered to be good operating conditions for unsignalised intersections. As can be seen each DOS (being the highest DOS of any one approach at that intersection) is significantly lower than 0.8.

Full outputs of the SIDRA analysis for existing and post development conditions are attached at Appendix D.

Based on the above assessment, we are satisfied that the introduction of up to 204 right-turn movements and 86 left-turn into the site will not severely impact on the operation of Goulburn Valley Highway.

Ford Road Access

The proposed development may result in up to 272 movements in/out of the site via the central access via Ford Road.

Traffix Group has undertaken a SIDRA intersection analysis has been undertaken to determine the performance of the new access via Ford Road under post development conditions. A peak flow factor of 95% has been adopted.

Table 4: SIDRA Summary

Approach	Degree of Saturation	Average Delay (sec)	Queue Length (m)
Site Access (south)	0.205	8.0	6.1
Ford Road (east)	0.103	1.3	0.0
Ford Road (west)	0.121	1.5	2.3

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The SIDRA analysis indicates that the proposed access has ample capacity on each approach to accommodate the number of movements, and there will be only a very minor delay for vehicles turning out of the site.

Full outputs of the SIDRA analysis for existing and post development conditions are attached at Appendix E.

6 Bicycle Parking

Clause 52.34 of the Planning Scheme sets out the statutory requirements for bicycle facilities. The purpose of Clause 52.34 is:

- To encourage cycling as a mode of transport.
- To provide secure, accessible and convenient bicycle parking spaces and associated shower and change facilities.

The number of bicycle spaces required under Clause 52.34 is set out below.

Table 5: Statutory Bicycle Parking Requirement

Use	Measure	Rate	Requirement ⁽¹⁾
Employee			
Retail	2,030m ²	1 space to each 300m ² of leasable floor area	7 space
Supermarket	3,960m ²	1 space to each 600m ² of leasable floor area if the leasable floor area exceeds 1,000m ²	7 spaces
Medical Centre	6 practitioners	1 space to each eight practitioners	1 space
Community Centre	100m ²	1 space to each 300m ² of net floor area if the net floor area exceeds 1,000m ²	0 spaces
Shopper/Visitor			
Retail	2,030m ²	1 space to each 500m ² of leasable floor area	4 spaces
Supermarket	3,960m ²	1 space to each 500m ² of leasable floor area if the leasable floor area exceeds 1,000m ²	8 spaces
Medical Centre	6 practitioners	1 space to each four practitioners	2 space
Council/Community Centre	100m ²	1 space to each 1,000m ² of leasable floor area if the leasable floor area exceeds 1,000m ²	0 spaces
TOTAL			29 spaces

(1) Clause 52.34 states... "If in calculating the number of bicycle facilities the result is not a whole number, the required number of bicycle facilities is the nearest whole number. If the requirement is one-half, the requirement is the next whole number."

The proposed development has a statutory requirement for 29 bicycle spaces, comprising 15 employee spaces and 14 visitor spaces.

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A total of 30 bicycle parking spaces are provided on-site including 16 within a secure area for employees and 14 spaces provided at horizontal rails near tenancy 4 for visitors.

Two shower/change room facilities are provided adjacent to the secure bicycle parking.

Accordingly, the bicycle and end of trip facility requirements set out at Clause 52.34 of the Planning Scheme are met.

7 Loading

Clause 52.07 of the Planning Scheme specifies that:

No building or works may be constructed for the manufacture, servicing, storage or sale of goods or materials unless:

- *Space is provided on the land for loading and unloading vehicles as specified in the table below.*
- *The driveway to the loading bay is at least 3.6 metres wide. If a driveway changes direction or intersects another driveway, the internal radius at the change of direction or intersection must be at least 6 metres.*
- *The road that provides access to the loading bay is at least 3.6 metres wide.*

FLOOR AREA OF BUILDING	MINIMUM LOADING BAY DIMENSIONS	
2,600 m ² or less in single occupation	Area	27.4 m ²
	Length	7.6 m
	Width	3.6 m
	Height Clearance	4.0 m
For every additional 1,800 m ² or part	Additional 18 m ²	

The supermarket is 3,960m² in area requiring a 45.4m² loading area. The supermarket loading bay is significantly larger than this and exceeds the Planning Scheme requirement.

Swept path analysis of a 19m articulated vehicle accessing the supermarket loading bay has been undertaken and access was shown to be satisfactory. A copy of the swept path analysis is attached at Appendix F.

A further two loading bays are provided for loading of the retail tenancies. Given the small size of many of the retail premises and the nature of the proposed development, it would be appropriate to for the retail tenancies to share the two common loading areas..

In addition, deliveries to the retail tenancies are likely to be via small vans which could make use of the on-site parking to undertake deliveries.

The provision of loading bays meets the statutory requirement set out at Clause 52.07 of the Planning Scheme.

8 Conclusions

Having visited the site, perused relevant documents and plans, provided design advice, conducted a spot parking survey and undertaken traffic engineering assessments, we are of the opinion that:

- a) The proposed development has a statutory car parking requirement for 309 spaces,
- b) the provision of 446 spaces, exceeds the statutory parking requirement the application does not seek a permit to reduce the statutory parking requirement,
- c) the proposed car parking layout is considered to be in accordance with both the relevant requirements of the Planning Scheme and Australian Standards and will operate in an appropriate and acceptable manner,
- d) the new access via Goulburn Valley Highway has been designed in accordance with Austroads Guide to Road Design Part 4A and will operate in a safe and effective manner,
- e) the treatments for the proposed access points on Ford Road have been designed in accordance with Austroads Guide to Road Design Part 4A and will work well as an interim treatment until the ultimate duplication of Ford Road,
- f) a contribution has been made by the applicant to be used at the discretion of Council/VicRoads for interim works at the intersection of Goulburn Valley Highway/Wanganui Road/Ford Road prior to the ultimate construction of the intersection as part of the Shepparton bypass,
- g) the provision of bicycle parking and end of trip facilities is in accordance with Clause 52.34 of the Planning Scheme,
- h) the provision of three loading bays meets the statutory loading requirement set out at Clause 52.07, and
- i) there are no traffic engineering reasons why a planning permit for the proposed mixed-use development at 221-229 Goulburn Valley Highway, Shepparton, should not be granted.

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Appendix A: Development Plans

GOULBURN VALLEY HIGHWAY

NUMURKAH ROAD

FORD STREET

DOODY STREET

SITE ANALYSIS

SUPERMARKET / LIQUOR	3960m ²
SPECIALTY RETAIL	2030m ²
TOTAL RETAIL	5990m²
MEDICAL	300m ²
COMMUNITY CENTRE	100m ²

TOTAL CARS PROVIDED ON SITE	446
TROLLEY BAYS	17

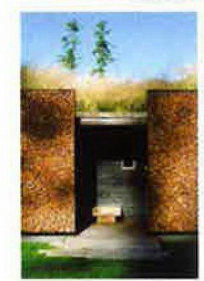
AFTER NOON SUN

MIDDAY SUN

MORNING SUN

4
170°

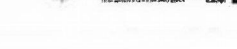
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TOWN PLANNING

2015-050 TP02 A

1:500 JAW/EL



LASCORP

NORTH SHEPPARTON
NUMURKAH ROAD,
SHEPPARTON, VIC 3630

PROPOSED SITE PLAN

MELBOURNE
STONEY
PERTH
i2C
i2C.COM.AU

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Appendix B:
Functional Layout Plan of
Goulburn Valley Highway Access



PRELIMINARY PLAN
FOR DISCUSSION
PURPOSES ONLY

WARNING
BEWARE OF UNDERGROUND SERVICES
The locations of underground services shown are approximate only and their exact position should be proven on site.

REVISION	REVISION NOTES	REVISION DATE
A	ISSUED FOR COMMENTS	11 NOV 2016
B	EXISTING NUMURKAH ROAD U-TURN AND SERVICE ROAD ACCESS RETAINED - PLAN UPDATED	20 DEC 2016
C	PEDESTRIAN CROSSING ADDED	22 DEC 2016
D	SERVICE ROAD EXIT RELOCATED FURTHER SOUTH AND MEDIAN ISLAND EXTENDED	09 JAN 2017
E	BASE PLAN UPDATED - PLAN RE-ISSUED	24 JAN 2017

GENERAL NOTES
1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP JUNE 2016)
2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL
3 MAIN ROAD - NUMURKAH ROAD (SPED 120K 40MPH)
4 ALL PROPOSED FOOTPATHS AND PRAM CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1:20 & 2009
5 EXISTING SIGNAGE NOT SHOWN

DESIGNED	S O'KEEFE 06 JUNE 2016
CHECKED/APPROVED	D MILDOR 08 JUNE 2016
FILE NAME	G19863-00.dgn

TraffixGroup
Traffic Engineers and Transport Planners
1/15 BENTLEY ROAD, 3RD FLOOR, BENTLEY, VIC 3084
03 9397 1111
www.traffixgroup.com.au

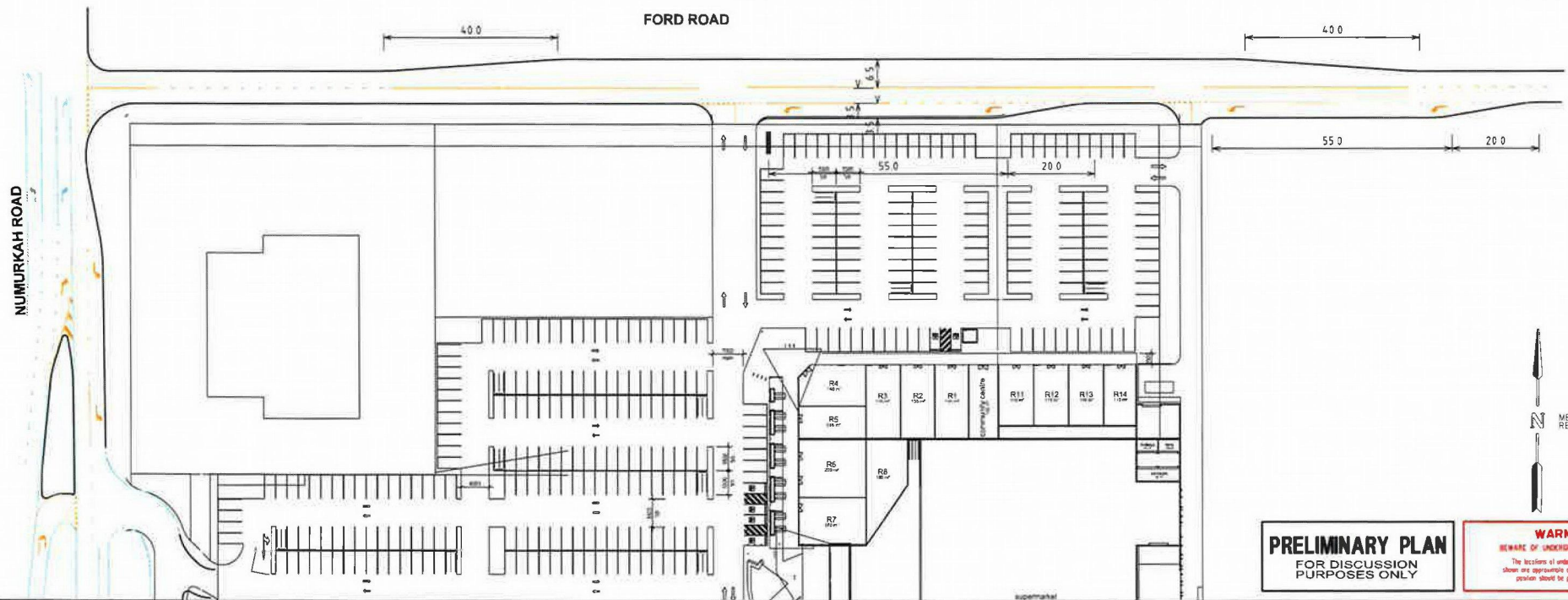
NUMURKAH ROAD - SHEPPARTON
GREATER SHEPPARTON CITY COUNCIL
FUNCTIONAL LAYOUT PLAN - OPTION 4
SCALE 1:500 SHEET No. 1 DWG No. G19863-04E

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Proposed Shopping Centre



Appendix C: Functional Layout Plan of Ford Road Access



REVISION	REVISION NOTES	REVISION DATE	GENERAL NOTES	DESIGNED	 Traffic Engineers and Transport Planners 10/100 SOUTH ROAD, SHEPPARTON, VIC 3630 03 5070 1000 • 03 5070 1001 • FAX 03 5070 1002 www.traffixgroup.com.au	FORD ROAD - SHEPPARTON GREATER SHEPPARTON CITY COUNCIL CONCEPT PLAN	SCALE 0 5 10 15 20 SHEET No. G19863-06B	DWG No. G19863-06B
A	ISSUED FOR COMMENTS	25 JULY 2016	1. BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP JUNE 2016)	S O'KEEFE 25 JULY 2016				
B	BASE PLAN UPDATED - PLAN RE-ISSUED	24 JAN 2017	2. ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL	CHECKED/APPROVED				
			3. MAIN ROAD - NUMURKAH ROAD (SPLED ZONE 50M/PM)	D MILDNER 25 JULY 2016				
			4. ALL PROPOSED FOOTPATHS AND PRAM CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1628.4-2009	FILE NAME				
				G19863-00.dgn				

Traffic Engineering Assessment

221-229 Goulburn Valley Highway and 10 Ford Road, Shepparton:
Proposed Shopping Centre



Appendix D:
SIDRA Output Goulburn Valley
Highway Access

MOVEMENT SUMMARY

 **Site: 101 [221-229 Goulburn Valley Highway, Shepparton]**

221-229 Goulburn Valley Highway, Shepparton
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Goulburn Valley Highway											
2	T1	637	6.0	0.339	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
3	R2	215	1.0	0.300	10.1	LOS B	1.4	9.7	0.61	0.89	49.6
Approach		852	4.7	0.339	2.6	NA	1.4	9.7	0.15	0.22	56.9
North: Goulburn Valley Highway											
7	L2	91	1.0	0.049	5.6	LOS A	0.0	0.0	0.00	0.58	53.6
8	T1	509	6.0	0.271	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
Approach		600	5.2	0.271	0.9	NA	0.0	0.0	0.00	0.09	58.9
All Vehicles		1452	4.9	0.339	1.9	NA	1.4	9.7	0.09	0.17	57.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

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.

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Project: P:\Synergy\Projects\GRP1\GRP19863\07-Analysis\SIDRA\19863 GVH & Ford Access.sip7

Traffic Engineering Assessment

221-229 Goulburn Valley Highway and 10 Ford Road, Shepparton:
Proposed Shopping Centre

Appendix E: SIDRA Output Ford Road Access

MOVEMENT SUMMARY

Site: 1 [Ford Road Access]

Ford Road Access
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Site Access											
1	L2	132	0.0	0.205	7.2	LOS A	0.9	6.1	0.39	0.90	47.5
3	R2	59	0.0	0.205	10.0	LOS B	0.9	6.1	0.39	0.90	47.1
Approach		191	0.0	0.205	8.0	LOS A	0.9	6.1	0.39	0.90	47.4
East: Ford Road											
4	L2	59	0.0	0.032	5.5	LOS A	0.0	0.0	0.00	0.58	48.7
5	T1	195	5.0	0.103	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		254	3.8	0.103	1.3	NA	0.0	0.0	0.00	0.13	58.0
West: Ford Road											
11	T1	165	5.0	0.121	0.3	LOS A	0.3	2.3	0.16	0.11	58.4
12	R2	37	0.0	0.121	6.6	LOS A	0.3	2.3	0.16	0.11	53.1
Approach		202	4.1	0.121	1.5	NA	0.3	2.3	0.16	0.11	57.7
All Vehicles		646	2.8	0.205	3.3	NA	0.9	6.1	0.16	0.35	55.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

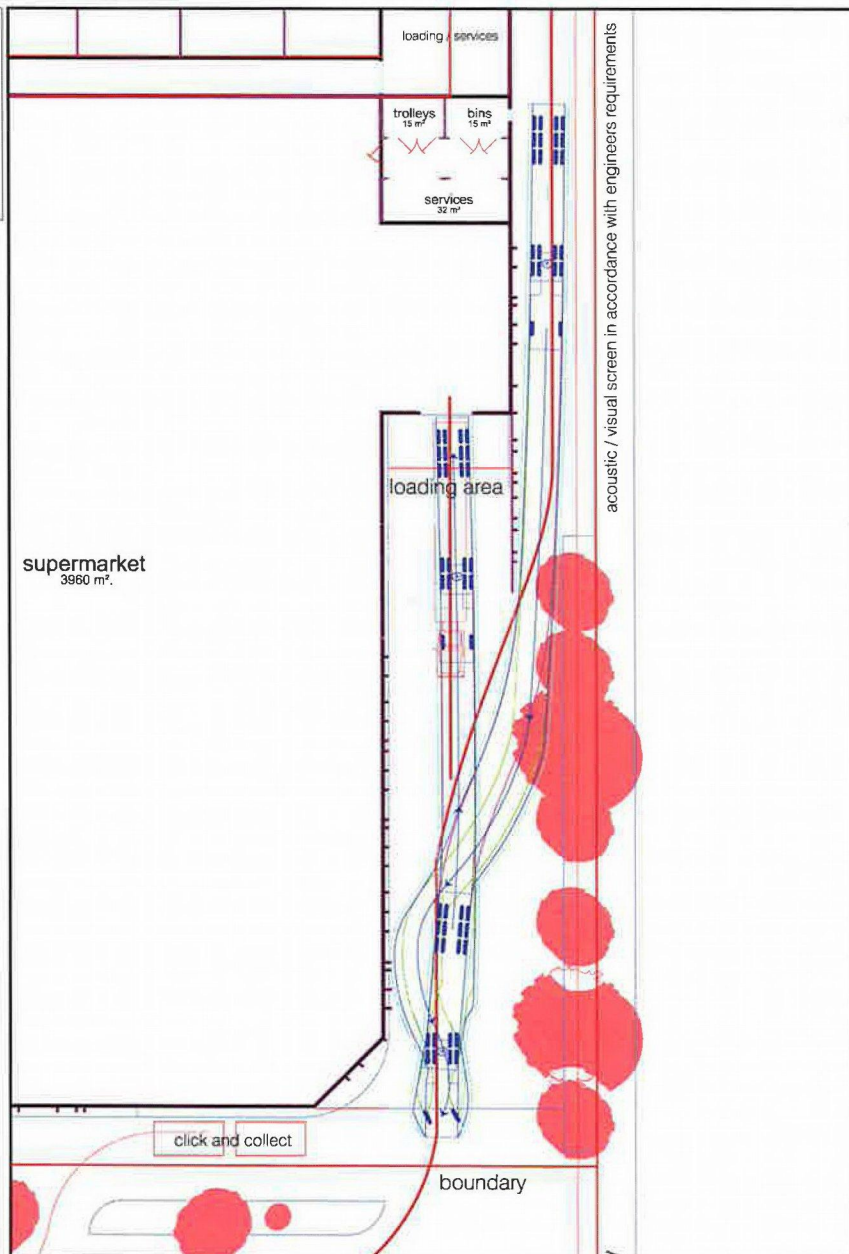
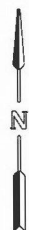
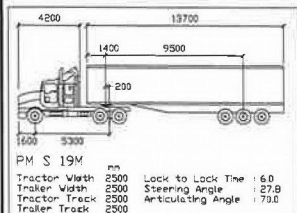
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Traffic Engineering Assessment

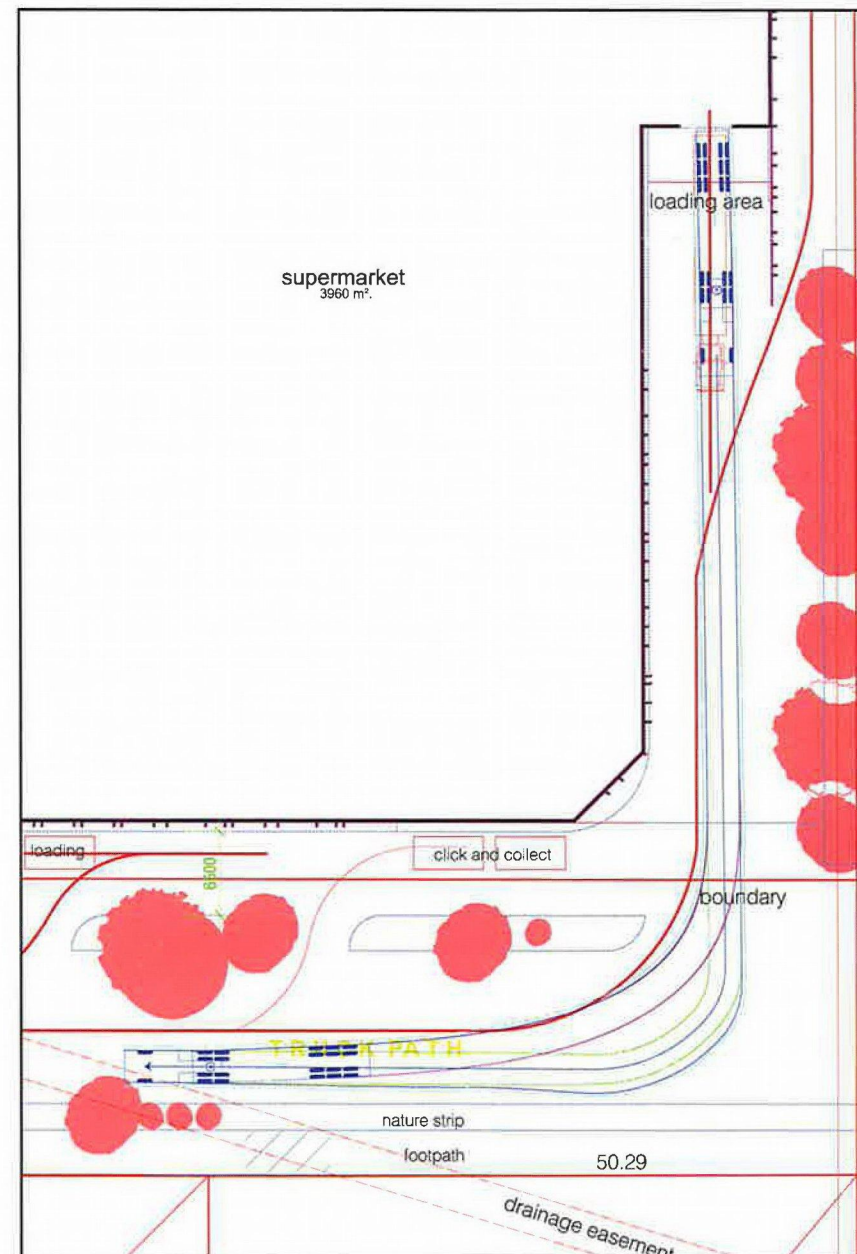
221-229 Goulburn Valley Highway and 10 Ford Road, Shepparton:
Proposed Shopping Centre

Appendix F: Swept Path Diagrams

Loading Bay - Autoturn IN



Loading Bay - Autoturn OUT



REV.	REVISION NOTES	REVISION DATE	GENERAL NOTES

DESIGNED:
D. Milder 24 JAN 2017
CHECKED:
H. TURNBULL 24 JAN 2017
FILE NAME:
19863-01B.DWG
ISSUE:
A



221-229 GOULBURN VALLEY HIGHWAY, SHEPPARTON NORTH
19m SEMI DESIGN SWEEP PATHS
PROPOSED MIXED-USE DEVELOPMENT
SCALE: 0 4 8
SHEET No. 01/01
19863-01B