

CROWN GROUP

TRAFFIC AND TRANSPORT
ASSESSMENT FOR AMENDED
MOD4 S75W APPLICATION FOR
SOUTHERN SITE OF EASTLAKES
SHOPPING CENTRE

MAY 2019
(MODIFIED OCTOBER 2019)

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TABLE OF CONTENTS

1. INTRODUCTION	1
2. IMPLICATIONS OF AMENDED MOD4 S75W APPLICATION FOR SOUTHERN SITE	5

I. INTRODUCTION

- I.1 Colston Budd Rogers and Kafes Pty Ltd has been commissioned by Crown Group Ltd to prepare the traffic and transport assessment for an amended development scheme for the southern site of Eastlakes Shopping Centre. The amended scheme has been prepared in respond to matters raised in submissions with regards to the MOD4 S75W modifications to the southern site.
- I.2 The Eastlakes Shopping Centre is located south of Gardeners Road at Eastlakes, and is generally bounded by Gardeners Road, Evans Avenue, Barber Avenue and Eastlakes Reserve, as shown on Figure I.
- I.3 Project Approval (MP09_0146) for the northern and southern sites was granted consent by the Planning Assessment Commission on 19 September 2013 for the construction of a mixed use development incorporating basement car parking, ground floor retail area, and residential development above, communal open space, public domain landscaping and associated infrastructure works. The approved development comprised:
- ❑ 404 residential units;
 - ❑ 14,404m² GFA of retail and community area;
 - ❑ parking provision of 916 spaces.
- I.4 We previously prepared a traffic and transport report⁽¹⁾ to support the Part 3A application of that Project Approval.

⁽¹⁾ ““Transport and Accessibility Impact Assessment for Part 3A Application for the Proposed Redevelopment of Eastlakes Shopping Centre”, July 2012, Colston Budd Hunt & Kafes Pty Ltd.

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- I.5 Subsequently, a Modified Project Approval (MP09_I46MOD1) incorporating modifications to the northern site was approved, comprising:
- ❑ 425 residential apartments;
 - ❑ 14,591m² (13,086 m² GLA) of retail and community area;
 - ❑ 980 parking spaces.
- I.6 We prepared a traffic report⁽²⁾ for the S75W application for that modified Project Approval.
- I.7 In August 2018 MOD 4 (S75W application) was lodged to modify the approved development on the southern site. In response to matters raised in submissions an amended scheme was prepared in June 2019. In response to matters raised in submissions with the June 2019 scheme further amendments have been made to MOD 4.
- I.8 Compared to the Modified Project Approval (MP09_I46MOD1) the further amendments include the following change:
- ❑ an additional 69 residential units;
 - ❑ reduction of some 461m² GLA of retail/community area/gallery;
 - ❑ additional 1,883m² GFA commercial office;
 - ❑ additional 75 place child care facility;
 - ❑ additional 500m² GFA medical centre;
 - ❑ additional 342m² GFA leisure area; and
 - ❑ reconfiguration of on-site car parking and loading dock arrangements.

⁽²⁾ "Traffic Report for Section 75W Modifications to Project Approval for the Proposed Redevelopment of Eastlakes Shopping Centre", July 2017, Colston Budd Rogers & Kafes Pty Ltd.

I.9 The implications of the amended MOD4 S75W application for the southern site are assessed in the following chapter, including addressing the SEARS and matters raised in submissions.

I.10 With regards to traffic and transport, the SEARS list the following:

“The Modified Report shall include an updated traffic and transport assessment taking into account any changes to:

- current daily and peak hour vehicle, public transport, pedestrian and bicycle movements, and existing and proposed traffic and transport facilities provided on the surrounding road network.*
- details of estimated total daily and peak hour trips likely to be generated by the proposed development, including vehicle, public transport, pedestrian and bicycle trips.*
- existing and future performance of key intersections (including AM and PM).*
- peak periods for all weekdays (and both weekend days) providing access to the site, and any upgrades (roads/intersections) required as a result of the development, supported by appropriate modelling and analysis.*
- cumulative impacts of traffic volumes from the proposal, together with existing and approved developments in the area and potential conflict with traffic movements generated by existing uses.*

- *appropriate provision, design and location of on-site bicycle parking, and how bicycle provision will be integrated with the existing bicycle network.*
- *Justification for the proposed number of car parking spaces and details of how on-street car parking will be managed, noting the Department supports suppressed car parking in areas with good access to services and transport.*
- *details of service vehicle movements to make sustainable transport choices, including measures to.*
- *measures for residents and visitors to make sustainable transport choices, including measures to:*
 - *improve public transport use and accessibility (in particular given the site's location in relation to public transport opportunities).*
 - *incorporate a streetscape to promote people walking and cycling locally (wide footpaths, wayfinding signage) and high quality public transport facilities (shelters and interchanges).*
 - *integrate with existing pedestrian and bicycle linkages within the area.*
 - *implement a new or revised location specific sustainable travel plan.*
 - *demonstrate that both the right turn bay and left turn slip lane on Gardeners Road into Racecourse Place will not be affected.*

- *prepare an updated construction traffic management plan (CTMP) to ensure construction traffic is appropriately managed and the proposed construction works will not affect the WestConnex construction.”*

I.11 In its letter dated 30 July 2019, DPE raised the following matters with regards to traffic and transport:

The RTS has not yet been forwarded to Agencies or Council for comment. However, from a preliminary review of the submitted Traffic and Transport Assessment, the following concerns are raised for your consideration:

- *The submitted traffic report appears to test the changes proposed in Mod 4 in isolation, rather than testing the impact of the whole development on the local traffic network. Please provide a report that tests the existing capacity of the surrounding roads and intersections, compared with the expected impact from the approved Eastlakes development under current conditions, and that proposed in the amended Mod 4;*
- *The submitted report does not assess the existing capacity of the public transport network, to enable an analysis of whether capacity is available to service the proposed development.*

I.12 Our response to the above matters is provided in Chapter 2.

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2. IMPLICATIONS OF AMENDED MOD4 S75W APPLICATION FOR SOUTHERN SITE

2.1 Our assessment of the implications is set down through the following sections:

- ❑ site location and road network;
- ❑ approved development;
- ❑ amended MOD4 S75W application;
- ❑ public transport, walking and cycling;
- ❑ travel demand management;
- ❑ parking provision;
- ❑ access, internal circulation and servicing;
- ❑ traffic effects;
- ❑ principles of construction traffic management;
- ❑ SEARS;
- ❑ response to matters raised in submissions;
- ❑ summary.

Site Location and Road Network

2.2 The Eastlakes Shopping Centre is located south of Gardeners Road at Eastlakes, and is generally bounded by Gardeners Road, Evans Avenue, Barber Avenue and Eastlakes Reserve, as shown on Figure 1.

2.3 The centre is in two main parts which are separated by Evans Avenue. The northern part of the centre provides specialty retail shops fronting Gardeners Road and a parking area with access from Evans Avenue.

- 2.4 The southern part of the centre provides the main part of the retail area, including supermarkets and specialty shops. Parking areas are provided with access from Barber Avenue and Evans Avenue. The Evans Avenue access is east of the Racecourse Place intersection which is controlled by a roundabout.
- 2.5 Surrounding land use includes low to medium density residential development. Eastlakes Reserve adjoins the centre to the west, a school and bowling club to the west in Florence Avenue with other areas of open space. There are golf courses north of Gardeners Road and east of Southern Cross Drive. South and west there is low to medium density residential development.
- 2.6 The road network in the vicinity of the centre includes Gardeners Road, Maloney Street, Evans Avenue, Racecourse Place, Barber Avenue and St Helena Parade.
- 2.7 Gardeners Road is a major east-west arterial road and forms part of a route linking Kingsford and Randwick in the east with the Princes Highway at Sydenham in the west. In the vicinity of the centre it provides a four to six lane divided carriageway with two to three traffic lanes in each direction. Major intersections are signalised with additional lanes for turning traffic. Gardeners Road has signalised intersections with Racecourse Place and Maloney Street. East of the centre, Gardeners Road provides a grade separation over Southern Cross Drive, which is part of a major north-south arterial route between the city and areas to the south.
- 2.8 West of the centre, Maloney Street is one of a number of north-south streets which runs south from Gardeners Road and provide access to residential and commercial areas in Eastlakes and Rosebery. Maloney Street has signalised intersections with Gardeners Road and Coward Street. Its intersection with King
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Street is controlled by a roundabout. Clear of intersections, Maloney Street generally provides for one traffic lane and one parking lane in each direction.

- 2.9 Evans Avenue runs west from Maloney Street and provides access to residential land uses and the centre. It bends at Eastlakes Reserve and has a roundabout controlled intersection with Racecourse Place. Evans Avenue also provides for entry to and exit from parking areas at the centre. In the vicinity of the centre, Evans Avenue provides traffic calming measures and bus stops. There is a marked pedestrian crossing between the northern and southern parts of the shopping centre. Clear of intersections it generally provides for one traffic lane and one parking lane in each direction. The intersection of Evans Avenue with Maloney Street is a priority controlled intersection with Maloney Street the major road.
- 2.10 Racecourse Place runs south from a signalised intersection with Gardeners Road. There are left and right turn lanes on the approaches to the intersection. Racecourse Place provides access to adjacent residential development and the shopping centre at its southern end.
- 2.11 Barber Avenue runs south from Evans Avenue and provides access to centre car parks and loading docks. It bends around behind the centre and provides access to medium density residential development on the opposite side to the centre. There are restrictions on on-street parking in the vicinity of the centre. St Helena Parade runs south from Barber Avenue at an unsignalised intersection and provides a local route to and from residential areas in the south.

Approved Development

2.12 Project Approval (MP09_0146) was granted by the Planning Assessment Commission on 19 September 2013 for the construction of a mixed use development incorporating basement car parking, ground floor retail area, and residential development above, communal open space, public domain landscaping and associated infrastructure works. The approved development comprised:

- ❑ 404 residential units;
- ❑ some 14,404m² GFA of retail and community area;
- ❑ parking provision of 916 spaces.

2.13 Subsequently a Modified Project Approval (MP09_146MOD1) was approved, comprising:

- ❑ 425 residential apartments;
- ❑ 14,591m² (13,086 m² GLA) of retail and community area;
- ❑ 980 parking spaces.

2.14 The modified approval related to a S75W application to modify the northern site, located on the northern side of Evans Avenue.

Amended MOD4 S75W Application

2.15 The amended MOD4 S75W application includes the following changes, compared to the Modified Project Approval (MP09_146MOD1):

- ❑ an additional 69 residential units;
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- ❑ reduction of some 461m² GLA of retail/community area/gallery;
 - ❑ additional 1,883m² GFA commercial office;
 - ❑ additional 75 place child care facility;
 - ❑ additional 500m² GFA medical centre;
 - ❑ additional 342m² GLA leisure area; and
 - ❑ reconfiguration of on-site car parking and loading dock arrangements.

2.16 The southern site will provide 361 residential units, comprising some 32 studio, 164 one bedroom units, 126 two bedroom units and 39 three bedroom units. The southern site will provide 9,665m² GLA of retail area/community/gallery, 1,883m² GFA commercial office, 733m² GFA child care centre (75 children), 500m² GFA medical centre, and 342m² GLA leisure.

2.17 In accordance with the approved development, vehicular access to the basement car park and to the on-site loading dock for the southern site will be provided from Evans Avenue and Barber Avenue.

Public Transport, Walking and Cycling

2.18 As shown on Figure 2, the site is accessible by public transport with Sydney Buses providing the following services:

- Route 301 – Circular Quay to Eastgardens;
 - Route 303 – Circular Quay to Sans Souci (with some services terminating at Mascot);
 - Route 343 – Kingsford to Chatswood via the Sydney CBD; and
 - Route 418 – Burwood to Bondi Junction via the inner west.
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- 2.19 Bus Routes 301, 303 and 418 are typical local bus routes, providing service frequencies of 10 to 30 minutes in peak periods and 30 minutes in the inter peaks. The 343 Bus Route has a higher service frequency of 5 to 6 minutes in peak periods. These bus services provide convenient services linking to the Sydney CBD, Circular Quay, Kingsford, Randwick, Mascot, Burwood and Bondi Junction. They also provide access to train services at Mascot, Bondi Junction and CBD railway stations. Bus stops are located near the site on Evans Avenue, Racecourse Place and Gardeners Road. The site is therefore well located for public transport services.
- 2.20 The Eastern City District Plan identifies Eastlakes as a local centre serving the surrounding community. It provides regional public transport connections to the surrounding area and connections to Sydney metropolitan public transport nodes, including to the CBD and South East Light Rail (currently under construction).
- 2.21 Eastlakes has been identified as part of the Mill Stream and Botany Wetlands Open Space Priority Corridor, as part of the Green Grid, including the following:
- ❑ provide a healthier urban environment;
 - ❑ improving community access to open space and recreation;
 - ❑ support walking and cycling connections between centres.
- 2.22 The Mill Stream and Botany Wetlands Open Space Priority Corridor will connect Sydney Airport with Centennial Park, which in turn provides access to Sydney CBD via existing cycleways.
- 2.23 The redevelopment of the centre includes integration with the existing pedestrian and cycle links in the area, including the existing on road cycleway in Evans
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Avenue. The exiting marked pedestrian crossings in Evans Avenue (west of Racecourse Place) and in Barber Avenue (west of St Helena Parade) will be retained. In accordance with the 2015 development approval, the existing marked pedestrian crossing in Evans Avenue east of Racecourse Place will be relocated during the road works for stage 2, in order to better provide for pedestrian access between developments north and south of Evans Avenue. There will also be pedestrian links through the centre including direct access to Eastlake Reserve.

- 2.24 The proposed development will be close to existing and future public transport services, and will therefore be readily accessible by public transport. To support accessibility by bicycles, appropriate bicycle parking is proposed to be provided.
- 2.25 The proposed development is therefore consistent with the Eastern City District Plan, government objectives and the planning principles of:
- (a) improve accessibility to housing, employment and services by walking, cycling, and public transport;
 - (b) improve the choice of transport and reducing dependence solely on cars for travel purposes;
 - (c) moderate growth in the demand for travel and the distances travelled, especially by car; and
 - (d) support the efficient and viable operation of public transport services.
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2.26 The proposed development will:

- ❑ enable residents, employees and shoppers to readily access buses close to the site, for journeys to work and other travel;
- ❑ providing pedestrian connections within and through the centre, to improve accessibility for residents in the development as well as the general public;
- ❑ providing an appropriate level of on-site parking to encourage public transport use and increase the proportion of journey to work trips by public transport;
- ❑ providing residential development close to other retail, commercial and transport facilities to reduce the need for external travel;
- ❑ being located close to employment centres in Green Square, Randwick, Port Botany and Sydney Airport, which are readily accessible by public transport;
- ❑ increasing the proportion of the population living within 30 minutes by public transport of a city or major centre in the metropolitan area; and
- ❑ providing appropriate bicycle parking on the site to increase the proportion of trips made by bicycles.

2.27 Journey to work (JTW) from the ABS and NSW Household Travel Survey (HTS) data for the area has been used to determine the amount of additional demand for travel by buses from the S75W.

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- 2.28 Based on JTW and HTS, the data shows some 10% of existing trips to work and from home are made by buses in the weekday morning and afternoon peak hours. The amended development scheme results in an increase of 69 units, a decrease in retail/community GLA of some 461m², additional commercial office (some 1,883m² GFA), additional medical centre (some 500m² GFA), additional childcare centre (75 children) and additional leisure area (some 342m² GFA) compared to the approved development on the site. HTS data suggests that units in the area generate some 0.7 trips per unit (all modes) in the weekday AM/PM peak hours. Allowing for an increase in trips by bus to 20%, the additional units as part of the amended development scheme would generate an additional 10 trips by bus in the weekday AM/PM peak hours.
- 2.29 JTW data for employees in the Eastlakes travel zones suggests that commercial development in the area generates some 4 trips per 100m² GFA (all modes) in the weekday AM/PM peak hours, with some 57% travel as car driver and some 10% travel by bus. Allowing for some improvement in travel by bus (to 15%), the medical centre and commercial office employees would generate an additional 14 trips by bus and the childcare centre employee (some 15 employees) an additional 2 trips by bus in the AM/PM peak hours.
- 2.30 Based on the retail area generating 5 and 10 trips per 100m² GLA (all modes) in the weekday AM/PM peak hours respectively and no change in the proportion of trips by bus (10%), the reduction in retail area (461m² GLA) would result in reduction in trips by bus of some 3 and 6 trips in the AM/PM peak hours respectively.
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- 2.31 The childcare centre would not be expected to generate an increase in bus trips (other than employees) as parents dropping off children would be either driving or a linked trip to the centre.
- 2.32 For the medical centre a patient/visitor generation rate of 1 and 5 trips per 100m² (all modes) in the AM/PM peak hours has been adopted (this is in addition to employee trips). With 10% of patient/visitor trips by bus, the medical centre would generate 1 and 3 trips by bus in the weekday AM/PM peak hours.
- 2.33 The proposed leisure facility has been assumed to have a similar generation rate to retail in the PM peak hour of 10 trips per 100m² (all modes). The proportion of trips by bus may be higher (at 20%) due to the patronage by younger people. With 20% by bus, the leisure facility would generate 7 trips by bus in the weekday PM peak hour.
- 2.34 Thus MOD 4 would result in an increase of some 24 trips by bus in the AM peak hour and some 30 trips by bus in the PM peak hour. These trips would be spread over the four bus routes that service the area which provide an average 16 buses per hour in the peak periods. When these additional trips are spread across these services, it would result in increases of 1 or 2 passengers per bus. Such an increase would not be noticeable in the daily variation of demand for bus services in the area.
- 2.35 Sydney Buses has advised that bus routes in the area will be reviewed following the completion of the light rail. It is anticipated that the completion of the light rail will result in a change in travel patterns to the CBD with passengers having a choice between a trip by bus or by bus/light rail. Sydney Buses advised that this
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will result in a more trips being each direction along Gardeners Road rather than in the current peak direction, thus increasing capacity.

Travel Demand Management

- 2.36 A number of measures will be implemented to reduce and manage travel demands to and from the site. These include appropriate provision for non-car based travel, including convenient access to public transport, pedestrians and bicycle facilities, as discussed in the previous section.
- 2.37 For employees, to encourage travel modes other than private vehicle, a travel demand management approach will be adopted, through a workplace travel plan to meet the specific needs of the site, future employees and visitors. The specific requirements and needs of the future employees and visitors, including travel from surrounding areas and public transport nodes, would be incorporated in the workplace travel plan to support the objectives of encouraging the use of public transport.
- 2.38 The principles of a workplace travel plan, to be developed for the site in consultation with council, RMS, bus operators and other stakeholders, would include the following:
- encourage the use of public transport, including train and bus services in the area;
 - work with public transport providers to improve services;

- ❑ encourage public transport use by employees and visitors through the provision of information, maps and timetables;
- ❑ raise awareness of health benefits of walking and cycling (including maps showing walking and cycling routes);
- ❑ encourage cycling by providing safe and secure bicycle parking and end of trip facilities;
- ❑ provide appropriate secure bicycle parking for residents; and
- ❑ provide appropriate on-site parking provision, consistent with the objective of reducing traffic generation.

2.39 The workplace travel plan will assist in delivering sustainable transport objectives by considering the means available for reducing dependence solely on cars for travel purposes, encouraging the use of public transport and supporting the efficient and viable operation of public transport services.

Parking Provision

2.40 The Project Approval includes the following parking rates for the proposed development:

- ❑ 1 spaces per studio, one bedroom and two bedroom units;
 - ❑ 2 spaces per three bedroom and four bedroom units;
 - ❑ 1 visitor space per five residential units; and
 - ❑ 3.5 spaces per 100m² of gross lettable retail area.
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- 2.41 Application of these parking rates to the proposed southern site for the residential and retail components, comprising 361 units (32 studio, 164 one bed, 126 two bed and 39 three bed units) and 9,665m² GLA retail and community area, results in a requirement for some 810 parking spaces, comprising 400 residential spaces, 72 visitor spaces and 338 retail spaces.
- 2.42 In addition to the above, parking for the childcare centre has been determined using the rates in Bayside Council DCP (Botany Bay DCP 2013). The DCP has the following minimum parking rates for child care centres:
- ❑ 1 space per two employees; plus
 - ❑ 1 spaces per five children; plus
 - ❑ 1 pick-up and set-down spaces per 20 children.
- 2.43 Based on some 15 staff, the proposed child care facility would require an additional 27 parking spaces.
- 2.44 With regards to the commercial office area, the DCP requires one space per 40m² GFA. Applying this rate to the commercial area (1,883m² GFA) would require 47 spaces.
- 2.45 With regards to the medical centre, the DCP requires 3 spaces per consulting room. As the number of consulting rooms in the medical centre is not known at this stage, the RMS rate of 1 space per 25m² GFA has been adopted. Applying this rate the medical centre (some 500m² GFA) would require 20 spaces.
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- 2.46 With regards to the leisure area, we have adopted the approved parking rate for retail of 3.5 spaces per 100m² GLA. Applying this rate to the leisure area (342m² GLA) would require 12 spaces.
- 2.47 The total parking requirement for the southern site would therefore be 916 spaces. The development will provide parking in accordance with this requirement.
- 2.48 Residential parking will be provided on levels B3 and B4, and the retail, commercial, leisure, community/gallery and medical centre parking will be on levels B1 and B2. The residential visitor parking will be shared with the retail parking. Parking for the child care facility will be provided on level B1.
- 2.49 The proposed development will include motor cycle and bicycle parking within the basement car park. Bicycle parking will be provided in accordance with Bayside Council DCP, with a bicycle parking rate equivalent to 10% of the required car parking provision for non-residential uses. Some 50 bicycle parking spaces will be provided within the basement car park. Bicycle parking will be provided in accordance with the Australian Standard for Bicycle parking facilities (AS2890.1-2003). End of trip facilities accessible to staff/visitors will be provided for retail, commercial, childcare centre, medical centre, community/gallery and leisure uses. The end of trip facilities will be located on basement level B1.
- 2.50 Residential bicycle parking will be located within the residential storage facilities within basement levels B3 and B4.
- 2.51 Accessible parking spaces are proposed within the basement car park, in close proximity to the vertical transport nodes accessing the retail, community,
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commercial, medical centre, child care centre and residential components of the development.

Access, Internal Layout and Servicing

2.52 No changes are proposed to the vehicular access arrangements onto Evans Avenue and Barber Avenue compared to the project approval access arrangements. A number of access options was investigated and the preferred arrangements, approved in association with the Project Approval (MP09_0146), included:

- ❑ access onto Evans Avenue will be provided at the roundabout controlled intersection of Evans Avenue and Racecourse Place. The roundabout will be upgraded to address the existing geometric constraints at the intersection;
- ❑ access onto Barber Avenue will be provided at the intersection of Barber Avenue and St. Helena Place, and the intersection upgraded to a roundabout.

2.53 The preferred access arrangements were selected based on the following:

- ❑ the access points to the southern site are located to easily and quickly capture traffic accessing the centre without using local streets;
- ❑ the size of the southern car park requires two access points. They have been located at the western end of the site to minimise traffic effects on Evans Avenue (east) and Barber Avenue (east);

- ❑ if not located at the western end of the site, the access points would have to be located on Evan Avenue (east) and Barber Avenue (east). Access from either of these locations would increase traffic on these streets compared to the project approval access arrangements and would impact on pedestrian linkage between the northern and southern sites.

- 2.54 The proposed access arrangements will improve safety and reduce congestion on Evans Avenue and Barber Avenue, with removal of the existing car park access driveways to the southern site on these streets. The existing access onto Evans Avenue causes significant queuing and safety issues with cars queuing back onto Evans Avenue into the roundabout at the Racecourse Place/Evans Avenue intersection.
- 2.55 The Barber Avenue access will be relocated to the intersection with Helena Parade (via a new roundabout). This will remove safety issues (dog leg traffic movement) associated with existing access offset from Helena Parade intersection. The new roundabout will also provide safer access to/from the shopping centre, through intersection and traffic calming measures on Barber Avenue.
- 2.56 Separate service vehicle access will be provided off Barber Avenue accessing on-site loading facilities for the southern site development. Alternative access arrangements to the southern basement car park would impact on the location of the proposed loading dock, resulting in an increase in service vehicle activity on Barber Avenue (east) and Evans Avenue (east).
- 2.57 The proposed access arrangements to basement parking and on-site loading area will be provided in accordance with the Australian Standard for Parking Facilities
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Part 1: Off-street car parking (AS2890.1-2004) and Part 2: Commercial vehicle facilities (AS2890.2-2002).

- 2.58 The proposed modifications to the southern site will include a reconfiguration of on-site car parking arrangements within basement levels, and the reconfiguration of the on-site loading dock accessed from Barber Avenue. Residential parking areas will be separated from the retail parking (residential parking will be provided on levels B3 and B4, and the retail/commercial parking will be on levels B1 and B2). Inside the property line, driveways will provide a maximum grade of 1 in 20 for the first six metres into the site, with clear areas for appropriate sight lines to pedestrians. Ramps will have a maximum grade of 1 in 5 with appropriate transitions at the top and bottom of the ramp.
- 2.59 Retail parking spaces will be 2.7 metres wide by 5.4 metres long and residential parking spaces will be 2.4 metres wide by 5.4 metres long. Aisles will be a minimum width of 6.2 metre. Columns will be set back 750mm from the front of spaces and parking spaces located adjacent to structure will be 300mm wider to provide for door opening.
- 2.60 Disabled parking spaces will be provided in accordance with the Australian Standard for Parking Facilities Part 6: Off-street car parking for people with disabilities (AS2890.6-2009). These spaces will be 2.4 metres wide by 5.4 metres long with an adjacent shared zone of 2.4 metre for wheelchair access. Height clearance will be 2.5 metres above disabled spaces and 2.2 metres elsewhere within the car parking areas. These parking dimensions are considered appropriate, being in accordance with the Australian Standards AS2890.1-2004 and AS2890.6-2009.
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- 2.61 The reconfigured loading dock arrangements for the southern site will be accessed via a combined entry and exit driveway located on the northern side of Barber Avenue. The loading dock will cater for service vehicles ranging from medium and large rigid trucks up to 19 metre articulated vehicles. The loading dock will service the supermarket, specialty retail and other development on the southern site (including the commercial and residential development). The service area provides four loading bays, two waste compactors and waste collection areas. In accordance with the Australian Standard AS2890.2-2002, a height clearance of 4.5 metres will be provided within the loading dock.
- 2.62 The supermarket loading bays are designed to cater for 19 metre articulated vehicles. The specialty loading bays and the waste collection areas are designed to cater for rigid trucks ranging from 8.8 metre medium rigid trucks to 12.5 metre large rigid trucks. All service vehicles will enter and exit the site in a forward direction.
- 2.63 In addition to the main on-site loading facility, a residential loading zone will be provided within basement level B1. The loading zone provides two loading bays suitable for vans and small rigid trucks, up to 6.4 metres in length. Access to the residential loading zones will be provided to and from the southern access driveway onto Barber Street. In accordance with the Australian Standard AS2890.2-2002, a height clearance of 3.5 metres will be provided within the residential loading zones and within all areas accessible by service vehicles accessing the loading area.
- 2.64 These arrangements are considered appropriate, being in accordance with the Australian Standard AS2890.2-2002.
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Traffic Effects

- 2.65 As set out in our 2012 traffic report, traffic generated by the proposed redevelopment of the centre will have its greatest effects during the weekday morning, weekday afternoon and Saturday midday peak periods when it combines with retail and commuter traffic on the surrounding road network. Traffic counts undertaken at the existing centre indicate that the retail generates some 3.1, 5.6 and 7.8 vehicles per hour two-way per 100m² GLA on Thursday morning, Thursday afternoon and Saturday midday peak hours respectively.
- 2.66 As per the approved development, we have adopted a traffic generation for the high density residential development of 0.29 vehicles per hour two-way during the weekday morning and afternoon peak hours.
- 2.67 With regards to the commercial office area, we have adopted the traffic generation rates of 1.6 and 1.2 vehicles per hour two-way per 100m² GFA during the weekday morning and afternoon peak hours respectively (as per RMS TDT 2013/04).
- 2.68 The proposed child care is an integral part of the development that will serve residents and employees of the proposed redevelopment. Therefore it will generate lower traffic than a typical child care. RMS surveys found typical weekday peak period generation rates of 0.4 vehicles per hour, two-way, per child. We have adopted a rate of 0.2 vehicles per hour for the proposed child care reflecting its location. The child care would be closed on weekends.
- 2.69 Surveys of traffic generation at a number of large medical centres have been reviewed. These included general practitioners, specialists, day surgery and
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radiology/pathology services. The surveys found the centres generated 1 trip per 70m² GFA in the morning peak period and 1 trip per 25m² GFA in the afternoon peak period.

- 2.70 With regards to the leisure area, based on similar developments, we have adopted generation rates of 2 and 4 vehicles per hour two-way per 100m² GLA during the Thursday afternoon and Saturday midday peak hours respectively.
- 2.71 Based on the above, estimates of the additional traffic generated by the proposed modifications to the southern site are set out in Table 2.1.

Table 2.1 Summary of Traffic Generation for South Side Modifications							
Component	Size	Rate			Traffic Generated (vph)		
		AM	PM	SAT	AM	PM	SAT
Retail	-461m ²	3.1/100m ²	5.6/100m ²	7.8/100m ²	-14	-26	-36
Commercial	+1,883m ²	1.6/100m ²	1.2/100m ²	-	+30	+23	0
Residential	+69 units	0.29/unit	0.29/unit	0.29/unit	+20	+20	+20
Childcare	75 child	0.2/child	0.2/child	-	+15	+15	0
Medical	+500m ²	1/70m ²	1/25m ²	1/25m ²	+7	+20	+20
Leisure	+342m ²	-	2/100m ²	4/100m ²	0	+7	+14
Total					+58	+59	+18

- 2.72 Examination of Table 2.1 reveals that the proposed modifications to the southern site will generate a modest increase in traffic generation of some 60 additional vehicles per hour (two-way) during the Thursday morning and afternoon peak periods, compared to the approved development. During the Saturday midday peak period there would be a smaller increase of some 20 vehicles per hour (two-way). When distributed to the surrounding road network the greatest increase in traffic would occur on Racecourse Place with increases of some 30 vehicles per hour, two-way in the morning and afternoon peak hours. On other roads the

increases would be less at up to 15 vehicles per hour, two-way. These are low increases in traffic, equivalent to an average of less than one additional vehicle every 2 to 4 minutes. Such minor increases during peak periods would not affect the operation of the surrounding road network.

2.73 Nonetheless the impact of traffic generated by MOD 4 on the operation of the intersections of Racecourse Place with Gardeners Road and Evans Avenue (where the increases are highest) has been assessed using SIDRA. The assessment includes a cumulative assessment of the additional traffic generated by MOD 4 and traffic generated by the approved development. Base case traffic flows and additional development traffic for the Thursday morning, Thursday afternoon and Saturday midday peak periods as shown on Figures 3 to 5.

2.74 SIDRA analyses intersections controlled by traffic signals, roundabouts and signs and provides 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).

- 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

2.75 The results of the SIDRA analysis are attached in Appendix A. With and without the additional traffic from MOD 4 (plus traffic from the approved development on the northern and southern parts of the site), the SIDRA analysis found that:

- the signalised intersection of Gardeners Road and Racecourse Place would operate with average delays of less than 20 seconds per vehicle during peak periods. This represents a level of service B, a good level of service; and
- the roundabout controlled intersection of Evans Avenue with Racecourse Place (and the site access) would operate with average delays, for the movement with the highest average delay, of less than 15 seconds per vehicle during the peak periods. This represents level of service A/B, a good level of service.

2.76 In summary, the minor increase in traffic generated by MOD 4, there would be minimal impact on the operation of the road network (compared to the approved development), with key intersections continuing to operate at a satisfactory or better level of service during peak periods.

Principles of Construction Traffic Management

2.77 The construction of the proposed development will be undertaken by Crown Group. At this stage the details of the construction process are yet to be developed. A series of construction traffic management plans will be developed

for the various stages of construction, including enabling works, demolition, excavation and main structure works. Crown will be responsible for the preparation of the traffic management plans, which will be lodged with Council and other relevant authorities for approval prior to the commencement of any construction activity.

2.78 The construction traffic management plans for the proposed development located on the southern side of Evans Avenue (southern site) will take into consideration the approved construction traffic management plan for the approved development on the northern side of Evans Avenue (northern site).

2.79 The overall principles for traffic management during construction will be:

- ❑ provide a convenient and appropriate environment for pedestrians;
- ❑ minimise effects on pedestrian movements and amenity;
- ❑ maintain appropriate capacity for pedestrian at all times along footpaths adjacent to the site during construction;
- ❑ maintain convenient access to public transport;
- ❑ manage and control construction traffic movements to ensure that the designated truck routes do not impact on bus services in the area, particularly along Evans Avenue;

- ❑ manage and control construction traffic movements to and from the construction site, including the on-going construction activity on the northern site;
 - ❑ the movement of trucks on and off the site to be managed and controlled by traffic controllers;
 - ❑ ensure that the construction activity associated with northern and southern development sites does not affect the construction of WestConnex;
 - ❑ maintain traffic capacity at intersections and mid-block in the vicinity of the site;
 - ❑ maintain existing on-street parking in the vicinity of the site;
 - ❑ maintain access to properties adjacent to the site, including access to and from the northern site during construction;
 - ❑ restrict construction vehicle activity to designated truck routes through the area, in accordance with the approved truck routes for the northern site;
 - ❑ construction access driveways to allow trucks to enter and exit the site in a forward direction;
 - ❑ construction activity for the southern site will be staged and coordinated with the construction activity for the northern site, to minimise traffic effects on the surround road network;
-

- ❑ provide an on-site construction compound on the southern side of Evans Avenue;
 - ❑ on-site and on-street work zones to be provided adjacent to the construction activity;
 - ❑ construction access driveways and on-street work zones to be managed and controlled by traffic controllers;
 - ❑ maintain safety for workers;
 - ❑ provide appropriate access to the site for construction vehicles;
 - ❑ pedestrian movements adjacent to the site to be protected with the erection of construction hoardings and containment fencing/barriers along Evans Avenue and Barber Avenue. Site sheds and amenities to be provided within the northern part of the site adjacent to Evans Avenue;
 - ❑ construction fencing to be erected around the balance of the site with overhead protection provided where required. Scaffolding to be erected within the site boundary;
 - ❑ pedestrian movements across the construction access driveways to be managed and controlled by qualified traffic controllers when the driveways are in use;
 - ❑ pedestrian warning signs and construction safety signs to be provided in accordance with SafeWork NSW requirements;
-

- ❑ construction activity to be carried out in accordance with Council's approved hours of work. Approved hours of work for the northern site are:
 - Monday to Friday - 7:00am to 7:00pm;
 - Saturday - 8:00am to 4:00pm; and
 - Sunday/public holidays - No work.

- ❑ site contractor to be responsible for the management of the site, construction vehicles movements, signage detail, traffic management and control of pedestrians in the vicinity of the site.

SEARS

2.80 With regards to traffic and transport, the SEARS are addressed as follows:

"The Modified Report shall include an updated traffic and transport assessment taking into account any changes to:

- ❑ *current daily and peak hour vehicle, public transport, pedestrian and bicycle movements, and existing and proposed traffic and transport facilities provided on the surrounding road network.*

 - ❑ *details of estimated total daily and peak hour trips likely to be generated by the proposed development, including vehicle, public transport, pedestrian and bicycle trips.*

 - ❑ *existing and future performance of key intersections (including AM and PM).*
-

- *peak periods for all weekdays (and both weekend days) providing access to the site, and any upgrades (roads/intersections) required as a result of the development, supported by appropriate modelling and analysis.*
- *cumulative impacts of traffic volumes from the proposal, together with existing and approved developments in the area and potential conflict with traffic movements generated by existing uses.*

2.81 These above matters are addressed in the following previous sections:

- public transport, walking and cycling;
- travel demand management;
- traffic effects.

2.82 The S75W modifications will only generate an additional some 60 vehicles per hour (two-way) in Thursday morning and afternoon peak periods and some 20 vehicles per hour (two way) in the Saturday midday peak hour. Intersections were found to continue to operate at satisfactory or better levels of service during peak periods.

2.83 The S75W modifications will only generate 24 to 30 additional people per hour using public transport in morning and afternoon peak periods. These trips would be spread over the four bus routes that service the area which provide an average 16 buses per hour in the peak periods. When these additional trips are spread across these services, it would result in increases of 1 or 2 passengers per bus. Such an increase would not be noticeable in the daily variation of demand for bus services in the area. Thus the existing bus services can cater for these minor increases.

- *appropriate provision, design and location of on-site bicycle parking, and how bicycle provision will be integrated with the existing bicycle network.*

2.84 This above matter is addressed in the section on public transport, walking and cycling. Bicycle parking will be provided in accordance with Bayside Council DCP. Bicycle parking and end of trip facilities for staff and visitors will be provided within the basement car park.

2.85 Residential bicycle parking will be located within the residential storage facilities within basement levels B3 and B4.

- *Justification for the proposed number of car parking spaces and details of how on-street car parking will be managed, noting the Department supports suppressed car parking in areas with good access to services and transport.*

2.86 This above matter is addressed in section on parking provision.

- *details of service vehicle movements to make sustainable transport choices, including measures to.*

2.87 This above matter is addressed in the section on access, internal circulation and servicing.

- *measures for residents and visitors to make sustainable transport choices, including measures to:*
 - *improve public transport use and accessibility (in particular given the site's location in relation to public transport opportunities).*

- *incorporate a streetscape to promote people walking and cycling locally (wide footpaths, wayfinding signage) and high quality public transport facilities (shelters and interchanges).*
- *integrate with existing pedestrian and bicycle linkages within the area.*
- *implement a new or revised location specific sustainable travel plan.*

2.88 These above matters are addressed in the following sections:

- public transport, walking and cycling.
- travel demand management.
- *demonstrate that both the right turn bay and left turn slip lane on Gardeners Road into Racecourse Place will not be affected.*

2.89 This above matter is addressed in section on traffic effects.

- *prepare an updated construction traffic management plan (CTMP) to ensure construction traffic is appropriately managed and the proposed construction works will not affect the WestConnex construction."*

2.90 This above matter is addressed in the section on construction traffic management.

Response to Matters Raised in Submissions

2.91 In response to the proposed modifications, TfNSW and RMS raised the following matters:

- ❑ bicycle parking;
- ❑ impact on bus services;
- ❑ impact of construction traffic;
- ❑ SIDRA analysis to verify no impact on road network and in particular the impact on turn bays on Gardeners Road at the intersection with Racecourse Place.

2.92 In addition DPE in its letter of 30 July 2019 raised concerns with regards to the traffic assessment and capacity of the buses to accommodate the additional demand.

2.93 These matters are addressed below.

Bicycle Parking

2.94 The proposed modifications include bicycle parking and end of trip facilities within the basement car park. Some 50 bicycle parking spaces and end of trip facilities will be located on basement level B1 for residential visitors and staff/visitors associated with the retail/community, commercial, childcare centre, medical centre and leisure uses.

2.95 Residential bicycle parking will be located within the residential storage facilities within basement levels B3 and B4.

Bus Services

2.96 The impact of the amended development on bus services and bus frequencies is addressed in the section on public transport, walking and cycling.

Impact of Construction Traffic

- 2.97 At this stage the details of the construction process are yet to be developed. Prior to the issue of the construction certificate a detailed construction traffic management plan will be developed for the various stages of construction, including enabling works, demolition, excavation and main structure works. Crown will be responsible for the preparation of the traffic management plan, which will be lodged with Council and other relevant authorities for approval.
- 2.98 With regards to the impact of construction activity on bus services and general traffic, this has been addressed in the section on principles of construction traffic management.

SIDRA Analysis

- 2.99 As discussed in the section on traffic effects, SIDRA analysis has been undertaken of the impact of development traffic on the operation of the intersections of Racecourse Place with Gardeners Road and Evans Avenue. These are the intersections which will be most impacted by development traffic. The SIDRA analysis found that with development traffic in place, the intersections will operate at satisfactory or better levels of service in the peak periods. Copies of the SIDRA movements summaries are attached in Appendix A. The SIDRA analysis found that existing left and right turn lanes on Gardeners Road, at the intersection with Racecourse Place, can accommodate traffic turning off Gardeners Road.

Traffic Assessment

- 2.100 As noted in the section on traffic effects, the minor increase in traffic generated by MOD 4 would have minimal impact on the operation of the road network (compared to the approved development), with key intersections continuing to operate at a satisfactory or better level of service during peak periods.

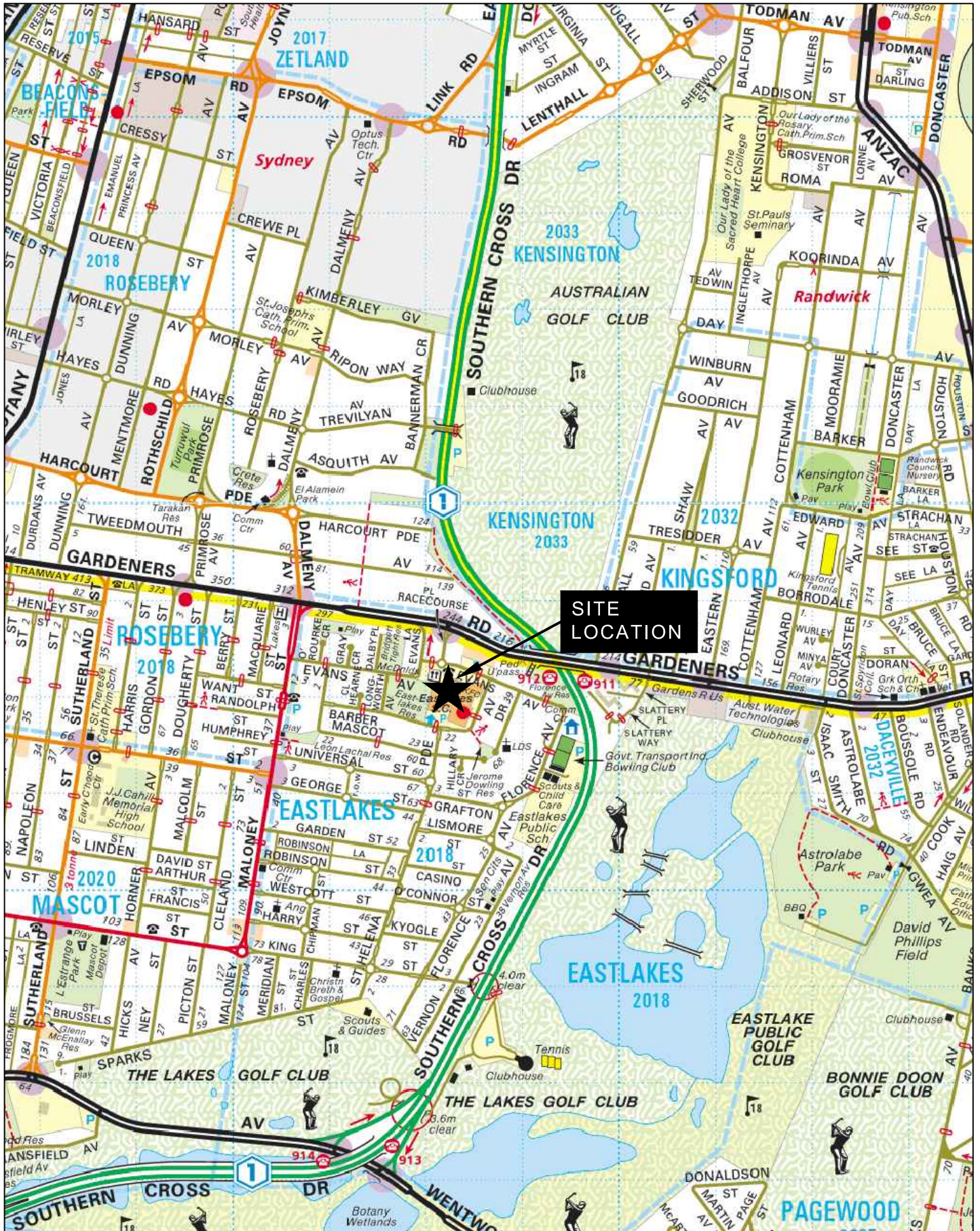
Capacity of Public Transport

- 2.101 As noted in the section on public transport, MOD 4 would result in an increase of some 24 trips by bus in the AM peak hour and some 30 trips by bus in the PM peak hour. These trips would be spread over the four bus routes that service the area which provide an average 16 buses per hour in the peak periods. When these additional trips are spread across these services, it would result in increases of 1 or 2 passengers per bus. Such an increase would not be noticeable in the daily variation of demand for bus services in the area.

Summary

- 2.102 In summary, the main points relating to the traffic and transport assessment for the proposed amended development scheme for the southern site are as follows:
- i) the amended scheme for the southern site of the development includes the following changes to the Modified Project Approval (MP09_146MOD1):
 - ❑ an additional 69 residential units;
 - ❑ reduction of some 461m² GLA of retail/community area/gallery;
 - ❑ additional 1,883m² GFA commercial office;
-

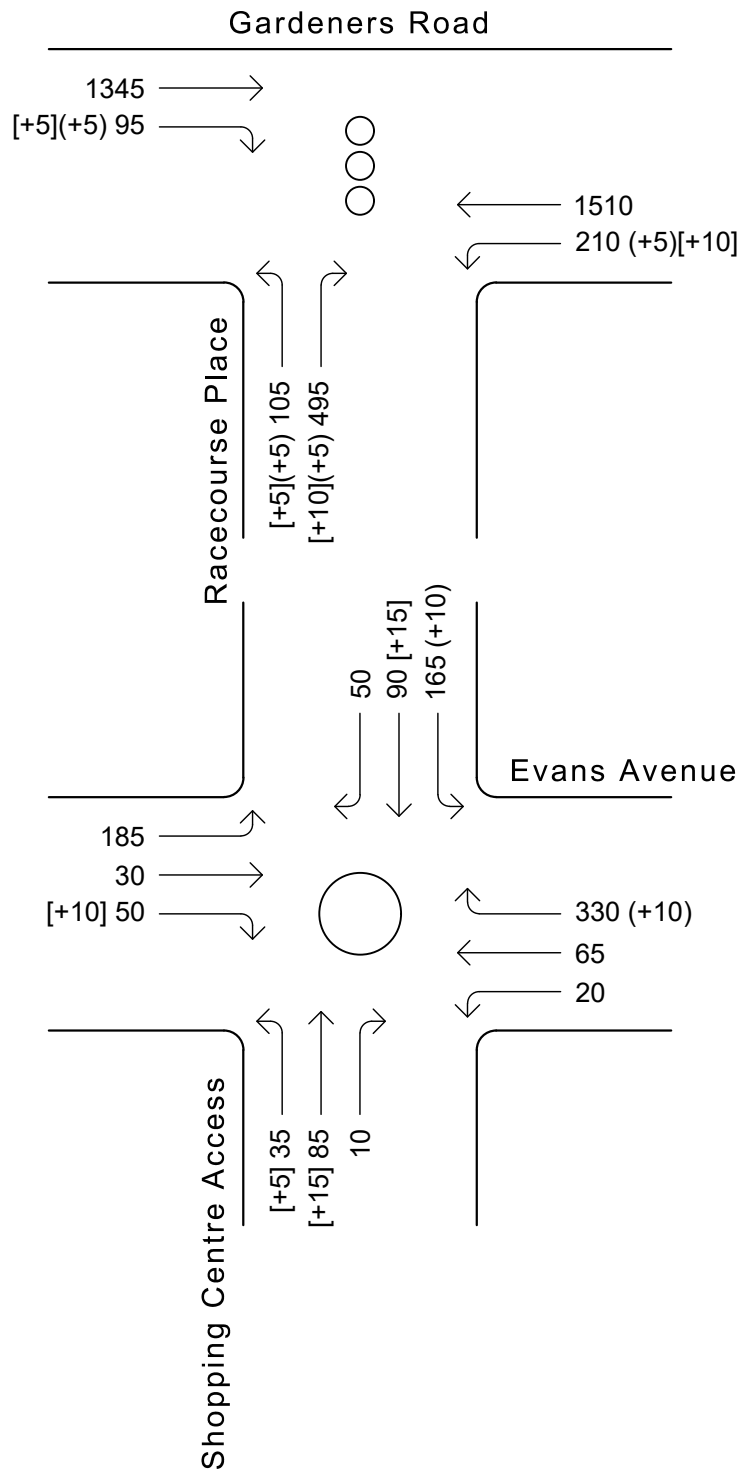
- ❑ additional 75 place child care facility;
 - ❑ additional 500m² GFA medical centre;
 - ❑ additional 342m² GLA leisure area; and
 - ❑ reconfiguration of on-site car parking and loading dock arrangements.
- ii) parking provision is appropriate;
- iii) access, internal layout and servicing will be provided in accordance with the Australian Standards;
- iv) the proposed modifications would result in only modest increases in traffic on surrounding roads;
- v) the surrounding road network and intersections in the vicinity of the site will continue to operate at satisfactory or better levels of service during peak periods;
- vi) the SEARS have been addressed with regards to traffic and transport;
- vii) matters raised in submissions by DPE, TfNSW and RMS have been addressed with regards to traffic and transport.



Location Plan



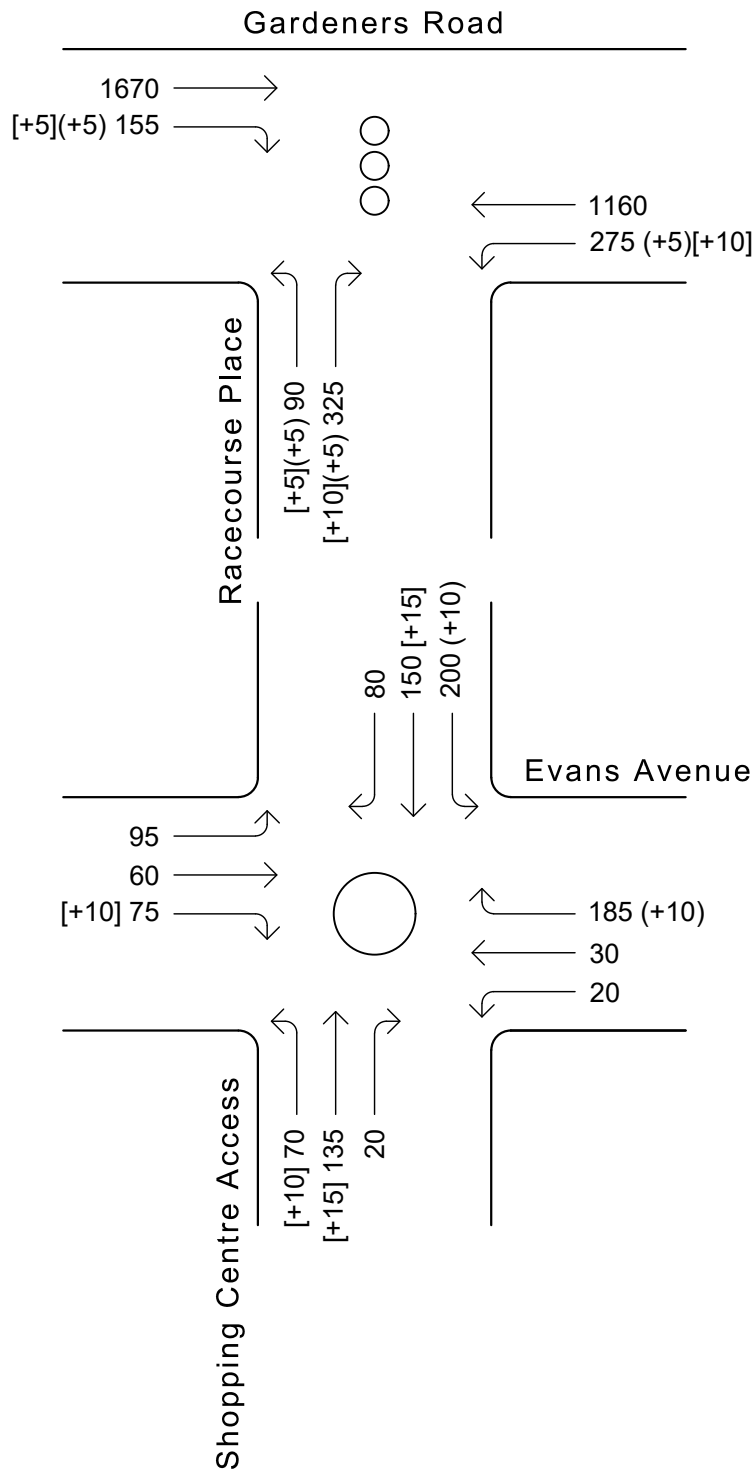
Bus Routes



LEGEND

- 100 - Base Case Peak Hour Traffic Flows (Project Approval MP09_0146)
- (+10) - Additional Development Traffic (Modified Project Approval MP09_146MOD1)
- [+10] - Additional Development Traffic for Southern Site
- ∞ - Traffic Signals
- - Roundabout

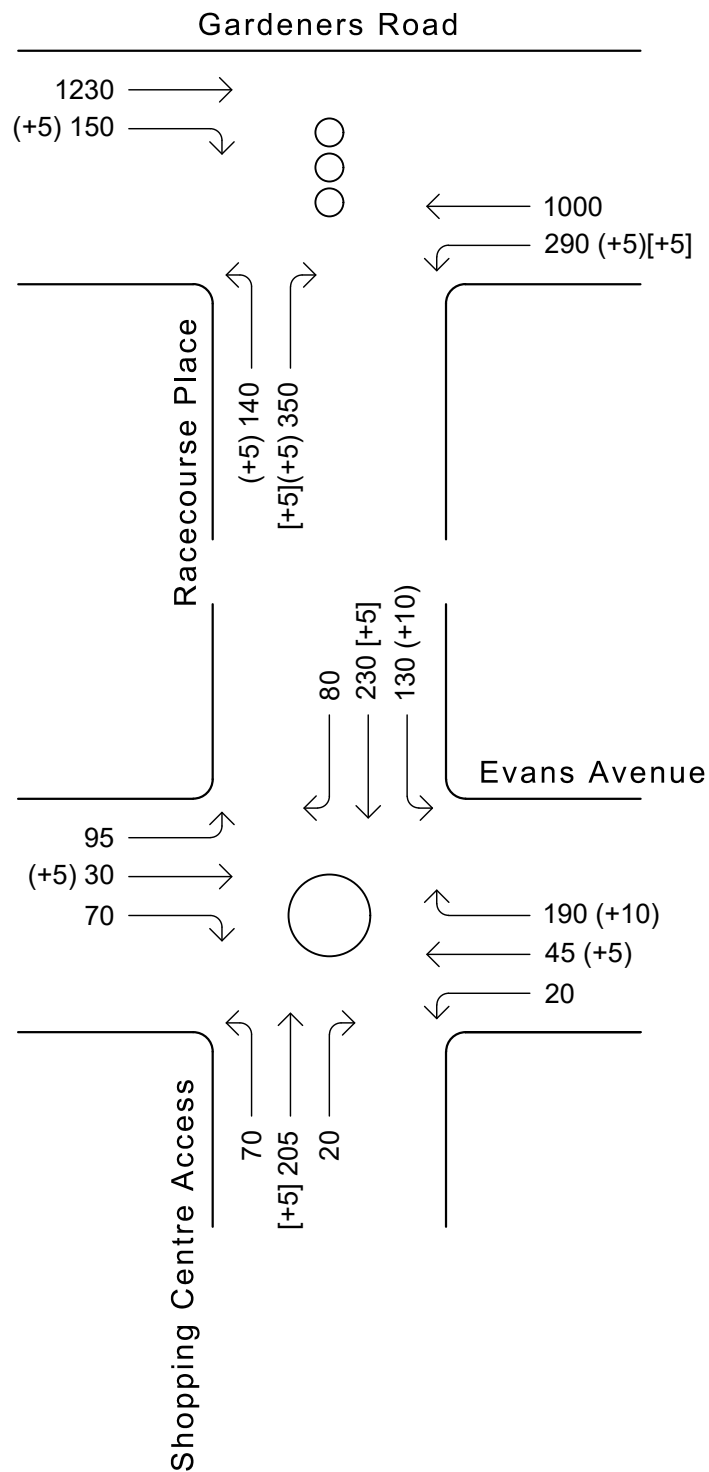
**Base Case Thursday morning
peak hour traffic flows plus
development traffic
Figure 3**



LEGEND

- 100 - Base Case Peak Hour Traffic Flows (Project Approval MP09_0146)
- (+10) - Additional Development Traffic (Modified Project Approval MP09_146MOD1)
- [+10] - Additional Development Traffic for Southern Site
- ∞ - Traffic Signals
- - Roundabout

**Base Case Thursday afternoon
peak hour traffic flows plus
development traffic**
Figure 4



LEGEND

- 100 - Base Case Peak Hour Traffic Flows (Project Approval MP09_0146)
- (+10) - Additional Development Traffic (Modified Project Approval MP09_146MOD1)
- [+10] - Additional Development Traffic for Southern Site
- ⊗ - Traffic Signals
- - Roundabout

**Base Case Saturday midday
peak hour traffic flows plus
development traffic
Figure 5**

APPENDIX A

SIDRA ANALYSIS

MOVEMENT SUMMARY

Site: 0 [Thu AM BC - Gardeners Avenue - Racecourse Place]

Network: N101 [Thu AM BC]

Base Case Thursday Morning Peak Hour Traffic

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Racecourse Place														
1	L2	105	2.0	105	2.0	0.742	51.4	LOS D	17.2	122.7	0.99	0.88	1.04	23.4
3	R2	495	2.0	495	2.0	0.742	52.1	LOS D	17.2	122.7	0.99	0.88	1.04	23.4
Approach		600	2.0	600	2.0	0.742	52.0	LOS D	17.2	122.7	0.99	0.88	1.04	23.4
East: Gardeners Road														
4	L2	210	2.0	210	2.0	0.184	7.4	LOS A	1.1	7.8	0.11	0.58	0.11	48.6
5	T1	1855	2.0	1855	2.0	0.756	13.0	LOS A	27.2	193.4	0.58	0.53	0.58	49.4
Approach		2065	2.0	2065	2.0	0.756	12.5	LOS A	27.2	193.4	0.54	0.54	0.54	49.4
West: Gardeners Road														
11	T1	1580	2.0	1580	2.0	0.601	3.5	LOS A	8.9	63.5	0.21	0.20	0.21	56.8
12	R2	95	2.0	95	2.0	0.436	35.7	LOS C	4.3	30.7	0.78	0.79	0.78	28.0
Approach		1675	2.0	1675	2.0	0.601	5.3	LOS A	8.9	63.5	0.25	0.23	0.25	55.1
All Vehicles		4340	2.0	4340	2.0	0.756	15.2	LOS B	27.2	193.4	0.49	0.47	0.49	46.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

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

Intersection and Approach LOS values are based on average delay for all vehicle 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.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue	Back of Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		
P1	South Full Crossing	50	12.2	LOS B	0.1	0.1	0.45	0.45
P4	West Full Crossing	200	38.7	LOS D	0.6	0.6	0.81	0.81
All Pedestrians		250	33.4	LOS D			0.74	0.74

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [Thu AM BC - Evans Avenue - Racecourse Place - Centre Access] Network: N101 [Thu AM BC]

Base Case Thursday Morning Peak Hour Traffic
Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Centre Access														
1	L2	35	2.0	35	2.0	0.231	7.4	LOS A	0.9	6.1	0.59	0.70	0.59	51.8
2	T1	85	2.0	85	2.0	0.231	7.3	LOS A	0.9	6.1	0.59	0.70	0.59	48.1
3	R2	10	2.0	10	2.0	0.231	10.6	LOS A	0.9	6.1	0.59	0.70	0.59	52.2
Approach		130	2.0	130	2.0	0.231	7.6	LOS A	0.9	6.1	0.59	0.70	0.59	50.0
East: Evans Avenue														
4	L2	20	2.0	20	2.0	0.575	6.1	LOS A	2.5	17.6	0.46	0.67	0.46	51.0
5	T1	65	2.0	65	2.0	0.575	6.0	LOS A	2.5	17.6	0.46	0.67	0.46	51.8
6	R2	330	2.0	330	2.0	0.575	9.2	LOS A	2.5	17.6	0.46	0.67	0.46	46.8
Approach		415	2.0	415	2.0	0.575	8.6	LOS A	2.5	17.6	0.46	0.67	0.46	48.3
North: Racecourse Place														
7	L2	165	2.0	165	2.0	0.244	4.8	LOS A	1.4	10.2	0.28	0.54	0.28	49.2
8	T1	90	2.0	90	2.0	0.244	4.7	LOS A	1.4	10.2	0.28	0.54	0.28	50.5
9	R2	50	2.0	50	2.0	0.244	8.0	LOS A	1.4	10.2	0.28	0.54	0.28	49.9
Approach		305	2.0	305	2.0	0.244	5.3	LOS A	1.4	10.2	0.28	0.54	0.28	49.7
West: Evans Avenue														
10	L2	185	2.0	185	2.0	0.472	7.9	LOS A	1.9	13.6	0.63	0.77	0.65	47.1
11	T1	30	2.0	30	2.0	0.472	7.8	LOS A	1.9	13.6	0.63	0.77	0.65	52.0
12	R2	50	2.0	50	2.0	0.472	11.0	LOS A	1.9	13.6	0.63	0.77	0.65	51.6
Approach		265	2.0	265	2.0	0.472	8.5	LOS A	1.9	13.6	0.63	0.77	0.65	49.1
All Vehicles		1115	2.0	1115	2.0	0.575	7.5	LOS A	2.5	17.6	0.47	0.66	0.47	49.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.

MOVEMENT SUMMARY

Site: 0 [Thu AM BC + Mod1 - Gardeners Avenue - Racecourse Place]

Network: N101 [Thu AM BC + Mod1]

Base Case Thursday Morning Peak Hour Traffic Plus Development Traffic

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles																
Mov ID	Turn	Demand		Flows		Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %			v/c	sec		Vehicles veh	Distance m				km/h
South: Racecourse Place																
1	L2	110	2.0	110	2.0	0.726	50.0	LOS D			17.2	122.6	0.98	0.87	1.01	23.8
3	R2	500	2.0	500	2.0	0.726	50.6	LOS D			17.2	122.6	0.98	0.87	1.02	23.8
Approach		610	2.0	610	2.0	0.726	50.5	LOS D			17.2	122.6	0.98	0.87	1.02	23.8
East: Gardeners Road																
4	L2	215	2.0	215	2.0	0.188	6.9	LOS A			0.8	6.0	0.09	0.57	0.09	49.3
5	T1	1850	2.0	1850	2.0	0.636	13.8	LOS A			19.6	139.9	0.53	0.48	0.53	48.9
Approach		2065	2.0	2065	2.0	0.636	13.1	LOS A			19.6	139.9	0.48	0.49	0.48	48.9
West: Gardeners Road																
11	T1	1580	2.0	1580	2.0	0.613	4.0	LOS A			10.2	72.9	0.24	0.22	0.24	56.3
12	R2	100	2.0	100	2.0	0.385	28.4	LOS B			3.8	27.4	0.68	0.76	0.68	31.3
Approach		1680	2.0	1680	2.0	0.613	5.5	LOS A			10.2	72.9	0.27	0.25	0.27	54.9
All Vehicles		4355	2.0	4355	2.0	0.726	15.4	LOS B			19.6	139.9	0.47	0.45	0.47	46.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

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

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	13.6	LOS B	0.1	0.1	0.48	0.48
P4	West Full Crossing	200	37.9	LOS D	0.5	0.5	0.80	0.80
All Pedestrians		250	33.0	LOS D			0.73	0.73

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [Thu AM BC + Mod1 - Evans Avenue - Racecourse Place - Centre Access]

Network: N101 [Thu AM BC + Mod1]

Base Case Thursday Morning Peak Hour Traffic Plus Development Traffic
Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	m				km/h
South: Centre Access														
1	L2	35	2.0	35	2.0	0.233	7.5	LOS A	0.9	6.2	0.60	0.70	0.60	51.7
2	T1	85	2.0	85	2.0	0.233	7.4	LOS A	0.9	6.2	0.60	0.70	0.60	48.0
3	R2	10	2.0	10	2.0	0.233	10.6	LOS A	0.9	6.2	0.60	0.70	0.60	52.2
Approach		130	2.0	130	2.0	0.233	7.7	LOS A	0.9	6.2	0.60	0.70	0.60	49.9
East: Evans Avenue														
4	L2	20	2.0	20	2.0	0.590	6.1	LOS A	2.5	18.1	0.47	0.67	0.47	51.0
5	T1	65	2.0	65	2.0	0.590	6.0	LOS A	2.5	18.1	0.47	0.67	0.47	51.7
6	R2	340	2.0	340	2.0	0.590	9.2	LOS A	2.5	18.1	0.47	0.67	0.47	46.8
Approach		425	2.0	425	2.0	0.590	8.6	LOS A	2.5	18.1	0.47	0.67	0.47	48.3
North: Racecourse Place														
7	L2	175	2.0	175	2.0	0.252	4.8	LOS A	1.5	10.8	0.28	0.54	0.28	49.2
8	T1	90	2.0	90	2.0	0.252	4.7	LOS A	1.5	10.8	0.28	0.54	0.28	50.5
9	R2	50	2.0	50	2.0	0.252	8.0	LOS A	1.5	10.8	0.28	0.54	0.28	49.9
Approach		315	2.0	315	2.0	0.252	5.3	LOS A	1.5	10.8	0.28	0.54	0.28	49.7
West: Evans Avenue														
10	L2	185	2.0	185	2.0	0.476	8.0	LOS A	2.0	13.9	0.64	0.78	0.67	46.9
11	T1	30	2.0	30	2.0	0.476	8.0	LOS A	2.0	13.9	0.64	0.78	0.67	51.9
12	R2	50	2.0	50	2.0	0.476	11.2	LOS A	2.0	13.9	0.64	0.78	0.67	51.5
Approach		265	2.0	265	2.0	0.476	8.6	LOS A	2.0	13.9	0.64	0.78	0.67	49.0
All Vehicles		1135	2.0	1135	2.0	0.590	7.6	LOS A	2.5	18.1	0.47	0.66	0.48	49.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.

MOVEMENT SUMMARY

Site: 0 [Thu AM BC + Mod1 + S Dev - Gardeners Avenue - Racecourse Place] Network: N101 [Thu AM BC + Mod1 + S Dev]

Base Case Thursday Morning Peak Hour Traffic Plus Development Traffic

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Back of Queue	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Racecourse Place														
1	L2	115	2.0	115	2.0	0.676	46.1	LOS D	16.9	120.5	0.95	0.84	0.95	24.9
3	R2	515	2.0	515	2.0	0.676	46.8	LOS D	16.9	120.5	0.96	0.84	0.96	24.8
Approach		630	2.0	630	2.0	0.676	46.7	LOS D	16.9	120.5	0.96	0.84	0.96	24.9
East: Gardeners Road														
4	L2	225	2.0	225	2.0	0.201	7.7	LOS A	1.4	9.6	0.13	0.59	0.13	48.2
5	T1	1850	2.0	1850	2.0	0.675	16.4	LOS B	22.6	160.9	0.60	0.54	0.60	47.3
Approach		2075	2.0	2075	2.0	0.675	15.5	LOS B	22.6	160.9	0.55	0.54	0.55	47.3
West: Gardeners Road														
11	T1	1580	2.0	1580	2.0	0.759	6.1	LOS A	21.3	151.5	0.36	0.33	0.36	54.6
12	R2	105	2.0	105	2.0	0.415	34.8	LOS C	4.7	33.3	0.77	0.79	0.77	28.3
Approach		1685	2.0	1685	2.0	0.759	7.9	LOS A	21.3	151.5	0.38	0.36	0.38	53.0
All Vehicles		4390	2.0	4390	2.0	0.759	17.0	LOS B	22.6	160.9	0.54	0.51	0.54	45.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

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

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	15.0	LOS B	0.1	0.1	0.50	0.50
P4	West Full Crossing	200	35.6	LOS D	0.5	0.5	0.77	0.77
All Pedestrians		250	31.5	LOS D			0.72	0.72

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [Thu AM BC + Mod1 + S Dev - Evans Avenue - Racecourse Place - Centre Access]

Network: N101 [Thu AM BC + Mod1 + S Dev]

Base Case Thursday Morning Peak Hour Traffic Plus Development Traffic
Site Category: (None)
Roundabout

Movement Performance - Vehicles													
Mov ID	Turn	Demand Total veh/h	Flows HV % veh/h	Arrival Total Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Centre Access													
1	L2	40	2.0	40	2.0	0.265	7.6	LOS A	1.0	7.3	0.61	0.71	51.7
2	T1	100	2.0	100	2.0	0.265	7.5	LOS A	1.0	7.3	0.61	0.71	48.0
3	R2	10	2.0	10	2.0	0.265	10.7	LOS A	1.0	7.3	0.61	0.71	52.2
Approach		150	2.0	150	2.0	0.265	7.7	LOS A	1.0	7.3	0.61	0.71	49.8
East: Evans Avenue													
4	L2	20	2.0	20	2.0	0.596	6.3	LOS A	2.7	18.9	0.50	0.68	50.9
5	T1	65	2.0	65	2.0	0.596	6.2	LOS A	2.7	18.9	0.50	0.68	51.7
6	R2	340	2.0	340	2.0	0.596	9.4	LOS A	2.7	18.9	0.50	0.68	46.7
Approach		425	2.0	425	2.0	0.596	8.8	LOS A	2.7	18.9	0.50	0.68	48.1
North: Racecourse Place													
7	L2	175	2.0	175	2.0	0.268	4.9	LOS A	1.6	11.5	0.30	0.54	49.2
8	T1	105	2.0	105	2.0	0.268	4.8	LOS A	1.6	11.5	0.30	0.54	50.4
9	R2	50	2.0	50	2.0	0.268	8.1	LOS A	1.6	11.5	0.30	0.54	49.9
Approach		330	2.0	330	2.0	0.268	5.3	LOS A	1.6	11.5	0.30	0.54	49.7
West: Evans Avenue													
10	L2	185	2.0	185	2.0	0.483	8.3	LOS A	2.1	15.1	0.66	0.80	46.5
11	T1	30	2.0	30	2.0	0.483	8.3	LOS A	2.1	15.1	0.66	0.80	51.6
12	R2	60	2.0	60	2.0	0.483	11.5	LOS A	2.1	15.1	0.66	0.80	51.2
Approach		275	2.0	275	2.0	0.483	9.0	LOS A	2.1	15.1	0.66	0.80	48.7
All Vehicles		1180	2.0	1180	2.0	0.596	7.7	LOS A	2.7	18.9	0.49	0.67	48.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.

MOVEMENT SUMMARY

Site: 0 [Thu PM BC - Gardeners Avenue - Racecourse Place]

Network: N101 [Thu PM BC]

Base Case Thursday Afternoon Peak Hour Traffic

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average	
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m			Speed km/h	
South: Racecourse Place														
1	L2	90	2.0	90	2.0	0.599	51.1	LOS D	11.6	82.4	0.96	0.82	0.96	23.5
3	R2	325	2.0	325	2.0	0.599	51.9	LOS D	11.6	82.4	0.97	0.82	0.97	23.5
Approach		415	2.0	415	2.0	0.599	51.7	LOS D	11.6	82.4	0.97	0.82	0.97	23.5
East: Gardeners Road														
4	L2	275	2.0	275	2.0	0.247	6.9	LOS A	1.2	8.2	0.09	0.58	0.09	49.2
5	T1	1395	2.0	1395	2.0	0.614	15.0	LOS B	18.9	134.2	0.54	0.49	0.54	48.2
Approach		1670	2.0	1670	2.0	0.614	13.6	LOS A	18.9	134.2	0.47	0.50	0.47	48.3
West: Gardeners Road														
11	T1	1505	2.0	1505	2.0	0.545	1.5	LOS A	4.0	28.7	0.10	0.09	0.10	58.5
12	R2	155	2.0	155	2.0	0.383	23.4	LOS B	5.2	36.9	0.61	0.75	0.61	34.3
Approach		1660	2.0	1660	2.0	0.545	3.6	LOS A	5.2	36.9	0.15	0.15	0.15	56.5
All Vehicles		3745	2.0	3745	2.0	0.614	13.4	LOS A	18.9	134.2	0.38	0.38	0.38	47.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).

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

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

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

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	14.5	LOS B	0.1	0.1	0.49	0.49
P4	West Full Crossing	100	41.8	LOS E	0.3	0.3	0.84	0.84
All Pedestrians		150	32.7	LOS D			0.72	0.72

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [Thu PM BC - Evans Avenue - Racecourse Place - Centre Access] Network: N101 [Thu PM BC]

Base Case Thursday Afternoon Peak Hour Traffic
Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Total veh/h	Flows HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
South: Centre Access														
1	L2	74	2.0	74	2.0	0.258	6.7	LOS A	1.5	10.4	0.54	0.65	0.54	52.1
2	T1	142	2.0	142	2.0	0.258	6.7	LOS A	1.5	10.4	0.54	0.65	0.54	48.6
3	R2	21	2.0	21	2.0	0.258	9.9	LOS A	1.5	10.4	0.54	0.65	0.54	52.5
Approach		237	2.0	237	2.0	0.258	7.0	LOS A	1.5	10.4	0.54	0.65	0.54	50.6
East: Evans Avenue (east)														
4	L2	21	2.0	21	2.0	0.263	6.8	LOS A	1.6	11.1	0.54	0.71	0.54	50.6
5	T1	32	2.0	32	2.0	0.263	6.8	LOS A	1.6	11.1	0.54	0.71	0.54	51.4
6	R2	195	2.0	195	2.0	0.263	10.0	LOS A	1.6	11.1	0.54	0.71	0.54	46.3
Approach		247	2.0	247	2.0	0.263	9.3	LOS A	1.6	11.1	0.54	0.71	0.54	47.8
North: Racecourse Place														
7	L2	211	2.0	211	2.0	0.392	5.4	LOS A	2.6	18.7	0.43	0.59	0.43	48.5
8	T1	158	2.0	158	2.0	0.392	5.3	LOS A	2.6	18.7	0.43	0.59	0.43	49.8
9	R2	84	2.0	84	2.0	0.392	8.7	LOS A	2.6	18.7	0.43	0.59	0.43	49.2
Approach		453	2.0	453	2.0	0.392	6.0	LOS A	2.6	18.7	0.43	0.59	0.43	49.1
West: Evans Avenue (west)														
10	L2	100	2.0	100	2.0	0.269	7.1	LOS A	1.5	10.8	0.57	0.70	0.57	47.5
11	T1	63	2.0	63	2.0	0.269	7.0	LOS A	1.5	10.8	0.57	0.70	0.57	52.2
12	R2	79	2.0	79	2.0	0.269	10.2	LOS A	1.5	10.8	0.57	0.70	0.57	51.9
Approach		242	2.0	242	2.0	0.269	8.1	LOS A	1.5	10.8	0.57	0.70	0.57	50.8
All Vehicles		1179	2.0	1179	2.0	0.392	7.3	LOS A	2.6	18.7	0.50	0.65	0.50	49.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.

MOVEMENT SUMMARY

Site: 0 [Thu PM BC + Mod1 - Gardeners Avenue - Racecourse Place]

Network: N101 [Thu PM BC + Mod1]

Base Case Thursday Afternoon Peak Hour Traffic Plus Development Traffic

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles													
Mov ID	Turn	Demand Total veh/h	Flows HV % veh/h	Arrival Total HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Racecourse Place													
1	L2	95	2.0	95	2.0	0.612	51.3	LOS D	11.9	84.8	0.97	0.82	23.5
3	R2	330	2.0	330	2.0	0.612	52.1	LOS D	11.9	84.8	0.97	0.82	23.4
Approach		425	2.0	425	2.0	0.612	51.9	LOS D	11.9	84.8	0.97	0.82	23.4
East: Gardeners Road													
4	L2	280	2.0	280	2.0	0.255	7.2	LOS A	1.4	9.9	0.11	0.58	48.8
5	T1	1395	2.0	1395	2.0	0.614	15.0	LOS B	18.9	134.2	0.54	0.49	48.2
Approach		1675	2.0	1675	2.0	0.614	13.7	LOS A	18.9	134.2	0.47	0.50	48.2
West: Gardeners Road													
11	T1	1505	2.0	1505	2.0	0.545	1.5	LOS A	4.0	28.7	0.10	0.09	58.5
12	R2	160	2.0	160	2.0	0.396	23.7	LOS B	5.5	39.1	0.62	0.75	34.1
Approach		1665	2.0	1665	2.0	0.545	3.6	LOS A	5.5	39.1	0.15	0.16	56.5
All Vehicles		3765	2.0	3765	2.0	0.614	13.5	LOS A	18.9	134.2	0.39	0.39	47.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	14.5	LOS B	0.1	0.1	0.49	0.49
P4	West Full Crossing	100	41.8	LOS E	0.3	0.3	0.84	0.84
All Pedestrians		150	32.7	LOS D			0.72	0.72

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [Thu PM BC + Mod1 - Evans Avenue - Racecourse Place - Centre Access]

Network: N101 [Thu PM BC + Mod1]

Base Case Thursday Afternoon Peak Hour Traffic Plus Development Traffic
Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	m				km/h
South: Centre Access														
1	L2	74	2.0	74	2.0	0.265	6.8	LOS A	1.5	10.6	0.55	0.66	0.55	52.0
2	T1	142	2.0	142	2.0	0.265	6.7	LOS A	1.5	10.6	0.55	0.66	0.55	48.5
3	R2	21	2.0	21	2.0	0.265	10.0	LOS A	1.5	10.6	0.55	0.66	0.55	52.5
Approach		237	2.0	237	2.0	0.265	7.0	LOS A	1.5	10.6	0.55	0.66	0.55	50.5
East: Evans Avenue (east)														
4	L2	21	2.0	21	2.0	0.279	6.9	LOS A	1.6	11.7	0.55	0.71	0.55	50.6
5	T1	32	2.0	32	2.0	0.279	6.8	LOS A	1.6	11.7	0.55	0.71	0.55	51.4
6	R2	205	2.0	205	2.0	0.279	10.0	LOS A	1.6	11.7	0.55	0.71	0.55	46.2
Approach		258	2.0	258	2.0	0.279	9.4	LOS A	1.6	11.7	0.55	0.71	0.55	47.7
North: Racecourse Place														
7	L2	221	2.0	221	2.0	0.401	5.5	LOS A	2.7	19.2	0.43	0.59	0.43	48.6
8	T1	158	2.0	158	2.0	0.401	5.3	LOS A	2.7	19.2	0.43	0.59	0.43	49.8
9	R2	84	2.0	84	2.0	0.401	8.7	LOS A	2.7	19.2	0.43	0.59	0.43	49.2
Approach		463	2.0	463	2.0	0.401	6.0	LOS A	2.7	19.2	0.43	0.59	0.43	49.1
West: Evans Avenue (west)														
10	L2	100	2.0	100	2.0	0.275	7.2	LOS A	1.5	11.0	0.57	0.71	0.57	47.5
11	T1	63	2.0	63	2.0	0.275	7.1	LOS A	1.5	11.0	0.57	0.71	0.57	52.2
12	R2	79	2.0	79	2.0	0.275	10.3	LOS A	1.5	11.0	0.57	0.71	0.57	51.8
Approach		242	2.0	242	2.0	0.275	8.2	LOS A	1.5	11.0	0.57	0.71	0.57	50.7
All Vehicles		1200	2.0	1200	2.0	0.401	7.4	LOS A	2.7	19.2	0.51	0.65	0.51	49.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 0 [Thu PM BC + Mod1 + S Dev - Gardeners Avenue - Racecourse Place] **Network:** N101 [Thu PM BC + Mod1 + S Dev]

Base Case Thursday Afternoon Peak Hour Traffic Plus Development Traffic
Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Total veh/h	Flows HV % veh/h	Arrival 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	Aver. No. Cycles	Average Speed km/h
South: Racecourse Place														
1	L2	100	2.0	100	2.0	0.607	50.4	LOS D	12.2	87.1	0.96	0.82	0.96	23.7
3	R2	340	2.0	340	2.0	0.607	51.2	LOS D	12.2	87.1	0.97	0.82	0.97	23.6
Approach		440	2.0	440	2.0	0.607	51.0	LOS D	12.2	87.1	0.96	0.82	0.96	23.6
East: Gardeners Road														
4	L2	290	2.0	290	2.0	0.271	8.1	LOS A	2.1	14.9	0.15	0.60	0.15	47.7
5	T1	1395	2.0	1395	2.0	0.614	15.0	LOS B	18.9	134.2	0.54	0.49	0.54	48.2
Approach		1685	2.0	1685	2.0	0.614	13.8	LOS A	18.9	134.2	0.48	0.51	0.48	48.1
West: Gardeners Road														
11	T1	1505	2.0	1505	2.0	0.552	1.9	LOS A	5.0	35.8	0.13	0.12	0.13	58.1
12	R2	165	2.0	165	2.0	0.424	25.1	LOS B	6.0	42.8	0.66	0.77	0.66	33.3
Approach		1670	2.0	1670	2.0	0.552	4.2	LOS A	6.0	42.8	0.18	0.18	0.18	55.9
All Vehicles		3795	2.0	3795	2.0	0.614	13.9	LOS A	18.9	134.2	0.40	0.40	0.40	47.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Pedestrian	Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	50	14.5	LOS B	0.1	0.1	0.49	0.49
P4	West Full Crossing	100	41.0	LOS E	0.3	0.3	0.83	0.83
All Pedestrians		150	32.2	LOS D			0.72	0.72

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [Thu PM BC + Mod1 + S Dev - Evans Avenue - Racecourse Place - Centre Access]

Network: N101 [Thu PM BC + Mod1 + S Dev]

Base Case Thursday Afternoon Peak Hour Traffic Plus Development Traffic
Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Total veh/h	Flows HV % veh/h	Arrival 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	Aver. No. Cycles	Average Speed km/h
South: Centre Access														
1	L2	84	2.0	84	2.0	0.299	6.9	LOS A	1.7	12.1	0.56	0.66	0.56	52.0
2	T1	158	2.0	158	2.0	0.299	6.8	LOS A	1.7	12.1	0.56	0.66	0.56	48.5
3	R2	21	2.0	21	2.0	0.299	10.0	LOS A	1.7	12.1	0.56	0.66	0.56	52.4
Approach		263	2.0	263	2.0	0.299	7.1	LOS A	1.7	12.1	0.56	0.66	0.56	50.5
East: Evans Avenue (east)														
4	L2	21	2.0	21	2.0	0.291	7.1	LOS A	1.7	12.0	0.57	0.72	0.57	50.5
5	T1	32	2.0	32	2.0	0.291	7.0	LOS A	1.7	12.0	0.57	0.72	0.57	51.2
6	R2	205	2.0	205	2.0	0.291	10.2	LOS A	1.7	12.0	0.57	0.72	0.57	46.0
Approach		258	2.0	258	2.0	0.291	9.6	LOS A	1.7	12.0	0.57	0.72	0.57	47.5
North: Racecourse Place														
7	L2	221	2.0	221	2.0	0.420	5.6	LOS A	2.8	20.3	0.45	0.60	0.45	48.5
8	T1	174	2.0	174	2.0	0.420	5.5	LOS A	2.8	20.3	0.45	0.60	0.45	49.7
9	R2	84	2.0	84	2.0	0.420	8.8	LOS A	2.8	20.3	0.45	0.60	0.45	49.2
Approach		479	2.0	479	2.0	0.420	6.1	LOS A	2.8	20.3	0.45	0.60	0.45	49.0
West: Evans Avenue (west)														
10	L2	100	2.0	100	2.0	0.293	7.3	LOS A	1.7	11.8	0.59	0.72	0.59	47.2
11	T1	63	2.0	63	2.0	0.293	7.2	LOS A	1.7	11.8	0.59	0.72	0.59	52.0
12	R2	89	2.0	89	2.0	0.293	10.5	LOS A	1.7	11.8	0.59	0.72	0.59	51.7
Approach		253	2.0	253	2.0	0.293	8.4	LOS A	1.7	11.8	0.59	0.72	0.59	50.6
All Vehicles		1253	2.0	1253	2.0	0.420	7.5	LOS A	2.8	20.3	0.53	0.66	0.53	49.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.

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.

MOVEMENT SUMMARY

Site: 0 [Sat MD BC - Gardeners Avenue - Racecourse Place] **Network: N101 [Sat MD BC]**

Base Case Saturday Midday Peak Hour Traffic

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles													
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		veh/h	HV %	Total	HV %	v/c	sec		Vehicles	Distance m			km/h
South: Racecourse Place													
1	L2	140	2.0	140	2.0	0.515	43.1	LOS D	12.6	90.0	0.90	0.80	25.7
3	R2	350	2.0	350	2.0	0.515	44.5	LOS D	12.6	90.0	0.91	0.80	25.5
Approach		490	2.0	490	2.0	0.515	44.1	LOS D	12.6	90.0	0.91	0.80	25.6
East: Gardeners Road													
4	L2	290	2.0	290	2.0	0.237	5.9	LOS A	0.3	2.4	0.03	0.56	50.6
5	T1	1000	2.0	1000	2.0	0.523	21.5	LOS B	15.3	109.0	0.62	0.54	44.4
Approach		1290	2.0	1290	2.0	0.523	18.0	LOS B	15.3	109.0	0.49	0.55	45.1
West: Gardeners Road													
11	T1	1230	2.0	1230	2.0	0.492	5.0	LOS A	8.2	58.5	0.25	0.23	55.5
12	R2	150	2.0	150	2.0	0.313	23.0	LOS B	4.5	31.8	0.55	0.72	34.6
Approach		1380	2.0	1380	2.0	0.492	7.0	LOS A	8.2	58.5	0.28	0.28	53.5
All Vehicles		3160	2.0	3160	2.0	0.523	17.2	LOS B	15.3	109.0	0.46	0.47	44.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

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

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue	Prop. Queued	Effective Stop Rate	
		ped/h	sec		Pedestrian ped	Distance m		
P1	South Full Crossing	50	19.9	LOS B	0.1	0.1	0.58	0.58
P4	West Full Crossing	100	35.4	LOS D	0.3	0.3	0.77	0.77
All Pedestrians		150	30.2	LOS D			0.71	0.71

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [Sat MD BC - Evans Avenue - Racecourse Place - Centre Access]

Network: N101 [Sat MD BC]

Base Case Saturday Midday Peak Hour Traffic
Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Total veh/h	Flows HV % veh/h	Arrival 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	Aver. No. Cycles	Average Speed km/h	
South: Centre Access														
1	L2	74	2.0	74	2.0	0.374	7.1	LOS A	2.1	15.1	0.60	0.68	0.60	51.9
2	T1	216	2.0	216	2.0	0.374	7.0	LOS A	2.1	15.1	0.60	0.68	0.60	48.3
3	R2	21	2.0	21	2.0	0.374	10.2	LOS A	2.1	15.1	0.60	0.68	0.60	52.3
Approach		311	2.0	311	2.0	0.374	7.2	LOS A	2.1	15.1	0.60	0.68	0.60	49.9
East: Evans Avenue (east)														
4	L2	21	2.0	21	2.0	0.324	7.5	LOS A	1.9	13.2	0.61	0.75	0.61	50.3
5	T1	47	2.0	47	2.0	0.324	7.4	LOS A	1.9	13.2	0.61	0.75	0.61	51.1
6	R2	200	2.0	200	2.0	0.324	10.6	LOS A	1.9	13.2	0.61	0.75	0.61	45.7
Approach		268	2.0	268	2.0	0.324	9.8	LOS A	1.9	13.2	0.61	0.75	0.61	47.6
North: Racecourse Place														
7	L2	137	2.0	137	2.0	0.382	5.2	LOS A	2.6	18.8	0.39	0.56	0.39	48.7
8	T1	242	2.0	242	2.0	0.382	5.0	LOS A	2.6	18.8	0.39	0.56	0.39	49.9
9	R2	84	2.0	84	2.0	0.382	8.4	LOS A	2.6	18.8	0.39	0.56	0.39	49.4
Approach		463	2.0	463	2.0	0.382	5.7	LOS A	2.6	18.8	0.39	0.56	0.39	49.5
West: Evans Avenue (west)														
10	L2	100	2.0	100	2.0	0.258	7.6	LOS A	1.4	9.8	0.61	0.74	0.61	46.9
11	T1	32	2.0	32	2.0	0.258	7.5	LOS A	1.4	9.8	0.61	0.74	0.61	51.8
12	R2	74	2.0	74	2.0	0.258	10.7	LOS A	1.4	9.8	0.61	0.74	0.61	51.5
Approach		205	2.0	205	2.0	0.258	8.7	LOS A	1.4	9.8	0.61	0.74	0.61	50.0
All Vehicles		1247	2.0	1247	2.0	0.382	7.4	LOS A	2.6	18.8	0.52	0.66	0.52	49.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.

MOVEMENT SUMMARY

Site: 0 [Sat MD BC + Mod1 - Gardeners Avenue - Racecourse Place]

Network: N101 [Sat MD BC + Mod1]

Base Case Saturday Midday Peak Hour Traffic Plus Development Traffic

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles													
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m			km/h
South: Racecourse Place													
1	L2	145	2.0	145	2.0	0.524	43.3	LOS D	12.9	92.2	0.90	0.81	25.7
3	R2	355	2.0	355	2.0	0.524	44.6	LOS D	12.9	92.2	0.91	0.81	25.5
Approach		500	2.0	500	2.0	0.524	44.2	LOS D	12.9	92.2	0.91	0.81	25.5
East: Gardeners Road													
4	L2	295	2.0	295	2.0	0.243	5.9	LOS A	0.3	2.5	0.03	0.56	50.6
5	T1	1000	2.0	1000	2.0	0.533	22.4	LOS B	15.7	112.0	0.64	0.56	43.9
Approach		1295	2.0	1295	2.0	0.533	18.6	LOS B	15.7	112.0	0.50	0.56	44.7
West: Gardeners Road													
11	T1	1230	2.0	1230	2.0	0.492	5.0	LOS A	8.2	58.5	0.25	0.23	55.5
12	R2	155	2.0	155	2.0	0.317	23.2	LOS B	4.7	33.4	0.56	0.72	34.4
Approach		1385	2.0	1385	2.0	0.492	7.0	LOS A	8.2	58.5	0.29	0.28	53.5
All Vehicles		3180	2.0	3180	2.0	0.533	17.6	LOS B	15.7	112.0	0.47	0.48	44.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Prop. Queued	Effective Stop Rate	
P1	South Full Crossing	50	20.5	LOS C	0.1	0.1	0.58	0.58
P4	West Full Crossing	100	35.4	LOS D	0.3	0.3	0.77	0.77
All Pedestrians		150	30.4	LOS D			0.71	0.71

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [Sat MD BC + Mod1 - Evans Avenue - Racecourse Place - Centre Access]

Network: N101 [Sat MD BC + Mod1]

Base Case Saturday Midday Peak Hour Traffic Plus Development Traffic
Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Total veh/h	Flows HV % veh/h	Arrival Total HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h	
South: Centre Access														
1	L2	74	2.0	74	2.0	0.387	7.2	LOS A	2.2	15.4	0.61	0.69	0.61	51.8
2	T1	216	2.0	216	2.0	0.387	7.1	LOS A	2.2	15.4	0.61	0.69	0.61	48.2
3	R2	21	2.0	21	2.0	0.387	10.3	LOS A	2.2	15.4	0.61	0.69	0.61	52.3
Approach		311	2.0	311	2.0	0.387	7.3	LOS A	2.2	15.4	0.61	0.69	0.61	49.8
East: Evans Avenue (east)														
4	L2	21	2.0	21	2.0	0.350	7.5	LOS A	2.0	14.2	0.62	0.75	0.62	50.3
5	T1	53	2.0	53	2.0	0.350	7.5	LOS A	2.0	14.2	0.62	0.75	0.62	51.0
6	R2	211	2.0	211	2.0	0.350	10.7	LOS A	2.0	14.2	0.62	0.75	0.62	45.7
Approach		284	2.0	284	2.0	0.350	9.9	LOS A	2.0	14.2	0.62	0.75	0.62	47.6
North: Racecourse Place														
7	L2	147	2.0	147	2.0	0.393	5.2	LOS A	2.7	19.5	0.40	0.56	0.40	48.7
8	T1	242	2.0	242	2.0	0.393	5.1	LOS A	2.7	19.5	0.40	0.56	0.40	49.9
9	R2	84	2.0	84	2.0	0.393	8.4	LOS A	2.7	19.5	0.40	0.56	0.40	49.3
Approach		474	2.0	474	2.0	0.393	5.7	LOS A	2.7	19.5	0.40	0.56	0.40	49.4
West: Evans Avenue (west)														
10	L2	100	2.0	100	2.0	0.270	7.7	LOS A	1.4	10.2	0.62	0.74	0.62	46.8
11	T1	37	2.0	37	2.0	0.270	7.6	LOS A	1.4	10.2	0.62	0.74	0.62	51.8
12	R2	74	2.0	74	2.0	0.270	10.8	LOS A	1.4	10.2	0.62	0.74	0.62	51.4
Approach		211	2.0	211	2.0	0.270	8.8	LOS A	1.4	10.2	0.62	0.74	0.62	50.0
All Vehicles		1279	2.0	1279	2.0	0.393	7.5	LOS A	2.7	19.5	0.54	0.67	0.54	49.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.

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.

MOVEMENT SUMMARY

Site: 0 [Sat MD BC + Mod1 + S Dev - Gardeners Avenue - Racecourse Place]

Network: N101 [Sat MD BC + Mod1 + S Dev]

Base Case Saturday Midday Peak Hour Traffic Plus Development Traffic

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Racecourse Place														
1	L2	145	2.0	145	2.0	0.514	42.4	LOS C	12.9	91.9	0.89	0.80	0.89	26.0
3	R2	360	2.0	360	2.0	0.514	43.7	LOS D	12.9	91.9	0.90	0.80	0.90	25.8
Approach		505	2.0	505	2.0	0.514	43.3	LOS D	12.9	91.9	0.90	0.80	0.90	25.8
East: Gardeners Road														
4	L2	300	2.0	300	2.0	0.248	5.9	LOS A	0.4	2.6	0.03	0.56	0.03	50.5
5	T1	1000	2.0	1000	2.0	0.523	21.5	LOS B	15.3	109.0	0.62	0.54	0.62	44.4
Approach		1300	2.0	1300	2.0	0.523	17.9	LOS B	15.3	109.0	0.48	0.55	0.48	45.1
West: Gardeners Road														
11	T1	1230	2.0	1230	2.0	0.498	5.5	LOS A	8.9	63.4	0.27	0.25	0.27	55.0
12	R2	155	2.0	155	2.0	0.335	24.0	LOS B	4.8	34.4	0.58	0.73	0.58	33.9
Approach		1385	2.0	1385	2.0	0.498	7.6	LOS A	8.9	63.4	0.31	0.30	0.31	53.0
All Vehicles		3190	2.0	3190	2.0	0.523	17.5	LOS B	15.3	109.0	0.47	0.48	0.47	44.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle 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.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue	Prop. Queued	Effective Stop Rate	
		ped/h	sec		Pedestrian ped	Distance m		
P1	South Full Crossing	50	19.9	LOS B	0.1	0.1	0.58	0.58
P4	West Full Crossing	100	34.6	LOS D	0.3	0.3	0.76	0.76
All Pedestrians		150	29.7	LOS C			0.70	0.70

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [Sat MD BC + Mod1 + S Dev - Evans Avenue - Racecourse Place - Centre Access]

Network: N101 [Sat MD BC + Mod1 + S Dev]

Base Case Saturday Midday Peak Hour Traffic Plus Development Traffic
Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Total veh/h	Flows HV %	Arrival 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	Aver. No. Cycles	Average Speed km/h
South: Centre Access														
1	L2	74	2.0	74	2.0	0.393	7.2	LOS A	2.2	15.8	0.61	0.70	0.61	51.8
2	T1	221	2.0	221	2.0	0.393	7.1	LOS A	2.2	15.8	0.61	0.70	0.61	48.1
3	R2	21	2.0	21	2.0	0.393	10.3	LOS A	2.2	15.8	0.61	0.70	0.61	52.2
Approach		316	2.0	316	2.0	0.393	7.3	LOS A	2.2	15.8	0.61	0.70	0.61	49.8
East: Evans Avenue (east)														
4	L2	21	2.0	21	2.0	0.352	7.6	LOS A	2.0	14.3	0.63	0.76	0.63	50.3
5	T1	53	2.0	53	2.0	0.352	7.5	LOS A	2.0	14.3	0.63	0.76	0.63	51.0
6	R2	211	2.0	211	2.0	0.352	10.7	LOS A	2.0	14.3	0.63	0.76	0.63	45.6
Approach		284	2.0	284	2.0	0.352	9.9	LOS A	2.0	14.3	0.63	0.76	0.63	47.6
North: Racecourse Place														
7	L2	147	2.0	147	2.0	0.398	5.2	LOS A	2.8	19.8	0.40	0.56	0.40	48.7
8	T1	247	2.0	247	2.0	0.398	5.1	LOS A	2.8	19.8	0.40	0.56	0.40	49.9
9	R2	84	2.0	84	2.0	0.398	8.4	LOS A	2.8	19.8	0.40	0.56	0.40	49.3
Approach		479	2.0	479	2.0	0.398	5.7	LOS A	2.8	19.8	0.40	0.56	0.40	49.4
West: Evans Avenue (west)														
10	L2	100	2.0	100	2.0	0.271	7.7	LOS A	1.4	10.3	0.62	0.75	0.62	46.8
11	T1	37	2.0	37	2.0	0.271	7.6	LOS A	1.4	10.3	0.62	0.75	0.62	51.8
12	R2	74	2.0	74	2.0	0.271	10.9	LOS A	1.4	10.3	0.62	0.75	0.62	51.4
Approach		211	2.0	211	2.0	0.271	8.8	LOS A	1.4	10.3	0.62	0.75	0.62	49.9
All Vehicles		1289	2.0	1289	2.0	0.398	7.5	LOS A	2.8	19.8	0.54	0.67	0.54	49.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

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.