
# Milperra WSU Masterplan
# Transport Assessment

Prepared for:

Mirvac

2 June 2020

The Transport Planning Partnership

# Milperra WSU Masterplan
# Transport Assessment

Client: Mirvac

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## Quality Record

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# 1 Introduction

This traffic and transport assessment report relates to the proposed rezoning of the existing Western Sydney University (WSU) Milperra campus. The report will accompany a planning proposal to Canterbury-Bankstown Council to rezone the site to permit residential land use.

The proposed development involves the construction of 441 residential dwellings, comprising a diverse mix of low rise residential dwellings, retail and retain the existing child care centre currently operating within the site.

The Transport Planning Partnership (TTPP) has prepared this report on behalf of Mirvac to accompany the planning proposal.

## 1.1 Purpose of this Report

This report assesses the traffic and transport implications of the proposed development and is set out as follows:

- Chapter 2 discusses the existing conditions including a description of the subject site
- Chapter 3 provides a brief description of the proposed development
- Chapter 4 assesses the future parking requirement of the site and its internal layout
- Chapter 5 examines the traffic generation and its impacts
- Chapter 6 presents the conclusions of the assessment.

## 1.2 References

In preparing this report, reference has been made to the following:

- Canterbury-Bankstown South District Plan 2018
- Bankstown Development Control Plan (DCP) 2015
- Roads and Maritime Services Guide to Traffic Generating Developments, updated technical direction TDT 2013/04a
- other documents and data as referenced in this report.

# 2 Existing Conditions Assessment

## 2.1 Site Description

The subject site (the 'site') is located in Milperra and falls within the Canterbury-Bankstown local government area. The site is currently occupied by the Western Sydney University Milperra campus, which is proposing to relocate to a new location in Bankstown.

The location of the site and its surrounds is shown in Figure 2.1.

**Figure 2.1: Locality Map**


*Source: Google Maps Australia*

Surrounding land uses in the area are predominantly light industrial to the north east, including the Milperra Industrial Precinct, and low density residential to the west and south-east of the site.

## 2.2 Abutting Road Network

The site is surrounded by a network of local roads, including Bullecourt Avenue to the north, Horsley Road to the east and Ashford Avenue to the west of the site. A brief description of these roads is provided below.

### 2.2.1 Bullecourt Avenue

Bullecourt Avenue functions as a two-way, two-lane primary collector road, generally aligned in an east-west direction between Horsley Road and Ashford Avenue. The road carriageway is approximately 12.5m wide (kerb to kerb), with unrestricted kerbside parking generally provided on both sides of the road. Bullecourt Avenue has a posted speed limit of 60 km/hr. This road provides good connectivity between Henry Lawson Drive and Horsley Drive to the west and east ends respectively.

### 2.2.2 Horsley Road

Horsley Road functions as a two-way, two-lane primary collector road in the immediate vicinity of the site and is generally aligned in a north-south direction between Ladbroke Street and Bransgrove Road. The road carriageway is approximately 12.0m wide (kerb to kerb), with unrestricted kerbside parking generally provided on both sides of the road. This road provides good connectivity to/from the wider arterial road network via Bullecourt Avenue, Beaconsfield Street and Bransgrove Road.

The posted speed limit is 60km/hr, with 40 km/hr school zone restrictions in operation during school hours to the south of the Horsley Road-Bullecourt Avenue intersection.

### 2.2.3 Ashford Avenue

Ashford Avenue functions as a two-way, two-lane local collector road, generally aligned in a north-south direction between Milperra Road and Flanders Avenue to the north and south ends respectively. The road carriageway is approximately 12.0m wide (kerb to kerb), with unrestricted kerbside parking provided on the west side and timed kerbside parking on the east side of the road. The posted speed limit is 50 km/hr within the vicinity of the site.

It is also noted that there is currently a No Parking zone along the east side of the road, which operates between 10am and 5pm Monday to Friday between March and November, which is generally used for drop off/pick up activities associated with the university.

## 2.3 Pedestrian Infrastructure

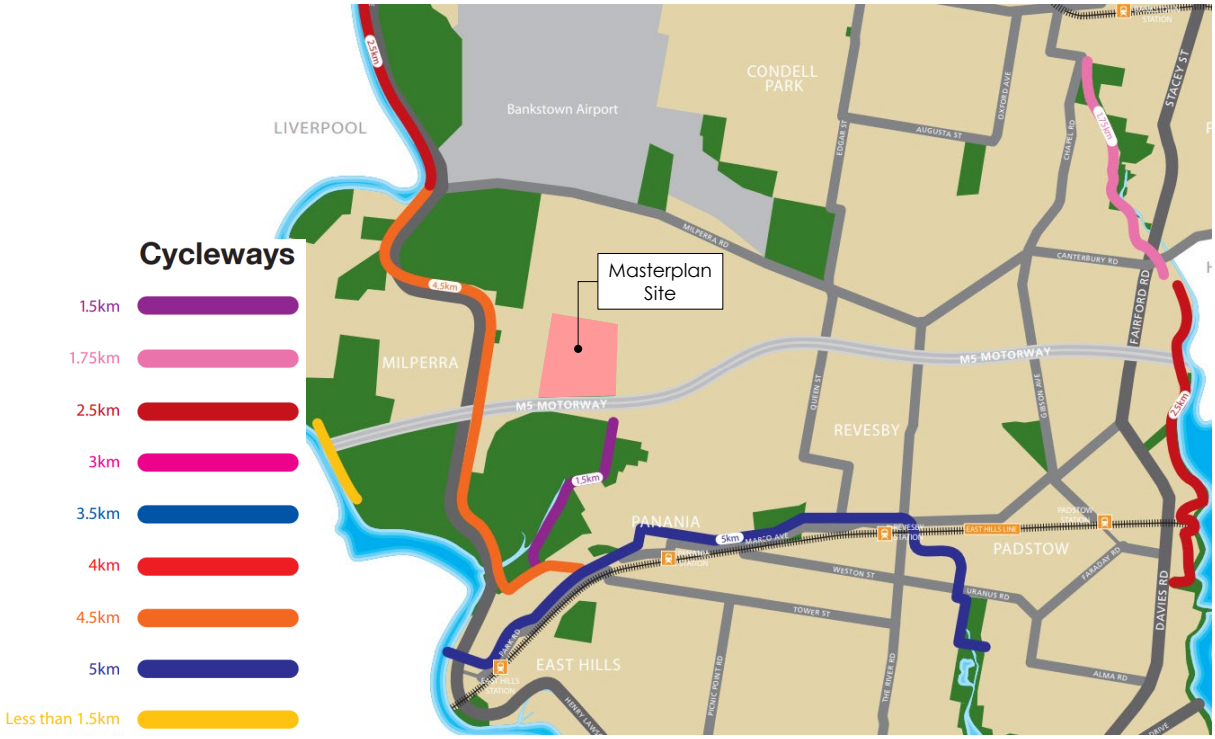
There is a reasonable provision of pedestrian infrastructure within the immediate vicinity of the site. Paved pedestrian footpaths are generally provided on both sides of Bullecourt Avenue and Horsley Road, which provides good access to the surrounding areas and public transport facilities. In addition to this, pedestrian footpaths are generally only provided on some sections of Ashford Avenue, near the retail shop frontages at the corner of Ashford Avenue and Bullecourt Avenue. Further south of Ashford Avenue, a grass verge is generally provided on either side of the road and are used as informal pedestrian footpaths.

## 2.4 Cycle Infrastructure

There is a good provision of cycle infrastructure in the local area. To the west of the site, a segregated cycleway (depicted in orange line in Figure 2.2) along Henry Lawson Drive, providing connectivity in a generally north-south direction between Landsdowne and East Hills. In addition to this, there is a cycleway provided to the south of the site traversing the sports fields which provides good connectivity to/from Panania (depicted in magenta line in Figure 2.2).

An extract from the Canterbury City Cycleway Plan is provided in Figure 2.2.

**Figure 2.2: Canterbury City Cycleway Plan**



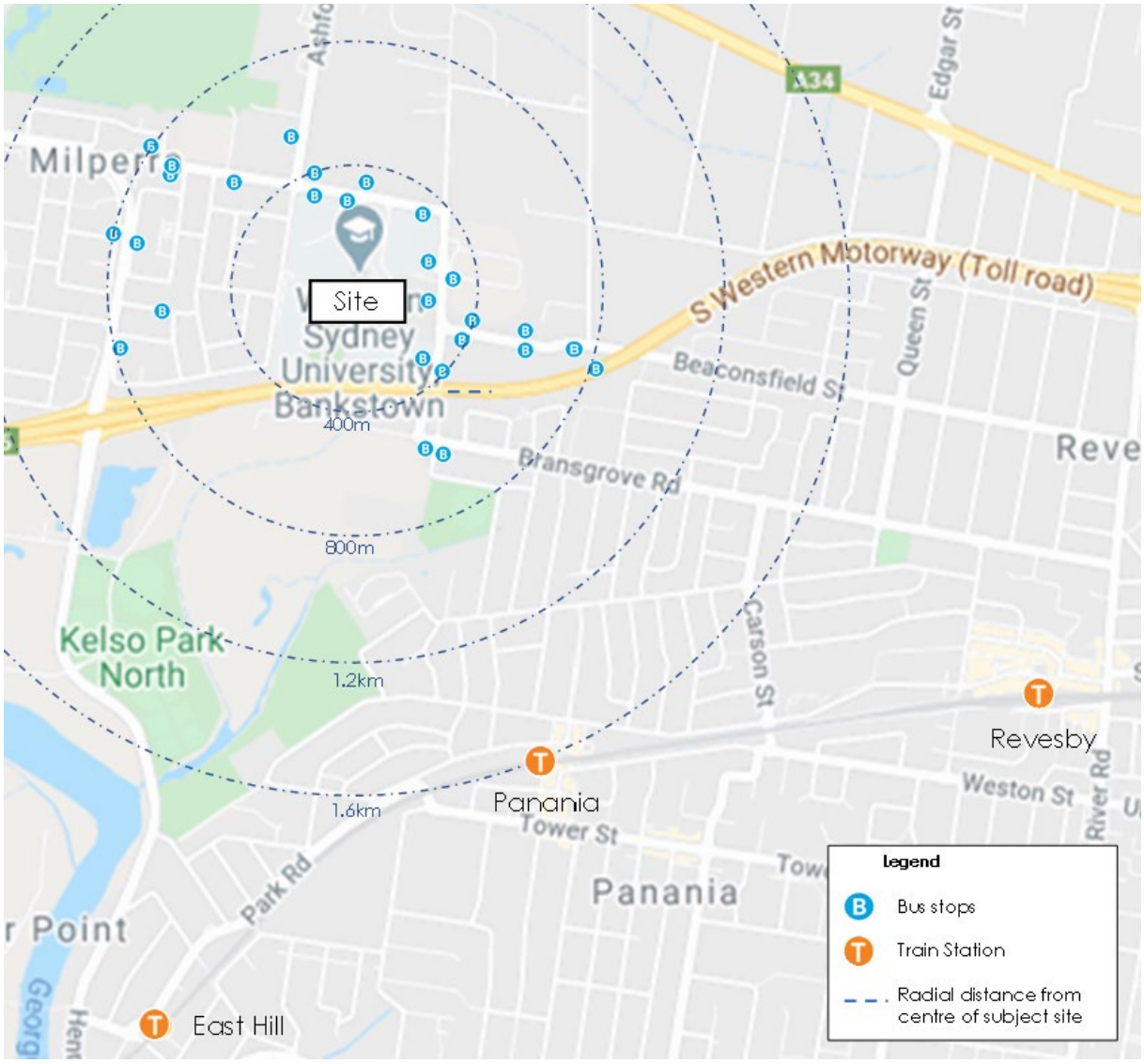

*Source: https://www.cbcity.nsw.gov.au/resident/getting-around/walking-and-cycling*

## 2.5 Public Transport Facilities

The site is moderately accessible by public transport, with a number of bus services operating within a 400m catchment radius of the centre of the site. There are several railway stations accessible from the site. The nearest railway station is Panania Station, which is approximately 1.6km from the site.

The site's proximity to nearby public transport facilities is shown in Figure 2.3.

**Figure 2.3: Site Proximity to Nearby Public Transport Facilities**




*Base Map Source: Google Maps Australia*

A summary of the existing bus services within a 400m radius catchment of the centre of the site, as well as their associated frequencies, is provided in Table 2.1.

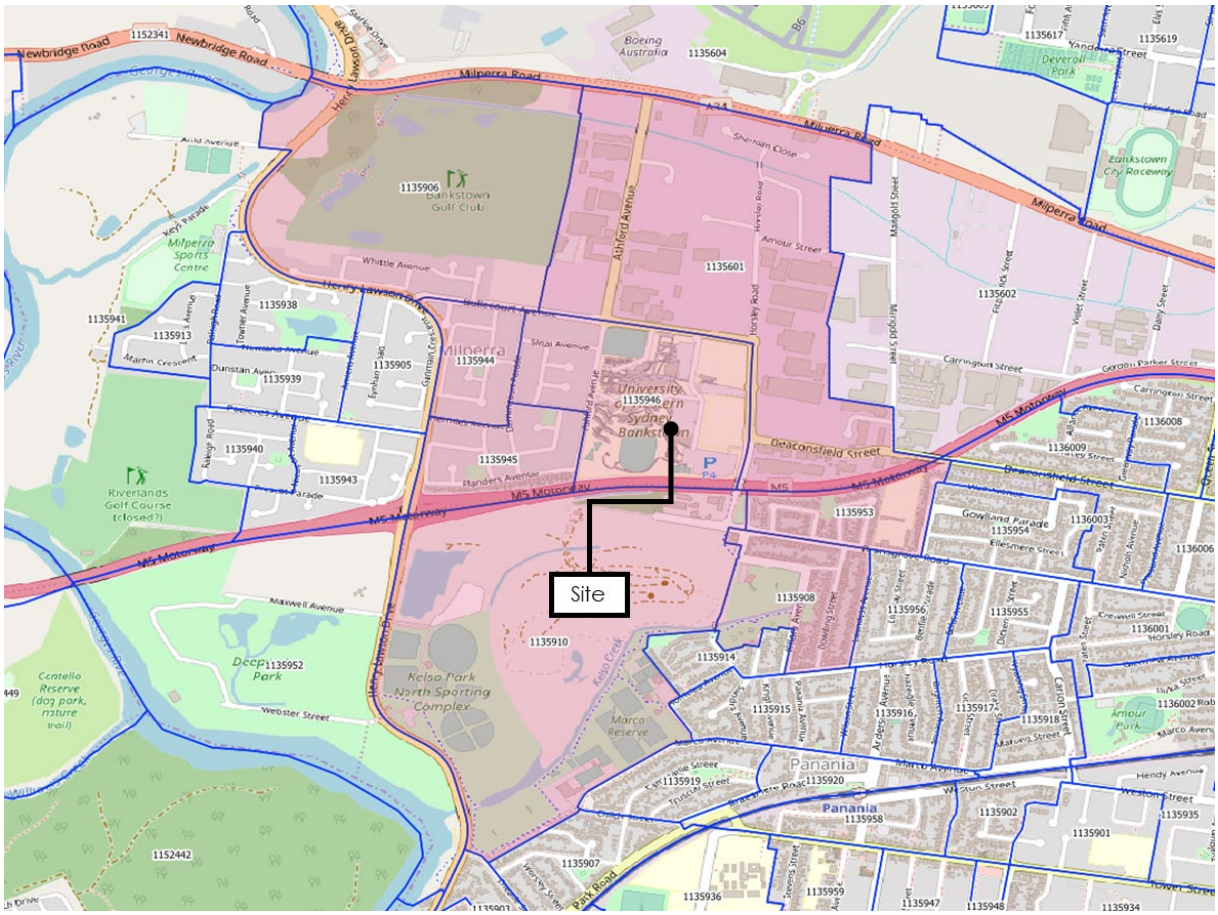
**Table 2.1: Bus Service Summary**

| Service No. | Route Description | Approximate Frequency (Each Direction) | |
|---|---|---|---|
| | | Peak | Off-Peak |
| 922 | Between East Hills and Bankstown | Every 30 mins | |
| 962 | Between East Hills and Miranda | Every 15-20 mins | Every 30 mins |
| M90 | Between Burwood and Liverpool | Every 10 mins | Every 15 mins |
| S5 | Between Milperra and Padstow | Five services per day | |

## 2.6 Method of Travel Work

Method of Travel to Work (MTW) data from the 2016 Census has been obtained from the Australian Bureau of Statistics (ABS) in order to understand the existing travel behaviour of residents living within the immediate vicinity of the site. The eight nearest 'level one' statistical areas (SA1) from the site have been selected, as shown in Figure 2.4.

**Figure 2.4: Selected SA1 Areas**




*Source: OpenStreetMap*

A summary of the existing mode share of travel for residents living in the selected statistical areas is provided in Table 2.2.

**Table 2.2: Travel to Work Mode Share Summary**

| Mode Type | Number of Persons | Proportion (%) |
|---|---|---|
| Train | 156 | 13% |
| Bus | 19 | 2% |
| Ferry/Tram | 0 | 0% |

| | | |
|---|---|---|
| Car (Drivers and Passengers) | 884 | 72% |
| Bicycle | 0 | 0% |
| Walked Only | 18 | 1% |
| Worked at Home/Did Not Go to Work | 147 | 12% |
| **Total** | **1,224** | **100%** |

Table 2.2 indicates that the predominant mode of travel among residents living in the selected statistical areas is car (72%), followed by train (13%) and those who either worked at home or did not go to work (12%).

## 2.7 Existing Site and Car Parking Provisions

As indicated previously, the existing site is currently occupied by the Western Sydney University Milperra campus, which is proposed to relocate to a new location in the Bankstown CBD.

The existing university campus currently provides various tertiary education facilities, including humanities and communication arts, social sciences and psychology, education and business etc. In 2016, the university campus supported some 8,166 students, 195 academic staff and 128 professional staff.

In addition to this, the site also provides student housing, operated by Campus Living Villages (CLV), which accommodates 290 rooms (290 beds) and a 67- place child care centre, amongst other ancillary gym and food facilities (e.g. WSU Village) within the campus.

The supply of parking across the site is more than the demand of on-site parking facilities within the campus, with eight key parking areas provided across the campus, as shown in Figure 2.5 (overleaf).

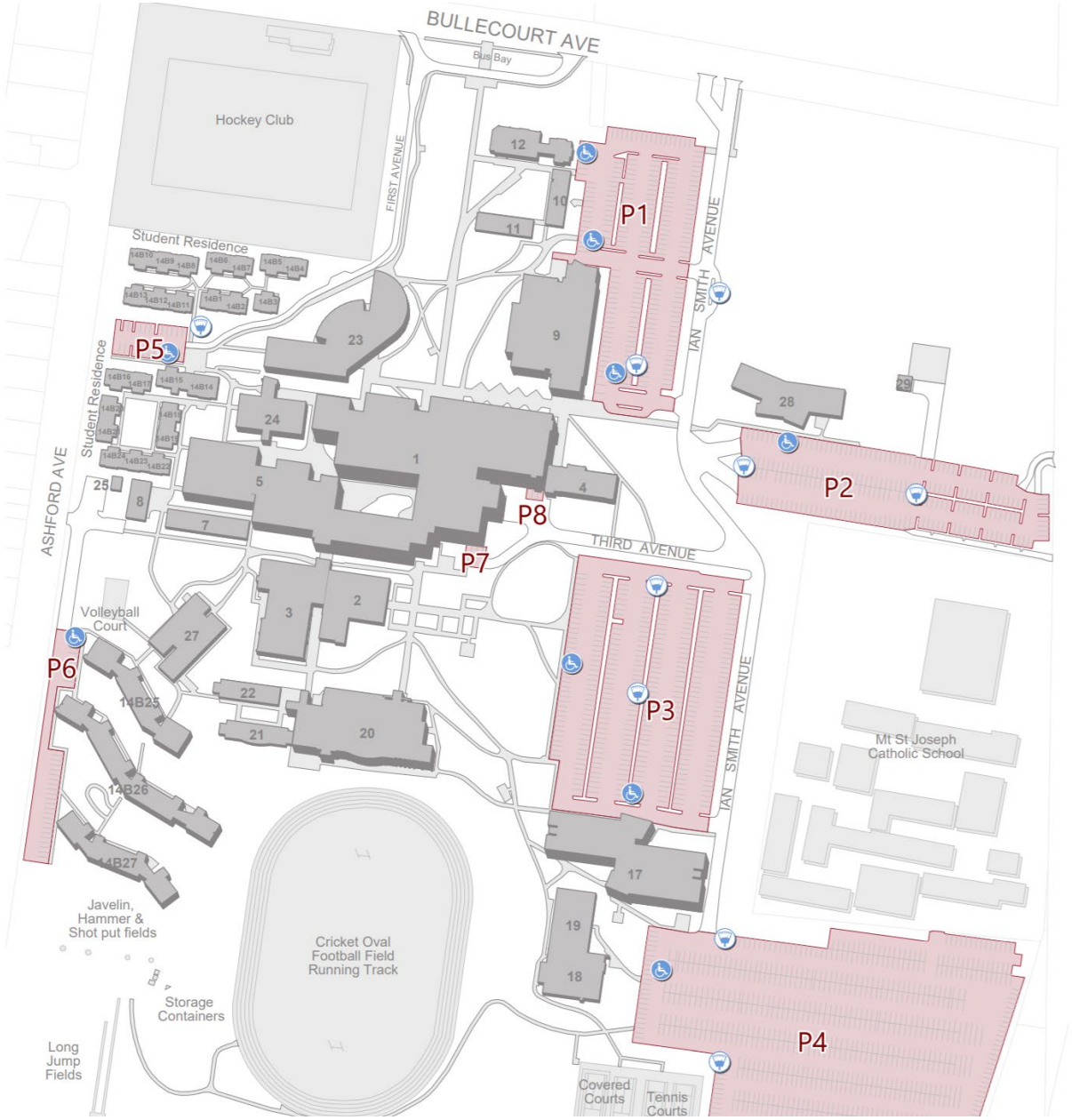
A one day 'scratch and display' parking permit for the campus parking facilities costs $7. However, most staff and students who drive to the campus are understood to have half or full-year parking permits, with the associated parking fees summarised in Table 2.3.

**Table 2.3: WSU Campus Parking Permit Fees**

| Permit Type | Permit Cost | |
|---|---|---|
| | Students | Non-Students |
| Half Year General Yellow | $47 | $101 |
| Annual General Yellow | $94 | $202 |

Notwithstanding this, based on site observations, the existing car parks within the campus currently operate well below capacity, with spare parking capacity available throughout the day.

**Figure 2.5: WSU Milperra Campus Off-Street Car Parks**

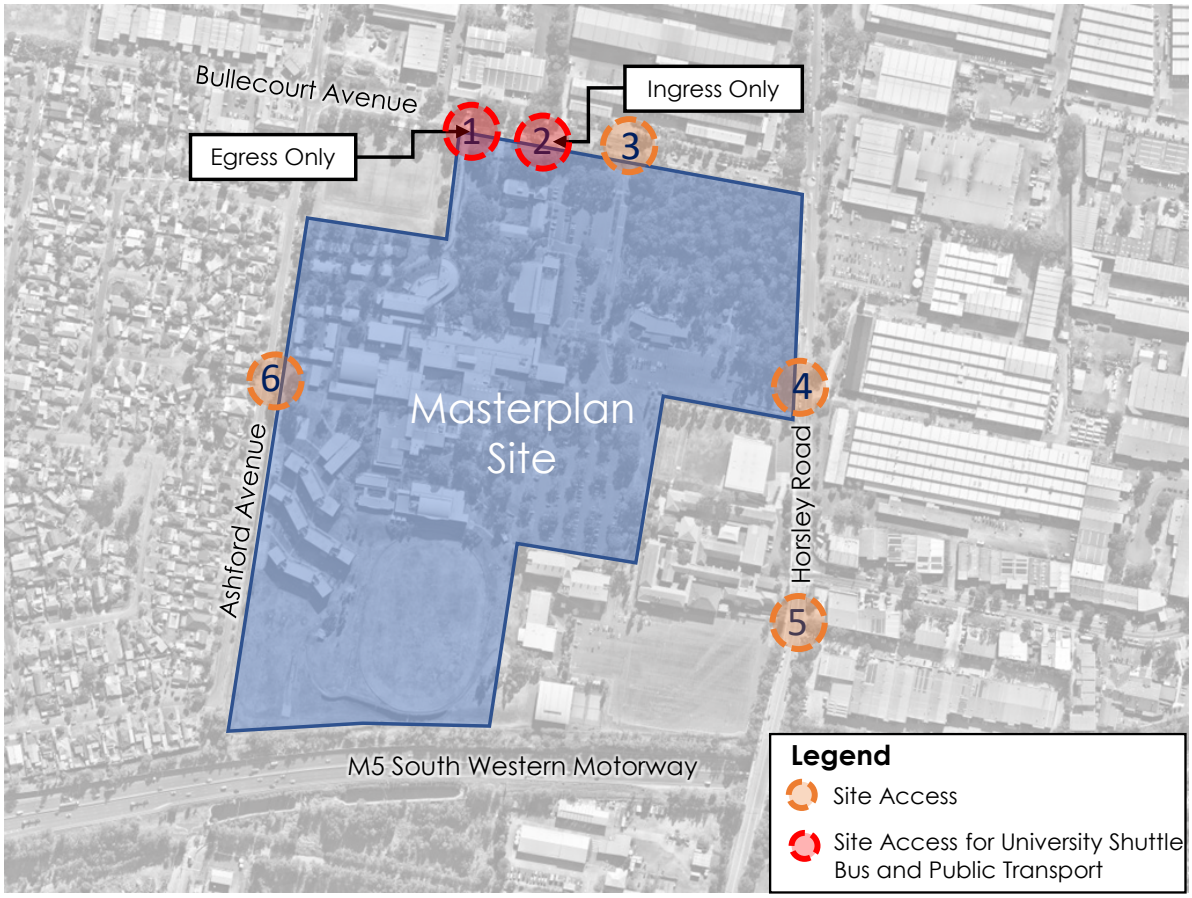



*Source: www.westernsydney.edu.au*

## 2.8 Existing Vehicle Access

Access to the site is currently provided via six existing driveways located directly off Bullecourt Avenue, Horsley Road and Ashford Avenue, as shown in Figure 2.6. It is noted that the two existing driveways off Bullecourt Avenue currently operate as separate ingress and egress access points and service the existing university shuttle bus.

**Figure 2.6: Existing Vehicle Access Locations**




*Source: Nearmap (aerial image dated 19 June 2019)*

Whilst the fifth access outlined in Figure 2.6 currently leads to the existing P4 WSU Milperra campus parking area, it is noted that this access is not included in the masterplan site.

## 2.9 Existing Site Traffic Generation

Traffic generation counts were undertaken at the existing six vehicle access points outlined in Figure 2.6 across a seven-day period from Wednesday 4 September until Tuesday 10 September 2019 to understand the existing traffic generation of the site.

A summary of the existing traffic generation profile of the site is shown in Figure 2.7.

**Figure 2.7: Summary of Existing Site Traffic Generation Profile**

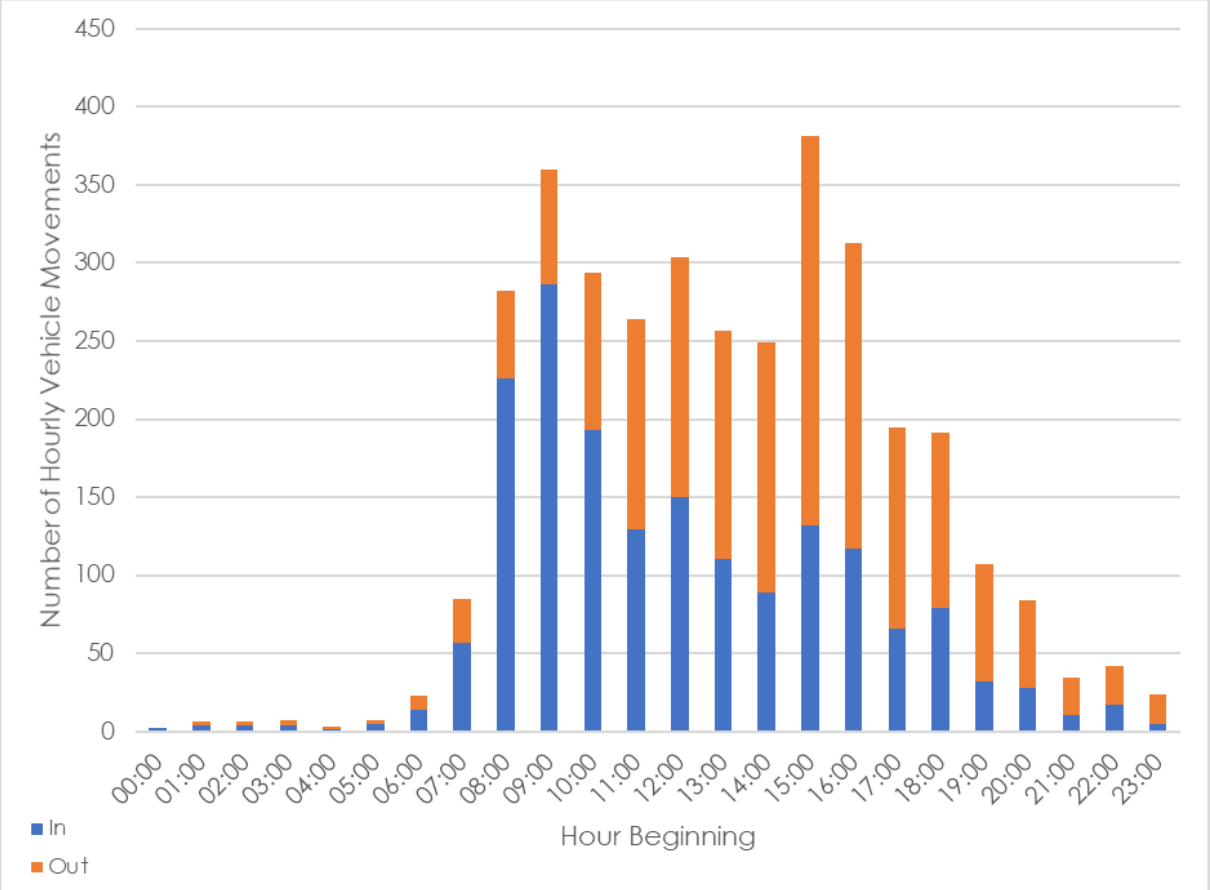



Figure 2.7 indicates that the existing site currently generates circa 360 vph between 9am and 10am and 381vph between 3pm and 4pm.

## 2.10 Traffic Volumes

Traffic surveys were undertaken on Wednesday 4 September 2019 between 7:00am and 10:00am and between 3:30pm and 6:30pm at the following key intersections:

- Ashford Avenue-Bullecourt Avenue (roundabout)
- Bullecourt Avenue-Horsley Road (roundabout)
- Horsley Road-UWS P2 access (roundabout)
- Horsley Road-Mount St Joseph School access (roundabout).

The location of the intersection counts is displayed in Figure 2.8.

**Figure 2.8: Traffic Survey Scope**


Based on the traffic surveys, the road network peak occurred between 8am and 9am in the AM Peak and between 5:15pm and 6:15pm in the PM Peak. On this basis, it is noted that the existing site traffic peak does not generally coincide with the road network peak traffic volumes.

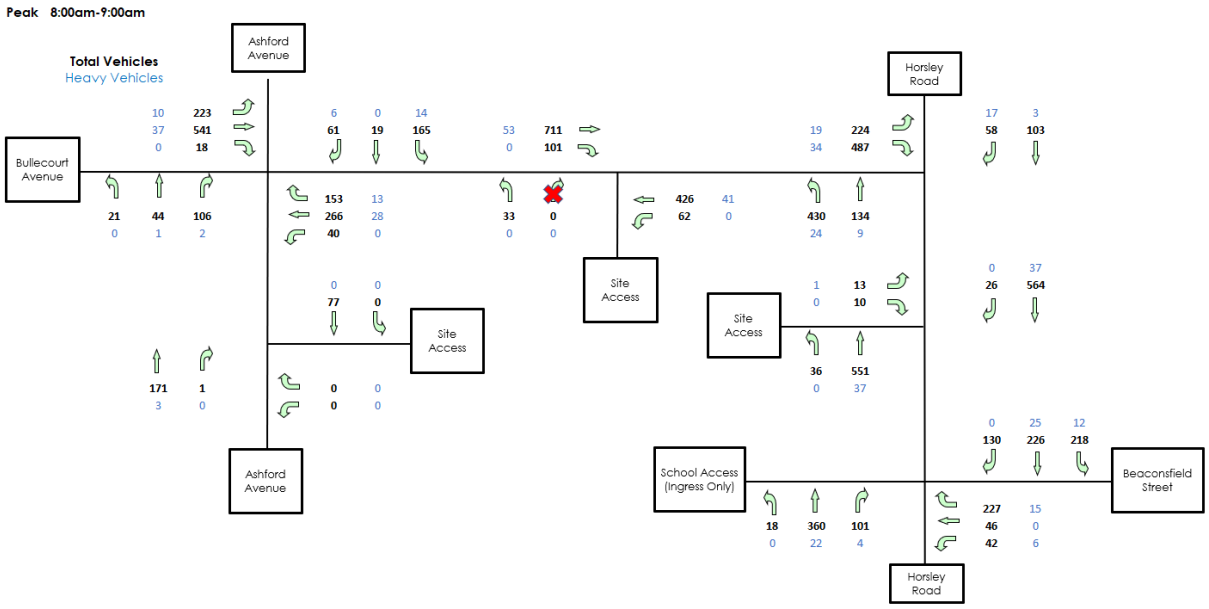
A summary of the site and road network peak hour traffic generation estimates are provided in Table 2.4.

**Table 2.4: Existing Development Peak Hour Traffic**

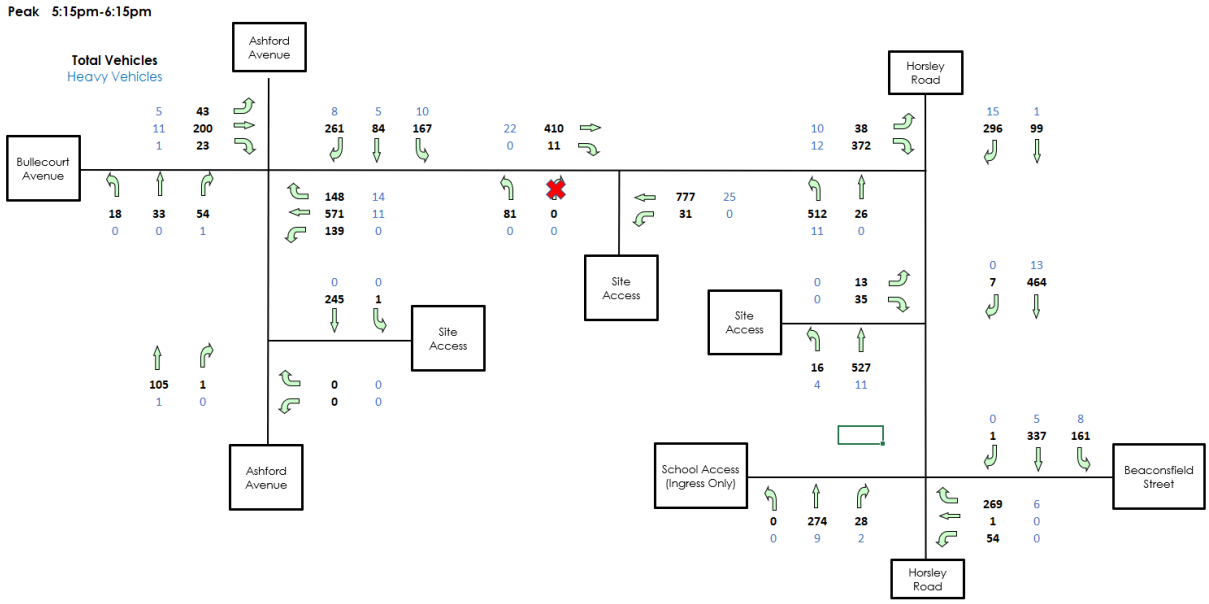
| Peak | Peak Period | Time Period | Traffic Generation | | |
|---|---|---|---|---|---|
| | | | In | Out | Two-Way |
| Site Peak | AM | 09:00-10:00 | 286 | 74 | **360** |
| | PM | 15:00-16:00 | 132 | 249 | **381** |
| Road Network Peak | AM | 08:00-09:00 | 226 | 56 | **282** |
| | PM | 17:15-18:15 | 66 | 119 | **195** |

The AM and PM road network peak traffic volumes and associated site traffic volumes during these times are shown in Figure 2.9 and Figure 2.10 respectively.

## Figure 2.9: AM Road Network Peak Traffic Volumes (8am-9am)




## Figure 2.10: Wednesday PM Road Network Peak Traffic Volumes (5:15pm-6:15pm)




Based on the above, it is noted that the majority of the existing development traffic is currently associated with the north and east site access points off Bullecourt Avenue and Horsley Road, with comparatively fewer vehicles utilising the west access point on Ashford Avenue. This is because the west access point is currently a locked gate which limits vehicle movements at this point.

## 2.11 Intersection Network Analysis

Network capacity analysis has been undertaken using SIDRA Network modelling software to ascertain the performance of the key intersections surrounding the site (as outlined in Figure 2.8). These traffic models have been calibrated based on-site queue length observations.

Roads and Maritime uses the performance measure Level of Service to establish the efficiency of an intersection under given prevailing traffic conditions.

Level of service (LoS) is directly related to the delays experienced by traffic traversing the intersection. Level of service indicators range from A (indicating good intersection operation) to F (indicating over-saturated conditions with long delays and queues). LoS D is the long-term desirable level of service.

At signalised intersections, the average delay is the volume weighted average of all movements. For roundabouts and priority (give way and stop sign) controlled intersections, the average delay relates to the worst movement.

Table 2.5 shows the criteria that SIDRA Intersection adopts in assessing the LoS.

**Table 2.5: Roads and Maritime LoS Criteria**

| LoS | Average Delay per vehicle (secs/veh) | Traffic Signals, Roundabout | Give Way & Stop Sign |
|---|---|---|---|
| A | Less than 14 | Good operation | Good operation |
| B | 15 to 28 | Good with acceptable delays and spare capacity | Acceptable delays and spare capacity |
| C | 29 to 42 | Satisfactory | Satisfactory, but accident study required |
| D | 43 to 56 | Near capacity | Near capacity, accident study required |
| E | 57 to 70 | At capacity; at signals incidents would cause excessive delays. Roundabouts require other control mode | At capacity, requires other control mode. |
| F | Greater than 70 | Unsatisfactory, requires additional capacity | Unsatisfactory, requires other control mode or major treatment |

Based on the surveyed peak hour traffic volumes outlined in Figure 2.9 and Figure 2.10, a summary of the existing weekday AM and PM peak hour traffic modelling results is provided in Table 2.6.

### Table 2.6: Existing Weekday Peak Hour Traffic Modelling Results

| Intersection | Control | AM Peak (8:00am-9:00am) | | PM Peak (5:15pm-6:15pm) | |
|---|---|---|---|---|---|
| | | Ave. Delay (s) | LoS | Ave. Delay (s) | LoS |
| Ashford Av-Bullecourt Av | RAB | 14 | A | 16 | B |
| Horsley Rd-Bullecourt Av | RAB | 12 | A | 11 | A |
| Horsley Rd-Site Access | RAB | 10 | A | 10 | A |
| Horsley Rd-Beaconsfield St | RAB | 13 | A | 12 | A |

Table 2.6 indicates that the key surrounding intersections currently operate well at LoS B or better during both of the AM and PM peak periods. Overall, the assessed intersections currently perform at an acceptable level.

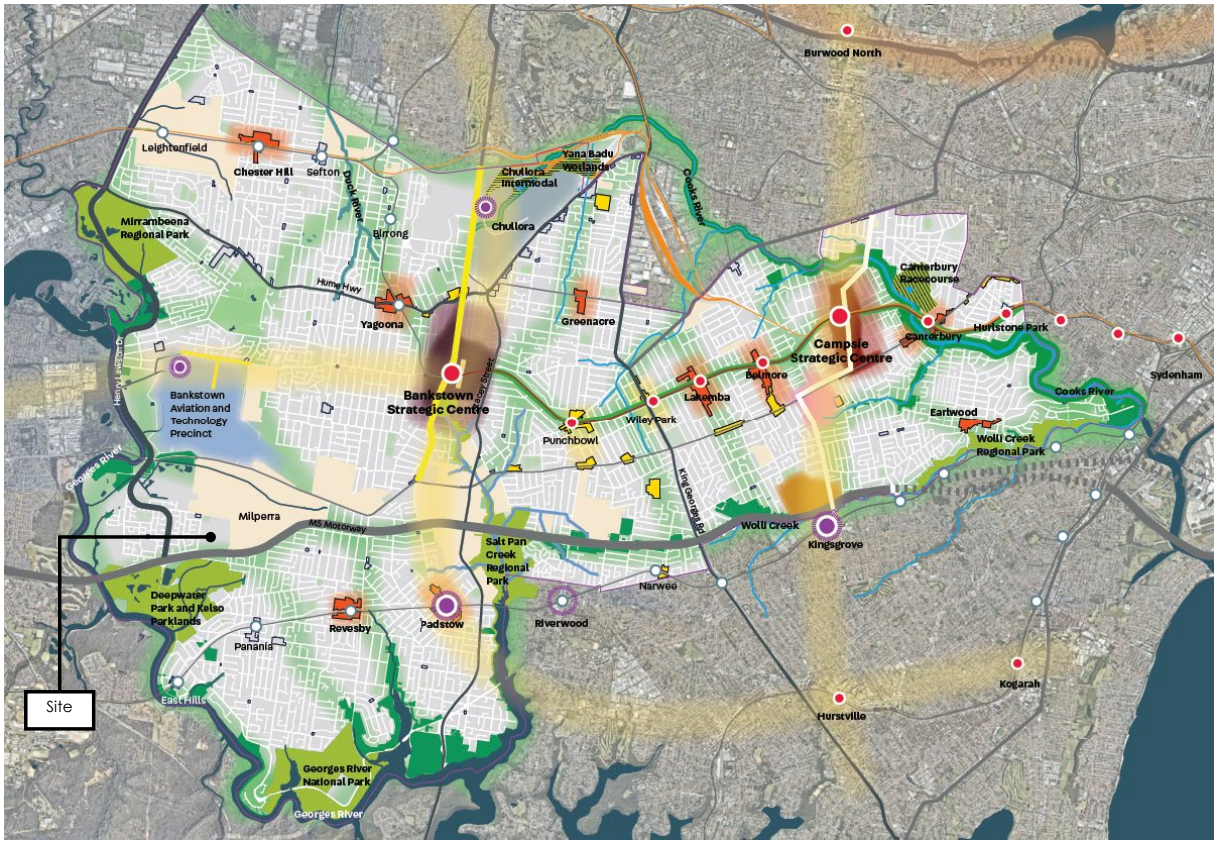
# 3 Proposed Development

## 3.1 Strategic Planning Context

Canterbury-Bankstown's Local Strategic Planning Statement – Connective City 2036 – is the 20-year plan to guide Canterbury-Bankstown's renewal and growth to accommodate an additional 50,000 dwellings to accommodate the anticipated population growth of 135,000 people, as well as an additional 44,000 workers within the LGA by 2036. It identifies a suite of 20-year strategic initiatives to ensure a successful and prosperous city over the medium to longer term.

Figure 3.1 shows Connective City 2036 that creates opportunities for living, working, access and movement.

**Figure 3.1: Connective City 2036 for Canterbury-Bankstown**




*Source: Connective City 2036*

On this basis, the proposal is considered consistent with the strategic planning context of Connective City 2036 that supports residential developments for the provision of additional dwellings to accommodate population growth in the LGA. The Western Sydney University site in Milperra will be subject to a masterplan process to realise an appropriate future based on its proximity to the precinct, the urban context and community consultation.

## 3.2 Development Description

This planning proposal seeks approval to rezone the site to permit residential land uses at the existing WSU Milperra campus site.

The proposed development involves the construction of 441 residential dwellings, comprising a diverse mix of low rise residential dwellings, with a small business zone to accommodate small scale retail and retain the existing child care centre currently operating within the site.

At this stage, the indicative masterplan is set to comprise the following uses for traffic analysis purposes:

- 441 low rise residential dwellings (197 free standing and 244 attached and semi-detached dwellings)
- 136m$^2$ GFA of shared community/meeting office space
- 250m$^2$ GFA of restaurant/café use
- 250m$^2$ GFA of convenience retail use
- 40-place child care centre.

It is noted that the proposal seeks to retain the existing child care centre with a reduced capacity from 67 to 40 children. The proposed masterplan layout is provided in Appendix A.

## 3.3 Vehicle Access Arrangements

It is proposed to retain three existing vehicle access points currently servicing the Milperra WSU campus directly to serve the proposed masterplan site off Bullecourt Avenue, Horsley Drive and Ashford Avenue. The existing ingress and egress only access points off Bullecourt Avenue would be removed as part of the proposal.

The proposed access arrangements to/from the proposed masterplan site are shown in Figure 3.2.

## Figure 3.2: Proposed Access Arrangements


*Source: nearmap Australia*

# 4 Parking Assessment

## 4.1 Car Parking Requirements

The parking requirements for the site have been assessed against the Bankstown Development Control Plan (DCP) 2015. A summary of Council's DCP car parking requirements relevant to the proposed development are presented in Table 4.1.

**Table 4.1: Car Parking Requirements**

| Land Use | Parking Rate |
|---|---|
| Dwelling houses | 2 car spaces per dwelling behind the building line |
| Dual occupancies | 1 car space per 2 or less bedrooms;<br>or 2 car spaces per 3 or more bedrooms |
| Semi–detached dwellings | 1 car space per 2 or less bedrooms; or<br>2 car spaces per 3 or more bedrooms |
| Multi dwelling housing | 1 car space per 1-bedroom dwelling; or<br>1.5 car spaces per 2-bedroom dwelling; or<br>2 car spaces per 3 or more-bedroom dwelling |
| Childcare | 1 car space per 4 children and<br>2 additional car spaces for the<br>exclusive use of any associated dwelling |
| Office | 1 car space per 40m$^2$ GFA of the premises |
| Restaurant | 0.15 car space per square metre<br>of total dining or bar area in excess of 100m$^2$ |
| Shops | 1 car space per 40m$^2$ of gross floor area |

The car parking requirements for the proposed development would be further assessed as part of any future development applications for the site. However, at this stage, it is proposed to comply with the car parking rates as set out in Council's DCP and provide appropriate allocation of loading and bicycle facilities.

The car park and associated elements would also be proposed to be designed in accordance with the design requirements set out in the relevant Australian Standards for car parking facilities.

# 5 Traffic Assessment

## 5.1 Existing Site Traffic Generation

As outlined in Section 2.9 and 2.10, the existing site currently generates up to 360-381vph during the site's busiest peak hour, or up to 195-282vph during the road network peak hour, as shown in Table 5.1.

**Table 5.1: Existing Development Peak Hour Traffic**

| Peak | Peak Period | Time Period | Traffic Generation | | |
|---|---|---|---|---|---|
| | | | In | Out | Two-Way |
| Site Peak | AM | 09:00-10:00 | 286 | 74 | **360** |
| | PM | 15:00-16:00 | 132 | 249 | **381** |
| Road Network Peak | AM | 08:00-09:00 | 226 | 56 | **282** |
| | PM | 17:15-18:15 | 66 | 119 | **195** |

## 5.2 Proposed Development Traffic Generation

The traffic generation estimates for the proposed development have been assessed using the Roads and Maritime Guide to Traffic Generating Developments, as set out in their technical direction TDT 2013/04a containing revised rates from recent surveys. A summary of the trip rates adopted for the purpose of this assessment is shown in Table 5.2.

**Table 5.2: Trip Rates Adopted**

| Land Use | AM Peak Trip Rate | PM Peak Trip Rate |
|---|---|---|
| Free standing dwelling (low density residential) | 0.95 trips per dwelling | 0.99 trips per dwelling |
| Attached and semi-detached dwellings (medium density residential) [1] | 0.85 trips per dwelling | 0.85 trips per dwelling |
| Child Care Centre | 0.8 trips per child | 0.7 trips per child |
| Office | 1.6 trips per 100m$^2$ | 1.2 trips per 100m$^2$ |
| Restaurant/Café | 2.5 trips per 100m$^2$ [2] | 5 trips per 100m$^2$ |
| Speciality Retail | 2.3 trips per 100m$^2$ [2] | 4.6 trips per 100m$^2$ |

*[1] A higher trip rate of 0.85 trips per dwelling has been adopted for the purpose of this assessment based on recent discussions with Roads and Maritime for similar medium density residential developments.*
*[2] It has been assumed that the AM peak trip generation is 50 per cent of the PM peak trip rate.*

Based on the above, the net additional traffic associated with the proposed development compared to the existing traffic generation of the site has been estimated based on the AM and PM network peak hours (08:00-09:00 and 17:15-18:15) as discussed in Section 2.10. The traffic assessment adopted these peak hours which present the worse-case scenario for the busiest hours of the total traffic volumes on the road network.

A summary of the net additional traffic volumes for the AM and PM network peak hours is provided in Table 5.3.

**Table 5.3: Net Traffic Generation Estimate**

| Land Use | Size / Area | Trip Rate | | Traffic Generation Estimate | |
|---|---|---|---|---|---|
| | | AM Peak | PM Peak | AM Peak (08:00-09:00) | PM Peak (17:15-18:15) |
| Free standing dwelling (low density residential) | 197 dwellings | 0.95 trips per dwelling | 0.99 trips per dwelling | 187 | 195 |
| Attached and semi-detached dwellings (medium density residential) | 244 dwellings | 0.85 trips per dwelling | 0.85 trips per dwelling | 207 | 207 |
| Child Care Centre | 40-children | 0.8 trips per child | 0.7 trips per child | 32 | 28 |
| Office | 136m² | 1.6 trips per 100m² | 1.2 trips per 100m² | 2 | 2 |
| Restaurant/Café | 250m² | 2.5 trips per 100m² | 5 trips per 100m² | 6 | 13 |
| Speciality Retail | 250m² | 2.3 trips per 100m² | 4.6 trips per 100m² | 6 | 12 |
| **Proposed Development Traffic** | | | | **440** | **457** |
| **Less Existing Development Traffic (during road network peak)** | | | | **282** | **195** |
| **Net Additional Traffic** | | | | **158** | **262** |

Table 5.3 indicates that the proposed development is expected to generate approximately 158 and 262 net additional vehicle trips during the respective AM and PM peak periods.

In addition to this, it is noted that the proposed development is expected to generate some self-contained trips within the masterplan (e.g. residents visiting the non-residential uses). On this basis, some of the total potential external traffic generated by the site could be internalised due to the mixed uses, which could reduce the overall net traffic impacts of the proposed development outlined in Table 5.3.

This however has not been considered as part of this proposal as the proposed land uses have been assumed to generate independent trips to/from the site. On this basis, the above traffic generation estimates are considered a fairly robust assessment of the proposal.

## 5.3 Distribution and Assignment

The traffic distribution and assignment of the proposed development traffic has been based on the surrounding road configuration and proposed location of the access points.

The following traffic distribution factors have been assumed:

- residential traffic: 20 per cent inbound traffic; 80 per cent outbound traffic in the AM Peak. The reverse would apply in the PM Peak

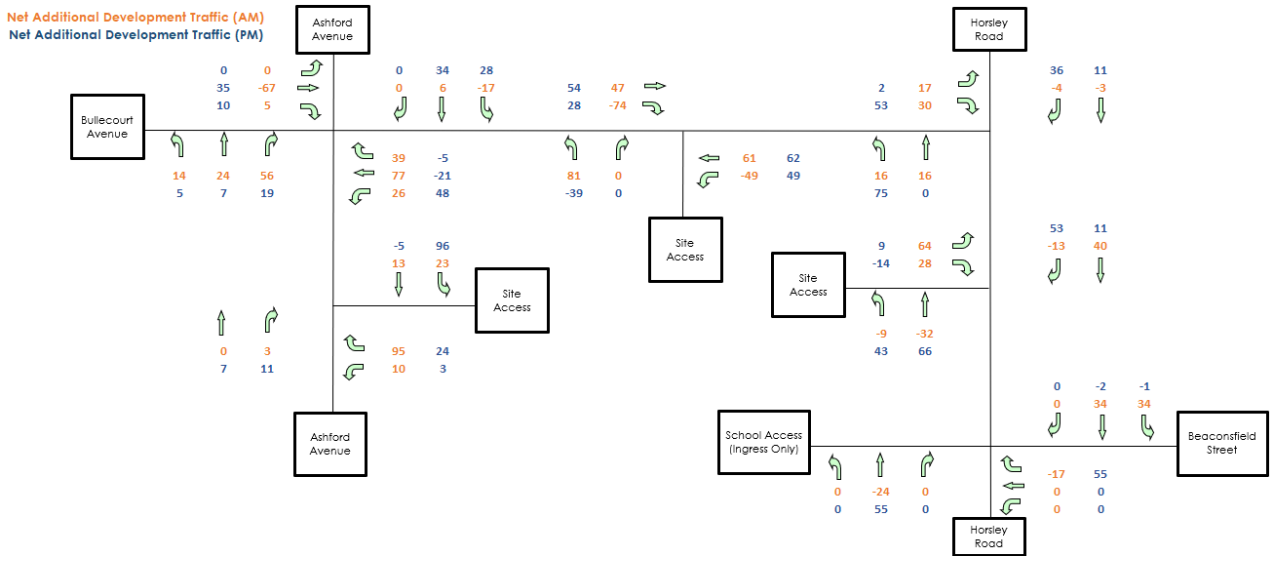
- commercial traffic: 80 per cent inbound; 20 per cent outbound in the AM Peak. The reverse would apply in the PM Peak
- child care traffic: 60 per cent inbound traffic; 40 per cent outbound traffic in the AM Peak. The reverse would apply in the PM Peak
- retail traffic: 50 per cent inbound and 50 per cent outbound trips in the AM and PM Peak

In addition to this, based on the proposed masterplan layout, the residential traffic has been broadly assumed to be evenly split between the three access points, while the child care, retail and commercial traffic has been evenly split between the north and east access points only.

The proposed development traffic volumes are shown in Figure 5.1 during the network AM and PM peak hours. It is noted that there is a reduction in some traffic movements due to the redistribution of proposed development site traffic as a result of the proposed access arrangements (i.e. increased traffic movements at the existing Ashmore Avenue site access point).

It is also noted that a reduction in traffic would be expected during the inter-peak period as compared with the current use. This is because the maximum WSU traffic generation occurs outside the network AM and PM peak hours which would be removed from the road network, and the majority of traffic generation associated with the proposed mixed use development would occur during the network AM and PM peak periods. The change in use from the existing land use (i.e. education) to the proposed mixed-use development would result in a reduction in traffic during other parts of the day resulting in a benefit to the local community.

**Figure 5.1: Development Traffic Volumes Only**




It is acknowledged that traffic could access M5 motorway via Beaconsfield Street in addition to Henry Lawson Drive. In light of this, development traffic has been assigned to Beaconsfield

Street, with 12% of outbound traffic in the AM peak and 21% of inbound traffic in the PM peak.

## 5.4 Network Capacity Analysis

Network capacity analysis has been conducted on the key surrounding intersections to assess the traffic implications arising from the proposal. Four traffic scenarios have been assessed and are detailed as follows:

- Scenario S1 – 2019 Existing Base (no development)
- Scenario S2 – 2019 Existing Case (with development)
- Scenario S3 – 2029 Future Base (no development)
- Scenario S4 – 2029 Future Case (with development)

All future scenarios relate to the future year 2029 representing a 10-year design horizon using traffic growth factors obtained from Roads and Maritime. The 10-year growth factors were derived from the Sydney Strategic Travel Model (STM) which is maintained by Transport Performance and Analytics (TPA).

A summary of the above listed four modelling scenarios are presented in Table 5.4 and Table 5.5 for the weekday AM and PM peak hour respectively. The full movement summaries are provided in Appendix B.

**Table 5.4: Weekday AM Peak Hour Traffic Modelling Results (8:00am-9:00am)**

| Intersection | Control | 2019 | | | | 2029 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Existing Base (No Development) | | Existing Case (With Development) | | Future Base (No Development) | | Future Case (With Development) | |
| | | Ave. Delay | LoS | Ave. Delay | LoS | Ave. Delay | LoS | Ave. Delay | LoS |
| Ashford Av-Bullecourt Av | RAB | 14 | A | 14 | A | 15 | B | 15 | B |
| Horsley Rd-Bullecourt Av | RAB | 12 | A | 12 | A | 12 | A | 12 | A |
| Horsley Rd-Site Access | RAB | 10 | A | 10 | A | 10 | A | 10 | A |
| Horsley Rd-Beaconsfield St | RAB | 13 | A | 13 | A | 13 | A | 13 | A |

**Table 5.5: Weekday PM Peak Hour Traffic Modelling Results (5:15am-6:15am)**

| Intersection | Control | 2019 | | | | 2029 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Existing Base (No Development) | | Existing Case (With Development) | | Future Base (No Development) | | Future Case (With Development) | |
| | | Ave. Delay | LoS | Ave. Delay | LoS | Ave. Delay | LoS | Ave. Delay | LoS |
| Ashford Av-Bullecourt Av | RAB | 16 | B | 16 | B | 19 | B | 21 | B |
| Horsley Rd-Bullecourt Av | RAB | 11 | A | 14 | A | 14 | A | 26 | B |
| Horsley Rd-Site Access | RAB | 10 | A | 10 | A | 10 | A | 10 | A |
| Horsley Rd-Beaconsfield St | RAB | 12 | A | 13 | A | 14 | A | 14 | A |

The above traffic modelling results indicate that the surrounding key intersections are expected to continue to operate satisfactorily at LoS B or better during both AM and PM peak periods. On this basis, the proposed development is not expected to compromise the existing intersection performance on the surrounding road network, nor result in any safety or operational issues. Therefore, the proposal is considered acceptable from a traffic capacity perspective.

## 5.5 Environmental Capacity

As indicated previously, the proposal is expected to result in some increased traffic movements at the existing Ashmore Avenue site access point. It is however anticipated that the majority of these traffic movement would travel northbound onto Bullecourt Avenue.

The Roads and Maritime Guidelines provides some guidance on typical environmental capacity of local residential streets. This information has been reproduced in Table 5.6.

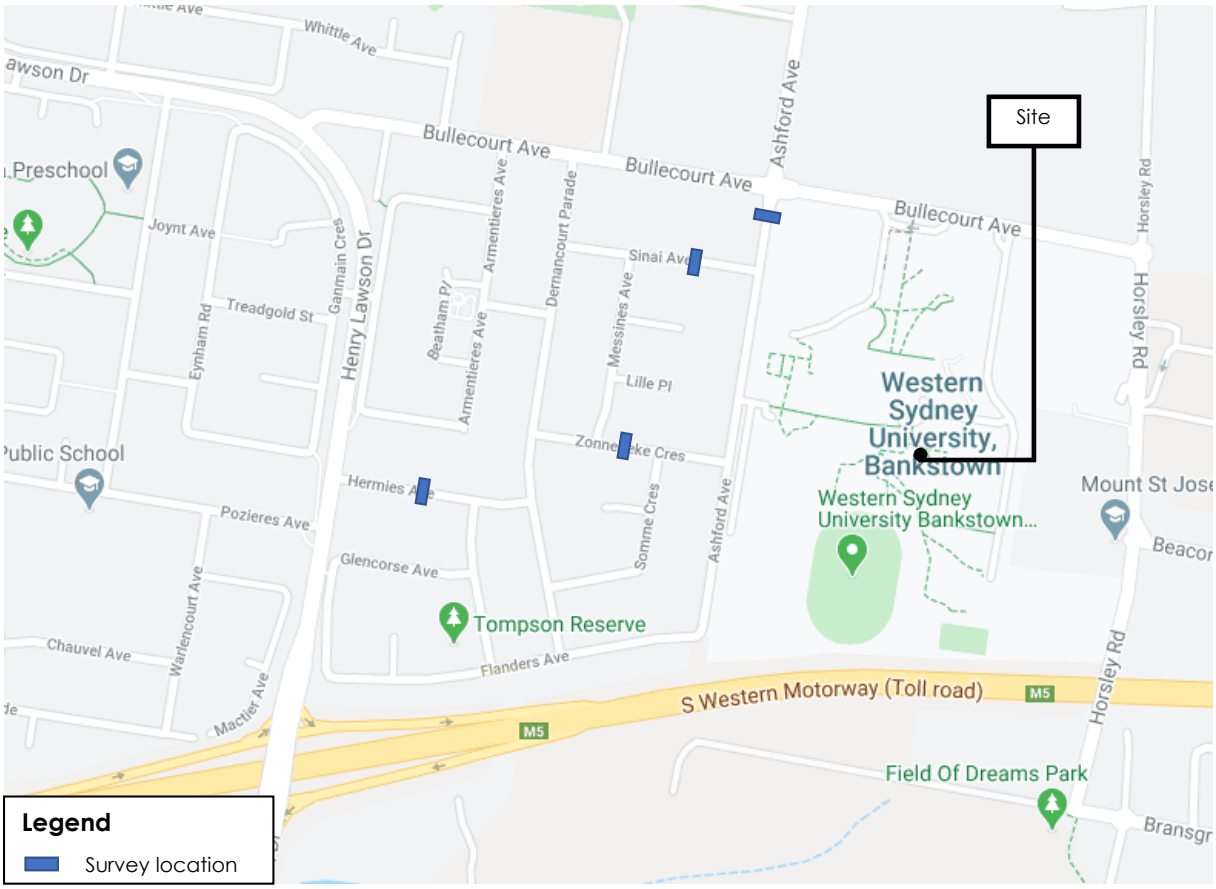
### Table 5.6: Environmental Capacity Performance Standards on Residential Streets

| Road Class | Road Type | Maximum Speed (km/h) | Maximum Peak Hour Volume (vph) |
|---|---|---|---|
| Local | Access Way | 25 | 100 |
| | Street | 40 | 200 environmental goal |
| | | | 300 maximum |
| Collector | Street | 50 | 300 environmental goal |
| | | | 500 maximum |

*Note: Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to the 85th percentile speed.*

Traffic surveys were undertaken to record existing local traffic volumes along Ashford Avenue, Hermies Avenue, Zonnebeke Crescent and Sinai Avenue which are an existing rat-running routes between Henry Lawson Drive and Bullecourt Road as shown in Figure 5.2.

### Figure 5.2: Survey Location for Rat-Running Routes




A summary of the existing traffic volumes is summarised in Table 5.7.

**Table 5.7: Traffic Volumes on Residential Streets for Environmental Capacity Performance**

| Survey Location | Road Type | Maximum Peak Hour Volume (vph) | Weekday Average (vph) – 2-way | |
|---|---|---|---|---|
| | | | AM Peak Hour | PM Peak Hour |
| Ashford Avenue | Collector Street | 300 environmental goal<br>500 maximum | 252<br>(8:00am-9:00am) | 351<br>(5:15pm-6:15pm) |
| Hermies Avenue | Local Street | 200 environmental goal<br>300 maximum | 60<br>(6:00am-7:00am) | 169<br>(4:00pm-5:00pm) |
| Zonnebeke Crescent | | | 32<br>(6:00am-7:00am) | 111<br>(4:00pm-5:00pm) |
| Sinai Avenue | | | 47<br>(8:00am-9:00am) | 60<br>(4:00pm-5:00pm) |

Taking into consideration the above, Table 5.6 indicates that the environmental capacity of Ashford Avenue is 300 vph (environmental goal), with a maximum of 500 vph in the peak hour. The existing traffic flows along Ashford Avenue are generally in the order of 252 to 351 vph during the peak hour as shown in Table 5.7. It is expected that the proposed development would result in an addition of 120 to 130 vph (2-way) on Ashford Avenue during the AM and PM peak hours. Although the future traffic volumes would be higher than the environmental goal they are less than the maximum threshold with the proposed development.

Table 5.7 shows that there are currently 169 vph (2-way)on Hermies Avenue, 111 vph (2-way)on Zonnebeke Crescent and 60 vph (2-way) on Sinai Avenue during the busiest hours. All of these local roads currently operate well below the environmental capacity (i.e. an environmental goal of 200 vph and maximum of 300 vph).

It is noted that Zonnebeke Crescent and Hermies Avenue carry considerably less traffic during the AM peak compared to the PM peak, which may be attributed to the existing right turn ban from Henry Lawson Drive into Hermies Avenue between 6:30am and 9:30am. This right turn ban will continue to operate as per existing conditions when the proposed development is in place. With this existing measure in place, this will continue to minimise the incident of rat-running on these local roads. In light of this, addition of site-related traffic on the road network would not affect the local road performance (i.e. an environmental goal of 200 vph and maximum of 300 vph), even if rat-running occurs on these local roads.

The above analysis indicates the performance of local roads is acceptable with traffic volumes under the maximum threshold based on the existing measures in place, even if all turning movements are permitted at the Ashford Avenue site access.

Based on the above, the proposed development is not expected to have any adverse traffic implications relating to residential amenity on Ashford Avenue and the local roads.

## 5.6 Regional Road Network Effects

The net traffic increase on Bullecourt Road between Henry Lawson Drive and Ashford Avenue is estimated to be 29 vehicles (two-way) in the AM and PM peak hours as shown in Figure 5.1, which equates to an average of approximately one vehicle every two minutes. The slight increase in traffic volume would further disperse across the road network via the Henry Lawson Drive and Bullecourt Road intersection and is not expected to impose adverse traffic impacts at the intersection.

Notwithstanding the above, Transport for NSW has commenced a 7.5 kilometre upgrade of Henry Lawson Drive between M5 Motorway, Milperra and Hume Highway, Lansdowne. The two lane road will be widened to four lanes with the intersection configuration design to be finalised in due course.

The proposed development would benefit from the upgrade of Henry Lawson Drive as the improvement in capacity would lead to improved traffic flow, travel times and safety for all road users.

# 6 Conclusion

This report examines the traffic and parking implications of a proposed rezoning at the existing Western Sydney University (WSU) Milperra campus. The key findings of this report are presented below:

- This planning proposal seeks approval to rezone the site to permit residential land uses at the existing WSU Milperra campus site.
- At this stage, the proposed development is envisaged to comprise 441 residential dwellings, comprising a diverse mix of low rise residential dwellings, with a small business zone to accommodate small scale retail, business and a child care centre.
- The car parking provision would be provided in accordance with Council's DCP, with appropriate allocation provided for loading and bicycle facilities.
- It is proposed to retain three existing vehicle access points to serve the proposed masterplan site off Bullecourt Avenue, Horsley Drive and Ashford Avenue. Two existing ingress and egress access points off Bullecourt Avenue that service university shuttle bus would be removed as part of the proposal.
- Canterbury-Bankstown's Connective City 2036 is the 20-year plan to guide LGA's renewal and growth to accommodate an addition of 50,000 dwellings to accommodate the anticipated population growth of 135,000 people as well as an additional 44,000 workers within the LGA by 2036. The proposal is consistent with the strategic planning context of Connective City 2036 that supports residential developments for the provision of additional dwellings.
- The net traffic generation of the site is expected to be in the order of 158vph and 262vph in the AM and PM peak periods respectively.
- Traffic modelling suggests that the key intersections surrounding the site would continue to operate well in Year 2029 (+10 years) with the proposed development at LoS B or better during both AM and PM peak periods. Therefore, the proposal is not expected to compromise the existing intersection performance on the surrounding road network, nor result in any safety or operational issues.
- The local roads will continue to operate within environmental capacity even if all turning movements are permitted at the Ashford Avenue site access.
- The net increase in traffic associated with the development is low to/from Henry Lawson Drive. The proposed development would benefit from the upgrade of Henry Lawson Drive as the improvement in capacity would lead to improved traffic flow, travel times and safety for all road users.
- Overall, it is concluded that the traffic and parking aspects of the proposed development would be satisfactory.

# Appendix A

## Masterplan Layout

BULLECOURT AVE

ASHFORD AVENUE

HORSLEY ROAD

Mt. St. Joseph
School

M5 MOTORWAY

0m 50m 100m 150m 200m

# MILPERRA WSU

Current Masterplan

22.10.19

MIRVAC
DESIGN

# Appendix B

## SIDRA Modelling Results

# MOVEMENT SUMMARY

## Site: 101 [2. Ex AM Ashford Avenue/ Bullecourt Avenue]

## Network: N101 [Existing AM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ashford Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 22 | 0.0 | 22 | 0.0 | 0.231 | 7.0 | LOS A | 0.5 | 3.8 | 0.65 | 0.76 | 0.65 | 46.1 |
| 2 | T1 | 46 | 2.3 | 46 | 2.3 | 0.231 | 7.1 | LOS A | 0.5 | 3.8 | 0.65 | 0.76 | 0.65 | 43.5 |
| 3 | R2 | 112 | 1.9 | 112 | 1.9 | 0.231 | 10.6 | LOS A | 0.5 | 3.8 | 0.65 | 0.76 | 0.65 | 34.6 |
| Approach | | 180 | 1.8 | 180 | 1.8 | 0.231 | 9.3 | LOS A | 0.5 | 3.8 | 0.65 | 0.76 | 0.65 | 40.1 |
| East: Bullecourt Avenue | | | | | | | | | | | | | | |
| 4 | L2 | 42 | 0.0 | 42 | 0.0 | 0.323 | 4.8 | LOS A | 1.0 | 7.2 | 0.35 | 0.54 | 0.35 | 43.5 |
| 5 | T1 | 280 | 10.2 | 280 | 10.2 | 0.323 | 5.2 | LOS A | 1.0 | 7.2 | 0.35 | 0.54 | 0.35 | 51.7 |
| 6 | R2 | 161 | 8.5 | 161 | 8.5 | 0.323 | 8.8 | LOS A | 1.0 | 7.2 | 0.35 | 0.54 | 0.35 | 47.5 |
| Approach | | 483 | 8.7 | 483 | 8.7 | 0.323 | 6.4 | LOS A | 1.0 | 7.2 | 0.35 | 0.54 | 0.35 | 49.8 |
| North: Ashford Avenue | | | | | | | | | | | | | | |
| 7 | L2 | 174 | 8.5 | 174 | 8.5 | 0.420 | 9.9 | LOS A | 1.2 | 9.2 | 0.86 | 0.93 | 0.92 | 38.9 |
| 8 | T1 | 20 | 0.0 | 20 | 0.0 | 0.420 | 9.5 | LOS A | 1.2 | 9.2 | 0.86 | 0.93 | 0.92 | 38.9 |
| 9 | R2 | 64 | 9.8 | 64 | 9.8 | 0.420 | 13.5 | LOS A | 1.2 | 9.2 | 0.86 | 0.93 | 0.92 | 46.3 |
| Approach | | 258 | 8.2 | 258 | 8.2 | 0.420 | 10.8 | LOS A | 1.2 | 9.2 | 0.86 | 0.93 | 0.92 | 41.5 |
| West: Bullecourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 235 | 4.5 | 235 | 4.5 | 0.668 | 7.8 | LOS A | 2.9 | 21.2 | 0.75 | 0.74 | 0.82 | 48.1 |
| 11 | T1 | 569 | 6.8 | 569 | 6.8 | 0.668 | 8.1 | LOS A | 2.9 | 21.2 | 0.75 | 0.74 | 0.82 | 47.3 |
| 12 | R2 | 19 | 11.1 | 19 | 11.1 | 0.668 | 11.8 | LOS A | 2.9 | 21.2 | 0.75 | 0.74 | 0.82 | 47.3 |
| Approach | | 823 | 6.3 | 823 | 6.3 | 0.668 | 8.1 | LOS A | 2.9 | 21.2 | 0.75 | 0.74 | 0.82 | 47.6 |
| All Vehicles | | 1744 | 6.8 | 1744 | 6.8 | 0.668 | 8.1 | LOS A | 2.9 | 21.2 | 0.64 | 0.71 | 0.69 | 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.
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: 101 [4. Ex AM Horsley Road/ Bullecourt Avenue]

## Network: N101 [Existing AM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 453 | 5.6 | 453 | 5.6 | 0.409 | 5.4 | LOS A | 1.4 | 9.9 | 0.31 | 0.52 | 0.31 | 36.8 |
| 2 | T1 | 141 | 6.7 | 141 | 6.7 | 0.409 | 5.2 | LOS A | 1.4 | 9.9 | 0.31 | 0.52 | 0.31 | 48.6 |
| Approach | | 594 | 5.9 | 594 | 5.9 | 0.409 | 5.3 | LOS A | 1.4 | 9.9 | 0.31 | 0.52 | 0.31 | 42.0 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 8 | T1 | 108 | 2.9 | 108 | 2.9 | 0.210 | 7.8 | LOS A | 0.5 | 4.1 | 0.69 | 0.75 | 0.69 | 43.8 |
| 9 | R2 | 61 | 29.3 | 61 | 29.3 | 0.210 | 11.7 | LOS A | 0.5 | 4.1 | 0.69 | 0.75 | 0.69 | 43.8 |
| Approach | | 169 | 12.4 | 169 | 12.4 | 0.210 | 9.2 | LOS A | 0.5 | 4.1 | 0.69 | 0.75 | 0.69 | 43.8 |
| West: Bullacourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 236 | 8.5 | 236 | 8.5 | 0.695 | 7.3 | LOS A | 2.9 | 21.8 | 0.67 | 0.66 | 0.67 | 44.3 |
| 12 | R2 | 513 | 7.0 | 513 | 7.0 | 0.695 | 9.7 | LOS A | 2.9 | 21.8 | 0.67 | 0.66 | 0.67 | 32.4 |
| Approach | | 748 | 7.5 | 748 | 7.5 | 0.695 | 8.9 | LOS A | 2.9 | 21.8 | 0.67 | 0.66 | 0.67 | 38.5 |
| All Vehicles | | 1512 | 7.4 | 1512 | 7.4 | 0.695 | 7.5 | LOS A | 2.9 | 21.8 | 0.53 | 0.61 | 0.53 | 40.4 |

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: 101 [5. Ex AM Horsley Road/Site Access C]

## Network: N101 [Existing AM]

Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 38 | 0.0 | 38 | 0.0 | 0.429 | 7.3 | LOS A | 1.2 | 9.2 | 0.17 | 0.51 | 0.17 | 35.1 |
| 2 | T1 | 580 | 6.7 | 580 | 6.7 | 0.429 | 5.1 | LOS A | 1.2 | 9.2 | 0.17 | 0.51 | 0.17 | 40.3 |
| Approach | | 618 | 6.3 | 618 | 6.3 | 0.429 | 5.3 | LOS A | 1.2 | 9.2 | 0.17 | 0.51 | 0.17 | 39.9 |
| North: Horsley Avenue | | | | | | | | | | | | | | |
| 8 | T1 | 594 | 6.6 | 594 | 6.6 | 0.339 | 5.0 | LOS A | 1.1 | 7.8 | 0.09 | 0.53 | 0.09 | 38.6 |
| 9 | R2 | 27 | 0.0 | 27 | 0.0 | 0.339 | 10.1 | LOS A | 1.1 | 7.8 | 0.09 | 0.53 | 0.09 | 33.1 |
| Approach | | 621 | 6.3 | 621 | 6.3 | 0.339 | 5.2 | LOS A | 1.1 | 7.8 | 0.09 | 0.53 | 0.09 | 38.3 |
| West: Site Access C | | | | | | | | | | | | | | |
| 10 | L2 | 14 | 7.7 | 14 | 7.7 | 0.032 | 3.3 | LOS A | 0.1 | 0.4 | 0.57 | 0.42 | 0.57 | 7.3 |
| 12 | R2 | 11 | 0.0 | 11 | 0.0 | 0.032 | 3.1 | LOS A | 0.1 | 0.4 | 0.57 | 0.42 | 0.57 | 7.3 |
| Approach | | 24 | 4.3 | 24 | 4.3 | 0.032 | 3.2 | LOS A | 0.1 | 0.4 | 0.57 | 0.42 | 0.57 | 7.3 |
| All Vehicles | | 1263 | 6.3 | 1263 | 6.3 | 0.429 | 5.2 | LOS A | 1.2 | 9.2 | 0.14 | 0.52 | 0.14 | 38.7 |

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.
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: 101 [6. Ex AM Horsley Road/ Beaconsfield Street/ School Access Roundabout]

## Network: N101 [Existing AM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 19 | 0.0 | 19 | 0.0 | 0.525 | 9.5 | LOS A | 1.3 | 9.2 | 0.58 | 0.77 | 0.62 | 14.7 |
| 2 | T1 | 379 | 6.1 | 379 | 6.1 | 0.525 | 7.1 | LOS A | 1.3 | 9.2 | 0.58 | 0.77 | 0.62 | 43.7 |
| 3 | R2 | 106 | 4.0 | 106 | 4.0 | 0.525 | 10.1 | LOS A | 1.3 | 9.2 | 0.58 | 0.77 | 0.62 | 49.8 |
| Approach | | 504 | 5.4 | 504 | 5.4 | 0.525 | 7.8 | LOS A | 1.3 | 9.2 | 0.58 | 0.77 | 0.62 | 40.1 |
| East: Beaconsfield Street | | | | | | | | | | | | | | |
| 4 | L2 | 44 | 14.3 | 44 | 14.3 | 0.421 | 8.9 | LOS A | 1.1 | 8.1 | 0.68 | 0.81 | 0.68 | 46.5 |
| 5 | T1 | 48 | 0.0 | 48 | 0.0 | 0.421 | 12.7 | LOS A | 1.1 | 8.1 | 0.68 | 0.81 | 0.68 | 15.9 |
| 6 | R2 | 239 | 6.6 | 239 | 6.6 | 0.421 | 11.3 | LOS A | 1.1 | 8.1 | 0.68 | 0.81 | 0.68 | 43.0 |
| Approach | | 332 | 6.7 | 332 | 6.7 | 0.421 | 11.2 | LOS A | 1.1 | 8.1 | 0.68 | 0.81 | 0.68 | 30.9 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 7 | L2 | 229 | 5.5 | 229 | 5.5 | 0.143 | 5.5 | LOS A | 0.4 | 3.0 | 0.32 | 0.53 | 0.32 | 48.9 |
| 8 | T1 | 238 | 11.1 | 238 | 11.1 | 0.234 | 5.5 | LOS A | 0.7 | 5.4 | 0.35 | 0.64 | 0.35 | 45.5 |
| 9 | R2 | 137 | 0.0 | 137 | 0.0 | 0.234 | 11.6 | LOS A | 0.7 | 5.4 | 0.35 | 0.64 | 0.35 | 12.6 |
| Approach | | 604 | 6.4 | 604 | 6.4 | 0.234 | 6.9 | LOS A | 0.7 | 5.4 | 0.34 | 0.60 | 0.34 | 27.6 |
| All Vehicles | | 1440 | 6.1 | 1440 | 6.1 | 0.525 | 8.2 | LOS A | 1.3 | 9.2 | 0.50 | 0.71 | 0.51 | 31.3 |

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: 101 [2. Ex PM Ashford Avenue/ Bullecourt Avenue]

## Network: N101 [Existing PM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ashford Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 19 | 0.0 | 19 | 0.0 | 0.238 | 12.2 | LOS A | 0.7 | 5.0 | 0.95 | 0.92 | 0.95 | 42.7 |
| 2 | T1 | 35 | 0.0 | 35 | 0.0 | 0.238 | 12.2 | LOS A | 0.7 | 5.0 | 0.95 | 0.92 | 0.95 | 40.5 |
| 3 | R2 | 57 | 1.9 | 57 | 1.9 | 0.238 | 15.9 | LOS B | 0.7 | 5.0 | 0.95 | 0.92 | 0.95 | 29.8 |
| Approach | | 111 | 1.0 | 111 | 1.0 | 0.238 | 14.1 | LOS A | 0.7 | 5.0 | 0.95 | 0.92 | 0.95 | 37.3 |
| East: Bullecourt Avenue | | | | | | | | | | | | | | |
| 4 | L2 | 146 | 0.0 | 146 | 0.0 | 0.741 | 9.4 | LOS A | 4.1 | 29.4 | 0.88 | 0.87 | 1.07 | 39.1 |
| 5 | T1 | 601 | 1.8 | 601 | 1.8 | 0.741 | 9.7 | LOS A | 4.1 | 29.4 | 0.88 | 0.87 | 1.07 | 49.4 |
| 6 | R2 | 156 | 10.1 | 156 | 10.1 | 0.741 | 13.6 | LOS A | 4.1 | 29.4 | 0.88 | 0.87 | 1.07 | 45.3 |
| Approach | | 903 | 2.9 | 903 | 2.9 | 0.741 | 10.4 | LOS A | 4.1 | 29.4 | 0.88 | 0.87 | 1.07 | 47.7 |
| North: Ashford Avenue | | | | | | | | | | | | | | |
| 7 | L2 | 176 | 6.0 | 176 | 6.0 | 0.471 | 5.4 | LOS A | 1.4 | 10.2 | 0.61 | 0.68 | 0.61 | 41.6 |
| 8 | T1 | 88 | 6.0 | 88 | 6.0 | 0.471 | 5.5 | LOS A | 1.4 | 10.2 | 0.61 | 0.68 | 0.61 | 41.6 |
| 9 | R2 | 275 | 3.1 | 275 | 3.1 | 0.471 | 8.9 | LOS A | 1.4 | 10.2 | 0.61 | 0.68 | 0.61 | 48.4 |
| Approach | | 539 | 4.5 | 539 | 4.5 | 0.471 | 7.2 | LOS A | 1.4 | 10.2 | 0.61 | 0.68 | 0.61 | 45.9 |
| West: Bullecourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 45 | 11.6 | 45 | 11.6 | 0.260 | 6.1 | LOS A | 0.7 | 4.8 | 0.50 | 0.60 | 0.50 | 48.7 |
| 11 | T1 | 211 | 5.5 | 211 | 5.5 | 0.260 | 6.2 | LOS A | 0.7 | 4.8 | 0.50 | 0.60 | 0.50 | 48.6 |
| 12 | R2 | 24 | 4.3 | 24 | 4.3 | 0.260 | 9.7 | LOS A | 0.7 | 4.8 | 0.50 | 0.60 | 0.50 | 48.6 |
| Approach | | 280 | 6.4 | 280 | 6.4 | 0.260 | 6.5 | LOS A | 0.7 | 4.8 | 0.50 | 0.60 | 0.50 | 48.6 |
| All Vehicles | | 1833 | 3.8 | 1833 | 3.8 | 0.741 | 9.1 | LOS A | 4.1 | 29.4 | 0.75 | 0.77 | 0.84 | 46.6 |

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.
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: 101 [4. Ex PM Horsley Road/ Bullecourt Avenue]

## Network: N101 [Existing PM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 539 | 2.1 | 539 | 2.1 | 0.578 | 8.2 | LOS A | 2.1 | 15.0 | 0.75 | 0.76 | 0.79 | 32.5 |
| 2 | T1 | 27 | 0.0 | 27 | 0.0 | 0.578 | 7.9 | LOS A | 2.1 | 15.0 | 0.75 | 0.76 | 0.79 | 46.6 |
| Approach | | 566 | 2.0 | 566 | 2.0 | 0.578 | 8.1 | LOS A | 2.1 | 15.0 | 0.75 | 0.76 | 0.79 | 34.0 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 8 | T1 | 105 | 1.0 | 105 | 1.0 | 0.475 | 8.3 | LOS A | 1.3 | 9.5 | 0.68 | 0.80 | 0.70 | 41.8 |
| 9 | R2 | 312 | 5.1 | 312 | 5.1 | 0.475 | 11.4 | LOS A | 1.3 | 9.5 | 0.68 | 0.80 | 0.70 | 41.8 |
| Approach | | 417 | 4.0 | 417 | 4.0 | 0.475 | 10.6 | LOS A | 1.3 | 9.5 | 0.68 | 0.80 | 0.70 | 41.8 |
| West: Bullacourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 40 | 26.3 | 40 | 26.3 | 0.322 | 5.7 | LOS A | 1.0 | 7.2 | 0.18 | 0.61 | 0.18 | 44.4 |
| 12 | R2 | 392 | 3.2 | 392 | 3.2 | 0.322 | 7.8 | LOS A | 1.0 | 7.2 | 0.18 | 0.61 | 0.18 | 34.5 |
| Approach | | 432 | 5.4 | 432 | 5.4 | 0.322 | 7.6 | LOS A | 1.0 | 7.2 | 0.18 | 0.61 | 0.18 | 36.5 |
| All Vehicles | | 1415 | 3.6 | 1415 | 3.6 | 0.578 | 8.7 | LOS A | 2.1 | 15.0 | 0.56 | 0.73 | 0.58 | 38.0 |

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: 101 [5. Ex PM Horsley Road/Site Access C]

## Network: N101 [Existing PM]

Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 19 | 22.2 | 19 | 22.2 | 0.364 | 7.6 | LOS A | 1.0 | 7.2 | 0.08 | 0.52 | 0.08 | 35.8 |
| 2 | T1 | 555 | 2.1 | 555 | 2.1 | 0.364 | 4.9 | LOS A | 1.0 | 7.2 | 0.08 | 0.52 | 0.08 | 41.4 |
| Approach | | 574 | 2.8 | 574 | 2.8 | 0.364 | 5.0 | LOS A | 1.0 | 7.2 | 0.08 | 0.52 | 0.08 | 41.1 |
| North: Horsley Avenue | | | | | | | | | | | | | | |
| 8 | T1 | 488 | 2.8 | 488 | 2.8 | 0.351 | 5.1 | LOS A | 1.1 | 7.6 | 0.20 | 0.50 | 0.20 | 37.8 |
| 9 | R2 | 8 | 0.0 | 8 | 0.0 | 0.351 | 10.3 | LOS A | 1.1 | 7.6 | 0.20 | 0.50 | 0.20 | 32.6 |
| Approach | | 497 | 2.8 | 497 | 2.8 | 0.351 | 5.2 | LOS A | 1.1 | 7.6 | 0.20 | 0.50 | 0.20 | 37.7 |
| West: Site Access C | | | | | | | | | | | | | | |
| 10 | L2 | 12 | 0.0 | 12 | 0.0 | 0.055 | 2.9 | LOS A | 0.1 | 0.7 | 0.54 | 0.41 | 0.54 | 7.7 |
| 12 | R2 | 34 | 0.0 | 34 | 0.0 | 0.055 | 2.9 | LOS A | 0.1 | 0.7 | 0.54 | 0.41 | 0.54 | 7.7 |
| Approach | | 45 | 0.0 | 45 | 0.0 | 0.055 | 2.9 | LOS A | 0.1 | 0.7 | 0.54 | 0.41 | 0.54 | 7.7 |
| All Vehicles | | 1116 | 2.6 | 1116 | 2.6 | 0.364 | 5.0 | LOS A | 1.1 | 7.6 | 0.15 | 0.50 | 0.15 | 38.6 |

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.
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: 101 [6. Ex PM Horsley Road/ Beaconsfield Street/ School Access Roundabout]

## Network: N101 [Existing PM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 1 | 0.0 | 1 | 0.0 | 0.306 | 8.1 | LOS A | 0.5 | 3.9 | 0.39 | 0.62 | 0.39 | 14.8 |
| 2 | T1 | 289 | 3.3 | 289 | 3.3 | 0.306 | 5.7 | LOS A | 0.5 | 3.9 | 0.39 | 0.62 | 0.39 | 45.8 |
| 3 | R2 | 29 | 7.1 | 29 | 7.1 | 0.306 | 8.8 | LOS A | 0.5 | 3.9 | 0.39 | 0.62 | 0.39 | 50.8 |
| Approach | | 320 | 3.6 | 320 | 3.6 | 0.306 | 6.0 | LOS A | 0.5 | 3.9 | 0.39 | 0.62 | 0.39 | 45.9 |
| East: Beaconsfield Street | | | | | | | | | | | | | | |
| 4 | L2 | 57 | 0.0 | 57 | 0.0 | 0.349 | 7.4 | LOS A | 0.9 | 6.1 | 0.58 | 0.74 | 0.58 | 48.3 |
| 5 | T1 | 1 | 0.0 | 1 | 0.0 | 0.349 | 11.7 | LOS A | 0.9 | 6.1 | 0.58 | 0.74 | 0.58 | 16.1 |
| 6 | R2 | 284 | 2.2 | 284 | 2.2 | 0.349 | 10.2 | LOS A | 0.9 | 6.1 | 0.58 | 0.74 | 0.58 | 44.7 |
| Approach | | 342 | 1.8 | 342 | 1.8 | 0.349 | 9.7 | LOS A | 0.9 | 6.1 | 0.58 | 0.74 | 0.58 | 45.1 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 7 | L2 | 169 | 5.0 | 169 | 5.0 | 0.115 | 5.3 | LOS A | 0.3 | 2.2 | 0.16 | 0.53 | 0.16 | 49.6 |
| 8 | T1 | 352 | 1.5 | 352 | 1.5 | 0.228 | 5.0 | LOS A | 0.7 | 4.8 | 0.17 | 0.48 | 0.17 | 49.2 |
| 9 | R2 | 1 | 0.0 | 1 | 0.0 | 0.228 | 11.3 | LOS A | 0.7 | 4.8 | 0.17 | 0.48 | 0.17 | 12.7 |
| Approach | | 522 | 2.6 | 522 | 2.6 | 0.228 | 5.1 | LOS A | 0.7 | 4.8 | 0.17 | 0.50 | 0.17 | 49.0 |
| All Vehicles | | 1184 | 2.7 | 1184 | 2.7 | 0.349 | 6.7 | LOS A | 0.9 | 6.1 | 0.35 | 0.60 | 0.35 | 47.1 |

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: 101 [2. Ex+Dev AM Ashford Avenue/ Bullecourt Avenue]

## Network: N101 [Existing AM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ashford Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 37 | 0.0 | 37 | 0.0 | 0.403 | 8.8 | LOS A | 1.1 | 7.6 | 0.79 | 0.88 | 0.81 | 44.8 |
| 2 | T1 | 72 | 1.5 | 72 | 1.5 | 0.403 | 8.9 | LOS A | 1.1 | 7.6 | 0.79 | 0.88 | 0.81 | 42.3 |
| 3 | R2 | 171 | 1.2 | 171 | 1.2 | 0.403 | 12.4 | LOS A | 1.1 | 7.6 | 0.79 | 0.88 | 0.81 | 32.7 |
| Approach | | 279 | 1.1 | 279 | 1.1 | 0.403 | 11.1 | LOS A | 1.1 | 7.6 | 0.79 | 0.88 | 0.81 | 38.6 |
| East: Bullecourt Avenue | | | | | | | | | | | | | | |
| 4 | L2 | 69 | 0.0 | 69 | 0.0 | 0.421 | 5.0 | LOS A | 1.4 | 10.2 | 0.40 | 0.54 | 0.40 | 43.2 |
| 5 | T1 | 361 | 7.9 | 361 | 7.9 | 0.421 | 5.3 | LOS A | 1.4 | 10.2 | 0.40 | 0.54 | 0.40 | 51.6 |
| 6 | R2 | 202 | 6.8 | 202 | 6.8 | 0.421 | 8.9 | LOS A | 1.4 | 10.2 | 0.40 | 0.54 | 0.40 | 47.4 |
| Approach | | 633 | 6.7 | 633 | 6.7 | 0.421 | 6.4 | LOS A | 1.4 | 10.2 | 0.40 | 0.54 | 0.40 | 49.7 |
| North: Ashford Avenue | | | | | | | | | | | | | | |
| 7 | L2 | 156 | 9.5 | 156 | 9.5 | 0.403 | 9.6 | LOS A | 1.2 | 8.7 | 0.86 | 0.91 | 0.89 | 39.1 |
| 8 | T1 | 27 | 0.0 | 27 | 0.0 | 0.403 | 9.2 | LOS A | 1.2 | 8.7 | 0.86 | 0.91 | 0.89 | 39.1 |
| 9 | R2 | 64 | 9.8 | 64 | 9.8 | 0.403 | 13.2 | LOS A | 1.2 | 8.7 | 0.86 | 0.91 | 0.89 | 46.5 |
| Approach | | 247 | 8.5 | 247 | 8.5 | 0.403 | 10.5 | LOS A | 1.2 | 8.7 | 0.86 | 0.91 | 0.89 | 41.8 |
| West: Bullecourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 235 | 4.5 | 235 | 4.5 | 0.693 | 9.9 | LOS A | 3.4 | 24.9 | 0.86 | 0.90 | 1.06 | 46.9 |
| 11 | T1 | 500 | 7.8 | 500 | 7.8 | 0.693 | 10.3 | LOS A | 3.4 | 24.9 | 0.86 | 0.90 | 1.06 | 45.2 |
| 12 | R2 | 24 | 8.7 | 24 | 8.7 | 0.693 | 13.9 | LOS A | 3.4 | 24.9 | 0.86 | 0.90 | 1.06 | 45.2 |
| Approach | | 759 | 6.8 | 759 | 6.8 | 0.693 | 10.3 | LOS A | 3.4 | 24.9 | 0.86 | 0.90 | 1.06 | 46.0 |
| All Vehicles | | 1918 | 6.1 | 1918 | 6.1 | 0.693 | 9.2 | LOS A | 3.4 | 24.9 | 0.70 | 0.78 | 0.78 | 45.8 |

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.
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: 101 [4. Ex+Dev AM Horsley Road/ Bullecourt Avenue]

## Network: N101 [Existing AM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 469 | 5.4 | 469 | 5.4 | 0.427 | 5.3 | LOS A | 1.5 | 10.7 | 0.31 | 0.52 | 0.31 | 36.8 |
| 2 | T1 | 157 | 6.0 | 157 | 6.0 | 0.427 | 5.2 | LOS A | 1.5 | 10.7 | 0.31 | 0.52 | 0.31 | 48.7 |
| Approach | | 626 | 5.5 | 626 | 5.5 | 0.427 | 5.3 | LOS A | 1.5 | 10.7 | 0.31 | 0.52 | 0.31 | 42.3 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 8 | T1 | 105 | 3.0 | 105 | 3.0 | 0.211 | 8.0 | LOS A | 0.5 | 4.3 | 0.72 | 0.76 | 0.72 | 43.6 |
| 9 | R2 | 57 | 31.5 | 57 | 31.5 | 0.211 | 12.0 | LOS A | 0.5 | 4.3 | 0.72 | 0.76 | 0.72 | 43.6 |
| Approach | | 162 | 13.0 | 162 | 13.0 | 0.211 | 9.4 | LOS A | 0.5 | 4.3 | 0.72 | 0.76 | 0.72 | 43.6 |
| West: Bullacourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 254 | 7.9 | 254 | 7.9 | 0.754 | 8.5 | LOS A | 3.9 | 28.7 | 0.77 | 0.69 | 0.81 | 43.5 |
| 12 | R2 | 544 | 6.6 | 544 | 6.6 | 0.754 | 10.9 | LOS A | 3.9 | 28.7 | 0.77 | 0.69 | 0.81 | 31.0 |
| Approach | | 798 | 7.0 | 798 | 7.0 | 0.754 | 10.2 | LOS A | 3.9 | 28.7 | 0.77 | 0.69 | 0.81 | 37.3 |
| All Vehicles | | 1586 | 7.0 | 1586 | 7.0 | 0.754 | 8.2 | LOS A | 3.9 | 28.7 | 0.58 | 0.63 | 0.60 | 39.7 |

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.
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: 101 [5. Ex+Dev AM Horsley Road/Site Access C]

## Network: N101 [Existing AM]

Site Category: (None)
Roundabout

| Movement Performance - Vehicles | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Horsley Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 28 | 0.0 | 28 | 0.0 | 0.381 | 7.2 | LOS A | 1.1 | 7.9 | 0.11 | 0.52 | 0.11 | 35.5 |
| 2 | T1 | 546 | 7.1 | 546 | 7.1 | 0.381 | 5.0 | LOS A | 1.1 | 7.9 | 0.11 | 0.52 | 0.11 | 40.9 |
| Approach | | 575 | 6.8 | 575 | 6.8 | 0.381 | 5.1 | LOS A | 1.1 | 7.9 | 0.11 | 0.52 | 0.11 | 40.6 |
| North: Horsley Avenue | | | | | | | | | | | | | | |
| 8 | T1 | 636 | 6.1 | 636 | 6.1 | 0.369 | 5.1 | LOS A | 1.2 | 8.6 | 0.20 | 0.50 | 0.20 | 37.7 |
| 9 | R2 | 14 | 0.0 | 14 | 0.0 | 0.369 | 10.2 | LOS A | 1.2 | 8.6 | 0.20 | 0.50 | 0.20 | 32.5 |
| Approach | | 649 | 6.0 | 649 | 6.0 | 0.369 | 5.2 | LOS A | 1.2 | 8.6 | 0.20 | 0.50 | 0.20 | 37.6 |
| West: Site Access C | | | | | | | | | | | | | | |
| 10 | L2 | 81 | 1.3 | 81 | 1.3 | 0.149 | 3.2 | LOS A | 0.3 | 2.1 | 0.58 | 0.48 | 0.58 | 7.2 |
| 12 | R2 | 40 | 0.0 | 40 | 0.0 | 0.149 | 3.2 | LOS A | 0.3 | 2.1 | 0.58 | 0.48 | 0.58 | 7.2 |
| Approach | | 121 | 0.9 | 121 | 0.9 | 0.149 | 3.2 | LOS A | 0.3 | 2.1 | 0.58 | 0.48 | 0.58 | 7.2 |
| All Vehicles | | 1345 | 5.9 | 1345 | 5.9 | 0.381 | 5.0 | LOS A | 1.2 | 8.6 | 0.19 | 0.51 | 0.19 | 37.0 |

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: 101 [6. Ex+Dev AM Horsley Road/ Beaconsfield Street/ School Access Roundabout]

## Network: N101 [Existing AM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 19 | 0.0 | 19 | 0.0 | 0.494 | 9.2 | LOS A | 1.1 | 8.1 | 0.55 | 0.75 | 0.57 | 14.8 |
| 2 | T1 | 354 | 6.5 | 354 | 6.5 | 0.494 | 6.8 | LOS A | 1.1 | 8.1 | 0.55 | 0.75 | 0.57 | 43.9 |
| 3 | R2 | 106 | 4.0 | 106 | 4.0 | 0.494 | 9.7 | LOS A | 1.1 | 8.1 | 0.55 | 0.75 | 0.57 | 49.9 |
| Approach | | 479 | 5.7 | 479 | 5.7 | 0.494 | 7.6 | LOS A | 1.1 | 8.1 | 0.55 | 0.75 | 0.57 | 40.1 |
| East: Beaconsfield Street | | | | | | | | | | | | | | |
| 4 | L2 | 44 | 14.3 | 44 | 14.3 | 0.412 | 9.2 | LOS A | 1.1 | 7.8 | 0.69 | 0.83 | 0.69 | 46.3 |
| 5 | T1 | 48 | 0.0 | 48 | 0.0 | 0.412 | 12.9 | LOS A | 1.1 | 7.8 | 0.69 | 0.83 | 0.69 | 15.9 |
| 6 | R2 | 221 | 7.1 | 221 | 7.1 | 0.412 | 11.6 | LOS A | 1.1 | 7.8 | 0.69 | 0.83 | 0.69 | 42.7 |
| Approach | | 314 | 7.0 | 314 | 7.0 | 0.412 | 11.5 | LOS A | 1.1 | 7.8 | 0.69 | 0.83 | 0.69 | 30.3 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 7 | L2 | 265 | 4.8 | 265 | 4.8 | 0.164 | 5.5 | LOS A | 0.5 | 3.5 | 0.32 | 0.53 | 0.32 | 48.9 |
| 8 | T1 | 273 | 9.7 | 273 | 9.7 | 0.254 | 5.5 | LOS A | 0.8 | 5.9 | 0.35 | 0.63 | 0.35 | 45.8 |
| 9 | R2 | 137 | 0.0 | 137 | 0.0 | 0.254 | 11.6 | LOS A | 0.8 | 5.9 | 0.35 | 0.63 | 0.35 | 12.6 |
| Approach | | 675 | 5.8 | 675 | 5.8 | 0.254 | 6.7 | LOS A | 0.8 | 5.9 | 0.34 | 0.59 | 0.34 | 28.8 |
| All Vehicles | | 1467 | 6.0 | 1467 | 6.0 | 0.494 | 8.0 | LOS A | 1.1 | 8.1 | 0.48 | 0.69 | 0.49 | 31.7 |

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.
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: 101 [2. Ex+Dev PM Ashford Avenue/ Bullecourt Avenue]

## Network: N101 [Existing PM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ashford Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 24 | 0.0 | 24 | 0.0 | 0.304 | 11.9 | LOS A | 0.9 | 6.5 | 0.96 | 0.94 | 0.96 | 42.9 |
| 2 | T1 | 42 | 0.0 | 42 | 0.0 | 0.304 | 11.9 | LOS A | 0.9 | 6.5 | 0.96 | 0.94 | 0.96 | 40.7 |
| 3 | R2 | 77 | 1.4 | 77 | 1.4 | 0.304 | 15.5 | LOS B | 0.9 | 6.5 | 0.96 | 0.94 | 0.96 | 30.0 |
| Approach | | 143 | 0.7 | 143 | 0.7 | 0.304 | 13.8 | LOS A | 0.9 | 6.5 | 0.96 | 0.94 | 0.96 | 37.2 |
| East: Bullecourt Avenue | | | | | | | | | | | | | | |
| 4 | L2 | 197 | 0.0 | 197 | 0.0 | 0.797 | 11.7 | LOS A | 5.2 | 37.5 | 0.97 | 0.98 | 1.29 | 36.3 |
| 5 | T1 | 578 | 1.8 | 578 | 1.8 | 0.797 | 12.0 | LOS A | 5.2 | 37.5 | 0.97 | 0.98 | 1.29 | 47.6 |
| 6 | R2 | 151 | 10.5 | 151 | 10.5 | 0.797 | 15.9 | LOS B | 5.2 | 37.5 | 0.97 | 0.98 | 1.29 | 43.8 |
| Approach | | 925 | 2.8 | 925 | 2.8 | 0.797 | 12.5 | LOS A | 5.2 | 37.5 | 0.97 | 0.98 | 1.29 | 45.5 |
| North: Ashford Avenue | | | | | | | | | | | | | | |
| 7 | L2 | 205 | 5.1 | 205 | 5.1 | 0.559 | 6.4 | LOS A | 1.9 | 13.8 | 0.72 | 0.75 | 0.75 | 41.1 |
| 8 | T1 | 124 | 4.2 | 124 | 4.2 | 0.559 | 6.5 | LOS A | 1.9 | 13.8 | 0.72 | 0.75 | 0.75 | 41.1 |
| 9 | R2 | 275 | 3.1 | 275 | 3.1 | 0.559 | 9.9 | LOS A | 1.9 | 13.8 | 0.72 | 0.75 | 0.75 | 48.0 |
| Approach | | 604 | 4.0 | 604 | 4.0 | 0.559 | 8.0 | LOS A | 1.9 | 13.8 | 0.72 | 0.75 | 0.75 | 45.1 |
| West: Bullecourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 45 | 11.6 | 45 | 11.6 | 0.308 | 6.3 | LOS A | 0.8 | 5.9 | 0.54 | 0.62 | 0.54 | 48.5 |
| 11 | T1 | 247 | 4.7 | 247 | 4.7 | 0.308 | 6.4 | LOS A | 0.8 | 5.9 | 0.54 | 0.62 | 0.54 | 48.3 |
| 12 | R2 | 35 | 3.0 | 35 | 3.0 | 0.308 | 9.8 | LOS A | 0.8 | 5.9 | 0.54 | 0.62 | 0.54 | 48.3 |
| Approach | | 327 | 5.5 | 327 | 5.5 | 0.308 | 6.7 | LOS A | 0.8 | 5.9 | 0.54 | 0.62 | 0.54 | 48.3 |
| All Vehicles | | 2000 | 3.5 | 2000 | 3.5 | 0.797 | 10.3 | LOS A | 5.2 | 37.5 | 0.82 | 0.85 | 0.98 | 45.2 |

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: 101 [4. Ex+Dev PM Horsley Road/ Bullecourt Avenue]

## Network: N101 [Existing PM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 618 | 1.9 | 618 | 1.9 | 0.784 | 14.3 | LOS A | 4.6 | 32.8 | 0.98 | 1.02 | 1.32 | 24.2 |
| 2 | T1 | 27 | 0.0 | 27 | 0.0 | 0.784 | 14.0 | LOS A | 4.6 | 32.8 | 0.98 | 1.02 | 1.32 | 40.7 |
| Approach | | 645 | 1.8 | 645 | 1.8 | 0.784 | 14.3 | LOS A | 4.6 | 32.8 | 0.98 | 1.02 | 1.32 | 25.5 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 8 | T1 | 116 | 0.9 | 116 | 0.9 | 0.552 | 9.9 | LOS A | 1.8 | 13.2 | 0.76 | 0.88 | 0.87 | 40.0 |
| 9 | R2 | 349 | 4.5 | 349 | 4.5 | 0.552 | 13.0 | LOS A | 1.8 | 13.2 | 0.76 | 0.88 | 0.87 | 40.0 |
| Approach | | 465 | 3.6 | 465 | 3.6 | 0.552 | 12.2 | LOS A | 1.8 | 13.2 | 0.76 | 0.88 | 0.87 | 40.0 |
| West: Bullacourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 42 | 25.0 | 42 | 25.0 | 0.358 | 5.7 | LOS A | 1.2 | 8.7 | 0.20 | 0.61 | 0.20 | 44.4 |
| 12 | R2 | 447 | 0.2 | 447 | 0.2 | 0.358 | 7.8 | LOS A | 1.2 | 8.7 | 0.20 | 0.61 | 0.20 | 34.4 |
| Approach | | 489 | 2.4 | 489 | 2.4 | 0.358 | 7.6 | LOS A | 1.2 | 8.7 | 0.20 | 0.61 | 0.20 | 36.2 |
| All Vehicles | | 1600 | 2.5 | 1600 | 2.5 | 0.784 | 11.6 | LOS A | 4.6 | 32.8 | 0.68 | 0.85 | 0.84 | 33.7 |

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.
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: 101 [5. Ex+Dev PM Horsley Road/Site Access C]

## Network: N101 [Existing PM]

Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 62 | 6.8 | 62 | 6.8 | 0.508 | 7.8 | LOS A | 1.7 | 11.9 | 0.31 | 0.53 | 0.31 | 34.0 |
| 2 | T1 | 624 | 1.9 | 624 | 1.9 | 0.508 | 5.4 | LOS A | 1.7 | 11.9 | 0.31 | 0.53 | 0.31 | 38.9 |
| Approach | | 686 | 2.3 | 686 | 2.3 | 0.508 | 5.6 | LOS A | 1.7 | 11.9 | 0.31 | 0.53 | 0.31 | 38.4 |
| North: Horsley Avenue | | | | | | | | | | | | | | |
| 8 | T1 | 500 | 2.7 | 500 | 2.7 | 0.381 | 5.0 | LOS A | 1.2 | 8.8 | 0.16 | 0.54 | 0.16 | 37.1 |
| 9 | R2 | 63 | 0.0 | 63 | 0.0 | 0.381 | 10.2 | LOS A | 1.2 | 8.8 | 0.16 | 0.54 | 0.16 | 32.1 |
| Approach | | 563 | 2.4 | 563 | 2.4 | 0.381 | 5.6 | LOS A | 1.2 | 8.8 | 0.16 | 0.54 | 0.16 | 36.4 |
| West: Site Access C | | | | | | | | | | | | | | |
| 10 | L2 | 23 | 0.0 | 23 | 0.0 | 0.061 | 3.4 | LOS A | 0.1 | 0.9 | 0.61 | 0.48 | 0.61 | 7.2 |
| 12 | R2 | 22 | 0.0 | 22 | 0.0 | 0.061 | 3.4 | LOS A | 0.1 | 0.9 | 0.61 | 0.48 | 0.61 | 7.2 |
| Approach | | 45 | 0.0 | 45 | 0.0 | 0.061 | 3.4 | LOS A | 0.1 | 0.9 | 0.61 | 0.48 | 0.61 | 7.2 |
| All Vehicles | | 1295 | 2.3 | 1295 | 2.3 | 0.508 | 5.5 | LOS A | 1.7 | 11.9 | 0.25 | 0.53 | 0.25 | 36.8 |

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.
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: 101 [6. Ex+Dev PM Horsley Road/ Beaconsfield Street/ School Access Roundabout]

## Network: N101 [Existing PM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 1 | 0.0 | 1 | 0.0 | 0.373 | 8.4 | LOS A | 0.7 | 5.2 | 0.47 | 0.65 | 0.47 | 14.8 |
| 2 | T1 | 345 | 2.7 | 345 | 2.7 | 0.373 | 6.0 | LOS A | 0.7 | 5.2 | 0.47 | 0.65 | 0.47 | 45.3 |
| 3 | R2 | 29 | 7.1 | 29 | 7.1 | 0.373 | 9.1 | LOS A | 0.7 | 5.2 | 0.47 | 0.65 | 0.47 | 50.5 |
| Approach | | 376 | 3.1 | 376 | 3.1 | 0.373 | 6.2 | LOS A | 0.7 | 5.2 | 0.47 | 0.65 | 0.47 | 45.4 |
| East: Beaconsfield Street | | | | | | | | | | | | | | |
| 4 | L2 | 57 | 0.0 | 57 | 0.0 | 0.468 | 8.3 | LOS A | 1.2 | 8.9 | 0.66 | 0.79 | 0.66 | 47.5 |
| 5 | T1 | 1 | 0.0 | 1 | 0.0 | 0.468 | 12.6 | LOS A | 1.2 | 8.9 | 0.66 | 0.79 | 0.66 | 16.0 |
| 6 | R2 | 340 | 1.9 | 340 | 1.9 | 0.468 | 11.1 | LOS A | 1.2 | 8.9 | 0.66 | 0.79 | 0.66 | 43.6 |
| Approach | | 398 | 1.6 | 398 | 1.6 | 0.468 | 10.7 | LOS A | 1.2 | 8.9 | 0.66 | 0.79 | 0.66 | 44.1 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 7 | L2 | 168 | 5.0 | 168 | 5.0 | 0.115 | 5.3 | LOS A | 0.3 | 2.3 | 0.16 | 0.53 | 0.16 | 49.6 |
| 8 | T1 | 353 | 1.5 | 353 | 1.5 | 0.228 | 5.0 | LOS A | 0.7 | 4.9 | 0.18 | 0.48 | 0.18 | 49.2 |
| 9 | R2 | 1 | 0.0 | 1 | 0.0 | 0.228 | 11.3 | LOS A | 0.7 | 4.9 | 0.18 | 0.48 | 0.18 | 12.7 |
| Approach | | 522 | 2.6 | 522 | 2.6 | 0.228 | 5.1 | LOS A | 0.7 | 4.9 | 0.17 | 0.50 | 0.17 | 49.0 |
| All Vehicles | | 1296 | 2.4 | 1296 | 2.4 | 0.468 | 7.1 | LOS A | 1.2 | 8.9 | 0.41 | 0.63 | 0.41 | 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.
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: 101 [2. Fu Base AM Ashford Avenue/ Bullecourt Avenue]

## Network: N101 [Existing AM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ashford Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 25 | 0.0 | 25 | 0.0 | 0.255 | 7.3 | LOS A | 0.6 | 4.3 | 0.68 | 0.78 | 0.68 | 45.8 |
| 2 | T1 | 46 | 2.3 | 46 | 2.3 | 0.255 | 7.4 | LOS A | 0.6 | 4.3 | 0.68 | 0.78 | 0.68 | 43.3 |
| 3 | R2 | 122 | 1.7 | 122 | 1.7 | 0.255 | 10.9 | LOS A | 0.6 | 4.3 | 0.68 | 0.78 | 0.68 | 34.2 |
| Approach | | 194 | 1.6 | 194 | 1.6 | 0.255 | 9.6 | LOS A | 0.6 | 4.3 | 0.68 | 0.78 | 0.68 | 39.7 |
| East: Bullecourt Avenue | | | | | | | | | | | | | | |
| 4 | L2 | 44 | 0.0 | 44 | 0.0 | 0.343 | 4.8 | LOS A | 1.1 | 7.9 | 0.35 | 0.53 | 0.35 | 43.6 |
| 5 | T1 | 317 | 10.6 | 317 | 10.6 | 0.343 | 5.3 | LOS A | 1.1 | 7.9 | 0.35 | 0.53 | 0.35 | 51.7 |
| 6 | R2 | 151 | 9.1 | 151 | 9.1 | 0.343 | 8.8 | LOS A | 1.1 | 7.9 | 0.35 | 0.53 | 0.35 | 47.6 |
| Approach | | 512 | 9.3 | 512 | 9.3 | 0.343 | 6.3 | LOS A | 1.1 | 7.9 | 0.35 | 0.53 | 0.35 | 50.0 |
| North: Ashford Avenue | | | | | | | | | | | | | | |
| 7 | L2 | 167 | 8.8 | 167 | 8.8 | 0.444 | 11.2 | LOS A | 1.4 | 10.3 | 0.90 | 0.98 | 1.00 | 37.8 |
| 8 | T1 | 20 | 0.0 | 20 | 0.0 | 0.444 | 10.8 | LOS A | 1.4 | 10.3 | 0.90 | 0.98 | 1.00 | 37.8 |
| 9 | R2 | 64 | 9.8 | 64 | 9.8 | 0.444 | 14.8 | LOS B | 1.4 | 10.3 | 0.90 | 0.98 | 1.00 | 45.5 |
| Approach | | 252 | 8.4 | 252 | 8.4 | 0.444 | 12.1 | LOS A | 1.4 | 10.3 | 0.90 | 0.98 | 1.00 | 40.6 |
| West: Bullecourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 235 | 4.5 | 235 | 4.5 | 0.707 | 8.3 | LOS A | 3.4 | 25.0 | 0.79 | 0.77 | 0.90 | 47.9 |
| 11 | T1 | 617 | 7.0 | 617 | 7.0 | 0.707 | 8.7 | LOS A | 3.4 | 25.0 | 0.79 | 0.77 | 0.90 | 46.9 |
| 12 | R2 | 19 | 0.0 | 19 | 0.0 | 0.707 | 12.0 | LOS A | 3.4 | 25.0 | 0.79 | 0.77 | 0.90 | 46.9 |
| Approach | | 871 | 6.2 | 871 | 6.2 | 0.707 | 8.6 | LOS A | 3.4 | 25.0 | 0.79 | 0.77 | 0.90 | 47.3 |
| All Vehicles | | 1827 | 6.9 | 1827 | 6.9 | 0.707 | 8.6 | LOS A | 3.4 | 25.0 | 0.67 | 0.73 | 0.74 | 46.4 |

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: 101 [4. Fu Base AM Horsley Road/ Bullecourt Avenue]

## Network: N101 [Existing AM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 463 | 5.5 | 463 | 5.5 | 0.429 | 5.5 | LOS A | 1.4 | 10.6 | 0.37 | 0.53 | 0.37 | 36.3 |
| 2 | T1 | 141 | 6.7 | 141 | 6.7 | 0.429 | 5.4 | LOS A | 1.4 | 10.6 | 0.37 | 0.53 | 0.37 | 48.4 |
| Approach | | 604 | 5.7 | 604 | 5.7 | 0.429 | 5.5 | LOS A | 1.4 | 10.6 | 0.37 | 0.53 | 0.37 | 41.6 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 8 | T1 | 108 | 2.9 | 108 | 2.9 | 0.245 | 8.2 | LOS A | 0.7 | 5.0 | 0.74 | 0.79 | 0.74 | 43.0 |
| 9 | R2 | 80 | 22.4 | 80 | 22.4 | 0.245 | 11.9 | LOS A | 0.7 | 5.0 | 0.74 | 0.79 | 0.74 | 43.0 |
| Approach | | 188 | 11.2 | 188 | 11.2 | 0.245 | 9.8 | LOS A | 0.7 | 5.0 | 0.74 | 0.79 | 0.74 | 43.0 |
| West: Bullacourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 238 | 8.4 | 238 | 8.4 | 0.740 | 7.6 | LOS A | 3.5 | 26.2 | 0.73 | 0.66 | 0.74 | 44.0 |
| 12 | R2 | 561 | 6.9 | 561 | 6.9 | 0.740 | 10.0 | LOS A | 3.5 | 26.2 | 0.73 | 0.66 | 0.74 | 32.0 |
| Approach | | 799 | 7.4 | 799 | 7.4 | 0.740 | 9.3 | LOS A | 3.5 | 26.2 | 0.73 | 0.66 | 0.74 | 37.9 |
| All Vehicles | | 1592 | 7.2 | 1592 | 7.2 | 0.740 | 7.9 | LOS A | 3.5 | 26.2 | 0.59 | 0.63 | 0.60 | 39.8 |

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.
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: 101 [5. Fu Base AM Horsley Road/Site Access C]

## Network: N101 [Existing AM]

Site Category: (None)
Roundabout

| Movement Performance - Vehicles | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Horsley Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 38 | 0.0 | 38 | 0.0 | 0.438 | 7.4 | LOS A | 1.3 | 9.5 | 0.18 | 0.51 | 0.18 | 35.0 |
| 2 | T1 | 591 | 6.6 | 591 | 6.6 | 0.438 | 5.1 | LOS A | 1.3 | 9.5 | 0.18 | 0.51 | 0.18 | 40.2 |
| Approach | | 628 | 6.2 | 628 | 6.2 | 0.438 | 5.3 | LOS A | 1.3 | 9.5 | 0.18 | 0.51 | 0.18 | 39.8 |
| North: Horsley Avenue | | | | | | | | | | | | | | |
| 8 | T1 | 642 | 6.7 | 642 | 6.7 | 0.367 | 5.0 | LOS A | 1.2 | 8.8 | 0.09 | 0.52 | 0.09 | 38.5 |
| 9 | R2 | 29 | 0.0 | 29 | 0.0 | 0.367 | 10.1 | LOS A | 1.2 | 8.8 | 0.09 | 0.52 | 0.09 | 33.1 |
| Approach | | 672 | 6.4 | 672 | 6.4 | 0.367 | 5.2 | LOS A | 1.2 | 8.8 | 0.09 | 0.52 | 0.09 | 38.2 |
| West: Site Access C | | | | | | | | | | | | | | |
| 10 | L2 | 14 | 7.7 | 14 | 7.7 | 0.032 | 3.3 | LOS A | 0.1 | 0.4 | 0.58 | 0.42 | 0.58 | 7.3 |
| 12 | R2 | 11 | 0.0 | 11 | 0.0 | 0.032 | 3.2 | LOS A | 0.1 | 0.4 | 0.58 | 0.42 | 0.58 | 7.3 |
| Approach | | 24 | 4.3 | 24 | 4.3 | 0.032 | 3.3 | LOS A | 0.1 | 0.4 | 0.58 | 0.42 | 0.58 | 7.3 |
| All Vehicles | | 1324 | 6.3 | 1324 | 6.3 | 0.438 | 5.2 | LOS A | 1.3 | 9.5 | 0.14 | 0.52 | 0.14 | 38.6 |

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.
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: 101 [6. Fu Base AM Horsley Road/ Beaconsfield Street/School Access Roundabout]

## Network: N101 [Existing AM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 19 | 0.0 | 19 | 0.0 | 0.534 | 9.6 | LOS A | 1.3 | 9.6 | 0.59 | 0.78 | 0.64 | 14.7 |
| 2 | T1 | 386 | 6.0 | 386 | 6.0 | 0.534 | 7.2 | LOS A | 1.3 | 9.6 | 0.59 | 0.78 | 0.64 | 43.6 |
| 3 | R2 | 106 | 4.0 | 106 | 4.0 | 0.534 | 10.2 | LOS A | 1.3 | 9.6 | 0.59 | 0.78 | 0.64 | 49.8 |
| Approach | | 512 | 5.3 | 512 | 5.3 | 0.534 | 7.9 | LOS A | 1.3 | 9.6 | 0.59 | 0.78 | 0.64 | 40.1 |
| East: Beaconsfield Street | | | | | | | | | | | | | | |
| 4 | L2 | 44 | 14.3 | 44 | 14.3 | 0.439 | 9.4 | LOS A | 1.2 | 8.6 | 0.71 | 0.84 | 0.72 | 46.2 |
| 5 | T1 | 48 | 0.0 | 48 | 0.0 | 0.439 | 13.1 | LOS A | 1.2 | 8.6 | 0.71 | 0.84 | 0.72 | 15.9 |
| 6 | R2 | 242 | 6.5 | 242 | 6.5 | 0.439 | 11.8 | LOS A | 1.2 | 8.6 | 0.71 | 0.84 | 0.72 | 42.5 |
| Approach | | 335 | 6.6 | 335 | 6.6 | 0.439 | 11.7 | LOS A | 1.2 | 8.6 | 0.71 | 0.84 | 0.72 | 30.7 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 7 | L2 | 241 | 5.2 | 241 | 5.2 | 0.150 | 5.5 | LOS A | 0.4 | 3.2 | 0.32 | 0.53 | 0.32 | 48.9 |
| 8 | T1 | 275 | 9.6 | 275 | 9.6 | 0.256 | 5.5 | LOS A | 0.8 | 6.0 | 0.35 | 0.63 | 0.35 | 45.8 |
| 9 | R2 | 137 | 0.0 | 137 | 0.0 | 0.256 | 11.6 | LOS A | 0.8 | 6.0 | 0.35 | 0.63 | 0.35 | 12.6 |
| Approach | | 653 | 6.0 | 653 | 6.0 | 0.256 | 6.8 | LOS A | 0.8 | 6.0 | 0.34 | 0.59 | 0.34 | 28.4 |
| All Vehicles | | 1499 | 5.9 | 1499 | 5.9 | 0.534 | 8.3 | LOS A | 1.3 | 9.6 | 0.51 | 0.71 | 0.53 | 31.6 |

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.
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: 101 [2. Fu Base PM Ashford Avenue/ Bullecourt Avenue]

## Network: N101 [Existing PM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ashford Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 20 | 0.0 | 20 | 0.0 | 0.306 | 14.8 | LOS B | 1.0 | 6.7 | 1.00 | 0.97 | 1.00 | 41.1 |
| 2 | T1 | 36 | 0.0 | 36 | 0.0 | 0.306 | 14.9 | LOS B | 1.0 | 6.7 | 1.00 | 0.97 | 1.00 | 39.1 |
| 3 | R2 | 57 | 1.9 | 57 | 1.9 | 0.306 | 18.5 | LOS B | 1.0 | 6.7 | 1.00 | 0.97 | 1.00 | 27.7 |
| Approach | | 113 | 0.9 | 113 | 0.9 | 0.306 | 16.7 | LOS B | 1.0 | 6.7 | 1.00 | 0.97 | 1.00 | 35.6 |
| East: Bullecourt Avenue | | | | | | | | | | | | | | |
| 4 | L2 | 153 | 0.0 | 153 | 0.0 | 0.838 | 12.3 | LOS A | 6.3 | 44.9 | 0.99 | 0.99 | 1.35 | 35.7 |
| 5 | T1 | 705 | 1.5 | 705 | 1.5 | 0.838 | 12.6 | LOS A | 6.3 | 44.9 | 0.99 | 0.99 | 1.35 | 47.2 |
| 6 | R2 | 161 | 9.8 | 161 | 9.8 | 0.838 | 16.4 | LOS B | 6.3 | 44.9 | 0.99 | 0.99 | 1.35 | 43.4 |
| Approach | | 1019 | 2.6 | 1019 | 2.6 | 0.838 | 13.1 | LOS A | 6.3 | 44.9 | 0.99 | 0.99 | 1.35 | 45.6 |
| North: Ashford Avenue | | | | | | | | | | | | | | |
| 7 | L2 | 176 | 6.0 | 176 | 6.0 | 0.500 | 5.9 | LOS A | 1.5 | 11.1 | 0.68 | 0.72 | 0.68 | 41.3 |
| 8 | T1 | 88 | 6.0 | 88 | 6.0 | 0.500 | 6.0 | LOS A | 1.5 | 11.1 | 0.68 | 0.72 | 0.68 | 41.3 |
| 9 | R2 | 275 | 3.1 | 275 | 3.1 | 0.500 | 9.4 | LOS A | 1.5 | 11.1 | 0.68 | 0.72 | 0.68 | 48.2 |
| Approach | | 539 | 4.5 | 539 | 4.5 | 0.500 | 7.7 | LOS A | 1.5 | 11.1 | 0.68 | 0.72 | 0.68 | 45.7 |
| West: Bullecourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 45 | 11.6 | 45 | 11.6 | 0.316 | 6.2 | LOS A | 0.8 | 6.2 | 0.54 | 0.61 | 0.54 | 48.6 |
| 11 | T1 | 269 | 5.5 | 269 | 5.5 | 0.316 | 6.3 | LOS A | 0.8 | 6.2 | 0.54 | 0.61 | 0.54 | 48.4 |
| 12 | R2 | 24 | 4.3 | 24 | 4.3 | 0.316 | 9.8 | LOS A | 0.8 | 6.2 | 0.54 | 0.61 | 0.54 | 48.4 |
| Approach | | 339 | 6.2 | 339 | 6.2 | 0.316 | 6.5 | LOS A | 0.8 | 6.2 | 0.54 | 0.61 | 0.54 | 48.4 |
| All Vehicles | | 2009 | 3.6 | 2009 | 3.6 | 0.838 | 10.8 | LOS A | 6.3 | 44.9 | 0.83 | 0.85 | 1.01 | 45.4 |

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: 101 [4. Fu Base PM Horsley Road/ Bullecourt Avenue]

## Network: N101 [Existing PM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 645 | 2.1 | 645 | 2.1 | 0.786 | 13.7 | LOS A | 4.7 | 33.7 | 0.97 | 0.98 | 1.28 | 24.8 |
| 2 | T1 | 27 | 0.0 | 27 | 0.0 | 0.786 | 13.4 | LOS A | 4.7 | 33.7 | 0.97 | 0.98 | 1.28 | 41.2 |
| Approach | | 673 | 2.0 | 673 | 2.0 | 0.786 | 13.6 | LOS A | 4.7 | 33.7 | 0.97 | 0.98 | 1.28 | 26.1 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 8 | T1 | 115 | 0.9 | 115 | 0.9 | 0.523 | 9.6 | LOS A | 1.6 | 11.9 | 0.74 | 0.87 | 0.83 | 40.3 |
| 9 | R2 | 321 | 5.2 | 321 | 5.2 | 0.523 | 12.7 | LOS A | 1.6 | 11.9 | 0.74 | 0.87 | 0.83 | 40.3 |
| Approach | | 436 | 4.1 | 436 | 4.1 | 0.523 | 11.9 | LOS A | 1.6 | 11.9 | 0.74 | 0.87 | 0.83 | 40.3 |
| West: Bullacourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 39 | 27.0 | 39 | 27.0 | 0.363 | 5.7 | LOS A | 1.2 | 9.1 | 0.20 | 0.61 | 0.20 | 44.3 |
| 12 | R2 | 452 | 3.3 | 452 | 3.3 | 0.363 | 7.8 | LOS A | 1.2 | 9.1 | 0.20 | 0.61 | 0.20 | 34.3 |
| Approach | | 491 | 5.2 | 491 | 5.2 | 0.363 | 7.7 | LOS A | 1.2 | 9.1 | 0.20 | 0.61 | 0.20 | 36.0 |
| All Vehicles | | 1599 | 3.6 | 1599 | 3.6 | 0.786 | 11.3 | LOS A | 4.7 | 33.7 | 0.67 | 0.84 | 0.83 | 33.8 |

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.
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: 101 [5. Fu Base PM Horsley Road/Site Access C]

## Network: N101 [Existing PM]

Site Category: (None)
Roundabout

| Movement Performance - Vehicles | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Horsley Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 19 | 22.2 | 19 | 22.2 | 0.429 | 7.6 | LOS A | 1.3 | 9.3 | 0.08 | 0.51 | 0.08 | 35.8 |
| 2 | T1 | 661 | 2.1 | 661 | 2.1 | 0.429 | 4.9 | LOS A | 1.3 | 9.3 | 0.08 | 0.51 | 0.08 | 41.3 |
| Approach | | 680 | 2.6 | 680 | 2.6 | 0.429 | 5.0 | LOS A | 1.3 | 9.3 | 0.08 | 0.51 | 0.08 | 41.1 |
| North: Horsley Avenue | | | | | | | | | | | | | | |
| 8 | T1 | 558 | 2.8 | 558 | 2.8 | 0.397 | 5.1 | LOS A | 1.3 | 9.2 | 0.21 | 0.50 | 0.21 | 37.7 |
| 9 | R2 | 8 | 0.0 | 8 | 0.0 | 0.397 | 10.3 | LOS A | 1.3 | 9.2 | 0.21 | 0.50 | 0.21 | 32.5 |
| Approach | | 566 | 2.8 | 566 | 2.8 | 0.397 | 5.2 | LOS A | 1.3 | 9.2 | 0.21 | 0.50 | 0.21 | 37.6 |
| West: Site Access C | | | | | | | | | | | | | | |
| 10 | L2 | 12 | 0.0 | 12 | 0.0 | 0.060 | 3.7 | LOS A | 0.1 | 0.8 | 0.60 | 0.47 | 0.60 | 7.2 |
| 12 | R2 | 34 | 0.0 | 34 | 0.0 | 0.060 | 3.7 | LOS A | 0.1 | 0.8 | 0.60 | 0.47 | 0.60 | 7.2 |
| Approach | | 45 | 0.0 | 45 | 0.0 | 0.060 | 3.7 | LOS A | 0.1 | 0.8 | 0.60 | 0.47 | 0.60 | 7.2 |
| All Vehicles | | 1292 | 2.6 | 1292 | 2.6 | 0.429 | 5.0 | LOS A | 1.3 | 9.3 | 0.16 | 0.50 | 0.16 | 38.6 |

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.
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: 101 [6. Fu Base PM Horsley Road/ Beaconsfield Street/ School Access Roundabout]

## Network: N101 [Existing PM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 1 | 0.0 | 1 | 0.0 | 0.374 | 8.5 | LOS A | 0.7 | 5.3 | 0.48 | 0.66 | 0.48 | 14.8 |
| 2 | T1 | 337 | 3.4 | 337 | 3.4 | 0.374 | 6.0 | LOS A | 0.7 | 5.3 | 0.48 | 0.66 | 0.48 | 45.1 |
| 3 | R2 | 35 | 6.1 | 35 | 6.1 | 0.374 | 9.1 | LOS A | 0.7 | 5.3 | 0.48 | 0.66 | 0.48 | 50.5 |
| Approach | | 373 | 3.7 | 373 | 3.7 | 0.374 | 6.3 | LOS A | 0.7 | 5.3 | 0.48 | 0.66 | 0.48 | 45.5 |
| East: Beaconsfield Street | | | | | | | | | | | | | | |
| 4 | L2 | 57 | 0.0 | 57 | 0.0 | 0.493 | 9.2 | LOS A | 1.4 | 10.1 | 0.70 | 0.84 | 0.75 | 46.8 |
| 5 | T1 | 1 | 0.0 | 1 | 0.0 | 0.493 | 13.5 | LOS A | 1.4 | 10.1 | 0.70 | 0.84 | 0.75 | 15.9 |
| 6 | R2 | 343 | 2.1 | 343 | 2.1 | 0.493 | 12.0 | LOS A | 1.4 | 10.1 | 0.70 | 0.84 | 0.75 | 42.6 |
| Approach | | 401 | 1.8 | 401 | 1.8 | 0.493 | 11.6 | LOS A | 1.4 | 10.1 | 0.70 | 0.84 | 0.75 | 43.1 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 7 | L2 | 193 | 4.9 | 193 | 4.9 | 0.132 | 5.3 | LOS A | 0.4 | 2.6 | 0.18 | 0.53 | 0.18 | 49.5 |
| 8 | T1 | 398 | 1.6 | 398 | 1.6 | 0.260 | 5.1 | LOS A | 0.8 | 5.8 | 0.20 | 0.48 | 0.20 | 49.1 |
| 9 | R2 | 1 | 0.0 | 1 | 0.0 | 0.260 | 11.3 | LOS A | 0.8 | 5.8 | 0.20 | 0.48 | 0.20 | 12.7 |
| Approach | | 592 | 2.7 | 592 | 2.7 | 0.260 | 5.1 | LOS A | 0.8 | 5.8 | 0.20 | 0.50 | 0.20 | 48.9 |
| All Vehicles | | 1365 | 2.7 | 1365 | 2.7 | 0.493 | 7.4 | LOS A | 1.4 | 10.1 | 0.42 | 0.64 | 0.44 | 46.3 |

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: 101 [2. Fu Base+Dev AM Ashford Avenue/ Bullecourt Avenue]

## Network: N101 [Fu Base + Dev AM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ashford Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 40 | 0.0 | 40 | 0.0 | 0.435 | 9.7 | LOS A | 1.2 | 8.8 | 0.81 | 0.92 | 0.89 | 44.1 |
| 2 | T1 | 72 | 1.5 | 72 | 1.5 | 0.435 | 9.8 | LOS A | 1.2 | 8.8 | 0.81 | 0.92 | 0.89 | 41.8 |
| 3 | R2 | 181 | 1.2 | 181 | 1.2 | 0.435 | 13.3 | LOS A | 1.2 | 8.8 | 0.81 | 0.92 | 0.89 | 31.8 |
| Approach | | 293 | 1.1 | 293 | 1.1 | 0.435 | 12.0 | LOS A | 1.2 | 8.8 | 0.81 | 0.92 | 0.89 | 37.8 |
| East: Bullecourt Avenue | | | | | | | | | | | | | | |
| 4 | L2 | 72 | 0.0 | 72 | 0.0 | 0.440 | 5.0 | LOS A | 1.5 | 11.1 | 0.41 | 0.54 | 0.41 | 43.3 |
| 5 | T1 | 398 | 8.5 | 398 | 8.5 | 0.440 | 5.4 | LOS A | 1.5 | 11.1 | 0.41 | 0.54 | 0.41 | 51.6 |
| 6 | R2 | 192 | 7.1 | 192 | 7.1 | 0.440 | 8.9 | LOS A | 1.5 | 11.1 | 0.41 | 0.54 | 0.41 | 47.4 |
| Approach | | 661 | 7.2 | 661 | 7.2 | 0.440 | 6.3 | LOS A | 1.5 | 11.1 | 0.41 | 0.54 | 0.41 | 49.8 |
| North: Ashford Avenue | | | | | | | | | | | | | | |
| 7 | L2 | 149 | 9.9 | 149 | 9.9 | 0.425 | 10.8 | LOS A | 1.3 | 9.6 | 0.89 | 0.96 | 0.97 | 38.1 |
| 8 | T1 | 26 | 0.0 | 26 | 0.0 | 0.425 | 10.3 | LOS A | 1.3 | 9.6 | 0.89 | 0.96 | 0.97 | 38.1 |
| 9 | R2 | 64 | 9.8 | 64 | 9.8 | 0.425 | 14.3 | LOS A | 1.3 | 9.6 | 0.89 | 0.96 | 0.97 | 45.8 |
| Approach | | 240 | 8.8 | 240 | 8.8 | 0.425 | 11.7 | LOS A | 1.3 | 9.6 | 0.89 | 0.96 | 0.97 | 41.0 |
| West: Bullecourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 235 | 4.5 | 235 | 4.5 | 0.736 | 10.9 | LOS A | 4.0 | 29.6 | 0.90 | 0.94 | 1.16 | 46.4 |
| 11 | T1 | 546 | 7.9 | 546 | 7.9 | 0.736 | 11.3 | LOS A | 4.0 | 29.6 | 0.90 | 0.94 | 1.16 | 44.2 |
| 12 | R2 | 24 | 0.0 | 24 | 0.0 | 0.736 | 14.5 | LOS B | 4.0 | 29.6 | 0.90 | 0.94 | 1.16 | 44.2 |
| Approach | | 805 | 6.7 | 805 | 6.7 | 0.736 | 11.2 | LOS A | 4.0 | 29.6 | 0.90 | 0.94 | 1.16 | 45.1 |
| All Vehicles | | 1999 | 6.3 | 1999 | 6.3 | 0.736 | 9.8 | LOS A | 4.0 | 29.6 | 0.72 | 0.81 | 0.85 | 45.3 |

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: 101 [4. Fu Base+Dev AM Horsley Road/ Bullecourt Avenue]

## Network: N101 [Fu Base + Dev AM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 480 | 5.3 | 480 | 5.3 | 0.448 | 5.5 | LOS A | 1.6 | 11.5 | 0.37 | 0.53 | 0.37 | 36.3 |
| 2 | T1 | 157 | 6.0 | 157 | 6.0 | 0.448 | 5.3 | LOS A | 1.6 | 11.5 | 0.37 | 0.53 | 0.37 | 48.4 |
| Approach | | 637 | 5.5 | 637 | 5.5 | 0.448 | 5.4 | LOS A | 1.6 | 11.5 | 0.37 | 0.53 | 0.37 | 41.8 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 8 | T1 | 105 | 3.0 | 105 | 3.0 | 0.252 | 8.5 | LOS A | 0.7 | 5.3 | 0.78 | 0.81 | 0.78 | 42.7 |
| 9 | R2 | 76 | 23.6 | 76 | 23.6 | 0.252 | 12.2 | LOS A | 0.7 | 5.3 | 0.78 | 0.81 | 0.78 | 42.7 |
| Approach | | 181 | 11.6 | 181 | 11.6 | 0.252 | 10.0 | LOS A | 0.7 | 5.3 | 0.78 | 0.81 | 0.78 | 42.7 |
| West: Bullacourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 256 | 7.8 | 256 | 7.8 | 0.800 | 9.5 | LOS A | 4.9 | 36.2 | 0.85 | 0.71 | 0.92 | 42.5 |
| 12 | R2 | 593 | 6.6 | 593 | 6.6 | 0.800 | 11.9 | LOS A | 4.9 | 36.2 | 0.85 | 0.71 | 0.92 | 29.5 |
| Approach | | 848 | 6.9 | 848 | 6.9 | 0.800 | 11.2 | LOS A | 4.9 | 36.2 | 0.85 | 0.71 | 0.92 | 35.8 |
| All Vehicles | | 1666 | 6.9 | 1666 | 6.9 | 0.800 | 8.9 | LOS A | 4.9 | 36.2 | 0.66 | 0.65 | 0.70 | 38.6 |

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.
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: 101 [5. Fu Base+Dev AM Horsley Road/Site Access C]

## Network: N101 [Fu Base + Dev AM]

Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 28 | 0.0 | 28 | 0.0 | 0.388 | 7.2 | LOS A | 1.1 | 8.2 | 0.11 | 0.52 | 0.11 | 35.5 |
| 2 | T1 | 557 | 7.0 | 557 | 7.0 | 0.388 | 5.0 | LOS A | 1.1 | 8.2 | 0.11 | 0.52 | 0.11 | 40.9 |
| Approach | | 585 | 6.7 | 585 | 6.7 | 0.388 | 5.1 | LOS A | 1.1 | 8.2 | 0.11 | 0.52 | 0.11 | 40.6 |
| North: Horsley Avenue | | | | | | | | | | | | | | |
| 8 | T1 | 684 | 6.3 | 684 | 6.3 | 0.396 | 5.1 | LOS A | 1.3 | 9.6 | 0.21 | 0.50 | 0.21 | 37.6 |
| 9 | R2 | 14 | 0.0 | 14 | 0.0 | 0.396 | 10.2 | LOS A | 1.3 | 9.6 | 0.21 | 0.50 | 0.21 | 32.5 |
| Approach | | 698 | 6.2 | 698 | 6.2 | 0.396 | 5.2 | LOS A | 1.3 | 9.6 | 0.21 | 0.50 | 0.21 | 37.5 |
| West: Site Access C | | | | | | | | | | | | | | |
| 10 | L2 | 81 | 1.3 | 81 | 1.3 | 0.150 | 3.3 | LOS A | 0.3 | 2.1 | 0.58 | 0.49 | 0.58 | 7.2 |
| 12 | R2 | 40 | 0.0 | 40 | 0.0 | 0.150 | 3.3 | LOS A | 0.3 | 2.1 | 0.58 | 0.49 | 0.58 | 7.2 |
| Approach | | 121 | 0.9 | 121 | 0.9 | 0.150 | 3.3 | LOS A | 0.3 | 2.1 | 0.58 | 0.49 | 0.58 | 7.2 |
| All Vehicles | | 1404 | 5.9 | 1404 | 5.9 | 0.396 | 5.0 | LOS A | 1.3 | 9.6 | 0.20 | 0.51 | 0.20 | 37.0 |

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: 101 [6. Fu Base+Dev AM Horsley Road/ Beaconsfield Street/School Access Roundabout]

## Network: N101 [Fu Base + Dev AM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 19 | 0.0 | 19 | 0.0 | 0.503 | 9.3 | LOS A | 1.1 | 8.4 | 0.56 | 0.76 | 0.59 | 14.8 |
| 2 | T1 | 361 | 6.4 | 361 | 6.4 | 0.503 | 6.9 | LOS A | 1.1 | 8.4 | 0.56 | 0.76 | 0.59 | 43.9 |
| 3 | R2 | 106 | 4.0 | 106 | 4.0 | 0.503 | 9.8 | LOS A | 1.1 | 8.4 | 0.56 | 0.76 | 0.59 | 49.9 |
| Approach | | 486 | 5.6 | 486 | 5.6 | 0.503 | 7.6 | LOS A | 1.1 | 8.4 | 0.56 | 0.76 | 0.59 | 40.1 |
| East: Beaconsfield Street | | | | | | | | | | | | | | |
| 4 | L2 | 44 | 14.3 | 44 | 14.3 | 0.430 | 9.8 | LOS A | 1.1 | 8.4 | 0.72 | 0.86 | 0.74 | 45.9 |
| 5 | T1 | 48 | 0.0 | 48 | 0.0 | 0.430 | 13.4 | LOS A | 1.1 | 8.4 | 0.72 | 0.86 | 0.74 | 15.9 |
| 6 | R2 | 224 | 7.0 | 224 | 7.0 | 0.430 | 12.1 | LOS A | 1.1 | 8.4 | 0.72 | 0.86 | 0.74 | 42.2 |
| Approach | | 317 | 7.0 | 317 | 7.0 | 0.430 | 12.0 | LOS A | 1.1 | 8.4 | 0.72 | 0.86 | 0.74 | 30.2 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 7 | L2 | 277 | 4.6 | 277 | 4.6 | 0.171 | 5.5 | LOS A | 0.5 | 3.6 | 0.33 | 0.53 | 0.33 | 48.9 |
| 8 | T1 | 309 | 8.5 | 309 | 8.5 | 0.276 | 5.5 | LOS A | 0.9 | 6.5 | 0.36 | 0.62 | 0.36 | 46.0 |
| 9 | R2 | 137 | 0.0 | 137 | 0.0 | 0.276 | 11.6 | LOS A | 0.9 | 6.5 | 0.36 | 0.62 | 0.36 | 12.6 |
| Approach | | 723 | 5.4 | 723 | 5.4 | 0.276 | 6.7 | LOS A | 0.9 | 6.5 | 0.35 | 0.59 | 0.35 | 29.6 |
| All Vehicles | | 1526 | 5.8 | 1526 | 5.8 | 0.503 | 8.1 | LOS A | 1.1 | 8.4 | 0.49 | 0.70 | 0.50 | 32.0 |

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: 101 [2. Fu Base+Dev PM Ashford Avenue/ Bullecourt Avenue]

## Network: N101 [Fu Base + Dev PM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ashford Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 25 | 0.0 | 25 | 0.0 | 0.375 | 14.9 | LOS B | 1.2 | 8.5 | 1.00 | 1.00 | 1.03 | 41.0 |
| 2 | T1 | 43 | 0.0 | 43 | 0.0 | 0.375 | 15.0 | LOS B | 1.2 | 8.5 | 1.00 | 1.00 | 1.03 | 39.0 |
| 3 | R2 | 77 | 1.4 | 77 | 1.4 | 0.375 | 18.6 | LOS B | 1.2 | 8.5 | 1.00 | 1.00 | 1.03 | 27.6 |
| Approach | | 145 | 0.7 | 145 | 0.7 | 0.375 | 16.9 | LOS B | 1.2 | 8.5 | 1.00 | 1.00 | 1.03 | 35.2 |
| East: Bullecourt Avenue | | | | | | | | | | | | | | |
| 4 | L2 | 203 | 0.0 | 203 | 0.0 | 0.898 | 17.2 | LOS B | 8.7 | 62.1 | 1.00 | 1.17 | 1.67 | 30.9 |
| 5 | T1 | 682 | 1.5 | 682 | 1.5 | 0.898 | 17.5 | LOS B | 8.7 | 62.1 | 1.00 | 1.17 | 1.67 | 43.7 |
| 6 | R2 | 156 | 8.1 | 156 | 8.1 | 0.898 | 21.3 | LOS B | 8.7 | 62.1 | 1.00 | 1.17 | 1.67 | 40.5 |
| Approach | | 1041 | 2.2 | 1041 | 2.2 | 0.898 | 18.0 | LOS B | 8.7 | 62.1 | 1.00 | 1.17 | 1.67 | 41.7 |
| North: Ashford Avenue | | | | | | | | | | | | | | |
| 7 | L2 | 205 | 5.1 | 205 | 5.1 | 0.592 | 7.6 | LOS A | 2.2 | 16.3 | 0.78 | 0.83 | 0.88 | 40.2 |
| 8 | T1 | 124 | 4.2 | 124 | 4.2 | 0.592 | 7.6 | LOS A | 2.2 | 16.3 | 0.78 | 0.83 | 0.88 | 40.2 |
| 9 | R2 | 275 | 3.1 | 275 | 3.1 | 0.592 | 11.1 | LOS A | 2.2 | 16.3 | 0.78 | 0.83 | 0.88 | 47.4 |
| Approach | | 604 | 4.0 | 604 | 4.0 | 0.592 | 9.2 | LOS A | 2.2 | 16.3 | 0.78 | 0.83 | 0.88 | 44.4 |
| West: Bullecourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 45 | 11.6 | 45 | 11.6 | 0.362 | 6.4 | LOS A | 1.0 | 7.3 | 0.57 | 0.63 | 0.57 | 48.4 |
| 11 | T1 | 305 | 4.8 | 305 | 4.8 | 0.362 | 6.5 | LOS A | 1.0 | 7.3 | 0.57 | 0.63 | 0.57 | 48.1 |
| 12 | R2 | 35 | 3.0 | 35 | 3.0 | 0.362 | 10.0 | LOS A | 1.0 | 7.3 | 0.57 | 0.63 | 0.57 | 48.1 |
| Approach | | 385 | 5.5 | 385 | 5.5 | 0.362 | 6.8 | LOS A | 1.0 | 7.3 | 0.57 | 0.63 | 0.57 | 48.2 |
| All Vehicles | | 2176 | 3.2 | 2176 | 3.2 | 0.898 | 13.5 | LOS A | 8.7 | 62.1 | 0.86 | 0.97 | 1.21 | 42.9 |

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: 101 [4. Fu Base+Dev PM Horsley Road/ Bullecourt Avenue]

## Network: N101 [Fu Base + Dev PM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 724 | 1.9 | 724 | 1.9 | 0.923 | 25.6 | LOS B | 9.2 | 65.6 | 1.00 | 1.29 | 1.93 | 16.4 |
| 2 | T1 | 27 | 0.0 | 27 | 0.0 | 0.923 | 25.3 | LOS B | 9.2 | 65.6 | 1.00 | 1.29 | 1.93 | 32.9 |
| Approach | | 752 | 1.8 | 752 | 1.8 | 0.923 | 25.6 | LOS B | 9.2 | 65.6 | 1.00 | 1.29 | 1.93 | 17.4 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 8 | T1 | 125 | 0.8 | 125 | 0.8 | 0.609 | 11.8 | LOS A | 2.3 | 16.5 | 0.82 | 0.97 | 1.03 | 38.0 |
| 9 | R2 | 359 | 4.7 | 359 | 4.7 | 0.609 | 14.9 | LOS B | 2.3 | 16.5 | 0.82 | 0.97 | 1.03 | 38.0 |
| Approach | | 484 | 3.7 | 484 | 3.7 | 0.609 | 14.1 | LOS A | 2.3 | 16.5 | 0.82 | 0.97 | 1.03 | 38.0 |
| West: Bullacourt Avenue | | | | | | | | | | | | | | |
| 10 | L2 | 41 | 25.6 | 41 | 25.6 | 0.402 | 5.7 | LOS A | 1.5 | 10.6 | 0.21 | 0.60 | 0.21 | 44.3 |
| 12 | R2 | 507 | 2.9 | 507 | 2.9 | 0.402 | 7.8 | LOS A | 1.5 | 10.6 | 0.21 | 0.60 | 0.21 | 34.3 |
| Approach | | 548 | 4.6 | 548 | 4.6 | 0.402 | 7.7 | LOS A | 1.5 | 10.6 | 0.21 | 0.60 | 0.21 | 35.9 |
| All Vehicles | | 1784 | 3.2 | 1784 | 3.2 | 0.923 | 17.0 | LOS B | 9.2 | 65.6 | 0.71 | 0.99 | 1.16 | 27.8 |

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.
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: 101 [5. Fu Base+Dev PM Horsley Road/Site Access C]

## Network: N101 [Fu Base + Dev PM]

Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Avenue | | | | | | | | | | | | | | |
| 1 | L2 | 62 | 6.8 | 62 | 6.8 | 0.625 | 7.9 | LOS A | 2.2 | 15.4 | 0.35 | 0.52 | 0.35 | 33.8 |
| 2 | T1 | 731 | 1.9 | 731 | 1.9 | 0.625 | 5.5 | LOS A | 2.2 | 15.4 | 0.35 | 0.52 | 0.35 | 38.6 |
| Approach | | 793 | 2.3 | 793 | 2.3 | 0.625 | 5.7 | LOS A | 2.2 | 15.4 | 0.35 | 0.52 | 0.35 | 38.1 |
| North: Horsley Avenue | | | | | | | | | | | | | | |
| 8 | T1 | 569 | 2.8 | 569 | 2.8 | 0.425 | 5.0 | LOS A | 1.5 | 10.6 | 0.17 | 0.54 | 0.17 | 37.1 |
| 9 | R2 | 63 | 0.0 | 63 | 0.0 | 0.425 | 10.2 | LOS A | 1.5 | 10.6 | 0.17 | 0.54 | 0.17 | 32.1 |
| Approach | | 633 | 2.5 | 633 | 2.5 | 0.425 | 5.6 | LOS A | 1.5 | 10.6 | 0.17 | 0.54 | 0.17 | 36.5 |
| West: Site Access C | | | | | | | | | | | | | | |
| 10 | L2 | 23 | 0.0 | 23 | 0.0 | 0.070 | 4.3 | LOS A | 0.1 | 1.0 | 0.67 | 0.55 | 0.67 | 6.7 |
| 12 | R2 | 22 | 0.0 | 22 | 0.0 | 0.070 | 4.3 | LOS A | 0.1 | 1.0 | 0.67 | 0.55 | 0.67 | 6.7 |
| Approach | | 45 | 0.0 | 45 | 0.0 | 0.070 | 4.3 | LOS A | 0.1 | 1.0 | 0.67 | 0.55 | 0.67 | 6.7 |
| All Vehicles | | 1471 | 2.3 | 1471 | 2.3 | 0.625 | 5.6 | LOS A | 2.2 | 15.4 | 0.28 | 0.53 | 0.28 | 36.8 |

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.
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: 101 [6. Fu Base+Dev PM Horsley Road/ Beaconsfield Street/School Access Roundabout]

## Network: N101 [Fu Base + Dev PM]

New Site
Site Category: (None)
Roundabout

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flows Total veh/h | HV % | Arrival Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | Aver. Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Horsley Road | | | | | | | | | | | | | | |
| 1 | L2 | 1 | 0.0 | 1 | 0.0 | 0.448 | 8.8 | LOS A | 1.0 | 7.0 | 0.56 | 0.69 | 0.56 | 14.8 |
| 2 | T1 | 393 | 2.9 | 393 | 2.9 | 0.448 | 6.4 | LOS A | 1.0 | 7.0 | 0.56 | 0.69 | 0.56 | 44.6 |
| 3 | R2 | 35 | 6.1 | 35 | 6.1 | 0.448 | 9.4 | LOS A | 1.0 | 7.0 | 0.56 | 0.69 | 0.56 | 50.2 |
| Approach | | 428 | 3.2 | 428 | 3.2 | 0.448 | 6.6 | LOS A | 1.0 | 7.0 | 0.56 | 0.69 | 0.56 | 44.9 |
| East: Beaconsfield Street | | | | | | | | | | | | | | |
| 4 | L2 | 57 | 0.0 | 57 | 0.0 | 0.562 | 10.1 | LOS A | 1.9 | 13.3 | 0.75 | 0.88 | 0.86 | 46.1 |
| 5 | T1 | 1 | 0.0 | 1 | 0.0 | 0.562 | 14.5 | LOS A | 1.9 | 13.3 | 0.75 | 0.88 | 0.86 | 15.9 |
| 6 | R2 | 399 | 1.8 | 399 | 1.8 | 0.562 | 12.9 | LOS A | 1.9 | 13.3 | 0.75 | 0.88 | 0.86 | 41.6 |
| Approach | | 457 | 1.6 | 457 | 1.6 | 0.562 | 12.6 | LOS A | 1.9 | 13.3 | 0.75 | 0.88 | 0.86 | 42.1 |
| North: Horsley Road | | | | | | | | | | | | | | |
| 7 | L2 | 192 | 4.9 | 192 | 4.9 | 0.132 | 5.3 | LOS A | 0.4 | 2.7 | 0.19 | 0.52 | 0.19 | 49.5 |
| 8 | T1 | 400 | 1.6 | 400 | 1.6 | 0.261 | 5.1 | LOS A | 0.8 | 6.0 | 0.21 | 0.48 | 0.21 | 49.0 |
| 9 | R2 | 1 | 0.0 | 1 | 0.0 | 0.261 | 11.3 | LOS A | 0.8 | 6.0 | 0.21 | 0.48 | 0.21 | 12.7 |
| Approach | | 593 | 2.7 | 593 | 2.7 | 0.261 | 5.1 | LOS A | 0.8 | 6.0 | 0.20 | 0.49 | 0.20 | 48.9 |
| All Vehicles | | 1478 | 2.5 | 1478 | 2.5 | 0.562 | 7.9 | LOS A | 1.9 | 13.3 | 0.47 | 0.67 | 0.51 | 45.6 |

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.
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.

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