

HMC CAPITAL

TRAFFIC REPORT FOR PROPOSED
EXTENSIONS TO BELROSE SUPER
CENTRE

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I. INTRODUCTION

- I.1 Colston Budd Rogers and Kafes Pty Ltd has been retained by HMC Capital to prepare a traffic and parking report to support the development application for the proposed extensions to Belrose Super Centre. The centre is located on the northern side of Garigal Road, between Forest Way and Niangala Close, as shown on Figure 1. The existing centre provides some 34,810m² bulky goods/large format retail area, with access from Niangala Close and Garigal Road.
- I.2 The proposed extensions provide an increase of some 1,660m² comprising additional large format retail area, improved dinning precinct and enhancement of the Level 2 roof top. To accommodate the proposed extensions, the existing Level 2 car park would be reconfigured. Access to and from the centre will be unchanged.
- I.3 The implications of the proposed extensions are addressed through the following chapters:
- Chapter 2 - description the existing conditions; and
 - Chapter 3 - assessing the traffic and parking implications of the proposed extensions.

2. EXISTING CONDITIONS

Site Location and Road Network

- 2.1 The centre is located within the Austlink Corporate Park, on the northern side of Garigal Road between Forest Way and Niangala Close, as shown on Figure 1. Access to the centre is provided from Niangala Close (car park and service access) and Garigal Road (basement car park egress and service egress).
- 2.2 Surrounding land use comprises Bunnings to the north and commercial development to the south and west (opposite side of Garigal Road and Niangala Close). Garigal National Park is located to the east (opposite Forest Way).
- 2.3 The road network in the vicinity of the site comprises Mona Vale Road, Forest Way, Garigal Road and Niangala Close. Mona Vale Road is located to the north and forms part of Metroad 3, linking Mona Vale in the north to Macquarie Park in the south. In the vicinity of the site, Mona Vale Road provides a four lane divided carriageway, clear of intersections. At its intersection with Forest Way, Mona Vale Road provides three traffic lanes in each direction, with separate storage lanes for turning vehicles. The intersection of Mona Vale Road and Forest Way is controlled by traffic signals.
- 2.4 Forest Way is located along the eastern boundary of the site and provides an arterial road linking Mona Vale Road in the north to Warringah Road in the south. Adjacent to the site, Forest Way provides a divided carriageway with three northbound traffic lanes and two southbound traffic, clear of intersections.
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Additional storage lanes are provided for turning vehicles. The intersection of Forest Way and Garigal Road is controlled by traffic signals.

- 2.5 Garigal Road is located along the southern boundary of the site and provides access into the Austlink Business Park. Adjacent to the site, Garigal Road provides a four lane divided road.
- 2.6 Niangala Close is located along the western boundary of the site. It provides access to the centre, Bunnings and commercial development on the western side of the road. Niangala Close is a no through road with one traffic lane and one parking lane in each direction, clear of intersections. The intersection of Niangala Close, Narabang Way and Garigal Road is controlled by a two lane roundabout. A turning head is provided at the northern end of Niangala Close and this functions as a roundabout, providing access to Bunnings and the Level 2 rooftop car park of the Belrose centre.

Traffic Flows

- 2.7 Traffic generated by the proposed extensions will have its greatest effects during the Thursday afternoon and Saturday midday peak periods. In order to gauge traffic conditions, counts were undertaken during these times at the following intersections:
- ❑ Forest Way/Garigal Road;
 - ❑ Garigal Road/Niangala Close/Narabang Way; and
 - ❑ Garigal Road and Niangala Close Super Centre access driveways.

- 2.8 The results of the surveys are shown in Figures 2 and 3, and summarised in Table 2.1.

Table 2.1: Existing Peak Hour Two-Way (sum of both directions) Traffic Flows		
Road/Location	Thursday Afternoon	Saturday Midday
Forest Way – north of Garigal Road – south of Garigal Road	2885 3220	3035 3375
Garigal Road – west of Forest Way – east of Niangala Close	865 800	1360 1196
Niangala Close – north of Garigal Road	455	1240
Narabang Way – west of Niangala Close – south of Garigal Road	605 300	440 125
Site Access Driveways – Garigal Road (egress only) – Niangala Close (basement) – Niangala Close (roof top)	50 210 120	140 375 270

- 2.9 Table 2.1 reveals the following:

- Forest Way traffic flows are some 2,890 to 3,220 vehicles per hour two-way during the Thursday afternoon and some 3,040 to 3,380 vehicles per hour two-way during Saturday midday;
- Gadigal Road traffic flows are some 800 to 870 vehicles per hour two-way during the Thursday afternoon and some 1,200 to 1,360 vehicles per hour two-way during Saturday midday;

- ❑ Niangala Close traffic flows are some 460 vehicles per hour two-way during the Thursday afternoon and some 1,240 vehicles per hour two-way during Saturday midday;
- ❑ Narabang Way traffic flows are some 300 to 600 vehicles per hour two-way during the Thursday afternoon and some 100 to 440 vehicles per hour two-way during Saturday midday; and
- ❑ the existing Super Centre generates some 380 vehicle per hour two-way during the Thursday afternoon and some 790 vehicles per hour two-way during Saturday midday.

Intersection Operations

- 2.10 The capacity of the road network is largely determined by the capacity of its intersections to cater for peak period traffic flows. The intersections of Forest Way/Garigal Road and Garigal Road/Niangala Close/Narabang Way have been analysed using SIDRA 9 Network Model for the traffic flows shown in Figures 2 and 3.
- 2.11 SIDRA simulates the operations of intersections to provide a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle. 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 $\text{delay}/(\text{all vehicles})$, 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 analysis found that:

- the signalised intersection of Forest Way and Garigal Road is operating with average delays of less than 25 seconds per vehicle during the Thursday afternoon and Saturday midday. This represents level of service B, a good level of intersection operation;
- the roundabout controlled intersection of Garigal Road/Niangala Close/Narabang Way is operating with average delays, for the movement with the highest average delay, of less than 15 seconds per vehicle during peak periods. This represents a level of service A/B, a good level of intersection operation.

Parking

2.14 Existing parking provision is some 1,040 spaces. Parking surveys were undertaken on Saturday 20 August 2022, between 10:00am to 3:00pm. The results of the surveys are shown in Table 2.1.

2.15 The peak parking demand was some 455 vehicles observed at 2:00pm. This represents a parking rate for the centre of one space per 76.5m². The parking surveys found that the busiest parking levels were basement Level P2 and Level 2 roof top.

- 2.16 By comparison observations undertaken on Saturday 30 October 2021 (post Covid-19 restrictions) found a peak parking demand of some 635 vehicles, representing a parking rate of one space per 54.8m².

Table 2.1: Parking Survey Results – Saturday 20 August 2022	
Time	On-Site Parking Demand
10:00am	270
11:00am	380
11:30pm	410
12:00pm	425
12:30pm	420
1:00pm	430
1:30pm	435
2:00pm	455
3:00pm	405

Public Transport

- 2.17 Public transport services in the area are provided by buses with the nearest bus stops located on Garigal Road (adjacent to the centre) and on Forest Way (south of Garigal Road). Pedestrian access across Garigal Road and Forest Way is provided via pedestrian crossing facilities at the traffic signals at the intersection of Forest Way and Garigal Road.
- 2.18 Forest Coach Line, in association with Transport NSW, operate a number of local and regional bus services, including:
- ❑ Route 141 - Austlink to Manly via Frenchs Forest;
 - ❑ Route 193 - Austlink to Warringah Mall via Frenchs Forest;

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- ❑ Route 196 - Mona Vale to Gordon;
 - ❑ Route 197 - Mona Vale to Macquarie Centre;
 - ❑ Route 260 - Terrey Hills to North Sydney;
 - ❑ Route 270 - Terrey Hills to City QVB;
 - ❑ Route 271 - Belrose to City QVB; and
 - ❑ Route 284 - Duffys Forest to Terrey Hills and Chatswood.

2.19 Routes 141, 193, 196, 197, 270 and 271 operate along Garigal Road past the centre. The 141 and 193 services connect Austlink with Manly and Warringah Mall. These services operate seven days at 60 minutes frequency throughout the day, with additional services at peak times. The 196 and 197 services connect Mona Vale with Gordon and Macquarie Centre. These services operate seven days a week at 30 to 60 minutes frequency with additional services at peak times. The 270 and 271 services connect Terrey Hills with the City QVB via Frenchs Forest. These services operate seven days a week at 30 to 60 minutes frequency with additional services at peak times.

2.20 Forest Coach Lines also operates routes 260, 270X and 284 along Forest Way. These services connect Duffys Forest and Terrey Hills with North Sydney, City QVB and Chatswood respectively. The 260 service operates Monday to Friday and the 284 service operates Monday to Saturday. The 270X service is an express service between Terrey Hills and City QVB, operating in the weekday commuter peak periods.

2.21 Overall, the centre is well serviced by existing public transport services.

3. IMPLICATIONS OF PROPOSED EXTENSIONS

- 3.1 The proposed extensions are an increase of some 1,660m² comprising additional large format retail area, improved dining precinct and enhancement of the Level 2 roof top.
- 3.2 To accommodate the proposed extensions, the existing Level 2 car park will be reconfigured. Parking provision will be 974 spaces. No changes are proposed to existing access arrangements.
- 3.3 This chapter assesses the implications of the proposed extensions through the following sections:
- ❑ public transport, walking and cycling;
 - ❑ parking provision;
 - ❑ access, servicing and internal layout;
 - ❑ traffic effects;
 - ❑ draft construction traffic management plan; and
 - ❑ summary.

Public Transport, Walking and Cycling

- 3.4 As discussed in Chapter 2, the site is well serviced by public transport, with regular bus services operating along Garigal Road and Forest Way (adjacent to the site), accessing surrounding areas. These services offer alternative travel modes to and from the site, other than by private vehicle.
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- 3.5 Northern Beaches Council is proposing an extension of the existing shared path network through Forest Way, Belrose, to provide a safer and more accessible pedestrian and bicycle route to surrounding schools, shops, businesses and connections. To provide accessibility for cyclists, appropriate bicycle parking will be provided within the development.
- 3.6 The proposed extensions will therefore be accessible by public transport, walking and cycling. It will increase employment close to existing public transport, strengthening the demand for these services and supporting the efficient and viable operation of the services.
- 3.7 The proposed extensions are therefore consistent with government policy and the planning principles of:
- (a) providing development that is accessible 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.
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Parking Provision

- 3.8 Northern Beaches Council's 'Warringah DCP 2011' sets out parking requirements for new developments. For large format retail (bulky goods) developments the DCP suggests comparisons must be drawn with other similar developments.
- 3.9 As noted in Chapter 2, the existing centre had a Saturday (busy day of the week) peak parking demand in August 2022 of one space per 76.5m². This compares to a Saturday peak parking demand in October 2021 of one space per 54.8m².
- 3.10 Applying the higher rate of one space per 54.8m², the extended centre of 36,470m² would require 666 spaces. This requirement is readily satisfied by the proposed provision of 974 spaces.
- 3.11 Typically, for large homemaker centres, parking is provided that meets parking demands for late November/early December. For this period, the TfNSW guide indicates that retail developments are some 10% to 20% busier than October.
- 3.12 The peak parking demands of the extended centre would therefore be some 735 to 800 spaces in this period. The proposed parking provision of 974 spaces will be able to cater for these levels of parking demand.
- 3.13 Bicycle and disabled parking will be provided in accordance with Council requirements.
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Access, Servicing and Internal Layout

- 3.14 No changes to the existing access arrangements are proposed. On Level 2 the existing car park will be reconfigured to accommodate the proposed extensions. Modifications to the car park will be in accordance with the requirements of the Australian Standard for Parking Facilities (Part 1: Off-street car parking), AS2890.1-2004.
- 3.15 The new retail tenancies on Level 2 will be serviced via the existing eastern loading dock located on Level 1 and a new loading bay located adjacent to the proposed Level 2 extensions. The new loading bay will be designed to cater for medium rigid trucks up to 8.8 metres and will be designed in accordance with the requirements of the Australian Standard for Parking Facilities (Part 2: Off-street commercial vehicle facilities), AS2890.2-2018.
- 3.16 Following DA approval, access arrangements, parking layout, servicing and vehicle swept paths should be reviewed and confirmed for compliance certification by other arm's length consultants.

Traffic Effects

- 3.17 As noted in Chapter 2, the existing centre generates some 380 and 785 vehicles per hour two-way during the Thursday afternoon and Saturday midday. These are generation rates of 1.1 and 2.3 vehicles per 100m².
- 3.18 The proposed extensions (some 1,660m²) would therefore generate an additional some 20 and 40 vehicles per hour two-way during Thursday afternoon and Saturday midday. These are low additional traffic flows.
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- 3.19 The additional traffic has been assigned to the road network, with the results summarised in Table 3.1 and shown in Figures 2 and 3.

Table 3.1: Existing Peak Hour Two-Way Plus Additional Development (sum of both directions) Traffic Flows				
Road/Location	Thursday Afternoon		Saturday Midday	
	Existing	Plus Development	Existing	Plus Development
Forest Way				
– north of Garigal Road	2885	+10	3035	+10
– south of Garigal Road	3220	+10	3375	+20
Garigal Road				
– west of Forest Way	865	+20	1360	+30
– east of Niangala Close	800	+20	1196	+25
Niangala Close				
– north of Garigal Road	455	+20	1240	+35
Narabang Way				
– west of Niangala Close	605	-	440	+10
– south of Garigal Road	300	-	125	-
Site Access Driveways				
– Garigal Road (egress only)	50	-	140	+5
– Niangala Close (basement)	210	+5	375	+15
– Niangala Close (roof top)	120	+10	270	+20

- 3.20 The intersections previously analysed in Chapter 2 have been reanalysed using SIDRA 9 Network Model for the traffic flows shown in Figures 2 and 3. The analysis found that:

- the signalised intersection of Forest Way and Garigal Road will continue to operate with average delays of less than 25 seconds per vehicle during the Thursday afternoon and Saturday midday. This represents level of service B, a good level of intersection operation;
- the roundabout controlled intersection of Garigal Road/Niangala Close/Narabang Way will continue to operate with average delays, for the

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

- 3.21 With the additional traffic generated by the proposed extensions the surrounding intersections will continue to operate at their existing good levels of service.

Draft Construction Traffic Management Plan

- 3.22 The construction methodology, process and staging will be finalised when a builder has been appointed. The CTMP will be prepared in accordance with Council's requirements. It will be prepared prior to the commencement of work, taking into account relevant consent conditions.
- 3.23 The construction activity will be staged to maintain the on-going operation of the centre during construction. Access to the centre during demolition and construction will be maintained from Niangala Close and Garigal Road.
- 3.24 Part of the Level 2 car park will be enclosed and converted into a temporary on-site construction compound. Access to the construction compound will be provided via the existing ramp accessing the Level 2 and roof top car parking areas from Niangala Close.
- 3.25 During demolition and construction, all construction vehicles and materials handling, including the removal of spoil and delivery of construction material, will be accommodated on-site. Construction hoarding and containment fencing will be erected around the perimeter of the construction compound, with scaffolding, containment fencing and overhead protection, provided where required.
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- 3.26 Access to the roof top construction compound will be restricted to medium rigid trucks up to 8.8 metres. Larger construction vehicles will be accommodated within the eastern loading dock on Level 1 (adjacent to the construction compound), with construction material lifted onto the site via the use of a tower crane.
- 3.27 Access to and from the site will be provided via the existing loading dock access driveways onto Garigal Road and Niangala Close, and via existing access ramp to the roof top level 2. The accesses will minimise effects on adjacent loading activity and customer parking for the on-going operation of the centre.
- 3.28 Construction vehicles will use the same travel paths used by other service vehicles accessing the Level 1 loading dock or vehicles accessing the Level 2 car park. The temporary construction access to the Level 2 construction compound and the Level 1 loading dock materials lifting area will be managed and controlled by appropriately qualified traffic controllers. All trucks accessing the site will be required to enter and exit in a forward direction. No construction vehicles will be permitted to reverse in or out of the site compound.
- 3.29 Construction vehicles will generally include single unit dump trucks, concrete trucks and large rigid trucks. Trucks will not be permitted to queue on-street. An appropriate on-site truck queuing area will be provided within the Level 2 construction compound.
- 3.30 Traffic controllers will be located within the site and will manage construction vehicle access and pedestrian movements adjacent to the temporary construction access points. They will ensure that the access points and driveways are kept clear at all times, to allow trucks unobstructed access to the site and ensure that
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trucks do not queue on-street. They will not enter the public road reserve or attempt to stop traffic within Garigal Road or Niangala Close. Trucks exiting the site will give way to traffic and pedestrians.

- 3.31 The construction access points will be located to provide appropriate sight lines for construction vehicle access, with regards to the number, type and size of construction vehicles. Traffic and pedestrian warning signs will be erected adjacent to the access points, in accordance with SafeWork NSW requirements.
- 3.32 Truck drivers will be advised of the designated truck routes to and from the site and of the presence of traffic controllers at the construction access points. Truck drivers will be required to observe the traffic controllers directions at all times. All traffic controllers will be fully qualified, with the relevant TfNSW Traffic Controllers qualifications.
- 3.33 The appointed builder/contractor will be responsible for the preparation of the CTMP, which will be prepared prior to the commencement of work, incorporating the conditions of consent.
- 3.34 Site operations, signage, construction fencing/hoarding, overhead protection, safety barriers and line marking detail will be provided in accordance with the Australian Standards and the TfNSW Manual for Traffic Control at Work Sites. A copy of the final CTMP will be kept on site at all times. Signage detail, traffic management, the control of pedestrians in the vicinity of the site, and control of construction vehicles entering and exiting the site will be the responsibility of the site contractor.
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3.35 The final CTMP will include the following:

- ❑ all construction activity to be provided on-site;
- ❑ maintain appropriate parking for customers associated with the on-going operation of the centre;
- ❑ construction vehicle access to be provided from Garigal Road and Niangala Close;
- ❑ maintain access to properties located in the vicinity of the site at all times during the construction period;
- ❑ minimize the loss of on-site parking;
- ❑ maintain access for delivery vehicles associated with the on-going operation of the centre;
- ❑ manage and control construction traffic movements on the adjacent road network and vehicles movements to and from the construction site;
- ❑ trucks to enter and exit the site in a forward direction;
- ❑ maintain traffic capacity at intersections and mid block in the vicinity of the site;
- ❑ restrict construction vehicles to designated truck routes through the area;

- ❑ construction vehicle work zones to be provided adjacent to the construction activity on Level 2;
 - ❑ construction access points, on-site work zones and material handling areas to be managed and controlled by qualified traffic controllers in accordance with a safe work method statement and appropriate traffic control plans;
 - ❑ construction hoarding/fencing and scaffolding to be erected around the construction site, with overhead protection provided where required;
 - ❑ construction work to be restricted to approved hours of construction. Any work outside the approved hours would be subject to prior approval from Northern Beaches Council;
 - ❑ traffic controllers to ensure that the construction access points are kept clear at all times, to allow trucks unobstructed access to the site;
 - ❑ the management of the site works will be the responsibility of the site contractor/builder;
 - ❑ provide a convenient and appropriate environment for pedestrians;
 - ❑ pedestrian activity adjacent to the site access points will be managed and controlled by qualified traffic controllers;
 - ❑ pedestrian arrangements, construction activity and erection of safety fencing will be provided in accordance with SafeWork NSW requirements;
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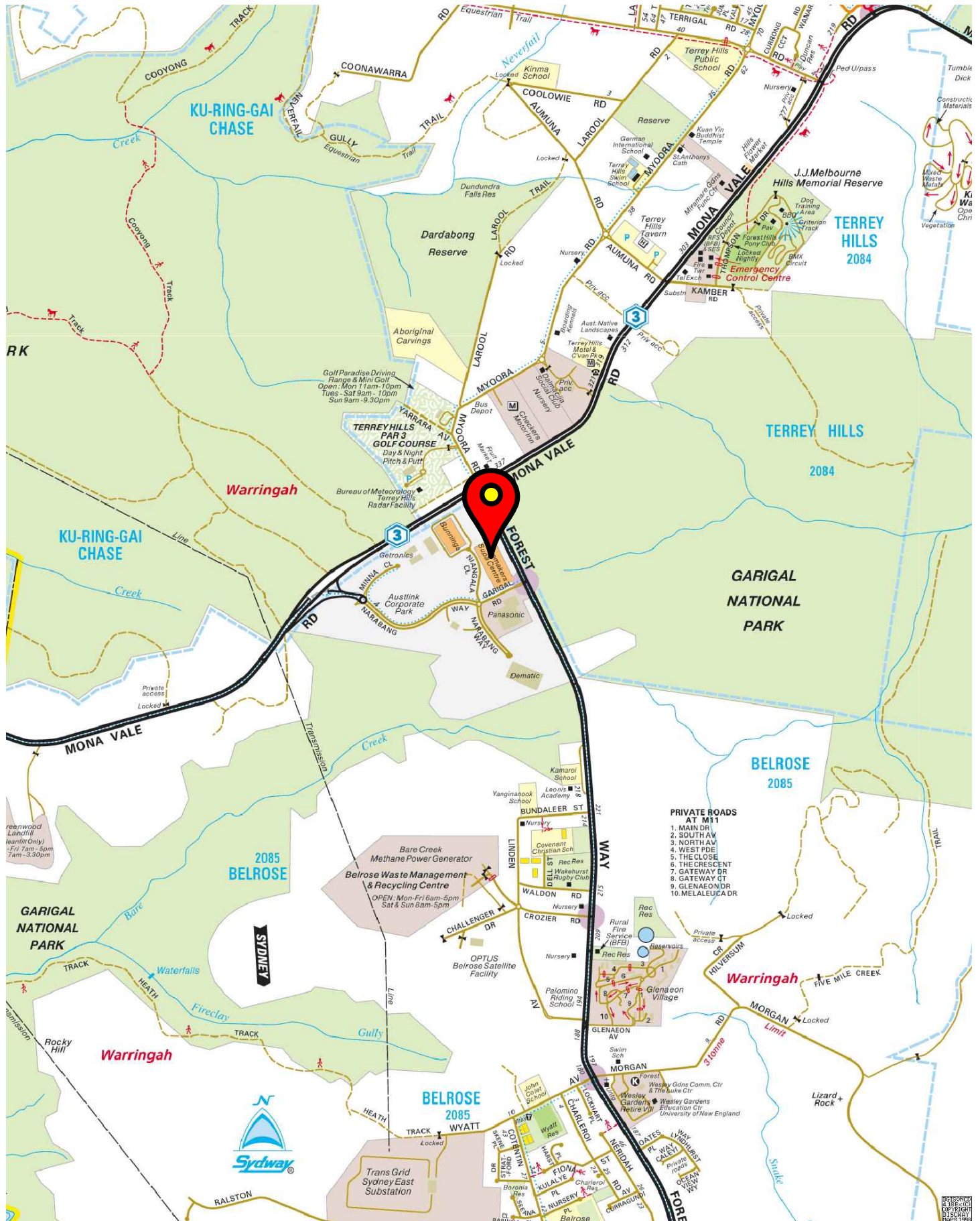
- ❑ the site contractor/builder will be responsible for the management of the site, the movement of trucks on and off the site, signage detail, traffic management and the control of pedestrians; and
- ❑ construction signage to be provided in accordance with Australian Standards and TfNSW Manual for Traffic Control at Work Sites.

Summary

3.36 In summary, the main points relating to the implications of the proposed extensions are as follows:

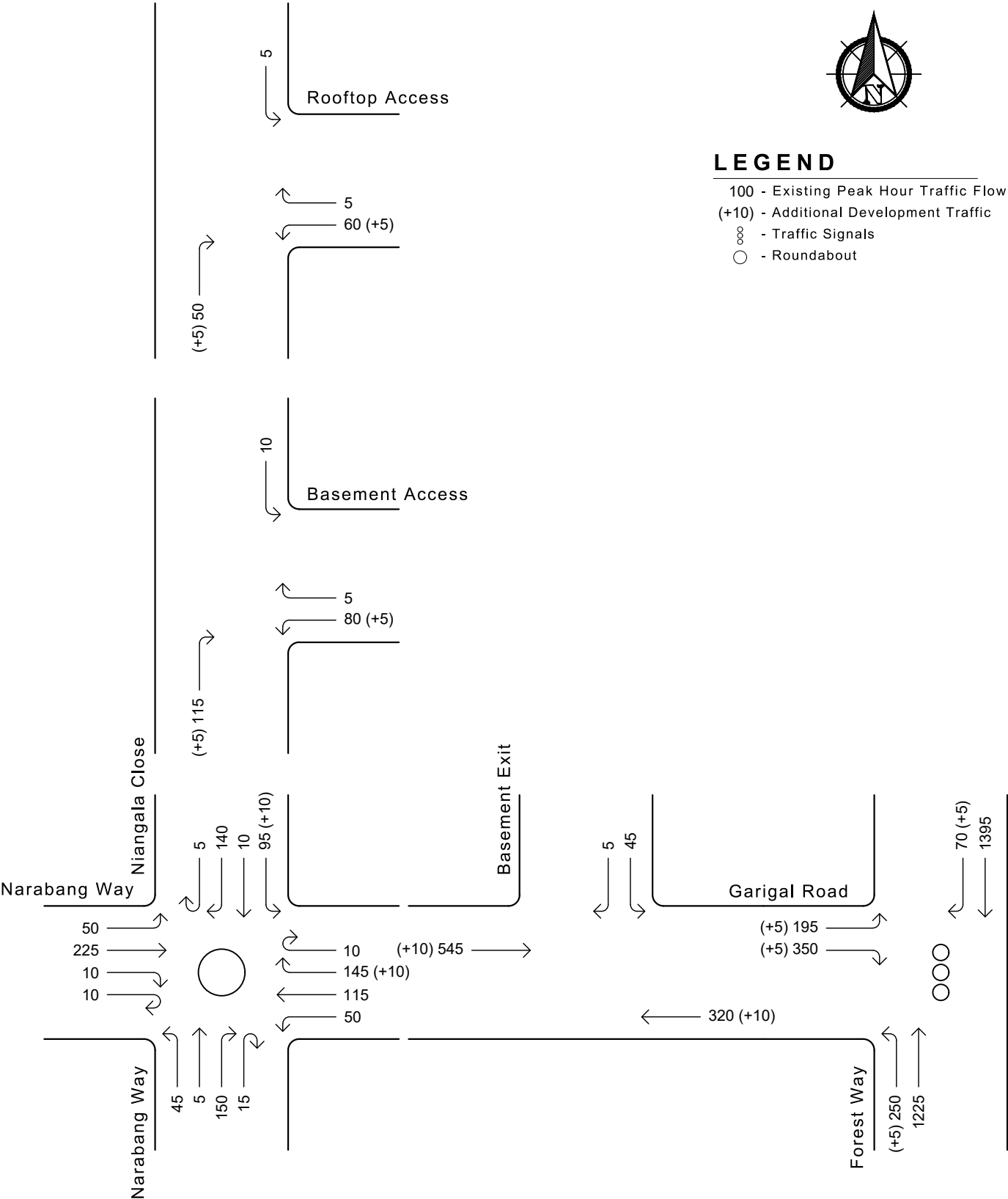
- i) the proposed extensions provide an increase of some 1,660m²;
- ii) the existing site is well serviced by public transport (buses) and active transport (walking and cycling) which provide opportunities for staff/customers to travel to/from the site by means other than car;
- iii) the proposed parking provision of some 974 spaces is appropriate;
- iv) access, parking and servicing will be provided in accordance with the Australian Standards;
- v) following DA approval, access arrangements, parking layout, servicing and vehicle swept paths should be reviewed and confirmed for compliance certification by other arm's length consultants;

- vi) the proposed extensions will have a minor traffic generation of some 20 to 40 vehicles per hour two-way during peak periods;
- vii) surrounding intersections would continue to operate at their existing good levels of service; and
- viii) a draft CTMP has been prepared.



Click: <https://goo.gl/maps/xxxxxxxxxx>

Location Plan



Existing Thursday afternoon
peak hour traffic flows plus
development traffic
Figure 2

