

FABCOT PTY LTD

TRAFFIC REPORT FOR PLANNING
PROPOSAL FOR PROPOSED
SHOPPING CENTRE, OLD ILLAWARRA
ROAD, BARDEN RIDGE

DECEMBER 2012

COLSTON BUDD HUNT & KAFES PTY LTD
ACN 002 334 296
Level 18 Tower A
Zenith Centre
821 Pacific Highway
CHATSWOOD NSW 2067

Telephone: (02) 9411 2411
Facsimile: (02) 9411 2422
Email: cbhk@cbhk.com.au

REF: 8833/2

TABLE OF CONTENTS

1. INTRODUCTION 1

2. EXISTING CONDITIONS 3

3. IMPLICATIONS OF PLANNING PROPOSAL 9

I. INTRODUCTION

- I.1. Colston Budd Hunt & Kafes Pty Ltd has been retained by Fabcot Pty Ltd to prepare a report on traffic aspects of a planning proposal for a shopping centre at Barden Ridge. The site is located on the southern side of Old Illawarra Road, to the east of New Illawarra Road (opposite Driscoll Place), as shown on Figure I.
- I.2. We have previously prepared a traffic report ⁽¹⁾ for a development application (DA) for a shopping centre (some 3,300m² and 141 parking spaces) on the subject site in 2011. This consisted of a supermarket of some 2,800m² and specialty shops of some 500m². The JRPP refused the DA on planning and design grounds prompting lodgement of this Planning Proposal seeking to alter the zoning applicable to the site.
- I.3. The planning proposal is intended to allow for a shopping centre of similar size to that proposed in the 2011 DA. This report builds upon the information presented in our 2011 traffic report for the previous DA.
- I.4. This report has been prepared to address the following aspects:
- ❑ demonstrate that surrounding road network has capacity to cater for the enlarged shopping centre contemplated as part of the Planning Proposal;
 - ❑ determine appropriate location of car park access;
 - ❑ determine appropriate location and layout of loading dock; and
 - ❑ determine appropriate parking provision.
- I.5. The traffic implications of the planning proposal have been assessed through the following chapters:-

⁽¹⁾ Report on the Traffic Aspects of Proposed Shopping Centre, Old Illawarra Road, Barden Ridge, August 2011.

- Chapter 2 - Describing the existing situation; and
- Chapter 3 - Assessing the implications of the planning proposal.

2. EXISTING CONDITIONS

Site Location

- 2.1. The site is located on the southern side of Old Illawarra Road, to the east of New Illawarra Road (opposite Driscoll Place), as shown on Figure 1. The site is currently vacant land. Surrounding land use is residential to the east, a church to the north, school to the south and New Illawarra Road to the west.

Road Network

- 2.2. The road network in the vicinity of the site includes New Illawarra Road, Old Illawarra Road, Driscoll Place, Allies Road and Thomas Mitchell Drive. New Illawarra Road is located to the west of the site and runs in a north south direction. It is an arterial road connecting Heathcote Road in the south with Bangor Bypass to the north. In the vicinity of the site it is a four lane divided road with major intersections traffic signal controlled with additional turn lanes.
- 2.3. Old Illawarra Road is located on the eastern boundary of the site and is the major access point to Barden Ridge. Adjacent to the site it provides one traffic lane in each direction with kerbside parking. Along the site frontage the western side of the road is unformed with no kerb and gutter. To the north west of the site, Old Illawarra Road connects to New Illawarra Road at a traffic signal controlled intersection. From this intersection Old Illawarra Road continues to the north, parallel to New Illawarra Road. South of the site Old Illawarra Road provides access to the school and residential development.
- 2.4. Driscoll Place is located opposite the site and intersects with Old Illawarra Road at a priority controlled T-intersection with Driscoll Place the minor road. Driscoll
-

Place is a no through road providing access to residential development. It provides for two way traffic flow with kerb side parking.

- 2.5. Allies Road and Thomas Mitchell Drive provide access to the southern parts of Barden Ridge. They intersect with Old Illawarra Road at a four way intersection controlled by a single lane roundabout. The fourth leg to the intersection is the access to the school. Each road provides one traffic lane in each direction with kerb side parking.

Traffic Volumes

- 2.6. In order to establish existing traffic conditions, counts were undertaken during the weekday morning and afternoon peak periods at the following intersections:

- ❑ New Illawarra Road/Old Illawarra Road;
- ❑ Old Illawarra Road/Driscoll Place; and
- ❑ Old Illawarra Road/Thomas Mitchell Drive/Allies Road/School Access.

- 2.7. The surveys were undertaken in June 2011 prior to school holidays and covered the school set down and pick up periods. The morning the peak hour coincided with the students being dropped off at the adjacent school. However, in the afternoon the overall peak hour was the commuter peak (around 5.00pm) due to the higher traffic flows on New Illawarra Road. It was noted that during the early afternoon peak hour (around 3.15 pm coinciding with school pick up) that traffic flows through the roundabout on Old Illawarra Road and the school access were some 95% of the late afternoon peak hour.

- 2.8. The surveyed peak flows are summarised in Table 2.1.
-
-

Table 2.1 : Existing Two-Way Peak Hour Traffic Flows		
Location	Vehicles Per Hour (Two-Way)	
	Weekday Morning	Weekday Afternoon
New Illawarra Road – north of Old Illawarra Road – south of Old Illawarra Road	2120 1850	1840 1690
Old Illawarra Road – north of Old Illawarra Road – north of Driscoll Place – south of Driscoll Place	540 820 820	470 430 425
Driscoll Place – east of Old Illawarra Road	20	25
Allies Road – east of Old Illawarra Road	450	190
Thomas Mitchell Drive – south of Old Illawarra Road	150	215
School Access – west of Old Illawarra Road	325	50

2.9. The results in Table 2.1 reveal that:-

- ❑ New Illawarra Road carried some 1,690 to 2,120 vehicles per hour (two-way) during the peak periods;
- ❑ Old Illawarra Road carried some 425 to 820 vehicles per hour (two-way) during the peak periods. Traffic flows were highest in the weekday morning peak period when the school and commuter peak periods coincided;
- ❑ Driscoll Place carried some 20 to 25 vehicles per hour (two-way) during the peak periods; and
- ❑ Allies Road and Thomas Mitchell Drive carried some 150 to 450 vehicles per hour (two-way) during the peak periods.

Intersection Operations

2.10. The capacity of the road network is generally determined by the capacity of its intersections to cater for peak period traffic flows. The surveyed intersections have been analysed using the SIDRA program. SIDRA is designed to analyse isolated signal controlled intersections, roundabouts and priority intersections.

2.11. Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):-

- For Traffic Signals, the average delay per vehicle in seconds is calculated as Delay/(All Vehicles), for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:-

0 to 14	=	"A"	Good
15 to 28	=	"B"	Good with minimal delays and spare capacity
29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Satisfactory but operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other control mode.
>70	=	"F"	Unsatisfactory and requires additional capacity

- For give way and stop signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to following LOS:-

0 to 14	=	"A"	Good
---------	---	-----	------

15 to 28	=	“B”	Acceptable delays and spare capacity
29 to 42	=	“C”	Satisfactory but accident study required
43 to 56	=	“D”	Near capacity and accident study required
57 to 70	=	“E”	At capacity and requires other control mode.
>70	=	“F”	unsatisfactory and requires other control Mode

2.12. It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

2.13. The SIDRA analysis found that:

- the traffic signal controlled intersection of New Illawarra Road and Old Illawarra Road operates with average delays per vehicle of some 30 seconds in the weekday morning peak period. This represents level of service C, a satisfactory level of intersection operation. In the weekday afternoon peak period it operates with average delays per vehicle of some 25 seconds. This represents level of service B, a good level of intersection operation;
- the roundabout at the intersection of Old Illawarra Road with Thomas Mitchell Drive and Allies Road operates with average delays per vehicle for the movement with the highest average delay, of less than 15 seconds for both peak periods. This represents level of service A/B, a good level of intersection operation; and

- the intersection of Driscoll Place and Old Illawarra Road operates with average delays per vehicle for the movement with the highest average delay, of less than 20 seconds for both peak periods. This represents level of service B, a satisfactory level of intersection operation.

2.14. Observations found that for short periods during the morning school drop off and afternoon pick up periods, the queues back along Old Illawarra Road from the traffic signals at New Illawarra Road can be longer than the SIDRA analysis found. However, these queues dissipate quickly once the school set down/pick up is over.

Public Transport

2.15. Veolia Transport operates the 961 bus service along Old Illawarra Road past the site. This is a seven day a week service that connects Miranda with Barden Ridge via GyMEA TAFE, Sutherland, Bangor and Menai.

3. IMPLICATIONS OF PLANNING PROPOSAL

The Proposed Development

- 3.1. The Planning Proposal is intended to facilitate a shopping centre of some 3,300m² to 4,000m² with a supermarket of some 2,800m² to 3,800m² and specialty shops of some 200m² to 700m². Access would be provided from Old Illawarra Road. Depending on the specific access design selected, a roundabout would be constructed at the intersection of Old Illawarra Road and Driscoll Place.
- 3.2. The specific size of the components of the shopping centre, access location and design would be identified with a subsequent DA.
- 3.3. This chapter examines the implications of the planning proposal through the following sections:-
- ❑ public transport;
 - ❑ parking provision;
 - ❑ access, internal circulation and servicing;
 - ❑ traffic effects; and
 - ❑ summary.

Public Transport

- 3.4. As noted in Chapter 2, the site is accessible by the existing 961 service operated by Veolia Transport which connects Barden Ridge with Menai, Sutherland and Miranda. The site is therefore located to provide opportunities for staff and customers with a choice of modes for travel to the site.
-

- 3.5. The proposed development is therefore consistent with government policy and the planning principles of:
- (a) improving accessibility to employment and services by walking, cycling, and public transport;
 - (b) improving the choice of transport and reducing dependence solely on cars for travel purposes;
 - (c) moderating growth in the demand for travel and the distances travelled, especially by car; and
 - (d) supporting the efficient and viable operation of public transport services.
- 3.6. As part of the proposed development a bus stop could be provided on the western side of Old Illawarra Road (north of Driscoll Place).

Parking Provision

- 3.7. Sutherland DCP 2006 DCP refers to RMS Guidelines for parking requirements for traffic generating developments such as shopping centres. For shopping centres the RMS Guidelines suggest the following rates when the components of the shopping centre are known:
- Supermarkets – 4.2 spaces per 100m² GLA; and
 - Specialty shops – 4.5 spaces per 100m² GLA.
- 3.8. As noted above the shopping centre (3,300 to 4,000m²), subject to a separate DA, is likely to comprise a supermarket (2,800 to 3,800m² GLA) and specialty shops (200 to 700m² GLA). Applying the above rates the shopping centre would require

141 to 167 spaces parking spaces which could be accommodated within at grade and basement parking.

- 3.9. Appropriate bicycle, motor cycle parking and disabled parking should be provided in accordance with Council requirements.

Access, Internal Circulation and Servicing

- 3.10. Access to the site will be from Old Illawarra Road. During the assessment of the previous DA, RMS was approached to see if it would provide concurrence for access from New Illawarra Road (as it is a classified road). RMS advised that it would not grant its concurrence as:

- ❑ provision of access to and/or from New Illawarra Road would compromise the safety and efficiency of the New Illawarra Road;
- ❑ the site has alternative access via a non-classified road (Old Illawarra Road);
- ❑ provision of access to and/or from New Illawarra Road would not be consistent with Clause 101 of SEPP Infrastructure.

- 3.11. Access to Old Illawarra Road is subject to a number of constraints including the location of the shopping centre. Primary access to the car park is not recommended north of Driscoll Street as the proximity of the traffic signal controlled intersection with New Illawarra Road would limit access to left in/left out. Limiting the primary access driveway to left in/left out would not provide an appropriate level of accessibility to the shopping centre. However, a secondary car park access to Old Illawarra Road, north of Driscoll Place (with left in/left out) would be appropriate.

- 3.12. Primary car park access would best be located opposite Driscoll Place (via a new roundabout) or towards to the southern end of the site. At either of these
-

locations all turning movements to/from the site could be accommodated and an appropriate level of accessibility provided to the shopping centre.

- 3.13. Service vehicle access can be either separate or shared with the car park access. Within the site it is preferred to separate truck turning areas from customer parking areas. Service vehicles will be required to enter and depart the site in a forward direction. Provision of service vehicle access north of Driscoll Place may result in service vehicles being limited to left in/left out with a turn facility required for trucks to access the site (as all trucks would come from New Illawarra Road). In the previous DA this was provided by a roundabout at the intersection of Old Illawarra Road and Driscoll Place. However, if the service vehicle access was located around the middle of the Old Illawarra Road frontage (and north of Driscoll Place) right turn ingress could be considered as the number of vehicles accessing the loading dock would be much lower than the car park.
- 3.14. Provision of service vehicle access at or south of Driscoll Place would allow for right turns into the site.
- 3.15. The location of the access will impact on amenity and pedestrian accessibility. With respect to these two matters the access would be best located at the northern end of the site as traffic generated by the shopping centre (including service vehicles) would have the least impact on houses along the northern side of Old Illawarra Road and maximise pedestrian connectivity with the school and residential development to the south and east. Hence the provision of appropriate access will be a balance between providing the traffic requirements for access, minimising amenity impacts and providing good connectivity with the surrounding area.
- 3.16. Taking these factors into account, two access options are considered appropriate. These are:
-

- ❑ Option 1 - access as per the previous DA with car park access via a roundabout at Driscoll Place and service access on the northern part of the site. The roundabout at Driscoll Place would allow trucks to turn around. Parking would be provided on the southern part of the site and if required, in basement parking); and
- ❑ Option 2 – primary car park access on the southern part of the site (all movements permitted) with secondary car park access (left in/left out) on the northern part of the site. Service vehicle access would be shared with the primary car park access on the southern end of the site with a separate service area to the car park. Car parking would a combination of at grade (on the northern part of the site) and basement parking with a connection (at grade or through the basement) between the northern and southern parts of the site.

- 3.17. Parking and service areas should be designed to comply with AS2890.1-2004, AS2890.2-2002 and AS2890.6-2009 with regard to driveways, parking space dimensions, aisle widths, ramp grades, height clearances, sight lines and manoeuvring areas.

Traffic Effects

- 3.18. The traffic generated by the proposed development will have its largest effects during the weekday morning and afternoon peak periods.
- 3.19. Estimates of traffic generation of the proposed development have been made using RMS Guidelines. These are set out below:

Thursday Afternoon

- ❑ supermarket – 15.5 trips per 100m²; and
 - ❑ speciality shops – 4.6 trips per 100m².
-

- 3.20. Application of these rates would result in a traffic generation of some 490 to 600 vehicles per hour (two way) in the weekday afternoon peak period hour. Weekday morning traffic generation would be lower. A 50% traffic generation of the afternoon peak hour (240 to 300 vehicles per hour (two way)) has been adopted.
- 3.21. A proportion of the traffic will be passing trade, which are vehicles that are already in the existing traffic stream passing the centre. Some 15% to 25% of retail trips (based on surveys undertaken by the RTA) would be passing trade and multi purpose trips. For centres less than 10,000m² the RTA guide suggests a rate of 25%. Thus the net increase in traffic generation would be some 180 to 450 vehicles per hour (two way).
- 3.22. Traffic from the proposed development (based on the higher traffic generation of 230/460 vehicles per hour, two way) was assigned to the existing road network as shown on Figures 2 and 3, and summarised in Table 3.1.

Table 3.1 : Base Plus Development Two-Way Peak Hour Traffic Flows				
	Vehicles Per Hour (Two-Way)			
Location	Weekday Morning		Weekday Afternoon	
	Existing	With Dev	Existing	With Dev
New Illawarra Road				
– north of Old Illawarra Road	2120	+30	1840	+50
– south of Old Illawarra Road	1850	+30	1690	+50
Old Illawarra Road				
– north of Old Illawarra Road	540	+50	470	+120
– north of Allies Road	820	+90	425	+220
Allies Road				
– east of Old Illawarra Road	450	+50	190	+110
Thomas Mitchell Drive				
– south of Old Illawarra Road	150	+40	215	+110
School Access				
– west of Old Illawarra Road	325	+0	50	+0

- 3.23. Examination of Table 3.1 reveals that:

- ❑ traffic flows on New Illawarra Road would increase by some 30 to 50 vehicles per hour (two-way) in the peak periods;
- ❑ traffic flows on Old Illawarra Road would increase by some 50 to 90 vehicles per hour (two-way) in the weekday morning peak period. In the afternoon peak period the increase would be some 120 to 220 vehicles per hour (two-way). The greatest increase would be in the section between New Illawarra Road and Allies Road; and
- ❑ traffic flows on Allies Road and Thomas Mitchell Drive would increase by some 40 to 50 vehicles per hour (two-way) in the weekday morning peak period. In the afternoon peak period the increase would be some 110 vehicles per hour (two-way).

3.24. The above approach is based on traffic generated by the proposed shopping centre being 'new' traffic. This approach is conservative as it does not take into account the redistribution of existing trips from shopping centres in the area (such as Menai) that would change to use the proposed supermarket. The proposed supermarket would result in people within the primary catchment being located closer to a supermarket and hence having to travel less distance in order to undertake their weekly shopping. This would result in a reduction in vehicle kilometres travelled, with complementary environmental benefits of less fuel consumption, less vehicle emissions, and savings in travel time.

3.25. Based on information provided in the economic study that prepared for the previous DA (by Hill PDA) some 70% of the trade of the new shopping centre will transfer from Menai. Using this information the likely reduction in traffic generation to Menai has been estimated. As noted above, based on RTA Guidelines, the proposed shopping centre at Barden Ridge would have a weekday afternoon peak hour traffic generation of some 360 vehicles (two way), when passing trade is taken into account. This equates to some 3,600 vehicles per day (two way). Thus traffic to Menai would

be reduced by some 2,500 vehicles per day (two way). Similarly parking demand at Menai would be reduced by some 80 spaces (using the DCP 2006 rates).

- 3.26. The proposed shopping centre is located some 2.5 kilometres south of Menai shopping centre. Thus a proportion of customers that would shop at the proposed shopping centre would already be travelling in the vicinity of the site (along Old Illawarra Road). Thus customers who choose to shop at the new shopping centre would have less distance to travel with associated reduction in fuel costs, vehicle emissions and reduced travel times. Based on reduction in traffic at Menai, an estimate in the savings in vehicle kilometres travelled (VKT) per year could be in the order of 2.2 million VKT.
- 3.27. The intersections along Old Illawarra Road have been analysed with development traffic in place, using SIDRA. The analysis found that:-
- the traffic signal controlled intersection of New Illawarra Road and Old Illawarra Road would operate with average delays per vehicle of some 32 seconds in the weekday morning peak period. This represents level of service C, a satisfactory level of intersection operation. In the weekday afternoon peak period it operates with average delays per vehicle of some 28 seconds. This represents level of service B, a good level of intersection operation;
 - the roundabout at the intersection of Old Illawarra Road with Thomas Mitchell Drive and Allies Road would operate with average delays per vehicle for the movement with the highest average delay, of less than 15 seconds for both peak periods. This represents level of service A/B, a good level of intersection operation; and
 - a roundabout at the intersection of Driscoll Place, Old Illawarra Road and the site access would operate with average delays per vehicle for the movement
-
-

with the highest average delay, of less than 15 seconds for both peak periods. This represents level of service A/B, a good level of intersection operation.

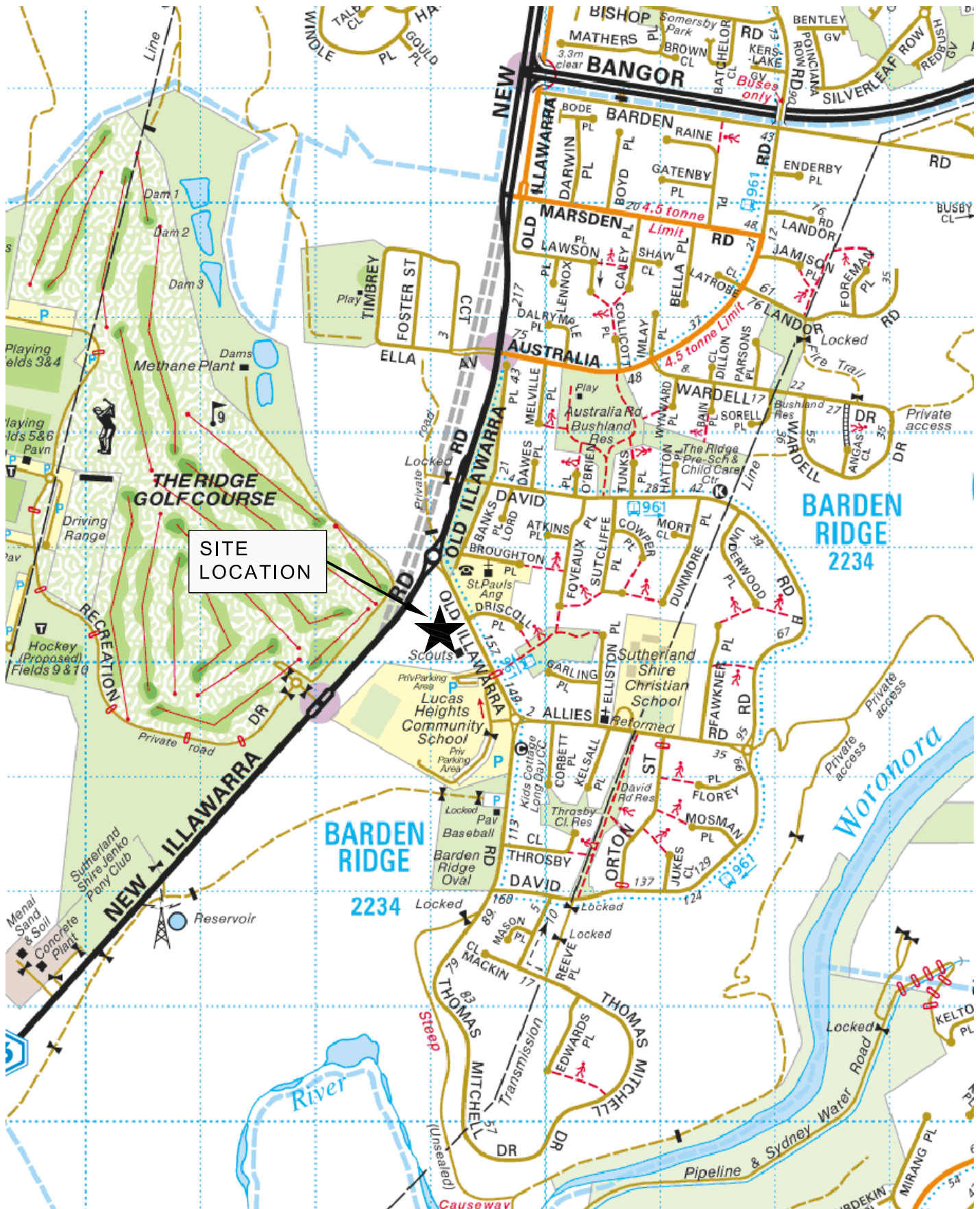
- 3.28. A review of queue lengths along Old Illawarra Road found that the 95% back of queue from New Illawarra Road (northbound queue) would be some 50 to 70 metres and from a roundabout at Driscoll Place (southbound) would be some 20 metres. Thus traffic queues would not extend back to either intersection (separated by some 115 metres).
- 3.29. In summary, the surrounding road network can accommodate the additional traffic generated by the proposed development with intersections operating at satisfactory or better levels of service in both peak periods. The Planning Proposal to facilitate the intended shopping centre would not require any further upgrades to the surrounding road network, except for a roundabout at the intersection of Old Illawarra Road and Driscoll Place as outlined in Option 1. This would be funded by the proponent.

Summary

- 3.30. In summary, the main points relating to the Planning Proposal for the shopping centre are:-
- (i) the proposed development will strengthen demand for public transport services;
 - (ii) parking can be provided in accordance with RMS guidelines with a likely provision of up to some 167 spaces;

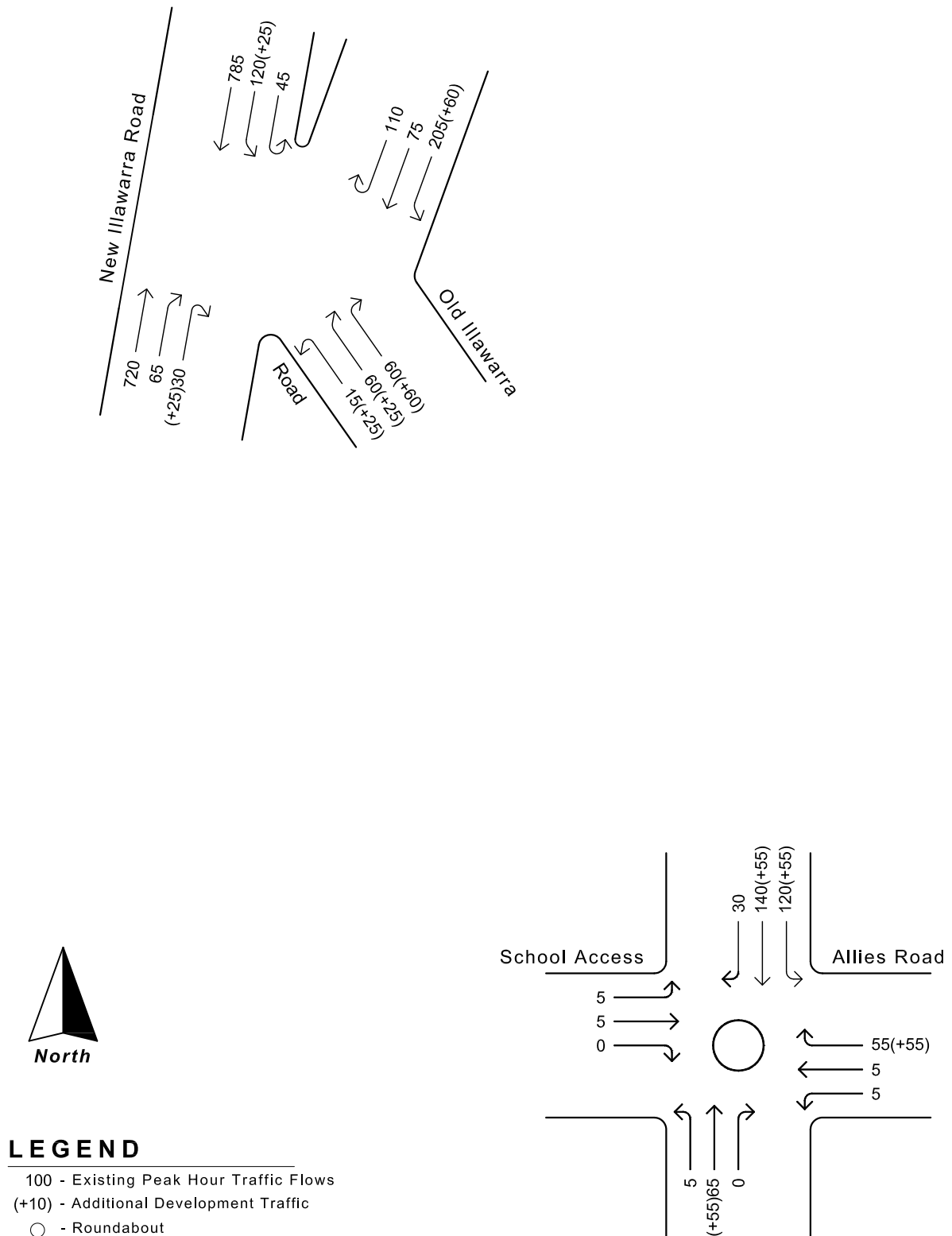
- (iii) the provision of appropriate access will be a balance between providing the traffic requirements for access, minimising amenity impacts and providing good connectivity with the surrounding area;
 - (iv) two access options are considered appropriate:
 - Option 1 - access as per the previous DA with car park access via a roundabout at Driscoll Place and service vehicle access on the northern part of the site. The roundabout at Driscoll Place would allow trucks to turn around. Parking would be provided on the southern side of the site and if required, in basement parking); and
 - Option 2 – primary car park access on the southern part of the site (all movements permitted) with secondary car park access (left in/left out) on the northern part of the site. Service vehicle access would be shared with the primary car park access on the southern end of the site with a separate service area to the car park. Car parking would a combination of at grade (on the northern part of the site) and basement parking with a connection (at grade or through the basement) between the northern and southern parts of the site.
 - (v) access arrangements, servicing and parking layout, should be designed to comply with AS2890.1-2004, AS2890.2-2002 and AS2890.6-2009;
 - (vi) the surrounding road network can cater for the traffic generated by the proposed larger shopping centre;
 - (vii) the Planning Proposal to facilitate the intended shopping centre would not require any further upgrades to the surrounding road network, except for a roundabout at the intersection of Old Illawarra Road and Driscoll Place as outlined in Option 1. This would be funded by the proponent;
-

- (viii) the proposed shopping centre would result in a reduction in traffic travelling to Menai and would result in a substantial reduction in vehicle kilometres travelled, with associated reduction in fuel costs, vehicle emissions and travel times; and
- (ix) the capturing of traffic within the local area would reduce traffic around Menai, with consequent reduced traffic and parking impacts.



Location Plan





Existing weekday afternoon peak hour traffic flows plus development traffic