SJB Planning

Assessment of Planning Proposals - Hurstville
Final Traffic Modelling Report

March 2019

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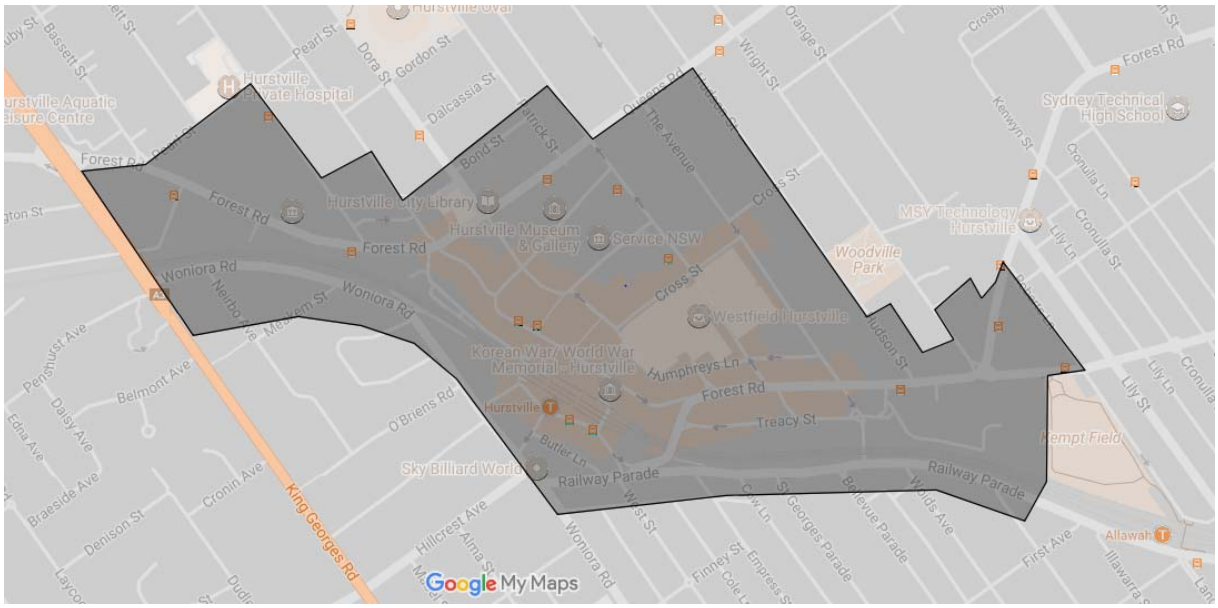
1. Introduction

Georges River Council (GRC) are seeking to assess the impacts of changes to land use at Hurstville Civic Precinct (Civic Centre) which would eventuate from planning proposals currently before GRC.

In 2017 GHD was commissioned by SJB Planning on behalf of GRC to carry out an independent review of this planning proposal. Since this time the proposal has been updated. This document reviews the latest planning proposals, with a particular view to assessing whether network improvements are required and the form these improvements may take.

Furthermore, in 2018 GHD has completed a full update of the original 2013 Transport Management and Access Plan (TMAP). This included a fully revised traffic modelling framework consisting of strategic, microsimulation and intersection models of Hurstville CBD, which has also been used for this assessment. The study area for the TMAP is shown in Figure 1.

Figure 1 Hurstville city centre TMAP study area



A review of the following planning documents provided by Georges River Council was undertaken:

- Hurstville Civic Precinct Planning Proposal Traffic Impact Assessment, GTA Consultants, July 2018.

1.1 Purpose of this report

The purpose of this report is to document the work carried out as part of this impact assessment, namely:

- Reviewing the Civic Centre planning proposal and provide a comparison to the TMAP.
- Undertaking microsimulation traffic modelling with the proposed land use changes and report on the network wide impacts.

1.2 Report Structure

The report is divided into three parts, mirroring the stages of the project:

- **Part A** – Provides a review of the Traffic Impact Assessment:
  - Trip generation and distribution
  - Walking and cycling
  - Parking
  - Road safety
- **Part B** – provides detailed results from the traffic impacts assessment carried out using the TMAP modelling framework and comparing with the analysis in the Traffic Impact Assessment.

1.3 Assumptions

This report is based on the following assumptions:

- The development data provided by GRC is correct and accurate and no checks have been made regarding the accuracy of this data.
- The developments are assumed to be built out and occupied by 2021.
- The assessment is based on the approved TMAP and no validation of traffic volumes since the development of the TMAP has been undertaken.
- Traffic signal timings have not significantly changed and have only been modified (where necessary) to operate the road network.

1.4 Scope limitations

This report: has been prepared by GHD for SJB Planning (NSW) Pty Ltd and may only be used and relied on by SJB Planning (NSW) Pty Ltd for the purpose agreed between GHD and the SJB Planning (NSW) Pty Ltd as set out this report.

GHD otherwise disclaims responsibility to any person other than SJB Planning (NSW) Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section 1.3. of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by SJB Planning (NSW) Pty Ltd and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Overview of the proposed developments, trip generation rates and trip distribution

2.1 Development specifications

A thorough review of the Civic Centre Planning Proposal (July 2018) has been undertaken and a comparison with previous Planning Proposal from 2016.

Table 1 outlines the existing and the proposed land use for the two development sites. Both development sites are identified as 'deferred matter' under the Hurstville LEP 2012 and GRC is seeking to rezone them to B4 mixed use type.

Table 1 Land use at the Civic Centre development site

Development Type	Existing	Proposed (2016)	**Proposed (2018)**	Units
Commercial	1,200	9,655	**13,500**	m^2 GFA
Community Use	Entertainment Centre 4,291			m^2 GFA
	Youth Centre 500			
	Seniors Centre 507			
	Museum and Gallery 615			
	Church – 500			
	Total 6,398	Total 8,470	**Total 8,410**	
Car Park	157	1050-1200	**1050-1200**	Spaces
Residential	-	447 or 38,739	**298**	Units or m^2 GFA
Retail	-	3,691	**3,160**	m^2 GFA

Since the planning proposal in 2016, the overall size of the development has been reduced, with:

- Approximately 150 fewer apartments
- Approximately 500m2 GFA less retail
- Nearly 400m2 GFA more commercial
- Almost the same in terms of community use (reduction of 60m2 GFA)
- No change in car parking provision.

2.2 Trip generation rates

Table 2 provides a comparison of trip generation rates used within the Hurstville TMAP; Civic Centre Planning Proposal and Westfield Planning Proposal.

Table 2 Vehicle trip rate comparison

Land Use	Peak Period	Civic Centre	Hurstville TMAP	Units
Residential	AM	0.19	0.19	Trips / hour / dwelling
	PM	0.15	0.15	
Retail	AM	2.3	2.23	Trips / hour / 100 m^2 GLFA
	PM	4.6	4.31	
Commercial	AM	1.6	1.975	Trips / hour / 100 m^2 GFA
	PM	1.2	1.83	
Community Facilities		2		Trips / hour /100 m^2 GFA

Table 2 shows that the trip generation rates used in the Civic Centre Planning Proposal and Westfield Planning Proposal are largely similar to those adopted for the TMAP (noting that the 2018 TMAP has adopted the most up to date advice from Roads and Maritime Services[1]).

Table 3 provides a comparison between the number of trips generated by the Civic Centre. Note that 2018 TMAP assumptions are adopting the trip generation rates from the various planning proposal documents and as such is consistent with the Civic Centre Planning Proposal expected trip generation.

Table 3 Peak hour trip generation

	Existing	Planning Proposal (2016)	Planning Proposal (2018)
Civic Centre			
AM	188(1)	297	328
PM	191 (1)	367	384

Notes: (1) 2016 entry/exit counts. Source: Civic Centre Planning Proposal

As can be observed in Table 3, the vehicles trips estimated to be generated by the Civic Centre development will increase the traffic coming in and out of the site by approximately:

- 140 trips in the am peak; and
- 193 trips in the pm peak.

Compared with the 2016 Planning Proposal, the 2018 update increases the forecast generation slightly.

This trip generation calculation has been based on the land use for the site. However, as noted elsewhere, the parking provision is significantly higher than that required for this level of development, particularly for a city centre location in close proximity to public transport. The Planning Proposal notes that this provision has the potential to remove car trips from Hurstville CBD to its periphery, which could constitute a wider benefit.

Overall, the impact of this parking provision does not appear to have been factored into the calculation of trip generation for the site and as such, the trip generation for the site as a whole may be under-represented.

[1] In 2013, Roads and Maritime Services (Roads and Maritime) published a Technical Direction relating to the Guide to Traffic Generating Developments (TDT 2013/04a) (the Guide). This Technical Direction supersedes some of the rates in the Guide. For example, the trip generation rates for high-density residential apartments reduce from 0.51 to 0.19 and from 0.475 to 0.19 trips/hr/dwelling for the am and pm peaks respectively. These new rates were adopted for the Civic Centre Planning Proposal and the 2018 TMAP.

2.3 Trip Distribution

The main vehicle access is understood to be from MacMahon Street. Supplementary accesses on Queens Road and Dora Street are expected to be left-in left-out only. This is considered to be reasonable given the existing road hierarchy.

The Planning Proposal does not specifically calculate proposed trip distribution from and to the site.

2.4 Summary

The Civic Centre Planning Proposal forecasts an increase in trip generation above the existing observed rates of approximately:

- 100 trips in the am peak hour; and
- 250 trips in the pm peak hour.

The trip generation rates used are reasonable and industry-standard.

No provision has been made in this forecast as to the utilisation of the additional parking capacity.

3. Review of the traffic impact assessments

The Civic Centre Planning Proposal included a transport impact assessment, produced by GTA consultants in July 2018, as Appendix B (TIA). The TIA has been reviewed in November/Decmeber 2018, with findings detailed in this section.

3.1 Traffic Impact Review

It is noted that a number of SIDRA intersection modelling outputs have been included in Appendix C in the TIA. However, no analysis or discussion of these models has been included in the body of the report. These SIDRAs have therefore not been assssed as part of this review.

GTA note that the 2012 TMAP reports that intersections in proximity to the subject site are within capacity in future years. Further, GTA note that the 2012 TMAP had more conservative (i.e. greater trip generation) assumptions and as a result, the Civic Centre development is expected to have less network impact than shown in the 2012 TMAP.

The traffic impact assessment concludes that as the development generates two to three additional vehicle movements per minute *"it is [GTA's] view that the traffic generation of the planning proposal cannot be expected to compromise the safety or function of the surrounding road network"*.

GHD considers that this analysis does not sufficiently prove this conclusion for the following reasons:

- The TIA does not explore whether there are any existing safety issues, such as through analysis of historical crash data. Therefore, the assertion that the development will not compromise the safety of the road network has not been proven.
- The trip generation calculations do not assume additional vehicle movements that are generated by the proposed car parking supply that is 40 to 80% above minimum guidelines. How this additional public parking capacity is managed is critical to understanding any likely additional trip generation.
- The 2012 TMAP did not model individual developments. Although the overall forecast of trip generation in the City Centre may have been high, it is possible that traffic generated by individual developments will cause specific and localised issues. SIDRA analysis would be expected to ensure the road network operates satisfactorily.
- There is no evidence of a discussion about the impact additional trips may have on the wider road network, which is known to be at or above capacity at present, such as the intersections on King Georges Road and, to a lesser extent, Railway Parade and Treacy Street.

Note that the 2018 TMAP did include a more detailed representation of the Civic Centre development as described in the planning proposal and the intersections in proximity to the development did operate within capacity.

3.2 Parking Provision Review

It is identified that the TIA report completed by GTA Consultants provides references to the following guidelines and development control plans with regards to parking provision requirements:

- Hurstville City Council Development Control Plan (DCP) No.2 Amendment 7 – Hurstville City Centre.
- NSW Department of Planning and Environment, Apartment Design Guide, July 2015, which refers to the Roads and Maritime Services Guide to Traffic Generating Developments (October 2002).

Neither the DCP nor the Roads and Maritimes Services Guide provide parking rates for community uses, therefore GTA Consultants adopted a first principle approach based on existing land use and parking provision to determine a parking rate. The existing uses provide 157 parking spaces for 9,855 m^2 of community uses. This equates to a rate of approximately one space for every 60 m^2 GFA. It was acknowledged that this is likely conservatively high given the car park accommodates demand associated with other land uses in Hurstville CBD. This would be a valid assumption given the information made available.

Table 4 outlines the minimum parking requirement comparisons inclusive of the community use rate adopted.

Table 4 Minimum parking requirement summary

Land Use	Council DCP	Roads and Maritime Guide
Residential	402	230
Retail	63	142
Commercial (Office)	135	135
Community uses	140	140
Total	740	647

The guidelines utilised for the parking provision indicate minimum parking provision of approximately 647 to 740 spaces for the planning proposal development.

The Planning Proposal includes provision for between 1050 and 1200 car spaces. A discussion around this is provided in section 4.2 of the Traffic and Transport assessment and is reproduced below:

> 4.3 Adequacy of Parking Supply
>
> The planning proposal includes provision of between 1,050 and 1,200 parking spaces. This exceeds the parking requirements identified in Council's DCP (740 spaces including 140 spaces estimated in Section 4.2.3 for community uses) and the empirical assessment (568 spaces). Based on this, there is opportunity to limit the amount of parking included in the planning proposal. That said, it is also recognised that providing some level of public parking is likely to be of benefit to Hurstville CBD and surrounds generally.
>
> Provision of some form of on-site public parking is also likely to have a positive effect on traffic conditions in Hurstville CBD. With greater availability of parking on the periphery and within an easy walk of key destinations, fewer vehicles would be inclined to enter the CBD in the search for parking spaces in more constrained locations. The public parking needs and appropriate quantum would be subject to future development applications and stakeholder engagement.

While it is acknowledged that the planning proposal parking provision of 1,050 to 1,200 spaces will exceed the minimum parking requirement of both guidelines, consideration should also be given to the current trend of minimising car dependency and to promote alternative means of transport such as public and active transport (walking and cycling). Means adopted to promote such objectives is limiting car parking provision within developments in close proximity to such transport options.

Reference is made to Ryde Council DCP and the Macquarie Park corridor. This area forms a relative function and similar accessibility to public and active transport options and similar proximity to Sydney CBD. Ryde Council has adopted minimum and maximum parking rates for developments with the objective to reduce car dependency. GHD have calculated the spaces that would be included if under the Ryde Council DCP:

- Residential: Maximum 276 spaces (plus car share)
- Retail: 126 spaces
- Commercial: Maximum 32 spaces
- **Total: 574 spaces** (including 140 for community use).

While GHD is not advocating the full application of the Ryde DCP parking rates outlined for the Macquarie Park Corridor, consideration should be given to limiting the Hurstville Civic Centre planning proposal car parking provision to be generally in line with the Hurstville Council DCP or Roads and Maritime Services Guide to Traffic Generating Developments rates in lieu of the current proposal of between 40 to 80 percent more than the minimum car parking rate outlined in these guidelines. Such car parking provision outlined in these guidelines aims to meet DCP objectives of meeting user requirements, but also the trend to minimising car dependency and to promoting alternative means of transport such as public and active transport such as walking and cycling.

Furthermore, it has been identified that the GTA TIA does not outline the requirements for other transport options and their associated parking requirements such as motorcycle, accessible parking or car share initiatives.

4. Summary of TMAP

4.1 The TMAP

The analysis in the GTA report, and the conclusions of the traffic impact studies detailed in Section 3 are predicated on the modelling, analysis and conclusions made in the Hurstville CBD TMAP finalised in 2013 and should be viewed in this context. Although the analysis and findings from the 2013 TMAP have been fully updated in 2018, the conclusions drawn are consistent with the earlier work.

As such, the relevant findings from the 2018 TMAP will be documented here, by way of contextualising the Civic Centre development alongside the required transport improvements in Hurstville City Centre as a whole.

Specifically, the 'preferred' scenario included road infrastructure changes and a forecast of a shift to public and active transport that would be attainable through adopting the policy and infrastructure recommendations of the TMAP. The key recommendations of the TMAP are provided under the following five themes:

- Land use
- Road network
- Public transport
- Active transport
- Travel demand management.

The full list of key recommendation and the TMAP Action Plan are provided in Appendix A.

This section seeks to draw out some particular aspects of the TMAP that are pertinent in the context of assessing proposed development in Hurstville CBD, within the framework of the TMAP.

4.2 Funding

The TMAP allocated responsibility to each recommendation, principally to GRC but also TfNSW, and RMS where relevant. No attempt has been made to quantify costs as part of the TMAP.

4.3 Network Impact

The traffic forecasts in the TMAP explicitly assume that the land use, public transport, active transport, and demand management recommendations are implemented. If this does not occur, it is likely that the trip generation in Hurstville City Centre will be higher than the forecasts. As a result, if developers do not adopt and/or contribute in a coordianated approach to the implementation of the recommendations, the overall condition on the road network may deteriorate further than it is forecast.

4.4 Regional Network

The TMAP recognised the network constraints in a regional context,

[The Treacy Street/Railway Parade/West Street intersection and the intersections on King Georges Road will continue to be a significant bottleneck for the network and consideration of options for improving the operation of these intersections may be critical in ensuring the overall network operation facilitates the proposed land use changes].

However, reducing land use in Hurstville to mitigate such regional issues was not considered to be an overriding factor on the basis that regional issues need to be dealt with regionally.

Nevertheless, each development in Hurstville that increases localised traffic generation is likely to have at least some impact on the regional network too.

4.5 Summary

To summarise, the TMAP concludes that the planned level of land use development and resulting trip generation can be accommodated within Hurstville City Centre, as long as the Action Plan recommendations are implemented.

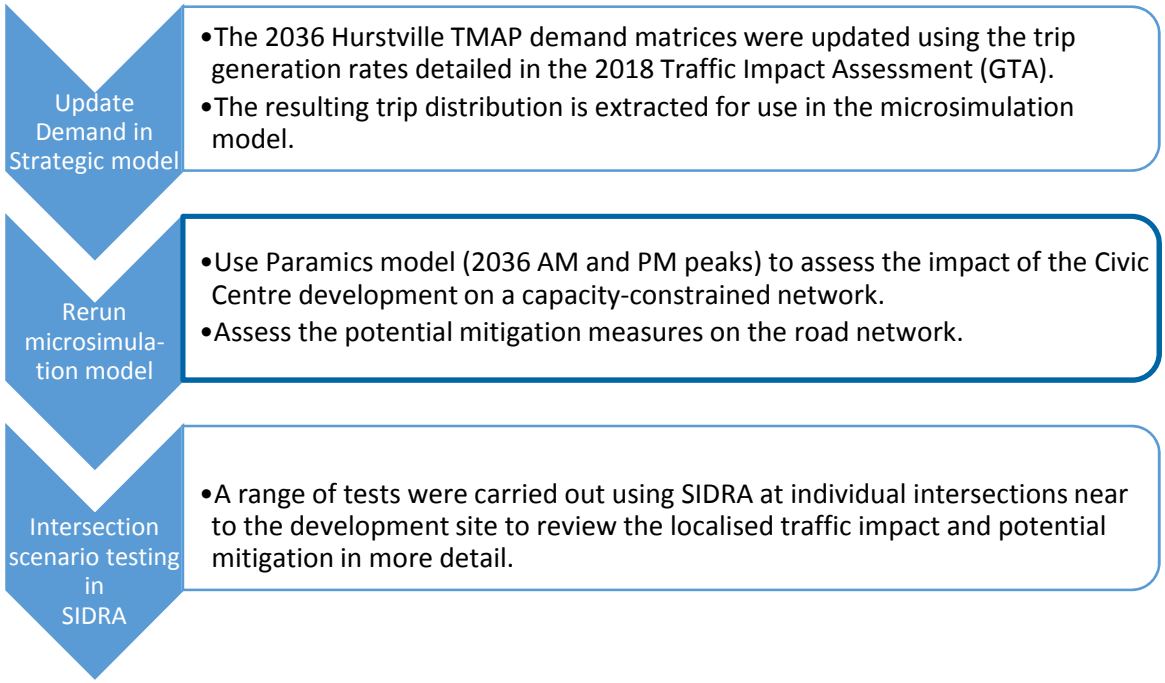
As a result, each development should be admissible on the basis of traffic generation, however, each development will also have some responsibility to assist in the realisation of the Action Plan in order to ensure the sustainability of Hurstville City Centre. This could be carried out through Section 94 or other instruments.

5. Traffic modelling

5.1 Method

The Paramics models developed for the Hurstville TMAP were utilised for this study. The method adopted for testing the impacts of the proposed developments is provided in Figure 2.

Figure 2 Modelling method



5.1.1 Update demands

The strategic model was used to update the travel demands from and to the Civic Centre to accord with the TIA. In addition, the access and egress arrangements for the Civic Centre were adjusted to accord with the suggested arrangements in the TIA (left-in left-out on Queens Road and Dora Street, all movements on Macmahon Street).

Note that as part of the TMAP, development of the trip generation forecasts used the actual trip generation estimates in each of the Planning Proposal and Development Application documents supplied by GRC as well as representation of additional Opportunity sites, as per the SJB Urban Design Strategy (2017).

5.1.2 Microsimulation modelling

High level of congestion was observed initially in the 2036 models. Congested models may not provide a good representation of the impacts caused by the proposed developments as it is difficult to estimate whether the poor performance is due to underlying congestion or the actual development. Analysis showed that external trips on King Georges Road, that is, trips passing along King Georges Road, and not stopping in Hurstville were by 2036 causing considerable levels of congestion in the Paramics model. This is likely due to the strategic model, which is not capacity constrained to the same extent as the microsimulation model.

5.1.3 Intersection modelling and testing of mitigation measures

The forecast demands from the microsimulation modelling are converted to inputs for the intersection modelling, which allows a more detailed analysis of intersction close to the development site and potential mitigation measures.

5.2 Microsimulation Modelling

More details regarding the development of the microsimulation models are provided in the TMAP document. These models were revised to specifically asses the impact of the Civic Centre development.

5.2.1 Baseline microsimulation modelling

There are a number of intersections that were highlighted in the base year Paramics modelling as causing queueing, plus additional intersections that produce further queueing in forecast scenarios:

- King Georges Road intersections with Forest Road, Bridge Street and Woniora Road;
- Railway Parade and Woniora Road;
- Railway Parade and the Avenue;
- Dora Street egress at Queens Road;
- The Avenue egress at Forest Road; and
- Durham Street.

5.2.2 Revised modelling scenario

A revised scenario was run using the updated Civic Centre trip generation rates, whilst also incorporating the following network alterations close to the Civic Centre site:

- Widening of the Dora Street approach to Queens Road.
- Adoption of the slip road and bus jump lane on Park Road at its intersection with Queens Road.

The findings, which are consistent with the findings in the TMAP, are summarised as follows:

- The model with the network changes shows significantly less queueing in Hurstville CBD on Dora Street and Queens Road even with the additional Civic Centre development traffic.
- Significant queues still exist on King Georges Road, which affects the overall model operation. However it is clear that the network changes improve the traffic conditions in the city centre.
- The proposed travel demand management measures and public and active transport measures are critical for managing the demand for vehicular traffic. Without these measures the road network will be significantly more congested, leading to greater delays.
- The intersection improvements at the Dora Street and Park Road intersections with Queens Road are expected to ease the flow of traffic and provide more capacity to accommodate the planned increases in development.

5.3 Intersection analysis

5.3.1 Introduction

For the TMAP, a network model was developed for Queens Road which incorporated the Dora Street, Park Road and The Avenue intersections. These models were updated using the revised demands from the Civic Centre.

A number of issues were identified at intersections in close proximity to the Civic Centre development:

- Forecasts show that the demand egressing from Dora Street onto Queens Road, particularly the left turn in the PM peak, will lead to increasing delays.
- The Park Road approach to Queens Road is to be affected by additional delays as further development in Hurstville occurs. In addition, Roads and Maritime are seeking to improve bus priority facilities at this intersection, and provided schematic diagrams of Option 1 and Option 2 to GHD to test.

The proposed mitigation measures are shown in Table 5 and Table 6 for Dora Street and Park Road respectively.

Table 5 Option for proposed mitigation at Dora Street

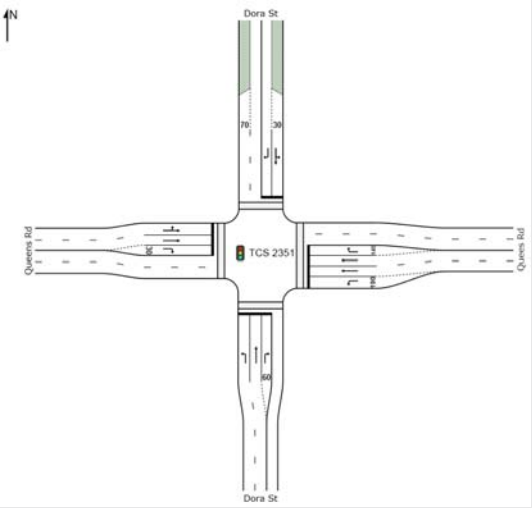
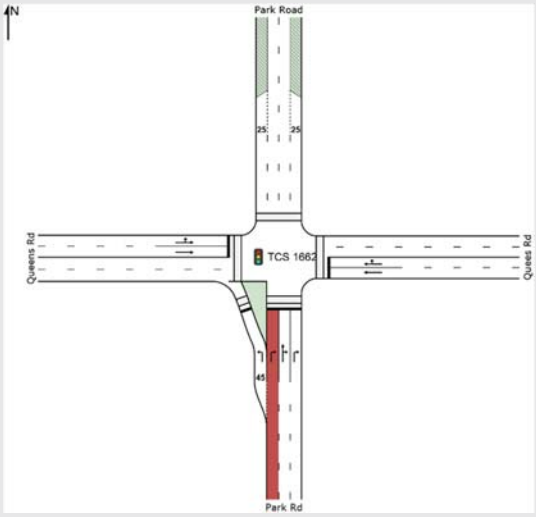
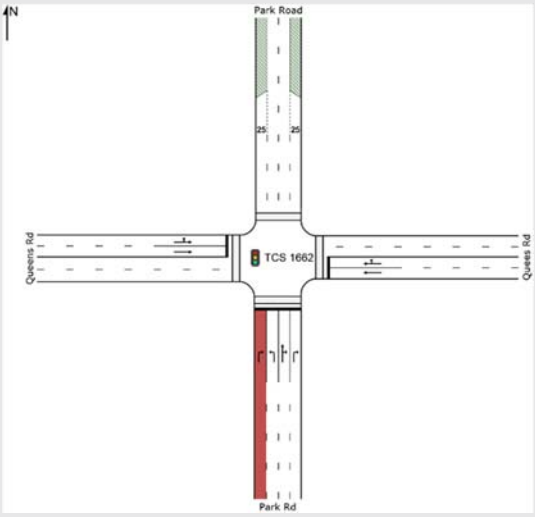
Mitigation	Proposed mitigation	Indicative layout
Option 1	To improve the egress capacity from Dora Street into Queens Road, Option 1 adds a right turn bay on the south approach of Dora Street by removing one of the two Dora Street southbound lanes exiting the intersection. Similarly, on the north approach, a dedicated right turn bay and a thorough/left lane would be required.	

Table 6 Options for proposed mitigation at Park Street

Mitigation	Proposed mitigation	Indicative layout
Option 1	Provides a bus only lane, suitable to accommodate one bus, and provides a left turn slip lane for general traffic. Requires the removal of approximately 8 car parking spaces from the adjacent car park to accommodate the high capacity left turn lane. It may also require land on the southwest corner of the intersection, and potentially impinge on development plans for this parcel of land and degrade the pedestrian environment within the town centre.	
Option 2	Provides a dedicated bus lane and retains traffic lanes. Require the loss of 15 permanent parking spaces and 19 AM and PM peak period spaces to accommodate the bus lane and three general traffic lanes between Cross Street and Queens Road.	

These options were grouped together into the SIDRA network analysis, to assess the impact on all of the intersections on Queens Road, as shown in Table 7. Note that Table 7 also includes an Option 2 for the Dora Street intersection, which provided an additional left turn slip lane. Since finalisation of the modelling work, GHD have been informed that this Option is no longer feasible as the required land-take for an enlarged intersection is no longer available.

Table 7 Relationship between SIDRA networks and intersection options

Network	Dora Street	Park Road	The Avenue
Existing	Existing	Existing	Existing
A	Option 1	Option 1	Existing
B	Option 2	Option 2	Existing
C	Option 2	Option 1	Existing

The results of the analysis are shown in Table 8.

Table 8 2036 SIDRA Results

Network Scenario	AM Peak			PM Peak		
	Ave Delay (s)	LoS	Degree of saturation	Ave Delay (s)	LoS	Degree of saturation
Queens Road / Park Road						
Existing	28	B	0.924	24	B	0.917
Network A	28	B	0.966	27	B	0.818
Network B	44	D	0.989	32	C	0.837
Network C	34	C	0.979	27.6	B	0.818
Queens Road / The Avenue						
Existing	24	B	0.713	34	C	0.848
Network A	25.4	B	0.690	30	C	0.702
Network B	30	C	0.702	35	C	0.769
Network C	25	B	0.693	35	C	0.769
Queens Road / Dora Road						
Existing	49	D	1.299	27	B	0.844
Network A	149	F	1.246	30	C	0.651
Network B	106	F	1.131	33	C	0.935
Network C	100	F	1.119	33	C	0.935

Table 9 shows the overall net benefits of the road network scenarios tested for Queens Road.

Table 9 Overall net benefits of SIDRA network scenarios

		AM Peak		PM Peak	
	Network scenario	Saving in average delay (s)	DoS difference	Saving in average delay (s)	DoS difference
Queens Road network	Network A	-101	0.034	-2	0.438
	Network B	-79	0.114	-15	0.068
	Network C	-58	0.145	-10.6	0.087

Overall, the Queens Road network options are likely to reduce the effectiveness of the network in terms of both delay and capacity. This is attributed to the bus jump phase included in the model at Park Road, which both reduces the available green time for opposing movements at the intersection and makes signal coordination along Queens Road more challenging. For this reason, Georges River Council are objecting to these options.

The analysis shows that Option 1 at Dora Street has the potential to reduce delays at this intersection, particularly in the PM peak and should be investigated further.

6. Summary and conclusions

The following list summarises the main points arising from the GHD review of the GTA TIA and the Hurstville Civic Centre Planning Proposal (July 2018):

- Consideration should be given to limiting the Hurstville Civic Centre planning proposal car parking provision, given the current trend of minimising car dependency and to promote alternative means of transport such as public and active transport. Over-supply of car parking may ameliorate the effectiveness of Travel Plans and other sustainability measures.
- To be able to conclude that the development will not adversely affect the safety and operation of the road network, further details are required to:
    - Review the impact of the proposed additional parking supply.
    - Assess any existing safety issues on the road network.
    - Consider how the two left-in-left out accesses may disproportionally affect particular routes to and from the site.
    - Consider the wider network impacts of the traffic generated.
    - Support the claims made and not solely rely on analysis from the 2012 TMAP as sufficient. The 2012 TMAP study did not include a detailed representation of the Civic Centre Planning Proposal.
- Overall, GHD considers that a development of this size is unlikely to have a significant effect on proximate intersections (depending upon the regime in place to control the additional parking). However,
    - This assessment depends upon the enactment of public transport, active transport, and travel demand initiatives. Without such initiatives, traffic generation for the development and for Hurstville as a whole may be greater than forecasted.
    - The development will have at least some impact on the proximate intersections and also have some impact on intersections that are further afield, but are nearing or at capacity at present and are critical to the operation of the overall road network.
    - The GHD modelling suggests there may be benefits to upgrading intersections and putting in place other road network improvements to ease traffic flow.
- GHD considers that it would be appropriate for a development of this size to:
    - Ensure that appropriate steps are taken to limit trip generation through provision of public and active transport facilities on site and enacting travel demand management measures for owners, tenants and users of the development.
    - Provide a reasonanble contribution towards the provision of transport schemes in Hurstville generally.

Appendices

Appendix A – TMAP Key Recommendations

A-1 Land Use

Overall, the modelling carried out for the TMAP update concludes that the planned level of development, as detailed in the Hurstville City Centre Urban Design Strategy can be accommodated without significant infrastructure upgrades. Therefore, it is recommended that the Urban Design Strategy is adopted in terms of transport impact and subject to consultation results.

Table A-1 Land Use recommendations

ID	Item Description	Responsibility	Purpose
LU1	Adoption of the Hurstville City Centre Urban Design Strategy	GRC/ DPE	To establish a sustainable growth strategy for the future development of Hurstville City Centre.
LU2	Establish a working group to manage the planning of transport corridors and regional growth.	GRC/ DPE/ RMS/ TfNSW	To establish a consistent regional planning framework for establishing parking controls in centres and employment lands and managing associated growth in regional traffic demand.
LU3	Monitor and Review city centre and Regional Development.	GRC / RMS/ TfNSW	To provide a structured process for reviewing planning controls and network performance against progress in City Centre and regional development.
LU4	Build compact communities.	GRC / RMS/ TfNSW	Communities should have sufficient density to support high-service standards of public transport (frequency, span of services and better stop and road space priority infrastructure standards).

A-2 Road Network

A range of road network schemes can improve the function of the network overall. In addition, a number of mitigation measures at intersections are detailed in Section5.3.

Table A-2 Road network recommendations

ID	Item	Responsibility	Purpose
RN1	Support the delivery of committed Road infrastructure improvements.	RMS / GRC	To ensure that the road network can operate efficiently
RN2	Consider upgrades to King Georges Road intersections with Forest Road, Bridge Street, Woniora Road.	RMS / GRC	Long term to ensure King Georges Road does not create a bottleneck for access/egress to Hurstville and that it operates satisfactorily
RN3	Consider the options for upgrading the Treacy Street/West Street/Railway Parade intersection	RMS / GRC	Long term to ensure the intersection operates satisfactorily
RN4	Consider expanding clearways to ease accessibility during peak periods. Railway Parade Treacy Street Forest Road Queens Road	GRC / RMS	Removing on-street parking during peak periods increases the capacity of the road network without additional infrastructure.
RN5	Continued review of traffic signal timing and coordination throughout the Hurstville City Centre.	RMS / GRC	Traffic modelling for future years noted a number of changes required to green times and coordination to optimise network operation. Ongoing signal timing maintenance can reduce the traffic impacts on amenity.
RN6	Consider upgrading the Park Road / Queens Road intersection to provide bus facilities and improve capacity	RMS / GRC	Traffic modelling suggests benefits would accrue from this upgrade for both bus users and general traffic on Park Road through providing additional capacity as well as a dedicated bus lane.

ID	Item	Responsibility	Purpose
RN7	Consider upgrading the Dora Street / Queens Road intersection to improve capacity	RMS / GRC	Traffic modelling suggests benefits would accrue from this upgrade through providing additional capacity for road users to exit from Dora Street. This is expected to be of , particular benefit in the PM peak period with the expected future densification of development.
RN8	Consider upgrading the Forest Road / The Avenue intersection to improve capacity	RMS / GRC	Traffic modelling suggests benefits would accrue from this upgrade with the expected future densification of development. The upgrade provides additional capacity for the left turn movement from the Avenue to Forest Road.
RN9	Consider signalisation of the Forest Road / Hudson Street intersection	RMS / GRC	Traffic modelling suggests benefits would accrue from this upgrade, particularly with the expected future densification of development. Hudson Street is expected to form the access point to some high density residential developments. Without the upgrade, delays accessing Forest Road could be considerable.

A-3 Public Transport

Trains

Hurstville benefits from being on the T4 Eastern Suburbs/Illawarra Line from Sutherland to Bondi Junction via the CBD, providing frequent direct access to Redfern/Central/Town Hall and Martin Place, including express services. The *NSW State Infrastructure Strategy 2018-2038: Building Momentum* recommends the upgrade of the T4 line under the SmartRail program in three stages as follows:

Stage 1 – unlock capacity in Central Sydney which would benefit the T4 and T8 Airport line services.

Stage 2 – Further uplift capacity on the T4 line. Stage 1 and Stage 2 would include the deployment of the New Intercity Fleet of vehicles.

Stage 3 – Further enhancements and automation.

Stage 1 and Stage 2 are recommended for completion within the next 10 years and would lead to a more efficient, reliable network.

To maximise this opportunity, public and active transport links to the station should be safe and integrated to encourage a shift away from car access.

Bus and other rapid transit

As a strategic centre, Hurstville has a high provision of bus services. However, in general, these services are not well used. The time taken and the level of choice and accessibility offered means that it is challenging to compete with the private car for mode share.

However, moving people onto buses will free up road space for everyone, and in a capacity-constrained network, this is important. Another opportunity is that the rail line passes through Hurstville in a south to north direction. This provides an opportunity for bus services to improve connectivity, travel times and frequencies to locations not served by rail and conversely, to form an integrated feeder service to the rail stations in the area.

Future Transport 2056 seeks to enhance rapid public transport corridors between strategic centres. Use of a hub-and-spoke approach could create stronger links between Parramatta, Campsie, Kingsgrove and Liverpool with Hurstville.

Bus services can be supported by providing bus-specific infrastructure which improves journey times and reliability.

Recommendations for actions involving public transport are summarised in Table A-3.

Table A-3 Public transport recommendations

ID	Item	Responsibility	Purpose
PT1	Adopt a target for increasing public transport mode share.	GRC / TfNSW	To target improvements in public transport mode share, growth in public transport patronage and help manage travel demand across the transport network.
PT2	Rail and bus service capacity improvements.	TfNSW	To support public transport mode share targets and growth in public transport usage for travel to Hurstville City Centre.
PT3	Rail Network Reliability Improvements.	TfNSW	To promote the reliability of using public transport services and attract additional people from private vehicles to public transport for travel to Hurstville City Centre.
PT4	Prioritise on-road public transport though enhancing signal and road space priority.	GRC / RMS/TfNSW	Improve travel time and reliability to enhance the attractiveness of the services.
PT5	Investigate the feasibility of introducing bus priority on strategic bus corridors.	GRC / RMS/TfNSW	To prioritise bus service movements and avoid congested sections of the road network with the aim of attracting additional people from private vehicles to public transport for travel to Hurstville City Centre.
PT6	Investigate the bus priority measures proposed at Park Road and Queens Road.	GRC / RMS	To assist with improving bus travel times.
PT7	Consider introducing more local area bus services.	GRC / TfNSW	More local services could be more frequent and reliable, and so more attractive for users.

A-4 Active Transport

It is critical to encourage walking and cycling, as this improves the health of the population, frees up road space by removing more trips that are less than 2-10 km in length and provides environmental benefits.

There are currently very few cycling facilities and designated routes in Hurstville, with a low level of cycle use observed.

A Pedestrian Access and Mobility Plan (PAMP) and Cycling strategy documents are recommended to further analyse the best options for delivering active transport infrastructure. These documents should include the following:

- Consideration of infrastructure improvements to encourage the active modes and to improve safety
- Consideration of the management of dockless bike schemes as an aid to improving cycling mode share

Table A-4 Active transport recommendations

ID	Item	Responsibility	Purpose
AT1	Target a Hurstville City Centre active transport mode share of 25%.	GRC / TfNSW	To target improvements in active transport mode share, growth in the number of people walking and cycling in Hurstville City Centre and help manage travel demand across the transport network.
AT2	Pedestrian and cycling safety improvements along City Centre routes.	GRC / RMS	To remove road network conflict points.
AT3	Develop a 2036 City Centre Bike Plan.	GRC	To establish a comprehensive cycle network that offers an attractive and safe environment to encourage people to cycle to and around the City Centre and help to manage growth in travel demand.
AT4	Develop a 2036 City Centre PAMP.	GRC	To support the development of a pedestrian-friendly City Centre network that offers an attractive and safe environment and encourages street activity. To support planned growth in walking and to help manage growth in vehicle travel demand.
AT5	Ensure all new major road infrastructure includes a provision for cyclists and pedestrians (via DCP - Public Domain Plans and specifications).	GRC	To promote a pedestrian and bicycle riding friendly city centre through enhancing the safety of active transport.
AT6	Review and updated wayfinding and signage within the study area, including to adjoining local government areas.	GRC	To promote a pedestrian and cycle friendly city centre, which enhances the safely and sustainability of the transport network through reducing car travel, congestion and emissions and promoting healthy physical activity.
AT7	Provide guidance and advice for the provision of end of trips facilities for new developments.	GRC	To encourage cycling use which enhances the sustainability of the transport network and reduces car travel, congestion and emissions.

ID	Item	Responsibility	Purpose
AT8	Audit pedestrian and cycle networks to major trips attractors (existing and proposed).	GRC	To be used as a tool to assist in developing policies that encourage the adoption of active transport and to monitor the prevalence and usage of pedestrian and cycle infrastructure.
AT9	Integrate bus stops and train stations with well-connected networks and provide bicycle parking at major stops and stations.	GRC	To promote a pedestrian and cycle access to public transport, encouraging the use of active transport modes through facility design, to make using the transport network safer, more efficient and more enjoyable.
AT10	Monitor and analyse bicycle riding demand.	GRC	To assist in planning and prioritising bicycle riding network upgrades and development.

A-5 Travel Demand Management

The *State Infrastructure Strategy* recommends travel demand management, *"Encourage travel patterns that are tailored to the capacity of the network and help manage congestion with mobility pricing reform and demand management initiatives" (p121).*

Although the parking provision rate constraints and parking management and controls should be reviewed as part of the Parking Study currently being undertaken by GRC, the proposed travel demand management measures in the 2013 TMAP largely remain relevant. These proposed measures include:

- Incorporate Workplace and Green Travel Plans into Planning Agreements; and
- Feasibility investigations into car sharing schemes, alternative work schedules, 'Smarter Choices', workplace parking levies, and park and ride sites.

In addition, the opportunity for car-sharing technologies such as Uber Pool and other services should be included in the toolbox of measures available.

Table A-5 Travel demand management recommendations

ID	Item	Responsibility	Purpose
TDM1	Adopt recommendations from the ongoing Parking Study.	GRC / DPE	Parking demand management can ensure that parking requirements are met whilst controlling available parking. As a result, the road network capacity can be protected and more people are encouraged to choose active and public transport options.

ID	Item	Responsibility	Purpose
TDM2	Investigate the feasibility of Introducing Car-Sharing Schemes. Promote and provide on-street car parking spaces for car sharing in neighbourhoods- carsharing providers generally need density and mixed uses to be viable.	GRC	To optimise the use of car parking and road space and help to better manage regional road network capacity.
TDM3	Investigate the feasibility of introducing an alternative work schedule.	GRC	To encourage travel outside of peak periods and help to better manage regional road network capacity.
TDM4	Update the DCP to mandate Green Travel Plans (GTP) as part of the planning application for major new developments. Develop a standard GTP template for developers and other organisations. Designate a staff member to monitor the application of GTP and provide advice to the public on an ad-hoc basis.	GRC	Through encouraging travel outside of peak periods, the demand for travel may be spread more widely, reducing the number of vehicles on the road in the peak period, whilst utilising spare capacity in shoulder-peak or off peak periods. This can help to better manage regional road network capacity.
TDM5	Investigate the feasibility of implementing 'Smarter Choices'.	GRC / TfNSW	To support and encourage active and public transport for accessing Hurstville City Centre and help to manage growth in regional traffic demand.
TDM6	Investigate the Feasibility of introducing Workplace Parking Levies.	GRC / DPE / TfNSW/ NSW Treasury	To protect road network capacity by introducing costs associated with the convenience of parking in Hurstville City Centre and helping to rebalance the cost of travel towards active and public transport.

Appendix B – SIDRA model outputs

2017 Base Scenarios

MOVEMENT SUMMARY

Site: 1 [2017_AM_Base_Forest Road - The Avenue]

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

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Road (E)											
5	T1	171	10.5	0.389	44.8	LOS D	6.9	52.6	0.85	0.68	24.8
Approach		171	10.5	0.389	44.8	LOS D	6.9	52.6	0.85	0.68	24.8
NorthWest: The Avenue (NW)											
27a	L1	244	9.1	0.370	33.5	LOS C	10.4	78.6	0.78	0.77	33.9
28	T1	323	5.9	0.400	28.1	LOS B	6.6	48.8	0.74	0.61	36.0
29b	R3	6	0.0	0.400	33.3	LOS C	6.6	48.6	0.74	0.61	29.8
Approach		574	7.2	0.400	30.5	LOS C	10.4	78.6	0.75	0.68	35.0
West: Forest Road (W)											
11	T1	677	9.3	0.396	13.9	LOS A	9.9	75.0	0.47	0.42	37.8
12a	R1	60	8.8	0.396	19.4	LOS B	9.9	75.0	0.52	0.48	36.0
Approach		737	9.3	0.396	14.4	LOS A	9.9	75.0	0.47	0.42	37.6
All Vehicles		1481	8.6	0.400	24.1	LOS B	10.4	78.6	0.63	0.55	34.7

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

MOVEMENT SUMMARY

Site: 1 [2017_PM_Base_Forest Road - The Avenue]

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

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Road (E)											
5	T1	283	4.8	0.576	44.9	LOS D	11.9	86.8	0.88	0.73	24.7
Approach		283	4.8	0.576	44.9	LOS D	11.9	86.8	0.88	0.73	24.7
NorthWest: The Avenue (NW)											
27a	L1	406	4.7	0.516	30.8	LOS C	17.4	126.5	0.79	0.80	34.8
28	T1	504	3.3	0.578	24.5	LOS B	10.1	72.5	0.71	0.60	37.4
29b	R3	15	21.4	0.578	29.9	LOS C	9.9	72.2	0.71	0.61	30.9
Approach		925	4.2	0.578	27.3	LOS B	17.4	126.5	0.74	0.69	36.1
West: Forest Road (W)											
11	T1	419	9.3	0.415	19.5	LOS B	10.4	78.8	0.57	0.51	34.4
12a	R1	174	6.7	0.415	35.1	LOS C	10.3	76.6	0.81	0.76	27.9
Approach		593	8.5	0.415	24.1	LOS B	10.4	78.8	0.64	0.58	32.2
All Vehicles		1801	5.7	0.578	29.0	LOS C	17.4	126.5	0.73	0.66	33.3

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

MOVEMENT SUMMARY

▽ Site: 1 [2017_AM_Base_Forest Rd_Hudson St]

8:00-9:00am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Rd											
5	T1	555	2.0	0.207	1.2	LOS A	1.2	8.9	0.15	0.07	44.9
6	R2	68	2.0	0.207	10.8	LOS A	1.2	8.9	0.54	0.24	43.2
Approach		623	2.0	0.207	2.2	NA	1.2	8.9	0.19	0.09	44.5
North: Hudson St											
7	L2	188	2.0	0.217	6.8	LOS A	0.8	6.0	0.47	0.69	42.7
9	R2	20	2.0	0.178	37.6	LOS C	0.5	3.9	0.91	0.97	26.6
Approach		208	2.0	0.217	9.8	LOS A	0.8	6.0	0.52	0.72	40.3
West: Forest Rd											
10	L2	15	2.0	0.216	4.6	LOS A	0.0	0.0	0.00	0.02	48.9
11	T1	816	2.0	0.216	0.0	LOS A	0.0	0.0	0.00	0.01	49.7
Approach		831	2.0	0.216	0.1	NA	0.0	0.0	0.00	0.01	49.7
All Vehicles		1662	2.0	0.217	2.1	NA	1.2	8.9	0.14	0.13	45.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 1 [2017_PM_Base_Forest Rd_Hudson St]

2
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Rd											
5	T1	747	2.0	0.321	1.3	LOS A	2.2	16.0	0.13	0.08	44.9
6	R2	126	2.0	0.321	12.8	LOS A	2.2	16.0	0.73	0.46	40.1
Approach		874	2.0	0.321	3.0	NA	2.2	16.0	0.21	0.14	43.2
North: Hudson St											
7	L2	69	2.0	0.083	6.7	LOS A	0.3	2.1	0.45	0.66	42.7
9	R2	17	2.0	0.327	87.5	LOS F	1.0	6.8	0.97	1.01	16.6
Approach		86	2.0	0.327	22.5	LOS B	1.0	6.8	0.55	0.73	32.7
West: Forest Rd											
10	L2	26	2.0	0.236	4.6	LOS A	0.0	0.0	0.00	0.03	48.8
11	T1	880	2.0	0.236	0.0	LOS A	0.0	0.0	0.00	0.02	49.6
Approach		906	2.0	0.236	0.1	NA	0.0	0.0	0.00	0.02	49.5
All Vehicles		1866	2.0	0.327	2.5	NA	2.2	16.0	0.13	0.10	44.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 1 [2017_AM_Base_Forest Rd_Wright St_Durham St]

8:00-9:00am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Durham St											
4	L2	322	9.2	0.314	5.9	LOS A	1.4	10.6	0.38	0.60	42.9
Approach		322	9.2	0.314	5.9	LOS A	1.4	10.6	0.38	0.60	42.9
NorthEast: Forest Road											
24	L2	15	7.1	0.121	4.6	LOS A	0.0	0.0	0.00	0.04	49.2
8	T1	435	7.7	0.121	0.0	LOS A	0.0	0.0	0.00	0.02	49.8
Approach		449	7.7	0.121	0.2	NA	0.0	0.0	0.00	0.02	49.8
NorthWest: Wright St											
27	L2	78	2.7	0.113	7.9	LOS A	0.4	2.8	0.53	0.75	44.7
Approach		78	2.7	0.113	7.9	LOS A	0.4	2.8	0.53	0.75	44.7
SouthWest: Forest Road											
1	L2	66	3.2	0.445	5.1	LOS A	6.3	48.4	1.00	0.00	46.0
2	T1	535	11.4	0.445	0.7	LOS A	6.3	48.4	1.00	0.00	45.1
3	R2	533	8.1	0.631	10.9	LOS A	5.9	44.1	0.71	1.08	39.3
Approach		1134	9.4	0.631	5.7	NA	6.3	48.4	0.86	0.51	42.2
All Vehicles		1983	8.7	0.631	4.6	NA	6.3	48.4	0.58	0.42	44.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 1 [2017_PM_Base_Forest Rd_Wright St_Durham St]

8:00-9:00am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Durham St											
4	L2	455	9.3	0.491	7.8	LOS A	3.4	25.5	0.53	0.78	41.7
Approach		455	9.3	0.491	7.8	LOS A	3.4	25.5	0.53	0.78	41.7
NorthEast: Forest Road											
24	L2	19	16.7	0.172	4.7	LOS A	0.0	0.0	0.00	0.03	49.0
8	T1	601	12.1	0.172	0.0	LOS A	0.0	0.0	0.00	0.02	49.8
Approach		620	12.2	0.172	0.2	NA	0.0	0.0	0.00	0.02	49.8
NorthWest: Wright St											
27	L2	34	6.3	0.043	7.0	LOS A	0.1	1.1	0.46	0.65	45.2
Approach		34	6.3	0.043	7.0	LOS A	0.1	1.1	0.46	0.65	45.2
SouthWest: Forest Road											
1	L2	36	8.8	0.259	4.4	LOS A	0.0	0.0	0.00	0.04	50.6
2	T1	438	9.6	0.259	0.0	LOS A	0.0	0.0	0.00	0.04	49.6
3	R2	391	8.4	0.589	12.7	LOS A	4.3	32.0	0.73	1.09	38.0
Approach		864	9.0	0.589	5.9	NA	4.3	32.0	0.33	0.51	43.6
All Vehicles		1973	10.0	0.589	4.6	NA	4.3	32.0	0.27	0.42	44.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: TCS 1662 [2017_AM_Base_Queens Rd_Park Rd] — **Network: N101 [2017_AM_Base]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 100 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Park Rd													
1	L2	179	2.0	179	2.0	0.922	68.8	LOS E	10.7	76.0	1.00	1.08	8.1
2	T1	61	2.0	61	2.0	0.546	45.0	LOS D	6.0	45.4	0.98	0.79	17.6
3	R2	174	7.9	174	7.9	0.546	51.2	LOS D	6.0	45.4	0.99	0.79	10.3
Approach		414	4.5	414	4.5	0.922	57.9	LOS E	10.7	76.0	0.99	0.91	10.3
East: Quees Rd													
5	T1	793	3.3	793	3.3	0.322	1.2	LOS A	1.6	11.4	0.08	0.08	49.8
6	R2	9	2.0	9	2.0	0.322	6.7	LOS A	1.4	9.9	0.08	0.09	46.3
Approach		802	3.3	802	3.3	0.322	1.3	LOS A	1.6	11.4	0.08	0.08	49.7
West: Queens Rd													
10	L2	77	2.0	77	2.0	0.499	7.9	LOS A	5.1	36.4	0.17	0.21	47.9
11	T1	1261	2.0	1261	2.0	0.499	2.0	LOS A	5.1	36.4	0.15	0.16	50.8
Approach		1338	2.0	1338	2.0	0.499	2.4	LOS A	5.1	36.4	0.15	0.17	50.5
All Vehicles		2554	2.8	2554	2.8	0.922	11.0	LOS A	10.7	76.0	0.27	0.26	29.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 1.0 %
Number of Iterations: 6 (maximum specified: 10)

MOVEMENT SUMMARY

Site: TCS 1662 [2017_PM_Base_Queens Rd_Park Rd] — **Network: N101 [2017_PM_Base]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 100 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Park Rd													
1	L2	311	2.0	311	2.0	0.895	57.8	LOS E	17.4	123.6	0.98	1.02	9.4
2	T1	161	2.0	161	2.0	0.608	34.3	LOS C	11.8	84.2	0.92	0.80	20.6
3	R2	295	2.0	295	2.0	0.608	41.0	LOS C	11.8	84.2	0.93	0.81	12.3
Approach		766	2.0	766	2.0	0.895	46.4	LOS D	17.4	123.6	0.95	0.89	12.7
East: Quees Rd													
5	T1	1033	2.0	1033	2.0	0.495	8.6	LOS A	9.6	68.6	0.42	0.37	25.4
6	R2	8	2.0	8	2.0	0.495	14.4	LOS A	9.5	67.7	0.45	0.39	33.9
Approach		1041	2.0	1041	2.0	0.495	8.6	LOS A	9.6	68.6	0.42	0.37	25.5
West: Queens Rd													
10	L2	5	2.0	5	2.0	0.740	22.5	LOS B	15.9	112.9	0.72	0.64	32.4
11	T1	793	2.0	793	2.0	0.740	15.3	LOS B	15.9	112.9	0.68	0.60	27.4
Approach		798	2.0	798	2.0	0.740	15.4	LOS B	15.9	112.9	0.68	0.60	27.5
All Vehicles		2605	2.0	2605	2.0	0.895	21.8	LOS B	17.4	123.6	0.65	0.59	18.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 195.4 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2347 [2017_Base_AM_Queens Road - The Avenue] — **Network: N101 [2017_AM_Base]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 100 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Queens Road (NE)													
24	L2	247	4.3	247	4.3	0.701	34.6	LOS C	19.5	146.0	0.91	0.83	38.6
25	T1	698	10.1	698	10.1	0.701	29.0	LOS C	19.9	150.0	0.91	0.81	30.5
Approach		945	8.6	945	8.6	0.701	30.4	LOS C	19.9	150.0	0.91	0.82	33.4
North: The Avenue (NW)													
27	L2	188	2.8	188	2.8	0.658	47.6	LOS D	8.7	62.7	0.97	0.83	33.1
28	T1	419	2.5	419	2.5	0.717	43.3	LOS D	10.2	72.8	0.97	0.85	35.2
29	R2	123	6.0	123	6.0	0.384	45.4	LOS D	5.4	39.9	0.93	0.78	24.3
Approach		731	3.2	731	3.2	0.717	44.7	LOS D	10.2	72.8	0.96	0.83	33.2
West: Queens Road (SW)													
31	T1	1142	8.5	1142	8.5	0.441	2.8	LOS A	6.0	45.6	0.19	0.17	55.7
32	R2	378	7.8	378	7.8	0.629	22.4	LOS B	10.2	76.1	0.66	0.90	35.4
Approach		1520	8.3	1520	8.3	0.629	7.7	LOS A	10.2	76.1	0.31	0.35	48.8
All Vehicles		3196	7.2	3196	7.2	0.717	22.9	LOS B	19.9	150.0	0.64	0.60	38.3

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 1.0 %
Number of Iterations: 6 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2347 [2017_Base_PM_Queens Road - The Avenue] — **Network: N101 [2017_PM_Base]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 100 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Queens Road (NE)													
24	L2	295	6.1	295	6.1	0.830	41.1	LOS C	27.7	207.1	0.97	0.94	36.1
25	T1	851	10.1	851	10.1	0.830	35.4	LOS C	28.0	213.1	0.97	0.95	27.6
Approach		1145	9.1	1145	9.1	0.830	36.9	LOS C	28.0	213.1	0.97	0.94	30.5
North: The Avenue (NW)													
27	L2	75	5.6	75	5.6	0.279	47.3	LOS D	3.3	24.4	0.93	0.76	33.2
28	T1	320	5.9	320	5.9	0.573	43.9	LOS D	7.5	55.2	0.98	0.79	34.9
29	R2	120	4.4	120	4.4	0.444	48.6	LOS D	5.5	40.0	0.96	0.79	23.3
Approach		515	5.5	515	5.5	0.573	45.5	LOS D	7.5	55.2	0.97	0.79	32.5
West: Queens Road (SW)													
31	T1	724	9.9	724	9.9	0.271	0.9	LOS A	1.1	8.4	0.07	0.06	58.5
32	R2	441	5.5	441	5.5	0.717	38.3	LOS C	16.6	121.9	0.96	1.02	28.2
Approach		1165	8.2	1165	8.2	0.717	15.1	LOS B	16.6	121.9	0.41	0.42	41.6
All Vehicles		2825	8.1	2825	8.1	0.830	29.4	LOS C	28.0	213.1	0.74	0.70	34.4

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 195.4 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: TCS 2351 [2017_AM_Base_Dora St Queens Rd]

Network: N101 [2017_AM_Base]

New Site
Signals - Fixed Time Coordinated Cycle Time = 100 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dora St													
1	L2	95	30.0	95	30.0	0.181	32.6	LOS C	3.7	32.4	0.78	0.74	8.2
2	T1	102	2.1	102	2.1	0.410	41.1	LOS C	5.2	39.0	0.93	0.76	25.7
3	R2	21	30.0	21	30.0	0.410	47.1	LOS D	5.2	39.0	0.95	0.76	8.2
Approach		218	16.9	218	16.9	0.410	38.0	LOS C	5.2	39.0	0.87	0.75	16.9
East: Quees Rd													
4	L2	145	20.3	145	20.3	0.197	14.6	LOS B	2.2	18.3	0.33	0.66	31.2
5	T1	555	7.8	555	7.8	0.337	16.0	LOS B	6.7	50.4	0.53	0.46	31.6
6	R2	234	4.5	234	4.5	0.598	26.4	LOS B	5.9	43.2	0.87	0.82	33.9
Approach		934	8.9	934	8.9	0.598	18.4	LOS B	6.7	50.4	0.59	0.58	32.5
North: Dora St													
7	L2	141	3.0	141	3.0	0.215	27.7	LOS B	4.7	33.7	0.72	0.74	28.6
8	T1	106	5.9	106	5.9	0.491	41.8	LOS C	6.1	45.7	0.95	0.77	25.5
9	R2	27	15.4	27	15.4	0.491	46.4	LOS D	6.1	45.7	0.95	0.77	22.9
Approach		275	5.4	275	5.4	0.491	35.0	LOS C	6.1	45.7	0.83	0.76	26.5
West: Queens Rd													
10	L2	64	1.6	64	1.6	0.848	37.2	LOS C	34.5	251.6	0.96	0.95	28.6
11	T1	1161	5.3	1161	5.3	0.848	31.9	LOS C	34.5	251.6	0.90	0.90	9.1
12	R2	117	2.7	117	2.7	0.202	12.7	LOS A	2.1	14.9	0.53	0.70	26.2
Approach		1342	4.9	1342	4.9	0.848	30.5	LOS C	34.5	251.6	0.87	0.89	11.9
All Vehicles		2768	7.2	2768	7.2	0.848	27.4	LOS B	34.5	251.6	0.77	0.76	21.4

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 1.0 %

MOVEMENT SUMMARY

Site: TCS 2351 [2017_PM_Base_Dora St Queens Rd]

Network: N101 [2017_PM_Base]

New Site
Signals - Fixed Time Coordinated Cycle Time = 100 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dora St													
1	L2	244	17.7	244	17.7	0.491	36.1	LOS C	9.9	79.8	0.87	0.80	13.3
2	T1	184	7.4	184	7.4	0.526	37.8	LOS C	9.1	68.1	0.93	0.78	26.9
3	R2	23	13.6	23	13.6	0.526	42.4	LOS C	9.1	68.1	0.93	0.78	9.0
Approach		452	13.3	452	13.3	0.526	37.1	LOS C	9.9	79.8	0.90	0.79	20.3
East: Quees Rd													
4	L2	96	20.9	96	20.9	0.113	18.9	LOS B	2.1	17.7	0.49	0.69	27.7
5	T1	1074	6.7	1074	6.7	0.561	12.8	LOS A	13.1	96.6	0.54	0.48	34.9
6	R2	227	5.1	227	5.1	0.354	18.7	LOS B	5.6	40.6	0.85	0.80	37.7
Approach		1397	7.4	1397	7.4	0.561	14.2	LOS A	13.1	96.6	0.59	0.55	35.2
North: Dora St													
7	L2	82	2.6	82	2.6	0.293	38.4	LOS C	4.9	35.6	0.86	0.74	25.1
8	T1	83	10.1	83	10.1	0.834	46.8	LOS D	5.6	41.8	0.93	0.87	23.6
9	R2	56	7.5	56	7.5	0.834	62.6	LOS E	5.6	41.8	1.00	0.97	19.2
Approach		221	6.7	221	6.7	0.834	47.7	LOS D	5.6	41.8	0.92	0.85	22.7
West: Queens Rd													
10	L2	40	2.6	40	2.6	0.529	34.6	LOS C	12.9	95.2	0.87	0.75	29.6
11	T1	574	6.6	574	6.6	0.529	29.1	LOS C	12.9	95.2	0.86	0.74	9.8
12	R2	60	8.8	60	8.8	0.104	16.5	LOS B	1.2	8.9	0.66	0.70	22.6
Approach		674	6.6	674	6.6	0.529	28.3	LOS B	12.9	95.2	0.84	0.73	13.1
All Vehicles		2743	8.1	2743	8.1	0.834	24.1	LOS B	13.1	96.6	0.73	0.66	25.4

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 195.4 %

MOVEMENT SUMMARY

Site: 1 [2017_AM_Base_Railway Pde-Ormonde Pde-West Street] — **Network: N101 [2017 AM Peak]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Cycle Time - User-Given)
Common Control Group: CCG1 [Railway_Treacy]

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: West Street (S)													
1	L2	65	3.2	65	3.2	0.700	45.4	LOS D	19.0	138.5	0.94	0.84	24.9
3a	R1	303	5.2	303	5.2	0.700	44.0	LOS D	19.0	138.5	0.94	0.84	27.0
3	R2	246	5.1	246	5.1	0.471	42.5	LOS D	11.8	86.1	0.87	0.81	25.3
Approach		615	5.0	615	5.0	0.700	43.6	LOS D	19.0	138.5	0.91	0.83	26.1
East: Railway Parade (E)													
4	L2	60	8.8	60	8.8	0.341	3.9	LOS A	0.5	3.4	0.03	0.15	53.8
5	T1	719	8.8	719	8.8	0.341	2.1	LOS A	1.3	10.0	0.08	0.10	32.5
Approach		779	8.8	779	8.8	0.341	2.3	LOS A	1.3	10.0	0.07	0.10	40.5
NorthWest: Ormonde Parade (NW)													
27	L2	99	4.3	99	4.3	0.139	15.2	LOS B	2.4	17.4	0.49	0.68	24.2
27a	L1	18	0.0	18	0.0	0.071	51.7	LOS D	0.9	6.5	0.90	0.67	5.4
29a	R1	105	12.0	105	12.0	0.455	55.2	LOS D	5.9	45.2	0.97	0.78	22.6
29b	R3	92	8.0	92	8.0	0.440	57.6	LOS E	5.1	38.2	0.97	0.78	4.8
Approach		314	7.7	314	7.7	0.455	43.1	LOS D	5.9	45.2	0.81	0.74	16.6
West: Railway Parade (W)													
10a	L1	474	6.0	474	6.0	0.698	31.5	LOS C	20.9	154.3	0.77	0.80	18.5
11	T1	385	8.7	385	8.7	0.698	40.6	LOS C	20.9	154.3	0.96	0.84	10.6
Approach		859	7.2	859	7.2	0.698	35.6	LOS C	20.9	154.3	0.85	0.81	14.8
All Vehicles		2566	7.2	2566	7.2	0.700	28.3	LOS B	20.9	154.3	0.63	0.59	21.1

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 38.6 %

MOVEMENT SUMMARY

Site: 1 [2017_PM_Base_Railway Pde-Ormonde Pde-West Street] — **Network: N101 [2017 PM Peak]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Phase Times)
Common Control Group: CCG2 [Railway_Treacy]

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: West Street (S)													
1	L2	48	6.5	48	6.5	0.876	68.7	LOS E	18.0	133.8	1.00	1.00	19.0
3a	R1	226	7.4	226	7.4	0.876	67.3	LOS E	18.0	133.8	1.00	1.00	21.1
3	R2	184	7.4	184	7.4	0.613	56.0	LOS D	10.2	75.9	0.98	0.82	21.4
Approach		459	7.3	459	7.3	0.876	62.9	LOS E	18.0	133.8	0.99	0.93	21.0
East: Railway Parade (E)													
4	L2	78	5.4	78	5.4	0.410	3.8	LOS A	0.8	6.0	0.04	0.14	54.4
5	T1	1107	13.8	1107	13.8	0.410	0.7	LOS A	0.8	6.0	0.04	0.06	44.8
Approach		1185	13.2	1185	13.2	0.410	0.9	LOS A	0.8	6.0	0.04	0.07	48.7
NorthWest: Ormonde Parade (NW)													
27	L2	131	0.0	131	0.0	0.140	10.9	LOS A	2.4	16.7	0.39	0.66	28.5
27a	L1	34	0.0	34	0.0	0.134	52.3	LOS D	1.8	12.4	0.92	0.70	5.4
29a	R1	84	15.0	84	15.0	0.371	54.5	LOS D	4.6	36.5	0.95	0.76	22.8
29b	R3	147	5.0	147	5.0	0.695	61.0	LOS E	8.7	63.7	1.00	0.85	4.6
Approach		396	5.1	396	5.1	0.695	42.4	LOS C	8.7	63.7	0.78	0.75	14.2
West: Railway Parade (W)													
10a	L1	335	10.0	335	10.0	0.485	21.9	LOS B	9.9	75.4	0.52	0.69	23.1
11	T1	272	7.3	272	7.3	0.485	20.8	LOS B	9.9	75.4	0.59	0.51	17.6
Approach		606	8.8	606	8.8	0.485	21.4	LOS B	9.9	75.4	0.55	0.61	20.9
All Vehicles		2646	10.0	2646	10.0	0.876	22.6	LOS B	18.0	133.8	0.43	0.44	21.3

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 5.2 %

MOVEMENT SUMMARY

Site: TCS 850 [2017_AM_Base_Railway Pde-Treacy Street] — **Network: N101 [2017 AM Peak]**

Railway Pde - Treacy St
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Cycle Time - User-Given)
Common Control Group: CCG1 [Railway_Treacy]

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Railway Parade (E)													
5	T1	576	8.8	576	8.8	0.370	37.1	LOS C	9.1	68.8	0.85	0.71	27.1
Approach		576	8.8	576	8.8	0.370	37.1	LOS C	9.1	68.8	0.85	0.71	27.1
NorthEast: Treacy Street													
26a	R1	204	6.2	204	6.2	0.669	65.4	LOS E	6.2	45.6	1.00	0.82	4.7
Approach		204	6.2	204	6.2	0.669	65.4	LOS E	6.2	45.6	1.00	0.82	4.7
West: Railway Parade (W)													
11	T1	649	9.7	649	9.7	0.287	0.4	LOS A	0.7	5.1	0.03	0.03	59.3
Approach		649	9.7	649	9.7	0.287	0.4	LOS A	0.7	5.1	0.03	0.03	59.3
All Vehicles		1429	8.8	1429	8.8	0.669	24.5	LOS B	9.1	68.8	0.50	0.42	31.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 38.6 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: TCS 850 [2017_PM_Base_Railway Pde-Treacy Street] — **Network: N101 [2017 PM Peak]**

Railway Pde - Treacy St
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (User-Given Phase Times)
Common Control Group: CCG2 [Railway_Treacy]

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Railway Parade (E)													
5	T1	784	14.0	784	14.0	0.554	39.1	LOS C	14.1	110.8	0.89	0.76	26.4
Approach		784	14.0	784	14.0	0.554	39.1	LOS C	14.1	110.8	0.89	0.76	26.4
NorthEast: Treacy Street													
26a	R1	420	10.8	420	10.8	0.567	50.6	LOS D	11.2	85.6	0.95	0.82	5.9
Approach		420	10.8	420	10.8	0.567	50.6	LOS D	11.2	85.6	0.95	0.82	5.9
West: Railway Parade (W)													
11	T1	477	9.7	477	9.7	0.249	0.8	LOS A	0.5	3.9	0.04	0.03	58.6
Approach		477	9.7	477	9.7	0.249	0.8	LOS A	0.5	3.9	0.04	0.03	58.6
All Vehicles		1681	12.0	1681	12.0	0.567	31.1	LOS C	14.1	110.8	0.67	0.57	26.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 5.2 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [2017_Base_AM_Railway Parade - The Avenue]

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

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Railway Parade (E)											
5	T1	382	9.9	0.391	12.5	LOS A	8.8	67.0	0.43	0.38	49.8
6	R2	313	1.3	0.582	44.7	LOS D	14.4	102.2	0.91	0.97	25.4
Approach		695	6.1	0.582	27.0	LOS B	14.4	102.2	0.64	0.64	38.1
North: The Avenue (N)											
7	L2	127	6.6	0.736	39.4	LOS C	24.5	181.7	0.93	0.86	27.1
9	R2	358	7.1	0.736	39.4	LOS C	24.5	181.7	0.93	0.86	27.0
Approach		485	6.9	0.736	39.4	LOS C	24.5	181.7	0.93	0.86	27.0
West: Railway Parade (W)											
10	L2	62	10.2	0.726	50.3	LOS D	17.1	129.3	0.93	0.82	18.4
11	T1	602	9.1	0.726	45.0	LOS D	17.5	132.4	0.93	0.82	34.3
Approach		664	9.2	0.726	45.5	LOS D	17.5	132.4	0.93	0.82	32.7
All Vehicles		1844	7.4	0.736	36.9	LOS C	24.5	181.7	0.82	0.76	33.2

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

MOVEMENT SUMMARY

Site: 1 [2017_Base_PM_Railway Parade - The Avenue]

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

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Railway Parade (E)											
5	T1	597	14.5	0.687	28.5	LOS B	21.5	169.4	0.79	0.72	40.6
6	R2	247	7.7	0.687	50.8	LOS D	15.4	116.5	0.94	1.00	24.0
Approach		844	12.5	0.687	35.0	LOS C	21.5	169.4	0.83	0.80	35.8
North: The Avenue (N)											
7	L2	215	6.9	0.812	34.6	LOS C	35.2	263.1	0.92	0.89	28.9
9	R2	475	8.2	0.812	34.6	LOS C	35.2	263.1	0.92	0.89	28.8
Approach		689	7.8	0.812	34.6	LOS C	35.2	263.1	0.92	0.89	28.8
West: Railway Parade (W)											
10	L2	54	5.9	0.789	61.4	LOS E	13.2	100.2	0.99	0.90	16.8
11	T1	401	10.5	0.789	56.1	LOS D	13.4	102.6	1.00	0.90	31.0
Approach		455	10.0	0.789	56.7	LOS E	13.4	102.6	1.00	0.90	29.2
All Vehicles		1988	10.3	0.812	39.8	LOS C	35.2	263.1	0.90	0.86	31.9

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

2036 Base Scenarios

MOVEMENT SUMMARY

Site: 1 [2036_AM_Base_Forest Road - The Avenue]

New Site
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Road (E)											
5	T1	238	10.5	0.521	45.2	LOS D	10.4	79.6	0.92	0.75	24.6
Approach		238	10.5	0.521	45.2	LOS D	10.4	79.6	0.92	0.75	24.6
NorthWest: The Avenue (NW)											
27a	L1	257	9.1	0.490	41.6	LOS C	12.5	94.0	0.88	0.81	31.5
28	T1	339	5.9	0.534	35.6	LOS C	7.8	57.1	0.82	0.67	33.6
29b	R3	2	0.0	0.534	40.8	LOS C	7.8	57.0	0.82	0.68	27.2
Approach		598	7.2	0.534	38.2	LOS C	12.5	94.0	0.85	0.73	32.6
West: Forest Road (W)											
11	T1	774	9.3	0.396	14.1	LOS A	13.2	99.4	0.58	0.52	37.7
12a	R1	61	8.8	0.396	19.3	LOS B	13.2	99.4	0.61	0.55	36.0
Approach		835	9.3	0.396	14.5	LOS A	13.2	99.4	0.58	0.52	37.6
All Vehicles		1671	8.7	0.534	27.3	LOS B	13.2	99.4	0.73	0.63	33.2

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

MOVEMENT SUMMARY

Site: 1 [2036_PM_Base_Forest Road - The Avenue]

New Site
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Road (E)											
5	T1	309	4.8	0.564	42.4	LOS C	13.4	97.3	0.91	0.76	25.4
Approach		309	4.8	0.564	42.4	LOS C	13.4	97.3	0.91	0.76	25.4
NorthWest: The Avenue (NW)											
27a	L1	345	4.7	0.559	38.9	LOS C	16.5	120.4	0.87	0.82	32.3
28	T1	396	3.3	0.544	31.8	LOS C	8.6	61.9	0.79	0.65	34.8
29b	R3	1	21.4	0.544	37.2	LOS C	8.6	61.9	0.79	0.65	28.1
Approach		742	4.0	0.559	35.1	LOS C	16.5	120.4	0.83	0.73	33.6
West: Forest Road (W)											
11	T1	595	9.3	0.409	17.9	LOS B	13.8	104.6	0.65	0.58	35.3
12a	R1	137	6.7	0.409	27.4	LOS B	12.5	93.8	0.75	0.68	31.4
Approach		732	8.8	0.409	19.7	LOS B	13.8	104.6	0.67	0.60	34.5
All Vehicles		1783	6.1	0.564	30.1	LOS C	16.5	120.4	0.78	0.68	32.4

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

MOVEMENT SUMMARY

▽ Site: 1 [2036_AM_Base_Forest Rd_Hudson St]

8:00-9:00am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Rd											
5	T1	785	2.0	0.321	2.0	LOS A	2.5	18.1	0.16	0.07	43.1
6	R2	89	2.0	0.321	15.9	LOS B	2.5	18.1	0.74	0.33	39.2
Approach		875	2.0	0.321	3.4	NA	2.5	18.1	0.22	0.10	42.1
North: Hudson St											
7	L2	213	2.0	0.374	11.0	LOS A	1.7	12.0	0.68	0.92	39.5
9	R2	23	2.0	0.666	182.5	LOS F	2.0	14.6	0.99	1.07	9.7
Approach		236	2.0	0.666	27.9	LOS B	2.0	14.6	0.71	0.94	30.3
West: Forest Rd											
10	L2	49	2.0	0.389	4.6	LOS A	0.0	0.0	0.00	0.04	48.8
11	T1	962	2.0	0.389	0.0	LOS A	0.0	0.0	0.00	0.03	49.3
Approach		1012	2.0	0.389	0.2	NA	0.0	0.0	0.00	0.03	49.2
All Vehicles		2122	2.0	0.666	4.6	NA	2.5	18.1	0.17	0.16	40.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 1 [2036_PM_Base_Forest Rd_Hudson St]

8:00-9:00am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Rd											
5	T1	933	2.0	0.385	1.7	LOS A	3.1	21.9	0.15	0.08	43.8
6	R2	133	2.0	0.385	14.2	LOS A	3.1	21.9	0.75	0.40	39.8
Approach		1065	2.0	0.385	3.2	NA	3.1	21.9	0.23	0.12	42.5
North: Hudson St											
7	L2	83	2.0	0.133	8.6	LOS A	0.5	3.3	0.56	0.79	41.2
9	R2	26	2.0	0.912	307.2	LOS F	3.4	24.1	1.00	1.18	6.3
Approach		109	2.0	0.912	80.4	LOS F	3.4	24.1	0.67	0.89	17.6
West: Forest Rd											
10	L2	27	2.0	0.344	4.6	LOS A	0.0	0.0	0.00	0.02	48.9
11	T1	869	2.0	0.344	0.0	LOS A	0.0	0.0	0.00	0.02	49.5
Approach		897	2.0	0.344	0.1	NA	0.0	0.0	0.00	0.02	49.5
All Vehicles		2072	2.0	0.912	6.0	NA	3.4	24.1	0.15	0.12	37.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 1 [2036_AM_Base_Forest Rd_Wright St_Durham St]

8:00-9:00am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Durham St											
4	L2	325	2.0	0.322	6.1	LOS A	1.4	10.1	0.43	0.64	43.1
Approach		325	2.0	0.322	6.1	LOS A	1.4	10.1	0.43	0.64	43.1
NorthEast: Forest Road											
24	L2	13	2.0	0.147	4.6	LOS A	0.0	0.0	0.00	0.02	49.3
8	T1	554	2.0	0.147	0.0	LOS A	0.0	0.0	0.00	0.01	49.9
Approach		566	2.0	0.147	0.1	NA	0.0	0.0	0.00	0.01	49.8
NorthWest: Wright St											
27	L2	83	2.0	0.125	8.2	LOS A	0.4	3.1	0.54	0.77	44.5
Approach		83	2.0	0.125	8.2	LOS A	0.4	3.1	0.54	0.77	44.5
SouthWest: Forest Road											
1	L2	56	2.0	0.480	5.3	LOS A	6.2	44.1	1.00	0.00	46.2
2	T1	587	2.0	0.480	0.9	LOS A	6.2	44.1	1.00	0.00	45.2
3	R2	532	2.0	0.682	12.6	LOS A	6.5	46.3	0.75	1.18	38.2
Approach		1175	2.0	0.682	6.4	NA	6.5	46.3	0.89	0.53	41.8
All Vehicles		2149	2.0	0.682	4.8	NA	6.5	46.3	0.57	0.42	44.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: 1 [2036_PM_Base_Forest Rd_Wright St_Durham St]

8:00-9:00am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Durham St											
4	L2	395	2.2	0.423	7.3	LOS A	2.5	17.6	0.51	0.76	42.2
Approach		395	2.2	0.423	7.3	LOS A	2.5	17.6	0.51	0.76	42.2
NorthEast: Forest Road											
24	L2	16	2.0	0.184	4.6	LOS A	0.0	0.0	0.00	0.02	49.3
8	T1	693	2.0	0.184	0.0	LOS A	0.0	0.0	0.00	0.01	49.9
Approach		708	2.0	0.184	0.1	NA	0.0	0.0	0.00	0.01	49.8
NorthWest: Wright St											
27	L2	62	2.0	0.072	6.6	LOS A	0.3	1.8	0.44	0.64	45.4
Approach		62	2.0	0.072	6.6	LOS A	0.3	1.8	0.44	0.64	45.4
SouthWest: Forest Road											
1	L2	58	2.0	0.410	5.8	LOS A	4.5	31.8	1.00	0.00	46.0
2	T1	404	2.0	0.410	1.4	LOS A	4.5	31.8	1.00	0.00	45.1
3	R2	489	2.0	0.753	16.4	LOS B	7.3	52.2	0.83	1.34	35.8
Approach		952	2.0	0.753	9.4	NA	7.3	52.2	0.91	0.69	39.8
All Vehicles		2117	2.0	0.753	5.8	NA	7.3	52.2	0.52	0.47	43.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: TCS 1662 [2036_AM_Base_Queens Rd_Park Rd] — **Network: N101 [2036_AM_Base]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 100 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Park Rd													
1	L2	228	2.0	228	2.0	0.924	68.2	LOS E	13.8	98.0	1.00	1.07	8.2
2	T1	68	2.0	68	2.0	0.620	43.9	LOS D	8.1	60.3	0.98	0.82	17.7
3	R2	234	6.0	234	6.0	0.620	49.8	LOS D	8.1	60.3	0.99	0.82	10.6
Approach		531	3.8	531	3.8	0.924	56.9	LOS E	13.8	98.0	0.99	0.93	10.3
East: Quees Rd													
5	T1	836	3.2	836	3.2	0.420	7.1	LOS A	8.4	59.5	0.30	0.27	27.9
6	R2	34	2.0	34	2.0	0.420	20.5	LOS B	8.4	59.5	0.54	0.49	27.7
Approach		869	3.2	869	3.2	0.420	7.6	LOS A	8.4	59.5	0.31	0.28	27.8
West: Queens Rd													
10	L2	12	2.0	12	2.0	0.867	36.0	LOS C	36.7	261.1	0.93	0.92	24.6
11	T1	1433	2.0	1433	2.0	0.867	29.1	LOS C	36.7	261.1	0.90	0.90	18.5
Approach		1444	2.0	1444	2.0	0.867	29.1	LOS C	36.7	261.1	0.90	0.90	18.5
All Vehicles		2844	2.7	2844	2.7	0.924	27.7	LOS B	36.7	261.1	0.74	0.72	16.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 7.2 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: TCS 1662 [2036_PM_Base_Queens Rd_Park Rd] — **Network: N101 [2036_PM_Base]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 100 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Park Rd													
1	L2	284	2.0	284	2.0	0.917	63.6	LOS E	16.7	118.8	1.00	1.06	8.7
2	T1	161	2.0	161	2.0	0.799	42.6	LOS D	13.9	102.1	0.96	0.93	18.2
3	R2	305	5.4	305	5.4	0.799	50.8	LOS D	13.9	102.1	0.98	0.94	10.4
Approach		751	3.4	751	3.4	0.917	53.9	LOS D	16.7	118.8	0.99	0.98	11.4
East: Quees Rd													
5	T1	1108	3.0	1108	3.0	0.535	8.3	LOS A	11.4	81.5	0.41	0.37	25.7
6	R2	35	2.0	35	2.0	0.535	15.8	LOS B	11.4	81.5	0.47	0.43	32.2
Approach		1143	3.0	1143	3.0	0.535	8.5	LOS A	11.4	81.5	0.41	0.37	26.1
West: Queens Rd													
10	L2	5	2.0	5	2.0	0.806	24.0	LOS B	17.5	124.7	0.79	0.71	31.2
11	T1	751	2.0	751	2.0	0.806	16.5	LOS B	17.5	124.7	0.73	0.66	26.4
Approach		756	2.0	756	2.0	0.806	16.5	LOS B	17.5	124.7	0.73	0.66	26.4
All Vehicles		2649	2.8	2649	2.8	0.917	23.7	LOS B	17.5	124.7	0.67	0.63	17.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 3.4 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2347 [2036_Base_AM_Queens Road - The Avenue] — **Network: N101 [2036_AM_Base]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 100 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Queens Road (NE)													
24	L2	293	4.3	293	4.3	0.709	32.7	LOS C	20.9	156.5	0.90	0.83	39.2
25	T1	741	10.0	741	10.0	0.709	27.1	LOS B	21.4	161.1	0.90	0.81	31.5
Approach		1034	8.4	1034	8.4	0.709	28.7	LOS C	21.4	161.1	0.90	0.81	34.5
North: The Avenue (NW)													
27	L2	174	4.3	174	4.3	0.705	51.6	LOS D	8.5	61.5	0.99	0.85	32.0
28	T1	365	3.1	365	3.1	0.713	45.9	LOS D	9.0	64.6	0.99	0.86	34.3
29	R2	132	4.3	132	4.3	0.487	48.9	LOS D	6.1	44.2	0.96	0.79	23.2
Approach		671	3.7	671	3.7	0.713	48.0	LOS D	9.0	64.6	0.99	0.84	31.9
West: Queens Road (SW)													
31	T1	1272	7.3	1272	7.3	0.468	3.5	LOS A	7.9	58.2	0.25	0.23	54.7
32	R2	382	6.7	382	6.7	0.634	33.6	LOS C	13.8	102.4	0.89	0.97	29.9
Approach		1654	7.1	1654	7.1	0.634	10.5	LOS A	13.8	102.4	0.40	0.40	46.0
All Vehicles		3358	6.8	3358	6.8	0.713	23.6	LOS B	21.4	161.1	0.67	0.62	37.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 7.2 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2347 [2036_Base_PM_Queens Road - The Avenue] — **Network: N101 [2036_PM_Base]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 100 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Queens Road (NE)													
24	L2	196	6.1	196	6.1	0.848	42.5	LOS C	29.8	227.4	0.98	0.97	36.0
25	T1	1003	11.2	1003	11.2	0.848	36.7	LOS C	30.3	230.5	0.98	0.97	27.2
Approach		1199	10.3	1199	10.3	0.848	37.7	LOS C	30.3	230.5	0.98	0.97	29.1
North: The Avenue (NW)													
27	L2	56	4.4	56	4.4	0.207	46.7	LOS D	2.4	17.8	0.91	0.74	33.4
28	T1	237	5.9	237	5.9	0.420	42.7	LOS D	5.4	39.7	0.95	0.76	35.3
29	R2	137	5.7	137	5.7	0.511	49.2	LOS D	6.4	46.7	0.97	0.80	23.2
Approach		429	5.7	429	5.7	0.511	45.3	LOS D	6.4	46.7	0.95	0.77	31.8
West: Queens Road (SW)													
31	T1	615	10.7	615	10.7	0.231	4.6	LOS A	5.5	41.7	0.34	0.29	53.3
32	R2	427	4.8	427	4.8	0.717	55.9	LOS D	18.2	132.4	1.00	1.03	22.9
Approach		1042	8.3	1042	8.3	0.717	25.6	LOS B	18.2	132.4	0.61	0.59	34.6
All Vehicles		2671	8.8	2671	8.8	0.848	34.2	LOS C	30.3	230.5	0.83	0.79	31.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 3.4 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: TCS 2351 [2036_AM_Base_Dora St Queens Rd] — **Network: N101 [2036_AM_Base]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 100 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dora St													
1	L2	293	7.4	293	7.4	0.550	36.5	LOS C	12.1	89.9	0.89	0.82	13.2
2	T1	78	0.0	78	0.0	0.572	49.8	LOS D	4.8	33.9	1.00	0.79	23.4
3	R2	18	12.5	18	12.5	0.572	54.5	LOS D	4.8	33.9	1.00	0.79	7.1
Approach		388	6.1	388	6.1	0.572	40.0	LOS C	12.1	89.9	0.92	0.81	16.1
East: Quees Rd													
4	L2	181	19.8	181	19.8	0.212	13.4	LOS A	2.4	19.5	0.29	0.65	32.3
5	T1	557	7.8	557	7.8	0.293	10.6	LOS A	5.2	38.6	0.41	0.35	37.5
6	R2	183	4.5	183	4.5	0.607	28.0	LOS B	5.4	39.5	0.92	0.81	33.1
Approach		921	9.5	921	9.5	0.607	14.6	LOS B	5.4	39.5	0.49	0.50	34.9
North: Dora St													
7	L2	197	3.0	197	3.0	0.549	35.9	LOS C	8.0	57.4	0.87	0.80	25.4
8	T1	181	3.1	181	3.1	1.299	321.2	LOS F	32.9	240.7	1.00	2.09	5.9
9	R2	37	15.4	37	15.4	1.299	325.8	LOS F	32.9	240.7	1.00	2.09	5.6
Approach		415	4.1	415	4.1	1.299	186.2	LOS F	32.9	240.7	0.94	1.47	8.7
West: Queens Rd													
10	L2	52	1.6	52	1.6	0.891	42.8	LOS D	37.6	274.4	0.97	1.04	26.7
11	T1	1151	5.3	1151	5.3	0.891	37.1	LOS C	37.6	274.4	0.86	0.95	8.1
12	R2	178	2.7	178	2.7	0.333	12.1	LOS A	3.2	22.6	0.52	0.70	26.8
Approach		1380	4.8	1380	4.8	0.891	34.1	LOS C	37.6	274.4	0.82	0.92	10.8
All Vehicles		3104	6.3	3104	6.3	1.299	49.4	LOS D	37.6	274.4	0.75	0.86	14.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 7.2 %

MOVEMENT SUMMARY

Site: TCS 2351 [2036_PM_Base_Dora St Queens Rd] — **Network: N101 [2036_PM_Base]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 100 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dora St													
1	L2	417	18.1	417	18.1	0.700	34.5	LOS C	17.6	142.0	0.92	0.85	13.7
2	T1	158	7.4	158	7.4	0.374	31.5	LOS C	7.3	54.7	0.85	0.72	29.0
3	R2	26	13.6	26	13.6	0.374	36.1	LOS C	7.3	54.7	0.85	0.72	10.4
Approach		601	15.1	601	15.1	0.700	33.8	LOS C	17.6	142.0	0.90	0.81	19.1
East: Quees Rd													
4	L2	106	28.6	106	28.6	0.148	24.7	LOS B	3.5	30.6	0.72	0.75	24.2
5	T1	1051	6.7	1051	6.7	0.621	18.0	LOS B	16.0	118.0	0.67	0.60	29.8
6	R2	229	5.1	229	5.1	0.409	24.3	LOS B	6.7	48.7	0.94	0.82	34.8
Approach		1386	8.1	1386	8.1	0.621	19.6	LOS B	16.0	118.0	0.72	0.65	30.8
North: Dora St													
7	L2	128	2.6	128	2.6	0.296	32.2	LOS C	6.1	44.2	0.79	0.74	27.2
8	T1	86	10.3	86	10.3	0.844	45.8	LOS D	6.1	44.2	0.91	0.87	23.9
9	R2	36	7.5	36	7.5	0.844	64.0	LOS E	4.7	35.8	1.00	0.96	19.1
Approach		251	5.9	251	5.9	0.844	41.4	LOS C	6.1	44.2	0.86	0.82	24.3
West: Queens Rd													
10	L2	17	2.6	17	2.6	0.587	37.4	LOS C	13.7	101.3	0.90	0.78	28.6
11	T1	572	6.6	572	6.6	0.587	31.7	LOS C	13.7	101.3	0.89	0.76	9.2
12	R2	54	8.8	54	8.8	0.203	19.1	LOS B	1.2	9.3	0.72	0.71	20.8
Approach		642	6.7	642	6.7	0.587	30.8	LOS C	13.7	101.3	0.87	0.75	11.0
All Vehicles		2880	9.1	2880	9.1	0.844	26.9	LOS B	17.6	142.0	0.80	0.72	23.4

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 3.4 %

MOVEMENT SUMMARY

Site: 1 [2036_AM_Base_Railway Pde-Ormonde Pde-West Street] — **Network: N101 [2036 AM Peak]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Cycle Time - User-Given)
Common Control Group: CCG1 [Treacy_Railway]

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: West Street (S)													
1	L2	107	3.2	107	3.2	1.102	172.4	LOS F	43.0	313.0	1.00	1.46	9.1
3a	R1	275	5.0	275	5.0	1.102	171.0	LOS F	43.0	313.0	1.00	1.46	10.4
3	R2	317	5.4	317	5.4	0.873	66.0	LOS E	20.6	150.9	1.00	0.96	19.2
Approach		699	4.9	699	4.9	1.102	123.6	LOS F	43.0	313.0	1.00	1.23	12.5
East: Railway Parade (E)													
4	L2	114	9.5	112	9.6	0.364	4.3	LOS A	1.0	7.2	0.05	0.22	52.9
5	T1	916	8.8	904	8.8	0.364	4.7	LOS A	4.3	32.2	0.19	0.21	21.6
Approach		1029	8.9	1016[N1]	8.9	0.364	4.6	LOS A	4.3	32.2	0.17	0.21	33.3
NorthWest: Ormonde Parade (NW)													
27	L2	116	0.0	116	0.0	0.205	29.6	LOS C	4.4	30.8	0.73	0.74	16.3
27a	L1	76	0.0	76	0.0	0.302	53.9	LOS D	4.1	28.7	0.94	0.75	5.2
29a	R1	58	14.6	58	14.6	0.254	53.5	LOS D	3.1	24.5	0.94	0.74	23.0
29b	R3	81	13.0	81	13.0	0.402	57.3	LOS E	4.5	35.0	0.96	0.77	4.8
Approach		331	5.7	331	5.7	0.402	46.1	LOS D	4.5	35.0	0.87	0.75	12.6
West: Railway Parade (W)													
10a	L1	815	0.0	815	0.0	1.108	156.6	LOS F	30.0	212.2	1.00	1.43	5.0
11	T1	935	8.7	935	8.7	1.108	163.4	LOS F	30.0	212.2	1.00	1.68	3.0
Approach		1749	4.6	1749	4.6	1.108	160.2	LOS F	30.0	212.2	1.00	1.56	3.9
All Vehicles		3808	5.9	3795[N1]	5.9	1.108	101.9	LOS F	43.0	313.0	0.77	1.07	7.2

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 35.6 %

MOVEMENT SUMMARY

Site: 1 [2036_PM_Base_Railway Pde-Ormonde Pde-West Street] — **Network: N101 [2036 PM Peak]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Cycle Time - User-Given)
Common Control Group: CCG1 [Treacy_railway]

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: West Street (S)													
1	L2	24	6.5	24	6.5	0.577	59.8	LOS E	7.8	58.1	0.99	0.80	20.9
3a	R1	114	7.4	114	7.4	0.577	58.4	LOS E	7.8	58.1	0.99	0.80	23.0
3	R2	131	7.4	131	7.4	1.140	210.9	LOS F	16.4	122.3	1.00	1.44	7.5
Approach		268	7.3	268	7.3	1.140	132.7	LOS F	16.4	122.3	0.99	1.11	11.9
East: Railway Parade (E)													
4	L2	91	5.4	91	5.4	0.640	25.8	LOS B	6.3	49.0	0.86	0.79	34.0
5	T1	1240	13.8	1240	13.8	0.640	19.7	LOS B	6.3	49.0	0.77	0.70	7.3
Approach		1331	13.2	1331	13.2	0.640	20.1	LOS B	6.3	49.0	0.77	0.71	11.5
NorthWest: Ormonde Parade (NW)													
27	L2	149	0.0	149	0.0	0.173	18.4	LOS B	4.2	29.1	0.56	0.70	21.9
27a	L1	93	0.0	93	0.0	0.458	55.8	LOS D	5.2	36.3	0.97	0.78	5.1
29a	R1	109	15.0	109	15.0	0.482	55.5	LOS D	6.1	48.4	0.97	0.78	22.5
29b	R3	123	5.0	123	5.0	1.162	227.6	LOS F	16.3	119.0	1.00	1.57	1.3
Approach		475	4.8	475	4.8	1.162	88.6	LOS F	16.3	119.0	0.85	0.96	8.0
West: Railway Parade (W)													
10a	L1	609	10.0	578	9.7	0.995	90.2	LOS F	28.1	212.2	1.00	1.13	8.3
11	T1	394	7.3	374	7.1	0.995	101.2	LOS F	28.1	212.2	1.00	1.26	4.7
Approach		1003	8.9	951[N1]	8.7	0.995	94.5	LOS F	28.1	212.2	1.00	1.18	6.8
All Vehicles		3077	10.0	3025[N1]	10.2	1.162	64.2	LOS E	28.1	212.2	0.88	0.93	8.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 295.7 %

MOVEMENT SUMMARY

Site: TCS 850 [2036_AM_Base_Railway Pde-Treacy Street] — **Network: N101 [2036 AM Peak]**

Railway Pde - Treacy St
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Cycle Time - User-Given)
Common Control Group: CCG1 [Treacy_Railway]

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Railway Parade (E)													
5	T1	778	6.6	778	6.6	0.384	28.0	LOS B	11.8	87.0	0.76	0.65	31.4
Approach		778	6.6	778	6.6	0.384	28.0	LOS B	11.8	87.0	0.76	0.65	31.4
NorthEast: Treacy Street													
26a	R1	253	6.2	253	6.2	1.156	214.3	LOS F	15.8	116.2	1.00	1.41	1.5
Approach		253	6.2	253	6.2	1.156	214.3	LOS F	15.8	116.2	1.00	1.41	1.5
West: Railway Parade (W)													
11	T1	935	9.7	859	9.6	0.372	0.9	LOS A	2.2	16.5	0.09	0.08	58.3
Approach		935	9.7	859[N1]	9.6	0.372	0.9	LOS A	2.2	16.5	0.09	0.08	58.3
All Vehicles		1965	8.0	1890[N1]	8.4	1.156	40.6	LOS C	15.8	116.2	0.49	0.49	24.1

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 35.6 %
Number of Iterations: 10 (maximum specified: 10)

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: TCS 850 [2036_PM_Base_Railway Pde-Treacy Street] — **Network: N101 [2036 PM Peak]**

Railway Pde - Treacy St
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Cycle Time - User-Given)
Common Control Group: CCG1 [Treacy_railway]

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Railway Parade (E)													
5	T1	863	14.0	863	14.0	1.190	245.5	LOS F	46.0	360.2	1.00	1.81	6.5
Approach		863	14.0	863	14.0	1.190	245.5	LOS F	46.0	360.2	1.00	1.81	6.5
NorthEast: Treacy Street													
26a	R1	479	10.8	479	10.8	1.154	220.7	LOS F	31.7	242.4	1.00	1.55	1.4
Approach		479	10.8	479	10.8	1.154	220.7	LOS F	31.7	242.4	1.00	1.55	1.4
West: Railway Parade (W)													
11	T1	394	9.7	384	9.5	0.461	39.7	LOS C	6.5	49.0	0.94	0.79	27.0
Approach		394	9.7	384[N1]	9.5	0.461	39.7	LOS C	6.5	49.0	0.94	0.79	27.0
All Vehicles		1736	12.1	1726[N1]	12.2	1.190	192.9	LOS F	46.0	360.2	0.99	1.51	6.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 295.7 %
Number of Iterations: 10 (maximum specified: 10)

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 1 [2036_Base_AM_Railway Parade - The Avenue]

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

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Railway Parade (E)											
5	T1	156	10.0	0.222	24.2	LOS B	5.0	37.8	0.58	0.48	42.9
6	R2	107	1.4	0.401	45.7	LOS D	5.4	38.0	0.91	0.79	25.1
Approach		263	6.5	0.401	33.0	LOS C	5.4	38.0	0.72	0.61	35.7
North: The Avenue (N)											
7	L2	75	6.6	0.524	24.5	LOS B	17.7	136.6	0.71	0.79	33.6
9	R2	392	13.1	0.524	24.5	LOS B	17.7	136.6	0.71	0.79	33.2
Approach		466	12.0	0.524	24.5	LOS B	17.7	136.6	0.71	0.79	33.3
West: Railway Parade (W)											
10	L2	48	10.2	0.521	44.1	LOS D	12.2	92.0	0.82	0.72	19.5
11	T1	492	9.1	0.521	38.7	LOS C	12.3	93.2	0.82	0.71	36.5
Approach		540	9.2	0.521	39.2	LOS C	12.3	93.2	0.82	0.71	34.8
All Vehicles		1269	9.7	0.524	32.5	LOS C	17.7	136.6	0.76	0.72	34.6

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

MOVEMENT SUMMARY

Site: 1 [2036_Base_PM_Railway Parade - The Avenue]

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

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Railway Parade (E)											
5	T1	492	14.5	0.600	32.5	LOS C	16.7	131.6	0.79	0.72	38.8
6	R2	187	7.7	0.600	49.8	LOS D	13.2	100.5	0.91	0.96	24.4
Approach		679	12.6	0.600	37.3	LOS C	16.7	131.6	0.82	0.79	35.1
North: The Avenue (N)											
7	L2	247	6.9	0.719	26.6	LOS B	29.4	219.7	0.81	0.84	32.5
9	R2	429	8.2	0.719	26.6	LOS B	29.4	219.7	0.81	0.84	32.3
Approach		677	7.7	0.719	26.6	LOS B	29.4	219.7	0.81	0.84	32.4
West: Railway Parade (W)											
10	L2	18	5.9	0.725	63.5	LOS E	9.0	68.2	0.99	0.85	16.6
11	T1	291	10.5	0.725	58.1	LOS E	9.1	69.4	1.00	0.85	30.5
Approach		308	10.3	0.725	58.4	LOS E	9.1	69.4	1.00	0.85	29.7
All Vehicles		1664	10.2	0.725	36.8	LOS C	29.4	219.7	0.85	0.82	32.9

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

2036 Network Scenarios

MOVEMENT SUMMARY

Site: TCS 1662 [2036_AM_Base_Queens Rd_Park Rd Option 1 bus] — **Network: N101 [2036_AM_Scenario A]**

New Site
Signals - Actuated Coordinated Cycle Time = 110 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Park Rd													
1	L2	228	2.0	228	2.0	0.355	17.2	LOS B	6.3	45.0	0.65	0.73	22.4
2	T1	68	2.0	68	2.0	0.352	37.7	LOS C	7.3	52.1	0.84	0.74	19.3
3	R2	234	6.0	234	6.0	0.352	42.4	LOS C	7.3	52.1	0.84	0.76	11.9
Approach		531	3.8	531	3.8	0.355	31.0	LOS C	7.3	52.1	0.76	0.74	16.3
East: Quees Rd													
5	T1	836	3.2	836	3.2	0.452	11.8	LOS A	10.9	77.7	0.39	0.35	20.8
6	R2	34	2.0	34	2.0	0.452	28.8	LOS C	10.9	77.7	0.63	0.55	22.5
Approach		869	3.2	869	3.2	0.452	12.5	LOS A	10.9	77.7	0.40	0.35	20.9
West: Queens Rd													
10	L2	12	2.0	10	2.0	0.966	46.4	LOS D	41.5	295.5	1.00	0.99	20.8
11	T1	1433	2.0	1265	2.0	0.966	36.1	LOS C	41.5	295.5	1.00	0.98	15.8
Approach		1444	2.0	1275[N1]	2.0	0.966	36.2	LOS C	41.5	295.5	1.00	0.98	15.9
All Vehicles		2844	2.7	2675[N1]	2.9	0.966	27.5	LOS B	41.5	295.5	0.76	0.73	16.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 10.1 %
Number of Iterations: 10 (maximum specified: 10)

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: TCS 1662 [2036_PM_Base_Queens Rd_Park Rd Option 1 bus] — **Network: N101 [2036_PM_Scenario A]**

New Site
Signals - Actuated Coordinated Cycle Time = 130 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Park Rd													
1	L2	284	2.0	284	2.0	0.436	13.6	LOS A	8.1	58.0	0.58	0.72	25.3
2	T1	161	2.0	161	2.0	0.818	55.7	LOS D	19.2	136.8	0.99	0.85	15.2
3	R2	305	5.4	305	5.4	0.818	61.4	LOS E	19.2	136.8	0.98	0.83	8.9
Approach		751	3.4	751	3.4	0.818	42.1	LOS C	19.2	136.8	0.83	0.79	13.8
East: Quees Rd													
5	T1	1108	3.0	1108	3.0	0.500	7.7	LOS A	12.8	90.9	0.30	0.27	26.8
6	R2	35	2.0	35	2.0	0.500	17.4	LOS B	12.8	90.9	0.41	0.38	30.5
Approach		1143	3.0	1143	3.0	0.500	8.0	LOS A	12.8	90.9	0.30	0.28	27.0
West: Queens Rd													
10	L2	5	2.0	5	2.0	0.786	48.8	LOS D	28.0	199.5	0.92	0.82	20.1
11	T1	751	2.0	751	2.0	0.786	41.7	LOS C	28.0	199.5	0.90	0.80	14.2
Approach		756	2.0	756	2.0	0.786	41.7	LOS C	28.0	199.5	0.90	0.80	14.3
All Vehicles		2649	2.8	2649	2.8	0.818	27.3	LOS B	28.0	199.5	0.62	0.57	16.2

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 19.6 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: TCS 1662 [2036_AM_Base_Queens Rd_Park Rd Option 2 bus] — **Network: N101 [2036_AM_Scenario B]**

New Site
Signals - Actuated Coordinated Cycle Time = 130 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Park Rd													
1	L2	228	2.0	228	2.0	0.765	63.4	LOS E	14.1	100.5	0.98	0.83	8.7
2	T1	68	2.0	68	2.0	0.593	55.8	LOS D	11.5	81.7	0.95	0.80	15.1
3	R2	234	6.0	234	6.0	0.593	61.0	LOS E	11.5	81.7	0.94	0.80	8.9
Approach		531	3.8	531	3.8	0.765	61.4	LOS E	14.1	100.5	0.96	0.81	9.7
East: Quees Rd													
5	T1	836	3.2	836	3.2	0.451	12.3	LOS A	12.5	88.7	0.31	0.27	20.3
6	R2	34	2.0	34	2.0	0.451	39.9	LOS C	12.5	88.7	0.70	0.60	17.9
Approach		869	3.2	869	3.2	0.451	13.4	LOS A	12.5	88.7	0.32	0.28	19.9
West: Queens Rd													
10	L2	12	2.0	11	2.0	0.989	66.2	LOS E	45.9	326.4	1.00	1.08	16.0
11	T1	1433	2.0	1323	2.0	0.989	57.7	LOS E	45.9	326.4	1.00	1.08	11.0
Approach		1444	2.0	1333 N1	2.0	0.989	57.7	LOS E	45.9	326.4	1.00	1.08	11.1
All Vehicles		2844	2.7	2733 N1	2.8	0.989	44.3	LOS D	45.9	326.4	0.78	0.78	11.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 22.7 %
Number of Iterations: 10 (maximum specified: 10)

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: TCS 2351 [2036_PM_Dora St Queens Rd_Option2] — **Network: N101 [2036_PM_Scenario B]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dora St													
1	L2	417	18.1	417	18.1	0.570	30.2	LOS C	18.5	149.4	0.80	0.80	15.6
2	T1	158	7.4	158	7.4	0.702	58.7	LOS E	11.6	86.6	1.00	0.86	21.4
3	R2	26	13.6	26	13.6	0.702	63.4	LOS E	11.6	86.6	1.00	0.86	6.2
Approach		601	15.1	601	15.1	0.702	39.1	LOS C	18.5	149.4	0.86	0.82	17.7
East: Quees Rd													
4	L2	106	28.6	106	28.6	0.170	22.7	LOS B	2.8	24.4	0.44	0.68	25.3
5	T1	1051	6.7	1051	6.7	0.714	31.3	LOS C	24.9	184.4	0.81	0.72	21.7
6	R2	229	5.1	229	5.1	0.310	12.1	LOS A	3.0	22.2	0.38	0.68	41.7
Approach		1386	8.1	1386	8.1	0.714	27.5	LOS B	24.9	184.4	0.71	0.71	26.0
North: Dora St													
7	L2	128	2.6	128	2.6	0.411	26.1	LOS B	4.7	33.4	0.62	0.70	29.4
8	T1	86	10.3	86	10.3	0.935	85.1	LOS F	9.4	71.3	1.00	1.10	16.9
9	R2	36	7.5	36	7.5	0.935	89.7	LOS F	9.4	71.3	1.00	1.10	15.6
Approach		251	5.9	251	5.9	0.935	55.5	LOS D	9.4	71.3	0.80	0.90	20.8
West: Queens Rd													
10	L2	17	2.6	17	2.6	0.456	35.6	LOS C	15.7	115.6	0.78	0.69	29.3
11	T1	572	6.6	572	6.6	0.456	29.8	LOS C	15.7	115.6	0.77	0.66	9.7
12	R2	54	8.8	54	8.8	0.093	16.0	LOS B	1.0	7.8	0.59	0.70	22.9
Approach		642	6.7	642	6.7	0.456	28.8	LOS C	15.7	115.6	0.75	0.67	11.7
All Vehicles		2880	9.1	2880	9.1	0.935	32.6	LOS C	24.9	184.4	0.76	0.74	21.0

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 15.4 %

MOVEMENT SUMMARY

Site: TCS 1662 [2036_AM_Base_Queens Rd_Park Rd Option 1 bus] — **Network: N101 [2036_AM_Scenario C]**

New Site
Signals - Actuated Coordinated Cycle Time = 110 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Park Rd													
1	L2	228	2.0	228	2.0	0.368	19.0	LOS B	6.8	48.4	0.68	0.74	21.2
2	T1	68	2.0	68	2.0	0.354	37.7	LOS C	7.4	52.5	0.84	0.74	19.3
3	R2	234	6.0	234	6.0	0.354	42.4	LOS C	7.4	52.5	0.84	0.76	11.9
Approach		531	3.8	531	3.8	0.368	31.8	LOS C	7.4	52.5	0.77	0.75	16.1
East: Quees Rd													
5	T1	836	3.2	836	3.2	0.460	12.5	LOS A	11.2	79.8	0.40	0.35	20.0
6	R2	34	2.0	34	2.0	0.460	31.5	LOS C	11.2	79.8	0.66	0.58	21.2
Approach		869	3.2	869	3.2	0.460	13.3	LOS A	11.2	79.8	0.41	0.36	20.1
West: Queens Rd													
10	L2	12	2.0	11	2.0	0.979	57.4	LOS E	45.9	326.4	1.00	1.05	17.8
11	T1	1433	2.0	1303	2.0	0.979	48.7	LOS D	45.9	326.4	1.00	1.06	12.6
Approach		1444	2.0	1314 N1	2.0	0.979	48.8	LOS D	45.9	326.4	1.00	1.06	12.7
All Vehicles		2844	2.7	2714 N1	2.8	0.979	34.1	LOS C	45.9	326.4	0.77	0.77	14.4

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 15.0 %
Number of Iterations: 10 (maximum specified: 10)

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: TCS 1662 [2036_PM_Base_Queens Rd_Park Rd Option 1 bus] — **Network: N101 [2036_PM_Scenario C]**

New Site
Signals - Actuated Coordinated Cycle Time = 130 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Park Rd													
1	L2	284	2.0	284	2.0	0.433	12.7	LOS A	7.7	55.0	0.55	0.71	26.2
2	T1	161	2.0	161	2.0	0.818	55.7	LOS D	19.2	136.8	0.99	0.85	15.2
3	R2	305	5.4	305	5.4	0.818	61.4	LOS E	19.2	136.8	0.98	0.83	8.9
Approach		751	3.4	751	3.4	0.818	41.8	LOS C	19.2	136.8	0.82	0.79	13.9
East: Quees Rd													
5	T1	1108	3.0	1108	3.0	0.500	7.7	LOS A	12.8	91.0	0.30	0.27	26.8
6	R2	35	2.0	35	2.0	0.500	17.4	LOS B	12.8	91.0	0.41	0.38	30.5
Approach		1143	3.0	1143	3.0	0.500	8.0	LOS A	12.8	91.0	0.30	0.28	27.0
West: Queens Rd													
10	L2	5	2.0	5	2.0	0.804	49.9	LOS D	27.9	198.9	0.92	0.81	19.8
11	T1	751	2.0	751	2.0	0.804	43.1	LOS D	27.9	198.9	0.91	0.80	13.9
Approach		756	2.0	756	2.0	0.804	43.1	LOS D	27.9	198.9	0.91	0.80	13.9
All Vehicles		2649	2.8	2649	2.8	0.818	27.6	LOS B	27.9	198.9	0.62	0.57	16.1

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 15.4 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2347 [2036_Base_AM_Queens Road - The Avenue] — **Network: N101 [2036_AM_Scenario A]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Queens Road (NE)													
24	L2	293	4.3	293	4.3	0.678	33.5	LOS C	22.2	166.1	0.87	0.82	38.9
25	T1	741	10.0	741	10.0	0.678	27.9	LOS B	22.7	171.0	0.87	0.79	31.1
Approach		1034	8.4	1034	8.4	0.678	29.5	LOS C	22.7	171.0	0.87	0.80	34.1
North: The Avenue (NW)													
27	L2	174	4.3	174	4.3	0.689	53.8	LOS D	9.0	65.6	0.98	0.84	31.4
28	T1	365	3.1	365	3.1	0.690	48.0	LOS D	9.6	69.0	0.98	0.83	33.6
29	R2	132	4.3	132	4.3	0.446	51.3	LOS D	6.5	47.4	0.95	0.79	22.6
Approach		671	3.7	671	3.7	0.690	50.1	LOS D	9.6	69.0	0.97	0.82	31.3
West: Queens Road (SW)													
31	T1	1272	7.3	1141	7.8	0.423	3.0	LOS A	6.0	44.9	0.20	0.18	55.4
32	R2	382	6.7	343	7.2	0.594	36.4	LOS C	14.6	108.2	0.92	0.97	28.8
Approach		1654	7.1	1483 N1	7.7	0.594	10.7	LOS A	14.6	108.2	0.37	0.36	45.7
All Vehicles		3358	6.8	3188 N1	7.2	0.690	25.1	LOS B	22.7	171.0	0.66	0.60	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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 10.1 %
Number of Iterations: 10 (maximum specified: 10)

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 2347 [2036_Base_PM_Queens Road - The Avenue] — **Network: N101 [2036_PM_Scenario A]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Queens Road (NE)													
24	L2	196	6.1	196	6.1	0.782	38.9	LOS C	33.1	252.6	0.92	0.85	37.3
25	T1	1003	11.2	1003	11.2	0.782	33.6	LOS C	33.1	252.6	0.92	0.84	28.4
Approach		1199	10.3	1199	10.3	0.782	34.5	LOS C	33.1	252.6	0.92	0.84	30.5
North: The Avenue (NW)													
27	L2	56	4.4	56	4.4	0.268	63.5	LOS E	3.3	24.0	0.95	0.75	28.9
28	T1	237	5.9	237	5.9	0.547	60.2	LOS E	7.3	53.7	0.99	0.79	30.2
29	R2	137	5.7	137	5.7	0.797	72.0	LOS F	9.1	67.2	1.00	0.89	18.0
Approach		429	5.7	429	5.7	0.797	64.4	LOS E	9.1	67.2	0.99	0.82	26.6
West: Queens Road (SW)													
31	T1	615	10.7	615	10.7	0.213	3.5	LOS A	4.8	36.1	0.27	0.23	54.7
32	R2	427	4.8	427	4.8	0.663	53.0	LOS D	20.2	146.9	1.00	1.04	23.6
Approach		1042	8.3	1042	8.3	0.663	23.8	LOS B	20.2	146.9	0.57	0.57	35.6
All Vehicles		2671	8.8	2671	8.8	0.797	35.1	LOS C	33.1	252.6	0.79	0.73	31.1

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 19.6 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2347 [2036_Base_AM_Queens Road - The Avenue] — **Network: N101 [2036_AM_Scenario B]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Queens Road (NE)													
24	L2	293	4.3	293	4.3	0.689	38.8	LOS C	26.6	198.9	0.88	0.83	36.8
25	T1	741	10.0	741	10.0	0.689	33.2	LOS C	26.7	201.0	0.88	0.80	28.5
Approach		1034	8.4	1034	8.4	0.689	34.8	LOS C	26.7	201.0	0.88	0.81	31.6
North: The Avenue (NW)													
27	L2	174	4.3	174	4.3	0.702	60.3	LOS E	10.4	75.6	0.96	0.83	29.7
28	T1	365	3.1	365	3.1	0.696	54.2	LOS D	11.1	80.1	0.96	0.82	31.8
29	R2	132	4.3	132	4.3	0.434	57.5	LOS E	7.5	54.7	0.94	0.79	21.0
Approach		671	3.7	671	3.7	0.702	56.4	LOS D	11.1	80.1	0.96	0.82	29.5
West: Queens Road (SW)													
31	T1	1272	7.3	1204	7.5	0.443	5.2	LOS A	10.2	75.7	0.28	0.26	52.5
32	R2	382	6.7	362	6.9	0.611	46.7	LOS D	18.9	140.4	0.98	1.01	25.4
Approach		1654	7.1	1565[N1]	7.4	0.611	14.8	LOS B	18.9	140.4	0.45	0.43	42.2
All Vehicles		3358	6.8	3270[N1]	7.0	0.702	29.7	LOS C	26.7	201.0	0.69	0.63	34.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 22.7 %
Number of Iterations: 10 (maximum specified: 10)

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 2347 [2036_Base_PM_Queens Road - The Avenue] — **Network: N101 [2036_PM_Scenario B]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Queens Road (NE)													
24	L2	196	6.1	196	6.1	0.769	39.2	LOS C	31.8	242.9	0.92	0.84	37.1
25	T1	1003	11.2	1003	11.2	0.769	33.6	LOS C	32.4	246.3	0.92	0.83	28.4
Approach		1199	10.3	1199	10.3	0.769	34.5	LOS C	32.4	246.3	0.92	0.83	30.4
North: The Avenue (NW)													
27	L2	56	4.4	56	4.4	0.268	63.5	LOS E	3.3	24.0	0.95	0.75	28.9
28	T1	237	5.9	237	5.9	0.547	60.2	LOS E	7.3	53.7	0.99	0.79	30.2
29	R2	137	5.7	137	5.7	0.746	69.4	LOS E	8.9	65.1	1.00	0.86	18.5
Approach		429	5.7	429	5.7	0.746	63.5	LOS E	8.9	65.1	0.99	0.80	26.8
West: Queens Road (SW)													
31	T1	615	10.7	615	10.7	0.213	3.5	LOS A	4.8	36.1	0.27	0.23	54.7
32	R2	427	4.8	427	4.8	0.648	51.9	LOS D	20.2	146.9	1.00	1.04	23.9
Approach		1042	8.3	1042	8.3	0.648	23.4	LOS B	20.2	146.9	0.57	0.56	35.9
All Vehicles		2671	8.8	2671	8.8	0.769	34.8	LOS C	32.4	246.3	0.79	0.72	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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 15.4 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 2347 [2036_Base_AM_Queens Road - The Avenue] — **Network: N101 [2036_AM_Scenario C]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Queens Road (NE)													
24	L2	293	4.3	293	4.3	0.693	34.4	LOS C	22.6	168.8	0.89	0.83	38.5
25	T1	741	10.0	741	10.0	0.693	28.8	LOS C	23.1	173.8	0.89	0.80	30.6
Approach		1034	8.4	1034	8.4	0.693	30.4	LOS C	23.1	173.8	0.89	0.81	33.6
North: The Avenue (NW)													
27	L2	174	4.3	174	4.3	0.689	53.8	LOS D	9.0	65.6	0.98	0.84	31.4
28	T1	365	3.1	365	3.1	0.690	48.0	LOS D	9.6	69.0	0.98	0.83	33.6
29	R2	132	4.3	132	4.3	0.446	51.3	LOS D	6.5	47.4	0.95	0.79	22.6
Approach		671	3.7	671	3.7	0.690	50.1	LOS D	9.6	69.0	0.97	0.82	31.3
West: Queens Road (SW)													
31	T1	1272	7.3	1180	7.6	0.437	2.9	LOS A	6.1	45.4	0.19	0.18	55.5
32	R2	382	6.7	354	7.0	0.602	36.6	LOS C	14.8	109.6	0.91	0.97	28.8
Approach		1654	7.1	1534 N1	7.5	0.602	10.7	LOS A	14.8	109.6	0.36	0.36	45.8
All Vehicles		3358	6.8	3238 N1	7.1	0.693	25.1	LOS B	23.1	173.8	0.65	0.60	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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 15.0 %
Number of Iterations: 10 (maximum specified: 10)

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

MOVEMENT SUMMARY

Site: 2347 [2036_Base_PM_Queens Road - The Avenue] — **Network: N101 [2036_PM_Scenario C]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Queens Road (NE)													
24	L2	196	6.1	196	6.1	0.769	39.2	LOS C	31.8	242.9	0.92	0.84	37.1
25	T1	1003	11.2	1003	11.2	0.769	33.6	LOS C	32.4	246.3	0.92	0.83	28.4
Approach		1199	10.3	1199	10.3	0.769	34.5	LOS C	32.4	246.3	0.92	0.83	30.4
North: The Avenue (NW)													
27	L2	56	4.4	56	4.4	0.268	63.5	LOS E	3.3	24.0	0.95	0.75	28.9
28	T1	237	5.9	237	5.9	0.547	60.2	LOS E	7.3	53.7	0.99	0.79	30.2
29	R2	137	5.7	137	5.7	0.746	69.4	LOS E	8.9	65.1	1.00	0.86	18.5
Approach		429	5.7	429	5.7	0.746	63.5	LOS E	8.9	65.1	0.99	0.80	26.8
West: Queens Road (SW)													
31	T1	615	10.7	615	10.7	0.213	3.5	LOS A	4.8	36.1	0.27	0.23	54.7
32	R2	427	4.8	427	4.8	0.648	53.0	LOS D	20.2	146.9	1.00	1.04	23.7
Approach		1042	8.3	1042	8.3	0.648	23.8	LOS B	20.2	146.9	0.57	0.56	35.6
All Vehicles		2671	8.8	2671	8.8	0.769	35.0	LOS C	32.4	246.3	0.79	0.72	31.2

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 15.4 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: TCS 2351 [2036_AM_Dora St Queens Rd_Option1] — **Network: N101 [2036_AM_Scenario A]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dora St													
1	L2	293	7.4	293	7.4	0.443	32.5	LOS C	11.8	87.6	0.80	0.79	14.3
2	T1	78	0.0	78	0.0	0.151	33.3	LOS C	3.2	22.4	0.80	0.63	28.6
3	R2	18	12.5	18	12.5	0.328	67.3	LOS E	1.0	8.1	1.00	0.69	5.4
Approach		388	6.1	388	6.1	0.443	34.3	LOS C	11.8	87.6	0.81	0.75	17.8
East: Quees Rd													
4	L2	181	19.8	181	19.8	0.237	28.3	LOS B	7.1	58.1	0.78	0.78	22.6
5	T1	557	7.8	557	7.8	0.329	16.3	LOS B	7.1	52.9	0.51	0.44	31.3
6	R2	183	4.5	183	4.5	0.693	43.1	LOS D	6.1	44.1	1.00	0.85	27.8
Approach		921	9.5	921	9.5	0.693	24.0	LOS B	7.1	58.1	0.66	0.59	28.2
North: Dora St													
7	L2	197	3.0	197	3.0	1.246	287.1	LOS F	56.0	402.0	1.00	2.10	5.6
8	T1	181	3.1	181	3.1	1.246	282.6	LOS F	56.0	402.0	1.00	2.10	6.5
9	R2	37	15.4	37	15.4	0.302	58.1	LOS E	2.0	15.6	0.97	0.74	20.9
Approach		415	4.1	415	4.1	1.246	264.8	LOS F	56.0	402.0	1.00	1.98	6.5
West: Queens Rd													
10	L2	52	1.6	52	1.6	1.222	266.3	LOS F	92.9	677.9	1.00	2.24	6.9
11	T1	1151	5.3	1151	5.3	1.222	261.8	LOS F	92.9	677.9	1.00	2.21	1.3
12	R2	178	2.7	178	2.7	0.371	16.1	LOS B	4.2	29.8	0.62	0.72	23.7
Approach		1380	4.8	1380	4.8	1.222	230.3	LOS F	92.9	677.9	0.95	2.02	1.9
All Vehicles		3104	6.3	3104	6.3	1.246	149.1	LOS F	92.9	677.9	0.85	1.43	5.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 10.1 %

MOVEMENT SUMMARY

Site: TCS 2351 [2036_PM_Dora St Queens Rd_Option1] — **Network: N101 [2036_PM_Scenario A]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dora St													
1	L2	417	18.1	417	18.1	0.596	35.7	LOS C	20.3	163.9	0.83	0.82	13.4
2	T1	158	7.4	158	7.4	0.379	46.3	LOS D	8.5	63.5	0.90	0.73	24.5
3	R2	26	13.6	26	13.6	0.102	53.5	LOS D	1.4	11.1	0.87	0.71	6.7
Approach		601	15.1	601	15.1	0.596	39.3	LOS C	20.3	163.9	0.85	0.79	17.4
East: Quees Rd													
4	L2	106	28.6	106	28.6	0.156	15.6	LOS B	1.7	15.2	0.28	0.64	30.1
5	T1	1051	6.7	1051	6.7	0.651	26.0	LOS B	22.1	163.7	0.72	0.64	24.4
6	R2	229	5.1	229	5.1	0.357	11.5	LOS A	2.8	20.7	0.33	0.67	42.1
Approach		1386	8.1	1386	8.1	0.651	22.8	LOS B	22.1	163.7	0.62	0.65	28.6
North: Dora St													
7	L2	128	2.6	128	2.6	0.624	53.7	LOS D	12.3	90.3	0.95	0.81	20.9
8	T1	86	10.3	86	10.3	0.624	49.1	LOS D	12.3	90.3	0.95	0.81	23.0
9	R2	36	7.5	36	7.5	0.603	79.0	LOS F	2.5	18.4	1.00	0.75	17.4
Approach		251	5.9	251	5.9	0.624	55.7	LOS D	12.3	90.3	0.95	0.80	21.0
West: Queens Rd													
10	L2	17	2.6	17	2.6	0.419	31.8	LOS C	14.5	106.8	0.74	0.65	30.9
11	T1	572	6.6	572	6.6	0.419	26.1	LOS B	14.5	106.8	0.72	0.62	10.8
12	R2	54	8.8	54	8.8	0.115	16.8	LOS B	1.1	8.4	0.61	0.70	22.8
Approach		642	6.7	642	6.7	0.419	25.4	LOS B	14.5	106.8	0.71	0.63	12.9
All Vehicles		2880	9.1	2880	9.1	0.651	29.7	LOS C	22.1	163.9	0.72	0.69	22.2

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 19.6 %

MOVEMENT SUMMARY

Site: TCS 2351 [2036_AM_Dora St Queens Rd_Option2] — **Network: N101 [2036_AM_Scenario B]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dora St													
1	L2	293	7.4	293	7.4	0.294	12.8	LOS A	6.8	50.6	0.48	0.67	25.2
2	T1	78	0.0	78	0.0	0.663	66.1	LOS E	6.3	44.7	1.00	0.83	20.0
3	R2	18	12.5	18	12.5	0.663	70.8	LOS F	6.3	44.7	1.00	0.83	5.6
Approach		388	6.1	388	6.1	0.663	26.1	LOS B	6.8	50.6	0.61	0.71	21.3
East: Quees Rd													
4	L2	181	19.8	181	19.8	0.530	55.9	LOS D	10.1	82.7	0.92	0.81	14.5
5	T1	557	7.8	557	7.8	0.734	53.4	LOS D	16.5	122.9	0.96	0.84	15.0
6	R2	183	4.5	183	4.5	0.730	45.6	LOS D	8.0	58.3	1.00	0.83	27.0
Approach		921	9.5	921	9.5	0.734	52.3	LOS D	16.5	122.9	0.96	0.83	17.9
North: Dora St													
7	L2	197	3.0	197	3.0	0.841	61.1	LOS E	13.2	94.6	0.92	0.96	18.9
8	T1	181	3.1	181	3.1	1.131	200.1	LOS F	27.8	203.2	1.00	1.61	8.8
9	R2	37	15.4	37	15.4	1.131	204.7	LOS F	27.8	203.2	1.00	1.61	8.3
Approach		415	4.1	415	4.1	1.131	134.6	LOS F	27.8	203.2	0.96	1.30	11.4
West: Queens Rd													
10	L2	52	1.6	52	1.6	1.111	182.9	LOS F	76.4	557.3	1.00	1.72	9.6
11	T1	1151	5.3	1151	5.3	1.111	176.7	LOS F	81.3	594.7	1.00	1.73	1.9
12	R2	178	2.7	178	2.7	0.239	15.5	LOS B	4.0	28.7	0.59	0.72	23.6
Approach		1380	4.8	1380	4.8	1.111	156.2	LOS F	81.3	594.7	0.95	1.60	2.7
All Vehicles		3104	6.3	3104	6.3	1.131	106.2	LOS F	81.3	594.7	0.91	1.22	7.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 22.7 %

MOVEMENT SUMMARY

Site: TCS 2351 [2036_PM_Dora St Queens Rd_Option2] — **Network: N101 [2036_PM_Scenario B]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dora St													
1	L2	417	18.1	417	18.1	0.570	30.2	LOS C	18.5	149.4	0.80	0.80	15.6
2	T1	158	7.4	158	7.4	0.702	58.7	LOS E	11.6	86.6	1.00	0.86	21.4
3	R2	26	13.6	26	13.6	0.702	63.4	LOS E	11.6	86.6	1.00	0.86	6.2
Approach		601	15.1	601	15.1	0.702	39.1	LOS C	18.5	149.4	0.86	0.82	17.7
East: Quees Rd													
4	L2	106	28.6	106	28.6	0.170	22.7	LOS B	2.8	24.4	0.44	0.68	25.3
5	T1	1051	6.7	1051	6.7	0.714	31.3	LOS C	24.9	184.4	0.81	0.72	21.7
6	R2	229	5.1	229	5.1	0.310	12.1	LOS A	3.0	22.2	0.38	0.68	41.7
Approach		1386	8.1	1386	8.1	0.714	27.5	LOS B	24.9	184.4	0.71	0.71	26.0
North: Dora St													
7	L2	128	2.6	128	2.6	0.411	26.1	LOS B	4.7	33.4	0.62	0.70	29.4
8	T1	86	10.3	86	10.3	0.935	85.1	LOS F	9.4	71.3	1.00	1.10	16.9
9	R2	36	7.5	36	7.5	0.935	89.7	LOS F	9.4	71.3	1.00	1.10	15.6
Approach		251	5.9	251	5.9	0.935	55.5	LOS D	9.4	71.3	0.80	0.90	20.8
West: Queens Rd													
10	L2	17	2.6	17	2.6	0.456	35.6	LOS C	15.7	115.6	0.78	0.69	29.3
11	T1	572	6.6	572	6.6	0.456	29.8	LOS C	15.7	115.6	0.77	0.66	9.7
12	R2	54	8.8	54	8.8	0.093	16.0	LOS B	1.0	7.8	0.59	0.70	22.9
Approach		642	6.7	642	6.7	0.456	28.8	LOS C	15.7	115.6	0.75	0.67	11.7
All Vehicles		2880	9.1	2880	9.1	0.935	32.6	LOS C	24.9	184.4	0.76	0.74	21.0

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 15.4 %

MOVEMENT SUMMARY

Site: TCS 2351 [2036_AM_Dora St Queens Rd_Option2] — **Network: N101 [2036_AM_Scenario C]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dora St													
1	L2	293	7.4	293	7.4	0.301	12.4	LOS A	6.2	45.8	0.51	0.67	25.5
2	T1	78	0.0	78	0.0	0.581	53.8	LOS D	5.2	37.1	1.00	0.79	22.4
3	R2	18	12.5	18	12.5	0.581	58.5	LOS E	5.2	37.1	1.00	0.79	6.7
Approach		388	6.1	388	6.1	0.581	22.9	LOS B	6.2	45.8	0.63	0.70	22.9
East: Quees Rd													
4	L2	181	19.8	181	19.8	0.527	49.9	LOS D	9.3	76.3	0.99	0.82	15.7
5	T1	557	7.8	557	7.8	0.729	45.6	LOS D	14.0	104.9	0.96	0.84	16.8
6	R2	183	4.5	183	4.5	0.693	38.1	LOS C	6.7	49.0	1.00	0.81	29.4
Approach		921	9.5	921	9.5	0.729	44.9	LOS D	14.0	104.9	0.97	0.83	19.8
North: Dora St													
7	L2	197	3.0	197	3.0	0.837	54.8	LOS D	11.5	82.5	0.93	0.98	20.2
8	T1	181	3.1	181	3.1	1.119	179.4	LOS F	24.5	178.9	1.00	1.63	9.7
9	R2	37	15.4	37	15.4	1.119	184.0	LOS F	24.5	178.9	1.00	1.63	9.1
Approach		415	4.1	415	4.1	1.119	120.6	LOS F	24.5	178.9	0.97	1.32	12.4
West: Queens Rd													
10	L2	52	1.6	52	1.6	1.113	177.8	LOS F	68.5	500.1	1.00	1.83	9.8
11	T1	1151	5.3	1151	5.3	1.113	171.2	LOS F	75.8	554.4	1.00	1.84	1.9
12	R2	178	2.7	178	2.7	0.245	14.5	LOS A	3.5	24.7	0.61	0.73	24.5
Approach		1380	4.8	1380	4.8	1.113	151.2	LOS F	75.8	554.4	0.95	1.70	2.8
All Vehicles		3104	6.3	3104	6.3	1.119	99.5	LOS F	75.8	554.4	0.92	1.27	8.4

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 15.0 %

MOVEMENT SUMMARY

Site: TCS 2351 [2036_PM_Dora St Queens Rd_Option2] — **Network: N101 [2036_PM_Scenario C]**

New Site
Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Dora St													
1	L2	417	18.1	417	18.1	0.570	30.2	LOS C	18.5	149.4	0.80	0.80	15.6
2	T1	158	7.4	158	7.4	0.702	58.7	LOS E	11.6	86.6	1.00	0.86	21.4
3	R2	26	13.6	26	13.6	0.702	63.4	LOS E	11.6	86.6	1.00	0.86	6.2
Approach		601	15.1	601	15.1	0.702	39.1	LOS C	18.5	149.4	0.86	0.82	17.7
East: Quees Rd													
4	L2	106	28.6	106	28.6	0.170	17.8	LOS B	2.0	17.6	0.32	0.65	28.4
5	T1	1051	6.7	1051	6.7	0.714	31.3	LOS C	24.9	184.4	0.81	0.72	21.7
6	R2	229	5.1	229	5.1	0.310	12.5	LOS A	3.2	23.3	0.40	0.69	41.4
Approach		1386	8.1	1386	8.1	0.714	27.2	LOS B	24.9	184.4	0.71	0.71	26.1
North: Dora St													
7	L2	128	2.6	128	2.6	0.411	26.1	LOS B	4.7	33.4	0.62	0.70	29.4
8	T1	86	10.3	86	10.3	0.935	85.1	LOS F	9.4	71.3	1.00	1.10	16.9
9	R2	36	7.5	36	7.5	0.935	89.7	LOS F	9.4	71.3	1.00	1.10	15.6
Approach		251	5.9	251	5.9	0.935	55.5	LOS D	9.4	71.3	0.80	0.90	20.8
West: Queens Rd													
10	L2	17	2.6	17	2.6	0.456	35.6	LOS C	15.7	115.6	0.78	0.69	29.3
11	T1	572	6.6	572	6.6	0.456	29.8	LOS C	15.7	115.6	0.77	0.66	9.7
12	R2	54	8.8	54	8.8	0.093	16.0	LOS B	1.0	7.8	0.59	0.70	22.9
Approach		642	6.7	642	6.7	0.456	28.8	LOS C	15.7	115.6	0.75	0.67	11.7
All Vehicles		2880	9.1	2880	9.1	0.935	32.5	LOS C	24.9	184.4	0.76	0.74	21.1

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 15.4 %

MOVEMENT SUMMARY

Site: 1 [2036_AM_Option 1_Forest Road - The Avenue] — **Network: N101 [2036 Network D AM Peak]**

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

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Road (E)													
5	T1	238	10.5	238	10.5	0.521	45.2	LOS D	10.8	82.4	0.95	0.78	12.5
Approach		238	10.5	238	10.5	0.521	45.2	LOS D	10.8	82.4	0.95	0.78	12.5
NorthWest: The Avenue (NW)													
27a	L1	257	9.1	257	9.1	0.490	41.6	LOS C	12.5	94.0	0.88	0.81	23.5
28	T1	339	5.9	339	5.9	0.530	35.5	LOS C	7.7	56.7	0.82	0.67	33.6
Approach		596	7.2	596	7.2	0.530	38.2	LOS C	12.5	94.0	0.85	0.73	30.0
West: Forest Road (W)													
11	T1	774	9.3	774	9.3	0.396	14.1	LOS A	13.2	99.5	0.58	0.52	17.8
12a	R1	61	8.8	61	8.8	0.396	19.3	LOS B	13.2	99.5	0.62	0.55	36.0
Approach		835	9.3	835	9.3	0.396	14.5	LOS A	13.2	99.5	0.58	0.52	21.0
All Vehicles		1668	8.7	1668	8.7	0.530	27.3	LOS B	13.2	99.5	0.73	0.63	25.3

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.5 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [2036_PM_Option 1_Forest Road - The Avenue] — **Network: N101 [2036 Network D PM Peak]**

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

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Road (E)													
5	T1	309	4.8	309	4.8	0.564	42.4	LOS C	13.4	97.3	0.91	0.76	13.1
Approach		309	4.8	309	4.8	0.564	42.4	LOS C	13.4	97.3	0.91	0.76	13.1
NorthWest: The Avenue (NW)													
27a	L1	345	4.7	345	4.7	0.565	39.7	LOS C	16.5	119.8	0.88	0.82	24.1
28	T1	396	3.3	396	3.3	0.565	32.7	LOS C	8.8	63.4	0.80	0.66	34.5
Approach		741	4.0	741	4.0	0.565	35.9	LOS C	16.5	119.8	0.84	0.73	30.5
West: Forest Road (W)													
11	T1	595	9.3	595	9.3	0.402	17.2	LOS B	13.5	102.2	0.64	0.57	15.5
12a	R1	137	6.7	137	6.7	0.402	26.6	LOS B	12.4	92.7	0.74	0.67	31.7
Approach		732	8.8	732	8.8	0.402	19.0	LOS B	13.5	102.2	0.66	0.59	21.7
All Vehicles		1782	6.1	1782	6.1	0.565	30.1	LOS C	16.5	119.8	0.78	0.68	25.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.5 %
Number of Iterations: 6 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [2036_AM_Option 2_Forest Road - The Avenue] — **Network: N101 [2036 Network E AM Peak]**

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

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Road (E)													
5	T1	238	10.5	238	10.5	0.521	45.2	LOS D	9.9	75.7	0.87	0.71	12.6
Approach		238	10.5	238	10.5	0.521	45.2	LOS D	9.9	75.7	0.87	0.71	12.6
NorthWest: The Avenue (NW)													
27a	L1	257	9.1	257	9.1	0.238	37.7	LOS C	5.6	42.6	0.80	0.75	24.7
28	T1	339	5.9	339	5.9	0.520	34.7	LOS C	7.7	56.5	0.82	0.67	33.9
29b	R3	3	0.0	3	0.0	0.520	39.9	LOS C	7.7	56.5	0.82	0.67	27.4
Approach		599	7.2	599	7.2	0.520	36.0	LOS C	7.7	56.5	0.81	0.70	30.7
West: Forest Road (W)													
11	T1	774	9.3	774	9.3	0.401	9.2	LOS A	8.8	66.2	0.36	0.33	23.1
12a	R1	61	8.8	61	8.8	0.401	14.7	LOS B	8.8	66.2	0.41	0.39	39.0
Approach		835	9.3	835	9.3	0.401	9.6	LOS A	8.8	66.2	0.36	0.33	26.3
All Vehicles		1672	8.7	1672	8.7	0.521	24.1	LOS B	9.9	75.7	0.59	0.52	26.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.3 %
Number of Iterations: 6 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [2036_PM_Option 2_Forest Road - The Avenue] — **Network: N101 [2036 Network E PM Peak]**

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

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Road (E)													
5	T1	309	4.8	309	4.8	0.564	42.4	LOS C	12.6	91.8	0.86	0.71	13.3
Approach		309	4.8	309	4.8	0.564	42.4	LOS C	12.6	91.8	0.86	0.71	13.3
NorthWest: The Avenue (NW)													
27a	L1	345	4.7	345	4.7	0.287	36.0	LOS C	7.5	54.5	0.79	0.76	25.3
28	T1	396	3.3	396	3.3	0.559	32.7	LOS C	8.7	62.7	0.80	0.66	34.5
29b	R3	1	21.4	1	21.4	0.559	38.1	LOS C	8.7	62.7	0.80	0.66	27.8
Approach		742	4.0	742	4.0	0.559	34.2	LOS C	8.7	62.7	0.79	0.71	31.0
West: Forest Road (W)													
11	T1	595	9.3	595	9.3	0.399	12.5	LOS A	10.8	80.6	0.44	0.40	19.2
12a	R1	137	6.7	137	6.7	0.399	23.8	LOS B	10.8	80.6	0.64	0.61	33.1
Approach		732	8.8	732	8.8	0.399	14.6	LOS B	10.8	80.6	0.48	0.44	25.0
All Vehicles		1783	6.1	1783	6.1	0.564	27.6	LOS B	12.6	91.8	0.68	0.60	26.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1v [2036_AM_Option 1_Forest Rd_Hudson St]

Network: N101 [2036 Network D AM Peak]

8:00-9:00am
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Rd													
5	T1	785	2.0	785	2.0	0.411	5.5	LOS A	11.8	84.0	0.38	0.37	29.2
6	R2	89	2.0	89	2.0	0.411	11.5	LOS A	6.2	43.8	0.42	0.48	41.3
Approach		875	2.0	875	2.0	0.411	6.1	LOS A	11.8	84.0	0.38	0.38	32.9
North: Hudson St													
7	L2	213	2.0	213	2.0	0.909	75.0	LOS F	14.5	103.4	1.00	1.02	16.6
9	R2	23	2.0	23	2.0	0.095	54.4	LOS D	1.2	8.6	0.91	0.71	20.2
Approach		236	2.0	236	2.0	0.909	73.0	LOS F	14.5	103.4	0.99	0.99	16.9
West: Forest Rd													
10	L2	49	2.0	49	2.0	0.507	7.7	LOS A	8.7	62.2	0.22	0.23	45.7
11	T1	962	2.0	962	2.0	0.507	2.4	LOS A	8.7	62.2	0.17	0.17	38.0
Approach		1012	2.0	1012	2.0	0.507	2.6	LOS A	8.7	62.2	0.17	0.18	39.4
All Vehicles		2122	2.0	2122	2.0	0.909	11.9	LOS A	14.5	103.4	0.35	0.35	26.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.5 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1v [2036_PM_Option 1_Forest Rd_Hudson St]

Network: N101 [2036 Network D PM Peak]

8:00-9:00am
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Rd													
5	T1	933	2.0	933	2.0	0.472	4.2	LOS A	13.3	94.9	0.35	0.35	32.0
6	R2	133	2.0	133	2.0	0.472	9.4	LOS A	6.8	48.4	0.37	0.47	42.9
Approach		1065	2.0	1065	2.0	0.472	4.9	LOS A	13.3	94.9	0.36	0.37	35.9
North: Hudson St													
7	L2	83	2.0	83	2.0	0.454	61.5	LOS E	4.8	34.0	0.99	0.77	18.8
9	R2	26	2.0	26	2.0	0.144	59.1	LOS E	1.4	10.3	0.95	0.71	19.2
Approach		109	2.0	109	2.0	0.454	61.0	LOS E	4.8	34.0	0.98	0.76	18.9
West: Forest Rd													
10	L2	27	2.0	27	2.0	0.431	6.2	LOS A	4.6	32.4	0.13	0.14	47.3
11	T1	869	2.0	869	2.0	0.431	1.3	LOS A	4.6	32.4	0.10	0.11	42.5
Approach		897	2.0	897	2.0	0.431	1.4	LOS A	4.6	32.4	0.11	0.11	43.2
All Vehicles		2072	2.0	2072	2.0	0.472	6.3	LOS A	13.3	94.9	0.28	0.28	33.0

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.5 %
Number of Iterations: 6 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1v [2036_AM_Option 1_Forest Rd_Hudson St]

Network: N101 [2036 Network E AM Peak]

8:00-9:00am
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Rd													
5	T1	785	2.0	785	2.0	0.406	5.2	LOS A	11.6	82.6	0.37	0.36	29.8
6	R2	89	2.0	89	2.0	0.406	10.4	LOS A	5.8	41.3	0.39	0.45	42.3
Approach		875	2.0	875	2.0	0.406	5.7	LOS A	11.6	82.6	0.37	0.37	33.6
North: Hudson St													
7	L2	213	2.0	213	2.0	0.909	75.0	LOS F	14.5	103.4	1.00	1.02	16.6
9	R2	23	2.0	23	2.0	0.095	54.4	LOS D	1.2	8.6	0.91	0.71	20.2
Approach		236	2.0	236	2.0	0.909	73.0	LOS F	14.5	103.4	0.99	0.99	16.9
West: Forest Rd													
10	L2	49	2.0	49	2.0	0.507	6.2	LOS A	4.7	33.6	0.12	0.14	47.2
11	T1	962	2.0	962	2.0	0.507	1.5	LOS A	4.7	33.6	0.11	0.12	41.3
Approach		1012	2.0	1012	2.0	0.507	1.7	LOS A	4.7	33.6	0.11	0.12	42.5
All Vehicles		2122	2.0	2122	2.0	0.909	11.3	LOS A	14.5	103.4	0.32	0.32	27.4

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.
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.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.3 %
Number of Iterations: 6 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1v [2036_PM_Option 1_Forest Rd_Hudson St]

Network: N101 [2036 Network E PM Peak]

8:00-9:00am
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Cycle Time - User-Given)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Forest Rd													
5	T1	933	2.0	933	2.0	0.471	4.2	LOS A	13.3	94.8	0.35	0.35	32.0
6	R2	133	2.0	133	2.0	0.471	9.4	LOS A	6.8	48.5	0.37	0.47	42.9
Approach		1065	2.0	1065	2.0	0.471	4.9	LOS A	13.3	94.8	0.36	0.37	35.9
North: Hudson St													
7	L2	83	2.0	83	2.0	0.454	61.5	LOS E	4.8	34.0	0.99	0.77	18.8
9	R2	26	2.0	26	2.0	0.144	59.1	LOS E	1.4	10.3	0.95	0.71	19.2
Approach		109	2.0	109	2.0	0.454	61.0	LOS E	4.8	34.0	0.98	0.76	18.9
West: Forest Rd													
10	L2	27	2.0	27	2.0	0.431	6.1	LOS A	4.2	30.2	0.12	0.13	47.4
11	T1	869	2.0	869	2.0	0.431	1.5	LOS A	4.2	30.2	0.12	0.13	41.5
Approach		897	2.0	897	2.0	0.431	1.7	LOS A	4.2	30.2	0.12	0.13	42.2
All Vehicles		2072	2.0	2072	2.0	0.471	6.4	LOS A	13.3	94.8	0.29	0.28	32.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.0 %
Number of Iterations: 5 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [2036_AM_Base_Forest Rd_Wright St_Durham St]

Network: N101 [2036 Network D AM Peak]

8:00-9:00am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Durham St													
4	L2	325	2.0	325	2.0	0.322	6.1	LOS A	1.4	10.1	0.43	0.64	42.7
Approach		325	2.0	325	2.0	0.322	6.1	LOS A	1.4	10.1	0.43	0.64	42.7
NorthEast: Forest Road													
24	L2	13	2.0	13	2.0	0.147	4.6	LOS A	0.0	0.0	0.00	0.02	49.3
8	T1	554	2.0	554	2.0	0.147	0.0	LOS A	0.0	0.0	0.00	0.01	49.8
Approach		566	2.0	566	2.0	0.147	0.1	NA	0.0	0.0	0.00	0.01	49.8
NorthWest: Wright St													
27	L2	83	2.0	83	2.0	0.121	8.1	LOS A	0.4	3.1	0.54	0.75	44.6
Approach		83	2.0	83	2.0	0.121	8.1	LOS A	0.4	3.1	0.54	0.75	44.6
SouthWest: Forest Road													
1	L2	56	2.0	56	2.0	0.480	5.3	LOS A	5.7	40.7	1.00	0.00	46.2
2	T1	587	2.0	587	2.0	0.480	0.9	LOS A	5.7	40.7	1.00	0.00	45.2
3	R2	532	2.0	532	2.0	0.682	12.3	LOS A	6.0	42.4	0.72	1.14	38.4
Approach		1175	2.0	1175	2.0	0.682	6.2	NA	6.0	42.4	0.87	0.52	41.9
All Vehicles		2149	2.0	2149	2.0	0.682	4.7	NA	6.0	42.4	0.56	0.41	43.8

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.5 %
Number of Iterations: 10 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [2036_PM_Base_Forest Rd_Wright St_Durham St]

Network: N101 [2036 Network D PM Peak]

8:00-9:00am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Durham St													
4	L2	395	2.2	395	2.2	0.423	7.3	LOS A	2.5	17.6	0.51	0.76	41.8
Approach		395	2.2	395	2.2	0.423	7.3	LOS A	2.5	17.6	0.51	0.76	41.8
NorthEast: Forest Road													
24	L2	16	2.0	16	2.0	0.184	4.6	LOS A	0.0	0.0	0.00	0.02	49.3
8	T1	693	2.0	693	2.0	0.184	0.0	LOS A	0.0	0.0	0.00	0.01	49.8
Approach		708	2.0	708	2.0	0.184	0.1	NA	0.0	0.0	0.00	0.01	49.8
NorthWest: Wright St													
27	L2	62	2.0	62	2.0	0.072	6.6	LOS A	0.3	1.8	0.44	0.64	45.5
Approach		62	2.0	62	2.0	0.072	6.6	LOS A	0.3	1.8	0.44	0.64	45.5
SouthWest: Forest Road													
1	L2	58	2.0	58	2.0	0.410	5.8	LOS A	4.3	30.7	1.00	0.00	46.0
2	T1	404	2.0	404	2.0	0.410	1.4	LOS A	4.3	30.7	1.00	0.00	45.1
3	R2	489	2.0	489	2.0	0.753	16.2	LOS B	7.1	50.2	0.83	1.32	35.9
Approach		952	2.0	952	2.0	0.753	9.3	NA	7.1	50.2	0.91	0.68	39.9
All Vehicles		2117	2.0	2117	2.0	0.753	5.8	NA	7.1	50.2	0.52	0.47	43.1

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.5 %
Number of Iterations: 6 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [2036_AM_Base_Forest Rd_Wright St_Durham St]

Network: N101 [2036 Network E AM Peak]

8:00-9:00am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Durham St													
4	L2	325	2.0	325	2.0	0.322	6.1	LOS A	1.4	10.1	0.43	0.64	42.7
Approach		325	2.0	325	2.0	0.322	6.1	LOS A	1.4	10.1	0.43	0.64	42.7
NorthEast: Forest Road													
24	L2	13	2.0	13	2.0	0.147	4.6	LOS A	0.0	0.0	0.00	0.02	49.3
8	T1	554	2.0	554	2.0	0.147	0.0	LOS A	0.0	0.0	0.00	0.01	49.8
Approach		566	2.0	566	2.0	0.147	0.1	NA	0.0	0.0	0.00	0.01	49.8
NorthWest: Wright St													
27	L2	83	2.0	83	2.0	0.122	8.1	LOS A	0.4	3.1	0.54	0.76	44.6
Approach		83	2.0	83	2.0	0.122	8.1	LOS A	0.4	3.1	0.54	0.76	44.6
SouthWest: Forest Road													
1	L2	56	2.0	56	2.0	0.480	5.3	LOS A	5.8	41.4	1.00	0.00	46.2
2	T1	587	2.0	587	2.0	0.480	0.9	LOS A	5.8	41.4	1.00	0.00	45.2
3	R2	532	2.0	532	2.0	0.682	12.3	LOS A	6.1	43.2	0.72	1.15	38.4
Approach		1175	2.0	1175	2.0	0.682	6.3	NA	6.1	43.2	0.87	0.52	41.9
All Vehicles		2149	2.0	2149	2.0	0.682	4.7	NA	6.1	43.2	0.56	0.41	43.8

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.3 %
Number of Iterations: 6 (maximum specified: 10)

MOVEMENT SUMMARY

Site: 1 [2036_PM_Base_Forest Rd_Wright St_Durham St]

Network: N101 [2036 Network E PM Peak]

8:00-9:00am
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Durham St													
4	L2	395	2.2	395	2.2	0.423	7.3	LOS A	2.5	17.6	0.51	0.76	41.8
Approach		395	2.2	395	2.2	0.423	7.3	LOS A	2.5	17.6	0.51	0.76	41.8
NorthEast: Forest Road													
24	L2	16	2.0	16	2.0	0.184	4.6	LOS A	0.0	0.0	0.00	0.02	49.3
8	T1	693	2.0	693	2.0	0.184	0.0	LOS A	0.0	0.0	0.00	0.01	49.8
Approach		708	2.0	708	2.0	0.184	0.1	NA	0.0	0.0	0.00	0.01	49.8
NorthWest: Wright St													
27	L2	62	2.0	62	2.0	0.072	6.6	LOS A	0.3	1.8	0.43	0.64	45.5
Approach		62	2.0	62	2.0	0.072	6.6	LOS A	0.3	1.8	0.43	0.64	45.5
SouthWest: Forest Road													
1	L2	58	2.0	58	2.0	0.410	5.8	LOS A	4.3	30.6	1.00	0.00	46.0
2	T1	404	2.0	404	2.0	0.410	1.4	LOS A	4.3	30.6	1.00	0.00	45.1
3	R2	489	2.0	489	2.0	0.753	16.2	LOS B	7.0	49.9	0.83	1.32	35.9
Approach		952	2.0	952	2.0	0.753	9.3	NA	7.0	49.9	0.91	0.68	39.9
All Vehicles		2117	2.0	2117	2.0	0.753	5.8	NA	7.0	49.9	0.52	0.47	43.1

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Network Model Accuracy Level (largest change in degree of saturation for any lane): 0.0 %
Number of Iterations: 5 (maximum specified: 10)

GHD

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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	S Payne	B Prinsloo		B Prinsloo		29/01/2019

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