

Eastern Creek Recycling Ecology Park Recycling Infrastructure Optimisation Project

Appendix I Traffic Impact Assessment

BINGO

June 2022

Eastern Creek Recycling Infrastructure Optimisation Project Traffic Impact Assessment

Prepared for: Bingo Industries

9 February 2022

The Transport Planning Partnership



Eastern Creek Recycling Infrastructure Optimisation Project Traffic Impact Assessment

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V01	03/10/21	Ashwini Uthishtran, Santi Botross	Santi Botross	Wayne Johnson	Wehn
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Executive Summary

Dial-A-Dump (EC) (DADEC) Pty Ltd, (the Applicant) (as owned by Bingo Industries Pty Ltd (Bingo) operate the Eastern Creek Recycling Ecology Park (REP) which is located at 1 Kangaroo Avenue, Eastern Creek (formerly known as the Genesis Waste Management Facility) ('the Proposal Site'). The current approval allows for a total throughput of 2 million tonnes per annum (Mtpa), of which up to 1 Mtpa may be landfilled (excluding residual chute waste) with the remaining 1 Mtpa processed for resource recovery.

The Eastern Creek REP comprises of a number of resource recovery facilities and activities including:

- Two materials processing centres known as Materials Processing Centre 1 (MPC1) and Materials Processing Centre 2 (MPC2) which predominantly process dry construction and demolition (C&D), and commercial and industrial (C&I) waste.
- A Segregated Materials Area (SMA) which is principally used for receiving, processing dispatch, and stockpiling of inert C&D waste such as sand, dirt, aggregate, concrete, bricks and asphalt.

The Eastern Creek REP is approaching the current 2 Mtpa throughput limit, with this limit to be reached within the next few years. Therefore, the Applicant is proposing to increase the total throughput of the Eastern Creek REP by 950,000 tonnes per annum (tpa) over two stages to a total 2.95 Mtpa and carry out minor infrastructure upgrades works across the Proposal Site (the Proposal). The Proposal aims to further unlock the potential of the strategically significant Eastern Creek REP, with benefits of scale and optimal location within the Sydney transport network to respond to market demand and the policies of both the NSW and Commonwealth governments for expanded and enhanced resource recovery infrastructure. The Proposal would consist of predominantly dry C&D and C&I waste which is consistent with existing waste streams received at the Eastern Creek REP.

The Proposal is considered as State Significant Development (SSD) under Clause 23 (waste and resource management facilities) of Schedule 1 of the State Environmental Planning Policy (Planning Systems) 2021. An Environmental Impact Statement (EIS) is being prepared which seeks approval, under Part 4, Division 4.7 of the Environmental Planning and Assessment Act 1979 (EP&A Act), for the construction and operation of the proposed throughput increase and required supporting infrastructure. This Traffic Impact Assessment (TIA) has been prepared by The Transport Planning Partnership (TTPP) to support the preparation of the EIS and assess the Proposal's impact on the surrounding road network.



Proposal Overview

The Proposal would include the upgrade and construction of supporting infrastructure to optimise the current operation at Eastern Creek REP and facilitate the increased throughput proposed to be received at the Proposal Site. It is proposed to develop the Proposal Site in three stages:

Stage 1: Initial throughput

 Stage 1 would comprise 500,000 tpa of additional throughput to be received at the Eastern Creek REP to enhance resource recovery outcomes by increasing utilisation of onsite processing capabilities.

Stage 2: Internal site optimisation

- Stage 2 would facilitate the remaining throughput increase (an additional 450,000 tpa of the total 950,000 tpa proposed) to be received and processed across the Eastern Creek REP, and operation of one of two proposed new site exits. Stage 2 would include:
- Construction and operation of a new exit road to the Honeycomb Drive extension and installation of two outbound weighbridges and dedicated weighbridge office.
- Construction and operation of a new exit connection to Kangaroo Avenue in the north east of the Proposal Site, and the installation of two outbound weighbridges and a dedicated weighbridge office.
- Upgrade of existing internal roads as required.
- Earthworks for Stage 3 site establishment.
- Additional carparking and amenities.

Stage 3: Installation of supporting infrastructure:

- Stage 3 would comprise the redevelopment of the north-eastern corner of the Proposal Site, including:
- Construction and operation of a Site Workshop (relocating this activity from elsewhere within the Proposal Site to a dedicated enclosed facility).
- Construction and operation of a skip bin Maintenance and Manufacturing Workshop.
- Installation of landscaping, signage, security fencing and finishing works.



Purpose of this Assessment

This Traffic Impact Assessment (TIA) has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) as they relate to traffic and transport, including:

- Details of all traffic types and volumes likely to be generated during construction and operation, including details of the greatest number of each vehicle daily and annually.
- A description of key access points and haul routes and traffic distribution over these.
- An assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections using sidra or similar traffic model.
- Details and plans of the proposed internal road network, loading and unloading areas, on -site parking provisions, and sufficient pedestrian and cyclist facilities, in accordance with the relevant Australian Standards.
- Details of the largest vehicle to access and move within the site, including swept path diagrams depicting vehicles entering and exiting the site via any new site access driveways connecting with local roads.
- Details of road upgrades, infrastructure works or new roads or access points required for the development, including how these interact with the surrounding road network.

Existing traffic conditions

Classified traffic turning movement surveys were undertaken on Wednesday 17 March 2021 (a typical day of operation), during the morning and afternoon peak periods at nearby key intersections listed below:

- Wallgrove Road / Wonderland Drive (signals).
- Wonderland Drive / Interchange Drive (roundabout).
- Wonderland Drive / Honeycomb Drive(roundabout).
- Honeycomb Drive / Grevillea Street (roundabout).
- Honeycomb Drive / Kangaroo Avenue.

In March 2021, there were no state-wide lockdowns or restrictions in place as a result of the COVID-19 pandemic which would have affected the existing site operation. As a result, the traffic surveys have captured typical operational conditions of the site.



From the traffic survey data, the road network peak periods have been identified as follows:

- AM peak period: 7:00am 8:00am.
- PM peak period: 4:00pm 5:00pm.

The site operational peak period has been identified to be 11.00am – 12.00pm from the traffic survey data, which is outside the road network peak periods.

SIDRA Intersection modelling analysis has been carried out for the surrounding road network to determine the traffic impacts of the existing site during the road network peak periods. All intersections operate at a level of service (LoS) A in the AM peak and PM peak periods, with the exception of Wallgrove Road-Wonderland Drive. This intersection operates at LoS B with an average delay per vehicle of 24 seconds in the AM peak hour and LoS C with an average delay of 32 seconds in the PM peak hour.

Findings of Traffic Impact Assessment

Operational traffic

SIDRA Intersection modelling analysis has been carried out for the surrounding road network to determine the impacts arising from the Proposal in the future study years. The key findings of the traffic modelling analysis and this traffic impact assessment are that:

In 2025 (Proposal opening year):

- Once the development traffic for the <u>average operational day</u> is considered in the future year 2025, all intersections would continue to operate satisfactorily at a LoS C or better. The development traffic would result in a marginal increase of 1 second in average delay at most intersections in the peak periods which would result in a negligible impact on the operation of intersections.
- All intersections would continue to operate at a LoS C or better even with the addition
 of development traffic for the <u>peak operational day</u> in the year 2025. Comparable to
 the average operational day, the development traffic would still result in a marginal
 increase of 1 second in average delay at most intersections compared to the
 scenario with no site-generated traffic. This would result in a negligible impact on the
 intersection operation.



In 2035:

- In 2035, when background traffic growth and development traffic for the <u>average</u> <u>operational day</u> are considered together, the level of service at all intersections would be maintained at a satisfactory LoS C or better which is similar to the performance in the scenario with no site-generated traffic. The development traffic would result in a marginal increase of 1 second in average delay at most intersections in the peak periods. Notwithstanding, this would result in a negligible impact on the intersection performance.
- The level of service at all intersections would be maintained at a satisfactory LoS C or better when background traffic growth and development traffic for the <u>peak</u> <u>operational day</u> are considered together in 2035. The development traffic would result in a marginal increase of 1-2 seconds in average delay at most intersections in the peak periods which would result in a negligible impact on the intersection operation.

Overall, the traffic assessment identifies that the Proposal would have a negligible impact on the performance of the surrounding road network.

Construction traffic

A review of the traffic impacts associated with the construction phase of the Proposal has been prepared in this report. It is estimates that the construction phase would generate up to an additional six (6) vehicles per hour in Stage 2 and an additional two (2) vehicles per hour in Stage 3, which would not have a material impact on the road network operation.



1 Introduction

Dial-A-Dump (EC) (DADEC) Pty Ltd, (the Applicant) (as owned by Bingo Industries Pty Ltd (Bingo) operate the Eastern Creek Recycling Ecology Park (REP) which is located at 1 Kangaroo Avenue, Eastern Creek (formerly known as the Genesis Waste Management Facility) ('the Proposal Site'). The current approval allows for a total throughput of 2 million tonnes per annum (Mtpa), of which up to 1 Mtpa may be landfilled (excluding residual chute waste) with the remaining 1 Mtpa processed for resource recovery.

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- Two materials processing centres known as Materials Processing Centre 1 (MPC1) and Materials Processing Centre 2 (MPC2) which predominantly process dry construction and demolition (C&D), and commercial and industrial (C&I) waste.
- A Segregated Materials Area (SMA) which is principally used for receiving, processing dispatch, and stockpiling of inert C&D waste such as sand, dirt, concrete, aggregate, bricks and asphalt.

The Eastern Creek REP is approaching the current 2 Mtpa throughput limit, with this limit to be reached within the next few years. The Applicant is therefore proposing to increase the total throughput of the Eastern Creek REP by 950,000 tonnes per annum (tpa) and carry out minor infrastructure upgrades works across the Proposal Site (the Proposal). The Proposal aims to further unlock the potential of the strategically significant Eastern Creek REP, with benefits of scale and optimal location within the Sydney transport network to respond to market demand and the policies of both the NSW and Commonwealth governments for expanded and enhanced resource recovery infrastructure.

The Proposal would consist of predominantly dry C&D and C&I waste which is consistent with existing waste streams received at the Eastern Creek REP.

The Proposal is considered as State Significant Development (SSD) under Clause 23 (waste and resource management facilities) of Schedule 1 of the State Environmental Planning Policy (Planning Systems) 2021. An Environmental Impact Statement (EIS) is being prepared which seeks approval, under Part 4, Division 4.7 of the Environmental Planning and Assessment Act 1979 (EP&A Act), for the construction and operation of the proposed throughput increase and required supporting infrastructure. This Traffic Impact Assessment (TIA) has been prepared by The Transport Planning Partnership (TTPP) to support the preparation of the EIS and assess the Proposal's impact on the surrounding road network.



1.1 Proposal Overview

Bingo is proposing to enhance resource recovery outcomes across the Greater Sydney area by increasing throughput at the Eastern Creek REP to capitalise on the underutilised state-ofthe-art processing facilities (namely MPC2), and plant and equipment within the Eastern Creek REP. The Proposal would include the upgrade and construction of supporting infrastructure to optimise the current operation at Eastern Creek REP and facilitate the increased throughput proposed to be received at the Proposal Site.

It is proposed to develop the Proposal Site in three stages as follows:

Stage 1: Initial throughput

 Stage 1 would comprise 500,000 tpa of additional throughput to be received at the Eastern Creek REP to enhance resource recovery outcomes by increasing utilisation of onsite processing capabilities.

Stage 2: Internal site optimisation

- Stage 2 would facilitate the remaining throughput increase (an additional 450,000 tpa of the total 950,000 tpa proposed) to be received and processed across the Eastern Creek REP, and operation of one of two proposed new site exits. Stage 2 would include:
- Construction and operation of a new site exit to the Honeycomb Drive extension and installation of two outbound weighbridges and dedicated weighbridge office.
- Construction and operation of a new site exit to Kangaroo Avenue in the north east of the Proposal Site, and the installation of two outbound weighbridges and a dedicated weighbridge office.
- Upgrade of existing internal roads as required.
- Earthworks for Stage 3 site establishment.
- Additional carparking and amenities.

Stage 3: Installation of supporting infrastructure:

- Stage 3 would comprise the redevelopment of the north-eastern corner of the Proposal Site, including:
- Construction and operation of a Site Workshop (relocating this activity from elsewhere within the Proposal Site to a dedicated enclosed facility).
- Construction and operation of a skip bin Maintenance and Manufacturing Workshop.
- Installation of landscaping, signage, security fencing and finishing works.



1.2 Site Location

The Eastern Creek REP key operational area comprises two parcels of land totalling around 54 hectares (ha) located at 1 Kangaroo Avenue, Eastern Creek (Lot 1 DP1145808 and Lot 2 DP1247691) as shown in Figure 1.1. The Proposal Site is located within the Blacktown Local Government Area (LGA), however, is not zoned under the Blacktown Local Environmental Plan 2015 (Blacktown LEP) as it falls within the boundary of the State Environmental Planning Policy (Industry and Employment) 2021. The Eastern Creek REP falls under the requirements of the Eastern Creek Precinct – Employment Lands Precinct Plan (Precinct Plan) prepared under the repealed State Environmental Planning Policy No 59-Central Western Sydney Economic and Employment Area (SEPP 59).

The Proposal Site is located within the Eastern Creek industrial precinct / M7 business hub and is surrounded by a large range of industrial developments, primarily to the east as shown in Figure 1.1. These industrial developments include Techtronic Industries, H&M distribution warehouse, Kuehne + Nagel (Australia) Pty Ltd warehouse, Kmart distribution centre, Bunnings distribution centre and DB Schenker warehouse. Immediately to the west of the operational area of the Eastern Creek REP is vacant land that form part of the broader Eastern Creek REP. Further to the west of the Eastern Creek REP is the Fulton Hogan asphalt batching plant and a vacant area of undeveloped land.

Key roads in close proximity to the Eastern Creek REP are Kangaroo Avenue to the east and Honeycomb Drive to the south (proposed to extend southeast to Old Wallgrove Road as shown in Figure 1.2). In the wider road network, the M4 Western Motorway is located north of the Proposal Site. The planned future Archbold Road extension will run parallel to the western boundary of the Proposal Site (Transport for NSW (TfNSW), 2019). The location of the Archbold Road extension relative to the Eastern Creek REP is illustrated in Figure 1.3. The Proposal is not reliant on these upgrades.

The Eastern Creek REP is accessed off Kangaroo Avenue which links to Honeycomb Drive and then Wonderland Drive and Wallgrove Road and provides access to the broader arterial road network including the M4 and M7 motorways.



Figure 1.1: Proposal Site Location



Basemap Source: Nearmap, aerial imagery dated 17 October 2021



Figure 1.2: Proposed Honeycomb Drive Extension to Old Wallgrove Road

Source: Calibre, Statement of Environmental Effects, viewed online 21/01/22





Figure 1.3: Archbold Road Upgrade and Extension Concept Design

Basemap Source: Transport for NSW, Archbold Road upgrade and extension project map, viewed online 2/11/2021



1.3 Site History

During the 1800s, the Eastern Creek REP site was used for both agricultural and breccia quarrying purposes. The quarrying activities had expanded by the 1930s and were then operated by the Ray Fitzpatrick Quarriers in the 1950s. Quarrying activities continued until September 2006, with the final quarry void estimated to be 12 million cubic metres (m³).

In November 2009, Dial-A-Dump Industries (DADI) acquired the Eastern Creek REP site and gained approval for the construction and operation of the Genesis Xero Waste Management Facility (now named the Eastern Creek REP) (MP 06_0139), comprising a resource recovery facility (RRF) and non-putrescible landfill with a material handling capacity of 700,000 tpa. This facility commenced operations in 2012.

Bingo acquired DADI in February 2019, including all its NSW waste and recycling assets. Bingo took over the operation of the Eastern Creek REP following completion of the acquisition process.

The Eastern Creek REP was originally approved (MP 06_0139) under Part 3A (now repealed) of the EP&A Act in 2009 and commenced operations in 2012 (Project Approval). Following the repeal of Part 3A of the EP&A Act on 1 October 2011, the project was subject to the transitional arrangements provided by the *Environmental Planning and Assessment Regulations 2000* (EP&A Regs). The transitional arrangements provided by EP&A Regs have now ceased, and the project was transitioned to a State Significant Development (SSD) on 2 October 2020.

Since the approval of MP 06_0139 in 2009, eight modification applications have been submitted and approved (most recently in March 2022) and one was withdrawn. The most recent modification was for the installation of a permanent landfill gas flare to provide a permanent solution to managing landfill gas at the Eastern Creek REP (Modification 10 MP 06-013). One further modification is currently being sought comprising a modification to expand the operational area of the Eastern Creek REP into part Lot 2 DP1145808 (Mod 9 MP 06-0139) and relocation of existing approved activities. The Proposal would constitute a standalone SSD application.



1.4 Purpose of this Report

This TIA supports the EIS for the Proposal and has been prepared as part of an SSD Application for which approval is sought under Part 4, Division 4.7 of the EP&A Act.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) (SSD-11606719) for the Proposal, issued by NSW Department of Planning, Industry and Environment, now Department of Planning and Environment (DPE) on 1 October 2021. Table 1.1 provides a summary of the relevant SEARs which relate to traffic and transport, and where these have been addressed in this report.

Notably, Transport for NSW (TfNSW) and Blacktown City Council (Council) were consulted by DPE for their input into the draft SEARs. Each agency's input into the SEARs has been included in Table 1.2.

Secretary's Environmental Assessment Requirements	Addressed in
Details of all traffic types and volumes likely to be generated during construction and operation, including details of the maximum numbers of each vehicle type per day and per annum	Sections 5.4, 5.1, 6.2, 6.4
A description of key access/ haul routes and traffic distribution over these	Sections 5.2 & 6.5
An assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections using SIDRA or similar traffic model	Chapter 6
Details and plans of any proposed the internal road network, loading and unloading areas, on-site parking provisions, and sufficient pedestrian and cyclist facilities, in accordance with the relevant Australian Standards	Chapter 3 & Chapter 7
Details of the largest vehicle anticipated to access and move within the site, including swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site	Section 6.2
Details of road upgrades, infrastructure works or new roads or access points required for the development, including how these interact with the existing or proposed road system	Sections 1.2, 4.2, 4.3 & 7.4

Table 1.1: SEAR's and Relevant Report Sections

It should be noted that Blacktown Council's response to SEARs refers to a throughput increase of 1.5 Mtpa. Blacktown Council responded to the SEARs dated 22 December 2020 that stated the development would include a throughput increase of 1.5 Mtpa. The Proposal has since been amended to comprise a throughput increase of 950,000 tpa as is reflected in the amended SEARs dated 1 October 2021.



Table 1.2: Local and State Authority Requirements and Relevant Report Sections

TfNSW Input to SEARs	Addressed in
Traffic Impact Assessment (TIA): A TIA is required to examine any potential transport/traffic related implications of the development. As a guide Table 2.1 of the RTA's Guide to Traffic Generating Developments outlines the key issues that should be considered in preparing a TIA. The TIA also needs to include, but not be limited to, the following:	-
a) Details on the types of vehicles that will access the development site (both heavy and light vehicles) during its operation. For heavy/service vehicles details are required on their size, their associated carrying capacity, etc. for both the receipt of required raw materials and the despatch of product. This should also include details on the maximum number of vehicles per day and per annum that the proposed development will generate including a breakdown into vehicle types and how these numbers correlate to the daily and annual limits for which approval is being sought. Details on how maximum vehicle numbers will be monitored to ensure ongoing compliance should also be provided;	Sections 6.2 & 6.4
b) Road transport routes that are to be used to provide access to and from the site (for both heavy and light vehicles) including details on the distribution of the traffic generated;	Sections 5.2 & 6.5
c) An assessment of the forecast impacts on traffic volume generated on road safety and capacity of road network including consideration of cumulative traffic impacts at key intersections including consideration of the impacts to the state road network and identification of appropriate measures to mitigate the impact (i.e. intersections to be used by the development that connect with the classified road network). The assessment of impacts on key intersections, depending on traffic volumes generated by the development, may require SIDRA modelling to be provided (including the electronic files). Any SIDRA modelling undertaken must ensure the base model has been calibrated with on-site observations (i.e. queue lengths, delays, etc.), must be provided for AM and PM peak periods as well as a 10-year growth scenario and provide details on any SIDRA default model parameters changed along with supporting justification. Please note the above relates only to potential impacts on the classified road network. Discussions should be had with Blacktown Council in relation to the information they may require to be included in the TIA concerning local road impacts.	Section 6.8
2. Access: Swept path diagrams to demonstrate the largest vehicles that will be using the classified road network where it connects with the local road network can undertake all required manoeuvres to enable access to and from the development site, as well as vehicles entering, exiting and manoeuvring throughout the site.	Appendix B provides swept paths for the proposed exit connections. No changes are proposed to internal road layout or manoeuvrability.
 3. Strategic/Concept Design: Should it be identified as part of preparing the Environmental Impact Statement or during the assessment of the application that mitigation measures are required that will impact a classified road, then a concept design for the proposed works will need to be prepared and submitted. This is needed to clarify the scope of works, demonstrate the works can be constructed within the road reserve and allow the consent authority to consider any environmental impacts of the works as part of their assessment. The concept design submitted must include, but not be limited to, legal property boundaries (including the existing road reserve boundaries based on a survey), existing and proposed lane configurations and lane widths at a number of locations along the length of the proposed works, etc. The design provided, should be based on a design speed which is 10km/h over the posted speed limit and should demonstrate compliance with the applicable requirements in Austroads Guide to Road Design and the relevant TfNSW supplements. The detailed traffic impact assessment should address the relevant planning provisions, goals and strategic planning objectives in the following: a) Future Transport 2056 and supporting documents; b) NSW Freight and Ports Plans 2018-2023; c) Guide to Traffic Generating Developments 2002(RTA); d) TDT 2013/04a Guide to Traffic Generating Developments; and e) Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development. 	Chapter 4



TfNSW Input to SEARs	Addressed in
Blacktown Council Input to SEARs	Addressed in
A Traffic Impact Assessment is to be prepared for additional traffic movements generated from processing of an additional 1.5Mtpa of waste	Chapter 5 & Chapter 6
All improvements to the road network are to be identified, costed and paid for by the developer	Noted

1.5 Structure of this report

The remainder of the report is set out as follows:

- Chapter 2 details the methodology for the traffic impact assessment.
- Chapter 3 discusses the existing conditions including a description of the local road, transport, pedestrian and cycling networks.
- Chapter 4 discusses the proposed works at the Proposal Site.
- Chapter 5 assesses the operational phase and their impacts
- Chapter 6 assesses the construction phases and their impacts.
- Chapter 7 assesses proposed onsite parking provision during operation, and site access and circulation arrangements.
- Chapter 8 presents the mitigation measures for operation and construction phases.
- Chapter 9 summarises and concludes the findings of the assessment.



2 Methodology

The TIA for the Proposal includes the following key activities:

- Traffic volume surveys
- Identification of the existing traffic environment
- Estimation of the future site-generated traffic
- Traffic modelling
- Operational traffic and construction impact assessment.

2.1 Policy Setting

Under the State Environmental Planning Policy (Transport and Infrastructure) 2021, the Proposal Site is considered a 'traffic-generating development'. Hence, it is a requirement to assess the impact of traffic associated with the future operation of the Proposal Site.

The RTA Guide to Traffic Generating Developments (2002) (the Guide) is used as a tool in determining the future traffic generation rates for different development types and land uses. The Guide states that "...peak traffic generation period for industrial land use is generally determined by three key factors: employee density, travel mode and peak period travel distribution." The Guide also recognises that peak period traffic generation of industrial land uses differs depending on the specific industrial development type. Consideration has been given to the traffic generation rates prescribed within the Guide. However, traffic generation for the Proposal has primarily been established based on existing weighbridge data and anticipated changes in vehicle numbers associated with the proposed throughput increase (i.e a 'first principles' approach has been adopted).

The Guide contains traffic generation rates for three industrial development types, namely, factories, warehouses, and business parks. Of these development types, factories and warehouses are most similar to that of the Proposal. The traffic generation rates for factories and warehouses are summarised in Section 6.1.

2.2 Identifying Existing Traffic Conditions

In order to determine the traffic impacts associated with the Proposal, a review of the existing road network and transport network has been undertaken to determine the baseline for existing traffic conditions.

The following activities were undertaken to determine the baseline conditions of the Proposal:

- an inspection of the surrounding road network during the morning peak and evening peak periods to observe signal phase timing and queueing.
- a desktop review of nearby transport infrastructure and services.



• weekday hourly traffic turning movements surveys at nearby intersections.

2.2.1 Traffic Surveys

Classified traffic turning movement surveys were undertaken on Wednesday 17 March 2021 (a typical day of operation), during the morning and afternoon peak periods at nearby key intersections listed below:

- Wallgrove Road / Wonderland Drive (signals).
- Wonderland Drive / Interchange Drive (roundabout).
- Wonderland Drive / Honeycomb Drive(roundabout).
- Honeycomb Drive / Grevillea Street (roundabout).
- Honeycomb Drive / Kangaroo Avenue.

From the traffic survey data, the road network peak periods have been identified as follows:

- AM peak period: 7:00am 8:00am.
- PM peak period: 4:00pm 5:00pm.

The site operational peak period has been identified to be 11.00am – 12.00pm from the traffic survey data, which is outside the road network peak periods.

2.3 Traffic Modelling Approach

To assess the potential impacts of the Proposal on road network performance during operation, traffic modelling for the road network peak periods has been undertaken of vehicle routes between the Proposal Site and the nearest arterial road (Wallgrove Road), including the intersection with the arterial road.

2.4 Model Calibration

A site visit was conducted at the time of the traffic surveys to record signal phasing and phase timing, as well as to observe queue lengths on each approach of the signalised intersection of Wallgrove Road – Wonderland Drive. Signal phasing, and phase and cycle timing information from the individual peak periods have been input into the SIDRA models. In the existing conditions, recorded phase times and phase frequency data has been used while future models are based on the total cycle time (i.e., sum of all phase timings in one cycle). Also, the queue length outputs of the modelling results have been checked against queue length observations at the time of the survey to ensure similar site conditions are reflected in the model.



2.5 Operational Traffic Impact Assessment

The operation of the key intersections nearby the Proposal Site have been assessed using SIDRA Intersection version 9.0, a computer-based modelling package which assesses intersection performance under prevailing traffic conditions.

Traffic modelling for an average operational day was undertaken during the road network AM peak and PM peak periods (as identified in Section 2.2.1). These peak periods represent the times at which the surrounding road network carries the greatest volume of traffic in the peak commuter periods. Traffic modelling has also been undertaken for a peak operational day which has conservatively been assumed to generate an approximate 30% increase to the average operational day. SIDRA calculates intersection performance as a level of service (LoS). SIDRA provides analysis of the operating conditions which can be compared to the performance criteria set out in Section 6.6.

2.6 Traffic Modelling Scenarios

A description of the traffic modelling scenarios used to determine the impacts of the Proposal on road network performance is provided in



Table 2.1. Potential traffic impacts have been assessed on a full build basis with construction and operational impacts considered separately, with worst case operational traffic being modelled as show in Figure 2.1.

Background traffic growth has been calculated for future modelling scenarios using the Sydney Strategic Traffic Forecasting Model (STFM) growth plots obtained from Transport for NSW (TfNSW). The STFM growth plots provide background traffic growth rates (per cent per annum growth) which are generated by TfNSW based on approved developments in the vicinity. STFM growth plots have been used to increase background traffic flows in the SIDRA modelling of future scenarios.



Model year	Without Proposal	With Proposal	Scenario	Description	Potential impacts assessed
2021	Х		Scenario 0: Existing Conditions	The existing road network	N/A
2025	Х		Scenario 1a: Future conditions with background traffic growth up to the year 2025 (Proposal opening year) i.e. <u>no site-generated</u> <u>traffic</u>	The road network with background traffic growth	Performance of the road network without the Proposal in the year 2025
2025		Х	Scenario 1b: Future conditions with background traffic growth up to the year 2025 plus site-generated traffic for the <u>average operational</u> <u>day</u>	The road network with background traffic growth and operation of the Proposal during an average day	Potential impacts on the road network as a result of operation of the Proposal during an average day
2025		Х	Scenario 1c: Future conditions with background traffic growth up to the year 2025 plus site-generated traffic for the <u>peak operational day</u>	The road network with background traffic growth and operation of the Proposal during a peak day	Potential impacts on the road network as a result of operation of the Proposal during a peak day
2035	X		Scenario 2a: Future conditions with background traffic growth up to the year 2035 (Proposal opening year plus 10 years) i.e. <u>no site- generated traffic</u>	The road network with background traffic growth	Performance of the road network without the proposal in the year 2035
2035		X	Scenario 2b: Future conditions with background traffic growth up to the year 2035 plus site-generated traffic for the <u>average operational</u> <u>day</u>	The road network with background traffic growth and operation of the Proposal during an average day	Potential impacts on the road network as a result of operation of the Proposal during an average day
2035		Х	Scenario 2c: Future conditions with background traffic growth up to the year 2035 plus site-generated traffic for the <u>peak operational day</u>	The road network with background traffic growth and operation of the Proposal during a peak day	Potential impacts on the road network as a result of operation of the Proposal during a peak day

Table 2.1: Traffic Modelling Operational Scenarios Assessed





Figure 2.1: Traffic modelling scenarios

2.7 Construction Traffic Impact Assessment

A review of the traffic impacts associated with the construction phase of the Proposal has been prepared in this report. It assesses the staging and duration of construction works, the construction traffic generation and vehicle haul routes to/from the Proposal Site. Given that there is a marginal increase in traffic volumes per hour generated by construction, the construction traffic impacts on the surrounding road network have been assessed qualitatively in this report in Chapter 5.

2.8 Analysis of On-site Parking Provision

The State Environmental Planning Policy (Planning Systems) 2021, Part 2, Section 2.10 stipulates that Council Development Control Plans do not apply to State Significant Developments. However, having due regard to the objectives and guidelines as set by Council for industrial developments, the provision for car parking of the proposed development has been assessed in accordance with Council guidelines.

It is noted that the Blacktown City Council's website states that "In addition to the Blacktown Development Control Plan 2006, there are a number of deemed Development Control Plans contained within various State Environmental Planning Policies (SEPPs).", one of which is the



Eastern Creek Precinct Plan Stage 3 - Prepared under SEPP 59. This Employment Lands Precinct Plan also provides car parking rates for developments in the Eastern Creek Precinct which includes the Proposal Site. Therefore, future car parking provisions have been assessed in-line with this Plan. Parking rates for the development type closest in nature to the Proposal have been used to estimate the future parking demand i.e., industrial land uses.

In addition, parking provision for the Proposal has also been estimated using a 'first principles' approach. The first principles method of calculation considers parking demand based on the number of employees at the Proposal Site rather than floor area of the facility. The first principles approach generates a more realistic and practical off-street parking provision for staff and visitors associated with the Proposal given the Proposal, a resource recovery facility, does not categorically fit the class of an industrial development.

2.9 Vehicle Access and On-Site Movements

Analysis of the site access and circulation route on-site for delivery and collection vehicles has been undertaken to determine whether vehicles proposed to access the site can adequately manoeuvre through the Proposal Site, to carry out material unloading and loading activities. Furthermore, a review of on-site vehicle storage (referred to as stacking capacity) has been undertaken to determine whether the Proposal Site can sufficiently accommodate delivery and collection vehicles during peak operation.

2.10 References

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

- An inspection of the Proposal Site and its surrounds undertaken on Wednesday 17 March 2021.
- State Environmental Planning Policy (Industry and Employment) 2021.
- Blacktown Local Environmental Plan (LEP) 2015.
- Eastern Creek Precinct Plan Stage 3 Prepared under SEPP 59.
- Blacktown Development Control Plan (DCP) 2015.
- RTA Guide to Traffic Generating Developments, 2002.
- TDT 2013/04a Guide to Traffic Generating Developments.
- Future Transport 2056 and supporting documents.
- NSW Freight and Ports Plans 2018-2023.
- Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development.



3 Existing Conditions

3.1 Current Site Conditions

The key features of the Eastern Creek REP are as follows:

- The landfill (former quarry void).
- Resource recovery facilities:
 - Materials Processing Centres 1 (MPC1)
 - Materials Processing Centre 2 (MPC2).
- Segregated Materials Area (SMA).

In addition to the waste management infrastructure across the Eastern Creek REP, operations are supported by a range of ancillary / supporting features including other buildings such as a maintenance shed, internal road network and water management infrastructure. The existing site layout comprising the above-mentioned areas is shown in Figure 3.1.

The central portion of the Eastern Creek REP comprises the landfill (the former quarry void).

The Eastern Creek REP contains two key resource recovery facilities; namely MPC1 and, the newly constructed, MPC2. MPC1 and MPC2 are located on the western side of the landfill, in the south-western corner of the Eastern Creek REP.

The SMA is located in the north-western corner of the Eastern Creek REP and covers an area of approximately 5 hectares. The SMA has minimal built form, and the area largely comprises stockpiles of C&D materials. Fixed and mobile equipment are also located within the SMA (e.g. crushing, sorting, and mixing equipment). All stockpile heights are limited to within the height of the amenity berms as required by the Project Approval (MP 06_0139) and are maintained in accordance with all current legislative and regulatory requirements.

In addition to the waste management infrastructure across the Eastern Creek REP, site operations are supported by a range of ancillary features including other buildings (such as a workshop and maintenance shed, site office), the internal road network, and water management infrastructure.





Figure 3.1 Existing Site Infrastructure



3.2 Approved Operation

Construction and operation of a resource recovery facility and general solid waste landfill at the (then) existing quarry and surrounding land at the Eastern Creek REP were approved under the original Project Approval (MP 06_0139) in 2009. Following subsequent modifications up to and including Modification 8 (approved March 2021), the Eastern Creek REP is now authorised for the following activities:

- Accept up to 2 Mtpa of C&D and C&I waste and landfilling of the quarry void of up to 1 Mtpa of non-putrescible waste (including asbestos and other non-recyclable waste), excluding residual chute waste from the materials processing centres.
- Operation of MPC1 and MPC2 which recover recyclable material from C&D waste and C&I waste streams as well as utilisation of a landfill disposal chute and maintenance activities.
- Crushing, grinding and separating works to process waste masonry material located in an area earmarked as the SMA;
- Stockpile up to 50 tonnes of waste tyres;
- Stockpile up to 20,000 tonnes of green waste.

3.3 Existing Operation Traffic Generation

The existing traffic volumes generated by the site operation are presented in Table 3.1.

Table 3.1: Existing Traffic Volumes

	Existing Operations			
Facility/ Activity	Daily Vehicles	Hourly Vehicles		
		In	Out	
Landfill	282	12	12	
MPC1	515	21	21	
SMA	104	4	4	
Material Processing Operational Staff	184	-	-	
Total	1,085	37	37	



3.4 Vehicle Access and On-site Circulation

The Eastern Creek REP is accessed via a private access road off Kangaroo Avenue (known as DADI Drive), approximately 150 m north of the intersection of Kangaroo Avenue and Honeycomb Drive.

Approximately 185m from the Eastern Creek REP entrance, the access road widens and six tidal weighbridges provide access into the broader operational area. The tidal weighbridges can be designated as weigh-in or weigh-out bridges depending on operational needs.

A passing lane is provided around the weighbridges to allow light vehicles and heavy vehicles passing through the Eastern Creek REP to bypass the weighbridges (predominantly comprising vehicles accessing the Fulton Hogan asphalt batching plant located to the west of the Eastern Creek REP).

The existing internal traffic flows is as follows:

- All vehicles enter the Eastern Creek REP via the entrance on Kangaroo Avenue and weigh-in over the weighbridge system.
- Vehicles travel along the main internal road along the southern boundary of the Proposal Site.
- Once vehicles reach the intersection adjacent to MPC2 they are directed to one of the four waste management infrastructure areas within the Eastern Creek REP (landfill, MPC1, MPC2 or the SMA).
- Vehicles manoeuvre within the respective resource recovery areas to tip or collect product
- Vehicles then exit the Eastern Creek REP by traversing DADI Drive towards the Kangaroo Avenue exit, weighing back out over the tidal weighbridge system and making a right-turn exit movement.

The existing entry and exit vehicle access points for the various types of vehicles are shown in Figure 3.2.



Figure 3.2: Existing Vehicle Access



3.5 Car Parking

Car parking for light vehicles is provided adjacent to the site office and in a smaller carpark to the south of the Eastern Creek REP entrance which can accommodate up to a minimum of 15 light vehicles.

The most recent modification of the Project Approval (Mod 8 MP06-019) provides for an additional 122 light vehicle spaces to the south-east of MPC2 which will be accessed via Honeycomb Drive.

3.6 Surrounding Road Network

A network of local and state roads surrounds the Proposal Site. A brief description of the surrounding roads is given below.

Kangaroo Avenue functions as a two-way local road generally aligned in a north-south and east-west direction. The road connects to Honeycomb Drive to the south and terminates with a cul-de-sac at the other end of the road. It supports a carriageway of approximately 13 m with a combination of restricted and unrestricted parking permitted in both kerbside lanes. There is no sign-posted speed limit along Kangaroo Avenue, therefore, a default speed limit of 50 km/h applies.



Honeycomb Drive functions as a two-way local road, generally aligned in north-west to south-east direction. Honeycomb Drive partially forms the southern boundary of the Eastern Creek REP. The carriageway is approximately 15 m with unrestricted parking permitted in both kerbside lanes. Both sides of the road terminate with a cul-de-sac. There is no sign-posted speed limit of along Honeycomb Drive, therefore, a default speed limit of 50 km/h applies.

In the wider arterial road network, **Wallgrove Road** functions as a two-way State road, with two through lanes in both directions in the vicinity of the Proposal Site. The road is aligned in the north-south direction between Great Western Highway and Elizabeth Drive and runs parallel to the M7 Motorway. It has a sign posted speed limit of 70 km/h.

The **M4 Western Motorway** is a two-way State road ranging between 3-4 travel lanes in each direction. It is a key east-west route within the wider Sydney transport network, spanning between Concord in the east (where the motorway links to Parramatta Road) and Glenbrook in the west (where the motorway links to Great Western Highway). Variable speed limits apply along the M4 Western Motorway, however, generally the signposted speed limit ranges between 90 km/h and 100 km/h.

The **M7 Motorway** is a two-lane two-way State road which is generally aligned in the northsouth direction. The M7 Motorway forms part of the wider Sydney Orbital Network and is a key route connecting three major Sydney motorways, namely, M5 South-West Motorway, M4 Western Motorway and M2 Hills Motorway. The M7 cycleway runs parallel to the M7 Motorway. Variable speed limits apply along the M7 Motorway, however, generally the signposted speed limit is 100 km/h.

3.7 Public Transport

The closest bus stops are located on Honeycomb Drive, approximately a 400 m walking distance from the Proposal Site. These bus stops service the bus route 723 Mount Druitt to Blacktown via Eastern Creek. There are six services during each of the weekday AM peak and PM peak periods. This service only operates on weekdays.

A bus stop is located on Wonderland Drive, near Alspec Place and is 1.9 km walking distance from the Proposal Site. This bus stop is served by bus route 738 Mount Druitt to Eastern Creek via Rooty Hill (Loop Service). There are three services in the weekday AM peak period and four services in the weekday PM peak period. The service only operates on weekdays.

The bus routes near the Proposal Site are indicated in Figure 3.3.





Figure 3.3: Bus Network Map

Source: Greater Western Sydney Bus Network Map (viewed online on 01/11/2021)

3.8 Pedestrian and Cycling Facilities

The streets surrounding the Proposal Site such as Kangaroo Avenue and Honeycomb Drive have sealed pedestrian footpaths adjacent to the constructed part of these streets.

There is an off-road shared path on the north side of Honeycomb Drive and west side of Kangaroo Avenue, which may be used by cyclists and pedestrians. Along the site boundary the shared path is signposted, and line marked and is approximately 2.6 m in width.

The shared path continues along the north side of Wonderland Drive. Although for the majority of its length the shared path is not line marked and/or signposted. There is a marked bicycle crossing and signal lantern across the Wallgrove Road – Wonderland Drive north approach. This provides a connection between the Eastern Creek industrial park and cycle route along the M7 Motorway.


4 Proposal Description

4.1 Proposal Overview

Bingo is proposing to enhance resource recovery outcomes across the Greater Sydney area by increasing throughput at the Eastern Creek REP to capitalise on the underutilised state-of the-art processing facilities, namely MPC2, and plant and equipment within the Eastern Creek REP. The Applicant is therefore proposing to increase the total throughput of the Eastern Creek REP by 950,000 tpa and carry out infrastructure upgrades works across the Proposal Site (the Proposal). The Proposal would include the upgrade and construction of supporting infrastructure to optimise the current operation at Eastern Creek REP and facilitate the increased throughput proposed to be received at the Proposal Site. An overview of the Proposal is provided in Figure 4.1 and Figure 4.2.

The Proposal would be developed in three stages:

Stage 1: Initial throughput

 Stage 1 would comprise 500,000 tpa of additional throughput to be received at the Eastern Creek REP to enhance resource recovery outcomes by increasing utilisation of onsite processing capabilities.

Stage 2: Internal site optimisation

- Stage 2 would facilitate the remaining throughput increase (an additional 450,000 tpa of the total 950,000 tpa proposed) to be received and processed across the Eastern Creek REP, and operation of one of two proposed new site exits. Stage 2 includes:
- Construction and operation of a new site exit to the Honeycomb Drive extension and installation of two outbound weighbridges and a dedicated weighbridge office.
- Construction and operation of a new site exit to Kangaroo Avenue in the northeast of the Proposal Site, and the installation of two outbound weighbridges and a dedicated weighbridge office.
- Upgrade of existing internal roads as required.
- Earthworks for Stage 3 site establishment.
- Additional carparking and amenities.

Stage 3: Installation of supporting infrastructure

- Stage 3 would comprise the redevelopment of the north-eastern corner of the Proposal Site, including:
- Construction and operation of a Site Workshop (relocating this activity from elsewhere within the Proposal Site to a dedicated enclosed facility).
- Construction and operation of a skip bin Maintenance and Manufacturing Workshop.
- Installation of landscaping, signage, security fencing and finishing works.



The new built elements forming the Proposal are described in Section 4.2 to Section 0. Table 4.1 denotes which stage of the Proposal each built element would be associated with. The existing Eastern Creek REP built elements would be utilised for all three stages of the Proposal.

Built elements	Stage 1	Stage 2	Stage 3
Connection to Honeycomb Drive		\checkmark	
Outbound weighbridges to the west of MPC2 (including wheel wash facilities) and weighbridge control office		\checkmark	
Connection to Kangaroo Avenue		\checkmark	
Outbound weighbridges (including wheel wash facilities) and weighbridge control office in the north-eastern corner		\checkmark	
Upgrades to existing roads		\checkmark	
Site Workshop			\checkmark
Maintenance and manufacturing workshop			\checkmark
Additional carparking adjacent to MPC2		✓	
Urban design and landscaping (including perimeter fencing)		\checkmark	\checkmark
Water management infrastructure		\checkmark	\checkmark

Table 4.1: Key Built Elements of the Proposal



Figure 4.1 Proposed Stage 2





Figure 4.2 Proposed Stage 3





4.2 Connection to the Honeycomb Drive extension

To accommodate future land releases and development within the Eastern Creek area, TfNSW is proposing to extend Honeycomb Drive from its current western most extent (approximately 430 m to the west of Kangaroo Avenue) to connect to Archbold Road to the west of the Eastern Creek REP (known as the 'Precinct Road').

Stage 2 of the Proposal would include a connection to the Honeycomb Drive extension, accommodating semi-trailer vehicles up to 19 m. The connection would provide an alternate exit for vehicles leaving the Eastern Creek REP. This new connection would comprise a single lane (5 m wide) exit approximately 900 m west of the Honeycomb Drive/ Kangaroo Avenue intersection. The exit would connect from the internal site road network between MPC1 and MPC2 and would extend approximately 230 m to the south to connect to the Honeycomb Drive extension. The exit would provide for single directional traffic flow (southbound direction) and would facilitate a left out turn only (travelling eastbound) for vehicles exiting onto the Honeycomb Drive extension prior to completion of the Archbold Road extension. The exit onto the Honeycomb Drive extension has been constructed. Two (2) exit weighbridges (typically 28 m in length) would be installed prior to the exit onto the Honeycomb Drive extension, north of the weighbridges the road is dual lane (10 m wide). All exiting vehicles would weigh out via one of these two weighbridges utilising the connection.

In summary, the connection to Honeycomb Drive would comprise:

- Removal of part of the amenity berms on the western site of MPC2.
- Approximately 230 m of dual lane single direction, graded and paved road, merging to single lane south of the weighbridges.
- Two (2) 28 m exit weighbridges.
- Wheel wash facilities with rumble grid.
- A left turn out exit point prior to the operation of the Archbold Road extension.
- A passing lane circumventing the weighbridges to provide an access / egress point for emergency vehicles.
- Stormwater diversion swales.



4.3 Connection to Kangaroo Avenue

As part of Stage 2 of the Proposal, a site exit would be established at the north-eastern corner of the Proposal Site onto Kangaroo Avenue, accommodating semi-trailer vehicles up to 19 m. The connection would facilitate an alternate exit for vehicles leaving the Eastern Creek REP (in addition to the exit to the Honeycomb Drive extension to be constructed as part of Stage 2 of the Proposal). The connection would include upgrade / extension of internal roads to formalise the connection from existing internal roads to the new exit. The exit onto Kangaroo Avenue would form the northern extent of the Eastern Creek REP and would require partial removal of the amenity berm in this location.

The exit would provide for single directional traffic flow (eastbound direction) onto Kangaroo Avenue. A single lane (5 m wide) would exit on to Kangaroo Avenue with a dual lane (10 m wide) being provided until the weighbridges. Two exit weighbridges (28 m in length) would be installed prior to the exit onto Kangaroo Avenue. All vehicles using this exit would weigh out via one of these two weighbridges.

The connection to Kangaroo Avenue would also include a single lane (5 m wide) entrance located directly adjacent the proposed exit lane to provide access to the Maintenance and Manufacturing Workshop, accommodating vehicles up to 12 m. This entrance lane would traverse the area north of the proposed OSD basin (Basin B), maintaining a width of 5 m before connecting to the proposed hardstand area located adjacent the Maintenance and Manufacturing Workshop. The proposed hardstand area would facilitate vehicle access to the broader Eastern Creek REP internal road network.

The proposed driveways off Kangaroo Avenue would incorporate a crossing of Angus Creek. The width of the Angus Creek corridor between the eastern boundary of the Proposal Site and the western footpath of Kangaroo Avenue is approximately 23 metres.

The connection to Kangaroo Avenue would comprise:

- Removal of the amenity berms in the north-east corner along the northern boundary of the Eastern Creek REP and part of the amenity berm along Kangaroo Avenue.
- An exit lane (5 m wide) to Kangaroo Avenue and entrance lane (5 m wide) providing access to the Maintenance and Manufacturing Workshop.
- An approximately 25 m culvert over Angus Creek
- Connection to the internal road network adjacent to the northern and southern side of the SMA.
- Two (2) 28 m exit weighbridges.
- Wheel wash facilities with rumble grid.
- A passing lane circumventing the weighbridges to provide an access / egress point for emergency vehicles
- Stormwater diversion swales.



4.4 Weighbridge Control Offices

Two (2) outbound weighbridges would be installed as part of the new connection to Kangaroo Avenue and as part of the new connection to the Honeycomb Drive extension. To provide visual and acoustic screening for neighbouring land uses to the north, and to administer use of the outbound weighbridges, a weighbridge control building would be constructed over the outbound weighbridges. The weighbridge control building would be approximately 4 m in width, and 10 m in length (totalling 40 m²).

4.5 Internal Road upgrades

Upgrades to the internal road network would be completed for internal roads located within close proximity to MPC1 and MPC2 and surrounding the SMA. These upgrades would include:

- Minor upgrading and widening of internal roads
- Resurfacing of internal roads where previous damage had occurred
- Maintenance of kerbing, guttering and drainage lines where needed.

Roads would be designed to a 20 km/h speed limit and a two-way road corridor width (10 m) (including traffic lanes, drainage and vehicle barriers where required). All internal road pavements will be rigid (concrete). Pavements will be designed to satisfy the requirements of *Austroads Pavement Design Guide – A Guide to the Structural Design of Road Pavements* and recommendations provided as part of a geotechnical investigation undertaken for the Proposal Site.

4.6 Site Workshop

Stage 3 of the Proposal would include the construction of a shed for the purpose of providing an enclosed Site Workshop to service the entire Eastern Creek REP. The Site Workshop would be located in the north-eastern corner of the Proposal Site adjacent to the connection to Kangaroo Avenue. The Site Workshop would have a total footprint of approximately 3,950 m² and would have a height of approximately 14 m. The Site Workshop would provide a visual and acoustic buffer between neighbouring land uses to the north and the landfilling activities within the centre of the Eastern Creek REP.

The Site Workshop would comprise a steel shed with corrugated steel frame and cladding, approximately 14 m in wall height, with a corrugated steel sheeting roof pitched to a maximum height of approximately 14 m.

There would be an awning and roller shutter doors along the southern side of the Site Workshop.



The Site Workshop would include a wash bay for trucks used in the operation of the Eastern Creek REP, an internal site office and warehouse amenities. The proposed hardstand area adjacent the southern side of the building would facilitate access to the broader Eastern Creek REP internal road network. The Site Workshop would also include a 20 kL rainwater tank and fire services infrastructure.

4.7 Maintenance and Manufacturing Workshop

The Proposal would include the construction of a Maintenance and Manufacturing Workshop for the purpose of maintaining and manufacturing skip bins for use within the Eastern Creek REP and broader Bingo network. The Maintenance and Manufacturing Workshop would be located in the north-eastern corner of the Proposal Site adjacent to the Eastern Creek REP boundary along Kangaroo Avenue. The Maintenance and Manufacturing Workshop would have a total footprint of approximately 8,500 m² and would have a maximum height of 14 m. The Maintenance and Manufacturing Workshop would provide a visual and acoustic buffer between neighbouring land uses to the east and the landfilling activities within the centre of the Eastern Creek REP in lieu of the partially removed amenity berm.

The Maintenance and Manufacturing Workshop would comprise a shed with corrugated steel frame and cladding, approximately 14 m in wall height, with a corrugated steel sheeting roof pitched to a maximum height of approximately 14 m.

The proposed Maintenance and Manufacturing Workshop is a single storey building which would include an internal site office, warehouse amenities and a wash bay for trucks. The eastern perimeter of the building would consist of a series of roller shutter doors and an awning which would extend over the roller shutter doors to allow vehicles to load/unload under cover. A hardstand area located to the east of the building would connect to the proposed Kangaroo Avenue egress.

The Maintenance and Manufacturing Workshop would also include a 20 kL rainwater tank and fire services infrastructure.



4.8 Proposal Staging

4.8.1 Stage 1: Initial throughput

In Stage 1, there would be the first phase of the increase in throughput growth (an additional 500,000 tpa) and no construction works proposed.

4.8.2 Stage 2: Internal site optimisation

Key activities associated with the construction of the connection to the Honeycomb Drive extension and connection to Kangaroo Avenue forming Stage 2 of the Proposal would comprise the following activities:

- Phase 2a: Site establishment including removal of amenity berms as required.
- Phase 2b: Establishment of pavement, road surface and kerbing.
- Phase 2c: Other minor internal road works and construction of carpark and amenities south of MPC2.
- Phase 2d: Construction of the weighbridge control offices
- Phase 2e: Installation of weighbridges and wheel wash facilities
- Phase 2f: Signage, line marking and commissioning.

Further detail regarding construction activities associated with Stage 2 of the Proposal are provided in the EIS.

Stage 2 construction would be anticipated to take approximately 18 months assuming that earthworks for both new exit connections is carried out sequentially. However construction may occur concurrently. Table 4.2 provides an indicative breakdown of construction tasks associated with Stage 2.

Construction	Month																	
Works Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Phase 2a																		
Phase 2b																		
Phase 2c																		
Phase 2d																		
Phase 2e																		
Phase 2f																		

Table 4.2: Stage 2 Construction Timing and Phasing (Indicative)



4.8.3 Stage 3: Installation of supporting infrastructure

Key activities associated with the construction of the built form elements comprising Stage 3 of the Proposal would comprise the following activities:

- Phase 3a: Site establishment.
- Phase 3b: Construction of the Site Workshop.
- Phase 3c: Construction of the Maintenance and Manufacturing Workshop.
- Phase 3d: Installation of perimeter fencing, landscaping and signage.
- Phase 3e: Commissioning.

Further detail regarding construction activities associated with Stage 3 of the Proposal are provided in Section 3.4.2 of the EIS.

Stage 3 would comprise the construction of the Site Workshop and the Maintenance and Manufacturing Workshop, which is anticipated to take approximately 14 months to complete.

The individual timing of the above Phases would be subject to on-site operational demands and may occur concurrently or as individual activities. Table 4.3 provides an indicative breakdown of construction tasks associated with Stage 3.

Construction	Month													
works Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Phase 3a														
Phase 3b														
Phase 3c														
Phase 3d														
Phase 3e														

Table 4.3 Stage 3 Construction Timing and Phasing (Indicative)

4.9 Construction Work Hours

For each Stage, works would be undertaken during standard construction hours, namely:

- 7am to 6pm, Monday to Friday.
- 8am to 1pm on Saturday.
- No works on Sundays or Public Holidays.



5 Construction Phase

A review of the traffic impacts associated with the construction phase of the Proposal has been undertaken to assess the staging and duration of construction works, the construction traffic generation and vehicle haul routes to/from the Proposal Site. Given that there is a marginal increase in traffic volumes per hour generated by construction, the construction traffic impacts on the surrounding road network have been assessed qualitatively herein.

5.1 Construction Traffic Generation

During the peak construction in Stage 2, the works are estimated to generate in the order of 72 heavy vehicles and 40 light vehicles on a daily basis. In Stage 3, the peak construction activities are expected to generate in the order of 24 heavy vehicle and 12 light vehicles per day.

In the road network AM peak and PM peak periods, the hourly construction traffic generation is estimated as follows:

- In Stage 2, six (6) vehicles per hour i.e. 12 two-way vehicle movements per hour.
- In Stage 3, two (2) vehicles per hour i.e. 4 two-way vehicle movements per hour.

In the busiest period of construction (which is likely to be earthworks), there would be in the order of six (6) heavy vehicles generated per hour. These vehicles would generate 12 trips which would equate to an average of one vehicle trip every five minutes.

Estimates for construction traffic generation in Stage 2 and Stage 3 are presented in Table 5.1.

Stage	Peak Construction Phase/s	Peak Daily Construction Traffic
Stage 2	Concurrent construction of: Phase 2a Phase 2b Phase 2c Phase 2d	72 heavy vehicles 40 light vehicles
Stage 3	Concurrent construction of: Phase 3b Phase 3c	24 heavy vehicles 12 light vehicles

Table 5.1: Construction Traffic Generation

As noted in Section 6.4, Stage 3 would generate the greatest number of operational vehicles. It would involve operation of the Site Workshop and Maintenance and Manufacturing Workshop along with the resource recovery facility operations (including an increase in throughput of 950,000 tpa). Consequently, the traffic modelling has been based on the full build scenario with all three stages of operation. Any impacts associated with construction traffic would be short term and have been considered qualitatively only. Construction traffic would have a negligible impact on the road network, having consideration that traffic



modelling for 2025 and 2035 future operational scenarios show the local network to operate at LoS C or better in peak periods.

Construction staff (light vehicles) would enter and exit the Proposal Site approximately 30-60 minutes before and after the start and end times (respectively). With construction hours commencing at 7am and ending by 6pm, construction staff would be arriving and departing outside of the road network peak periods (7am-8am and 4pm-5pm).

5.2 Construction Vehicle Routes

The primary route for construction heavy vehicles would be onto Kangaroo Avenue from Honeycomb Drive, Wonderland Drive, Wallgrove Road and the M7 Motorway. Some heavy vehicles may travel via the M4 Motorway and Wallgrove Road.

5.3 Construction Vehicle Access

During Stage 2, construction vehicles will access the Proposal Site via the existing access driveway off Kangaroo Avenue as shown in Figure 5.1. During Stage 3, construction vehicles will enter the Proposal Site via the existing access driveway off Kangaroo Avenue and exit the Proposal Site via the new exit off Kangaroo Avenue and the proposed Honeycomb Drive extension as shown in Figure 5.2.

An alternative temporary construction access may be established off Honeycomb Drive extension or the new exit point on Kangaroo Avenue, which would separate construction vehicles from operational vehicles where possible.





Figure 5.1: Stage 2 – Construction Vehicle Access







5.4 Construction Vehicles and Equipment

Various types of plant and equipment would be required for the various construction activities of the Proposal. A summary of the plant and equipment that are likely to be used during the construction of the Proposal is provided in Table 5.2.

Table 5.2: Construction Plant and Equipment

Faultamont	Construction Stage				
Equipment	Stage 2	Stage 3			
Excavators and backhoes	\checkmark	\checkmark			
Forklifts		\checkmark			
Cherry pickers and mobile cranes		\checkmark			
Water trucks	\checkmark	\checkmark			
Handheld tools	\checkmark	\checkmark			
Concrete agitators, pumps and saws	\checkmark	\checkmark			
Mulcher	\checkmark	\checkmark			
Roller (vibratory and static)	\checkmark	\checkmark			
Scraper	\checkmark	\checkmark			

5.5 Construction Staff Parking

Construction personnel would utilise existing car parking available across the Eastern Creek REP and within established working compounds.

5.6 Pedestrian and Cyclist Access

Pedestrian and cyclist access will be maintained at all times during construction of the Proposal and would not be impeded by the proposed construction works.

5.7 Public Transport

The proposed construction activities would not adversely impact existing nearby bus services which operate along Wonderland Drive.

5.8 Emergency Vehicles

No special provisions for emergency service vehicles are required as part of the construction works. Notwithstanding, emergency vehicle access shall be maintained at all times.



6 Operational Phase

6.1 Design Rate

Under the State Environmental Planning Policy (Transport and Infrastructure) 2021, the Proposal Site is considered a 'traffic-generating development'. Hence, it is a requirement to assess the impact of traffic associated with the future operation of the Proposal Site, which also aligns with the requirement of the SEARs.

The RTA Guide to Traffic Generating Developments (2002) (the Guide) states that "...peak traffic generation period for industrial land use is generally determined by three key factors: employee density, travel mode and peak period travel distribution." The Guide also recognises that peak period traffic generation of industrial land uses differs depending on the specific industrial development type.

The Guide contains traffic generation rates for industrial developments including, factories, warehouses, and business parks based on the gross floor area (GFA) of the development. However, the trip generation of the Proposal is not directly impacted by changes in the GFA. Rather, it is influenced by the amount of material throughput at the facility. Hence, application of the GFA rate to above trip rates is not considered to be appropriate. A more appropriate method of estimating the trip generation of the Proposal would be based on the annual material throughput as assessed in Section 6.2.

6.2 Traffic Generation of the Proposal

6.2.1 Resource Recovery Activities

Site-generated trips have been estimated based on the amount of waste material to be received (and processed) at the Proposal Site and the amount of recovered material to be exported (for further recycle and reuse). The resource recovery rate (rate of waste material diverted away from landfill) at the Eastern Creek REP is currently 81.5%; the remaining 18.5% of material which cannot be recovered is sent to the landfill on-site. It is anticipated that the majority of the throughput increase would be processed through MPC2. MPC2 has been designed to achieve resource recovery rates up to 90%. However, for the purposes of this assessment a recovery rate of 85% has been used.



The Proposal would consist of predominantly dry C&D and C&I waste which is consistent with existing waste streams received at the Eastern Creek REP. This material would be transported to/from the Proposal using the following types of vehicles:

- Walking floor trailers i.e. 19 m semi-trailer.
- 19 m Truck and Dog combinations.
- Mix of rigid vehicles, including 6.4 m small rigid vehicles, 8.8 m medium rigid vehicles and 12.5 m heavy rigid vehicles.

Details of these vehicles are presented in Table 6.1.

		Maximum Regulatory Mass	Vehicle (Mass of L	Payload .oad Only)	Vehicle Payload					
Vehicle Type (Based on Length)	cle Type Typical Axle on Length) Configuration 1		Theoretical ³	Average based on ECREP Weighbridge Data	Adopted in this Assessment					
Articulated Vehicles										
Walking Floor (19m semi-trailer)	6 axles	42.5 tonnes	24.04 tonnes	20 tonnes	20 tonnes					
19m Truck & Dog	6 axles	42.5 tonnes	33.00 tonnes	32 tonnes	32 tonnes					
		Rigid Vehicles								
12.5m Heavy Rigid Vehicle	Generally 4 axles	Up to 30.0 tonnes	15.50 tonnes							
8.8m Medium Rigid Vehicle	Generally 3 axles	26.5 tonnes	13.12 tonnes	4 tonnes	4 tonnes					
6.4m Small Rigid Vehicle	Generally 2 axles	15.0 tonnes	7.00 tonnes							

Table 6.1: Type of Vehicles

Sources:

1 - National Heavy Vehicle Regulator Common Heavy Freight Vehicle Configurations.

2 - National Heavy Vehicle Regulator Common Heavy Freight Vehicle Configurations.

3 - Australian Trucking Association Truck impact chart Technical Advisory Procedure, 2.2 edition, March 2018, Table 3.



To be conservative, this traffic assessment adopts the vehicle payload as per historic weighbridge data at the Eastern Creek REP which are slightly less than the theoretical payloads as documented within the Australian Trucking Association Truck impact chart Technical Advisory Procedure, 2.2 edition.

Estimates for traffic generation associated with the additional material throughput in Stage 1 and Stage 2 are presented in Table 6.2 and Table 6.3, respectively. The estimates include details of the key elements as follows:

- Type of vehicles to be used in the transportation of waste material and recovered material to/from the Proposal Site.
- Proportion of vehicle type.
- Vehicle payload.
- Equivalent number of vehicles generated on a yearly, daily, and hourly basis.

The vehicle numbers given in Table 6.2 and Table 6.3 are the additional number of vehicles estimated to be generated by the increase in material throughput within each Stage. A summary of the cumulative additional throughout is presented in Table 6.4, which is representative of conditions at the end of Stage 2.

Vehicle Type	Proportion of Vehicle Type (%)	Additional Material Throughput (tpa)	Ave. Vehicle Payload 1	Yearly Vehicles	Daily Vehicles ²	Hourly Vehicles ³
		Incoming	Waste Material			
Walking Floor (19m semi-trailer)	50%	250,000	20 tonnes	12,500	35	2
19m Truck & Dog	35%	175,000	32 tonnes	5,469	15	1
Small/Medium/Heavy Rigid Vehicles	15%	75,000	4 tonnes	18,750	53	2
Sub-Total	-	500,000	-	-	103	5
		Outgoing Re	covered Materi	al		
Walking Floor (19m semi-trailer)	40%	170,000	20 tonnes	8,500	24	1
19m Truck and Dog	60%	255,000	32 tonnes	7,969	22	1
Sub-Total	-	425,000 4	-	-	46	2
Total					149	7

Table 6.2: Stage 1 (Additional 500,000 tpa) Traffic Generation

Notes:

1 - Average vehicle payload based on 2021 weighbridge data at Eastern Creek REP.

2 - 357 Operational days per year.

3 - 24-hour operation per day (assumes vehicles are evenly split across the day).

4 - Resource recovery rate of 85% (rate of waste diverted away from landfill).



Vehicle Type	Proportion of Vehicle Type (%)	Additional Material Throughput (tpa)	Ave. Vehicle Payload 1	Yearly Vehicles	Daily Vehicles ²	Hourly Vehicles ³
		Incoming	Waste Material			
Walking Floor (19m semi-trailer)	50%	225,000	20 tonnes	11,250	32	1
19m Truck & Dog	35%	157,500	32 tonnes	4,922	14	1
Small/Medium/Heavy Rigid Vehicles	15%	67,500	4 tonnes	16,875	47	2
Sub-Total	-	450,000	-	-	93	4
		Outgoing Re	covered Materi	al		
Walking Floor (19m semi-trailer)	40%	153,000	20 tonnes	7,650	21	1
19m Truck and Dog	60%	229,500	32 tonnes	7,172	20	1
Sub-Total	-	382,500	-	-	41	2
Total					134	6

Table 6.3: Stage 2 (Additional 450,000 tpa) Traffic Generation

Notes:

1 - Average vehicle payload based on 2021 weighbridge data at Eastern Creek REP.

2 - 357 Operational days per year.

3 - 24-hour operation per day (assumes vehicles are evenly split across the day).

4 - Resource recovery rate of 85% (rate of waste diverted away from landfill).

Table 6.4: Cumulative Additional Traffic Generation (Additional 950,000 tpa)

Vehicle Type	Additional Material Throughput (tpa)	No. of Daily Vehicles	No. of Hourly Vehicles	
Stage 1	500,000	149	7	
Stage 2	450,000	134	6	
Total 950,000		283	13	

As a result of the additional 500,000 tpa in Stage 1, there would be an additional 149 vehicles per day or 7 vehicles per hour on the surrounding road network.

The additional 450,000 tpa in Stage 2 would result in a further 134 vehicles per day or 6 vehicles per hour on the surrounding network.

The full material throughput increase of 950,000 tpa would be reached by the end of Stage 2, at which point the total number of additional material transportation vehicles generated by the Proposal would be 283 vehicles per day or 13 vehicles per hour.



6.2.2 Site Workshop and Maintenance and Manufacturing Workshop

As outlined in Chapter 4, Stage 3 is for the redevelopment of the north-eastern corner of the site. This would involve construction and operation of a Site Workshop (relocating this activity from elsewhere within the Proposal Site to a dedicated enclosed facility), and construction and operation of a Maintenance and Manufacturing Workshop.

As advised by the Applicant, activities associated with the Maintenance and Manufacturing Workshop is anticipated as follows:

- Workshop material deliveries per day 10 heavy vehicles per day.
- Workshop customers 5 heavy vehicles per day.
- Workshop staff 50 light vehicles per day.

The abovementioned traffic generation would occur at the end of Stage 3 following completion of the workshop and maintenance shed construction has completed.

6.3 Operational Staff

Employees at the Eastern Creek REP would carry out work on-site across two (2) shift times, namely, 5am - 3pm (day shift) and 3pm - 1am (night shift). There will be skeleton staff (around 15 staff) outside these times to allow ongoing receipt of waste and processing in the MPCs. Separately, the Maintenance and Manufacturing Workshop would employ 50 staff on a daily basis between the hours of 6am and 6pm.

The allocation of operational staff across the various resource recovery facilities and maintenance and manufacturing workshop is presented in Table 6.5.

	No. of Employees								
Facility/	Existing		Stag	Stage 1		ge 2	Stage 3		
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Day Shift	Night Shift	Day Shift	Night Shift	Day Shift	Night Shift	Day Shift	Night Shift	
MPC1 and MPC2	67	56	72	61	77	66	77	66	
Landfill	12	2	12	2	12	2	12	2	
Crushing and SMA	16	0	16	0	16	0	16	0	
Site Management	6	0	6	0	6	0	6	0	
Site Office	25	0	25	0	25	0	25	0	
Workshop & Maintenance	0	0	0	0	0	0	25	25	
Sub-total	126	58	131	63	136	68	161	93	
Total	18	84	19	94	20	04	2	54	

Table 6.5: Operational Staff



6.4 Future Traffic Generation of the Entire Eastern Creek REP

Of the various stages of the Proposal, Stage 3 would generate the greatest number of operational vehicles. It would involve operation of the Site Workshop and Maintenance and Manufacturing Workshop along with the resource recovery facility operations (including an increase in throughput of 950,000 tpa).

Average day traffic generation in the Stage 3 operation phase is presented in Table 6.6. This scenario has been modelled using SIDRA Intersection traffic modelling software. As discussed in Section 2.5, a peak day has been conservatively considered as generating approximately 30% greater traffic volumes than the average day based on existing weighbridge data. The peak day has also been modelled as a low likelihood 'worst case' scenario. It is noted that future vehicles volumes would be monitored through weighbridge records, as currently occurs.

	Stage 3 – Operation Phase					
Facility/ Activity	Deily Vehicles	Ave. Hourly	y Vehicles ¹			
	Daily venicles	In	Out			
Landfill	282	12	12			
MPC1	515	21	21			
SMA	104	4	4			
MPC2	283	13	13			
Material Processing Operational Staff ²	204	-	-			
Workshop Customers	5	Assume 1 ³	Assume 1 ³			
Workshop Material Deliveries	10	1	1			
Workshop Staff ²	50	-	-			
Total	1,453	52	52			

Table 6.6: Stage 3 Traffic Generation

Notes:

1 – 24-hour operation per day (assumes vehicles are evenly split across the day).

2 - Staff (light vehicles) would enter and exit the site before and after the start and end of a work shift/ hours of

construction which occur outside of the surrounding road network peak periods.

3 - Realistically, there would be less than 1 trip per hour since there is only 5 trips per day. However, 1 trip per hour has been considered.

The Stage 3 operation phase for the average day and peak day have been assessed herein.

6.5 Traffic Distribution

The M4 Motorway, the main east-west link across Sydney's road network, is located north of the Proposal Site and the M7 Motorway, a key a north-south link across Sydney's road network, is located south of the Proposal Site. It is anticipated that vehicle travel to/from the north direction and south direction on Wallgrove Road would be an even split.



6.6 Level of Service Criteria

TfNSW uses level of service as a performance measure to indicate the operating efficiency of a given intersection. The level of service ranges from A to F. Levels of service between A and D indicate the intersection is operating within capacity, with LoS A providing exceptionally good performance to LoS D indicating satisfactory performance. LoS E and F indicate the intersection is operating at or near capacity and generally would require intersection improvement works to maintain reasonable performance.

The level of service is directly related to the average delay experienced by vehicles travelling through the intersection. At signalised intersections, the average delay is the volume weighted average delay over all movements. For roundabouts and priority (give way and stop sign) controlled intersections, the average delay relates to the movement with the highest average delay per vehicle.

Table 6.7 shows the criteria that TfNSW adopts in assessing the level of service at intersections.

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

Table 6.7: Intersection Level of Service Criteria

6.7 Background Traffic Growth

Background traffic growth has been adopted based on the Sydney Strategic Traffic Forecasting Model (STFM) growth plots obtained from TfNSW. The STFM growth plots provide growth rates (per cent per annum growth) from 2021 to 2036 and are based on approved developments in Sydney. STFM growth plots have been used to increase background traffic flows for SIDRA modelling of future scenarios for the Proposal.

Background traffic growth has been considered in future traffic modelling scenarios based on the Strategic Traffic Forecasting Model (STFM) growth plots obtained from TfNSW. STFM growth plots are based on National Census population data collected by ABS in 2016. Future growth in population is aligned with population projections and housing supply forecasts prepared by DPE in 2019. Future employment is aligned with NSW Treasury economic forecasts and



industry forecasts prepared using a Computerised General Equilibrium model by Victoria University. The future distribution of employment growth is informed by a custom-built Future Employment Developments Database across NSW.

Growth plots from the STFM (model version 3.8) provide rates from 2016 to 2036 based on approved developments in Sydney. Network key assumptions considered in the 2036 future year are shown in Figure 6.1.

STFM background traffic growth data is only provided at two nearby intersections, namely, at Wonderland Drive-Wallgrove Road and Wonderland Drive-Aspec Place. Therefore, background traffic growth rates at Wonderland Drive-Aspec Place have been applied to downstream intersections which have assessed using SIDRA. The background traffic growth rates which have been adopted in the assessed intersections are summarised in Table 6.8.

Table 6.8: STFM Background Traffic Growth Rates

Intersection	Growth Period	AM Peak	PM Peak
Wonderland Dr - Wallgrove Rd	2021-2026	2.1% p.a.	1.2% p.a.
	2021-2036	1.2% p.a.	1.2% p.a.
Wonderland Dr - Aspec PI, and downstream intersections	2021-2026	1.1% p.a.	0.8% p.a.
Honeycomb Dr - Grevillea St, Honeycomb Dr – Kangaroo Ave)	2021-2036	2.0% p.a.	0.6% p.a.

Notes:

p.a. – per annum.

Notably, the STFM model plots indicates a faint line in the location of the reproposed future Archbold Road extension. However, there is no traffic growth allocated to the route. On this basis, it is assumed that the Archbold Road extension would not be constructed and operational by such time. As such, it has not been considered within future modelling scenarios as part of this assessment. This can be seen in the STFM growth plots contained in Appendix D.



Figure 6.1: STFM Network Key Assumptions

Year	Road	Rail / Light Rail	Bus
• 2016	 Hunter Motorway (F3- Branxton) M2 widening M5 widening Western Sydney Employment Hub 	 SWRL LRT Dulwich Hill Extension 	• CBD Bus Plan
• 2021	 WestConnex Stages 1 & 2 Kingsford Smith Airport Upgrades (Airport Dr and Qantas Dr widening) M2 to F3 Tunnel (NorthConnex) F3 Kariong to Doyalson widen F3 Wyong Rd to Newcastle Link Rd widen M4 widening 	 SWRL Northwest Metro (Chatswood to Rouse Hill) CBD and South East Light Rail 	 Northern Beaches B-Line Metro Northwest bus adjustments For SMBSC¹ services – 1.3% growth per year, and for OSMBSC² services – 0.5% growth per year for all the years beyond 2016
• 2026	 M12 Badgerys Creek Sydney Gateway WestConnex Stage 3 North West Growth Centre Western Harbour Tunnel WCX Beaches Link F6 Extension Stage 1 	 City and South West Metro (Chatswood to Bankstown) Sydney Metro – Western Sydney Airport (St Marys – Badgerys Creek Aerotropolis) Parramatta Light Rail Stage 1 Parramatta Light Rail Stage 2 More Trains More Services on existing lines 	 Metro City & Southwest bus adjustments Western Sydney Bus Rapid Network Parramatta Light rail bus services
• 2031	 South West Growth Centre Elizabeth Dr M7 to Edmondson Av widening M1 Pacific Motorway extension to Raymond Terrace 	 Sydney Metro West Other Rail as 2026 Light Rail as 2026 	Metro West bus adjustments
• 2036	• As 2031	 Rail as 2031 Light Rail as 2026 	• As 2031

¹ Sydney Metropolitan Bus Services Contract

² Outer Sydney Metropolitan Bus Services Contract



6.8 Traffic Modelling Scenarios and Results

As noted in Section 6.4, Stage 3 would generate the greatest number of operational vehicles. It would involve operation of the Site Workshop and Maintenance and Manufacturing Workshop along with the resource recovery facility operations (including an increase in throughput of 950,000 tpa). Consequently, the operational modelling has been based on the full build scenario with all three stages of operation.

Modelling of the existing and future conditions have been undertaken as follows:

- Scenario 0 Existing Conditions ("base case").
- Scenario 1a Future conditions with background traffic growth up to the year 2025 (Proposal opening year) i.e. <u>no site-generated traffic.</u>
- Scenario 1b Future conditions with background traffic growth up to the year 2025 plus site-generated traffic for the <u>average operational day</u>.
- Scenario 1c Future conditions with background traffic growth up to the year 2025 plus site-generated traffic for the <u>peak operational day</u>.
- Scenario 2a Future conditions with background traffic growth up to the year 2035 (Proposal opening year plus 10 years) i.e. <u>no site-generated traffic.</u>
- Scenario 2b Future conditions with background traffic growth up to the year 2035 plus site-generated traffic for the <u>average operational day</u>.
- Scenario 2c Future conditions with background traffic growth up to the year 2035 plus site-generated traffic for the <u>peak operational day</u>.

Table 6.9 presents a summary of the SIDRA modelling results in the road network peak periods.

to to see the se	AM Peak (7.00)am – 8.00am)	PM Peak (4.00pm – 5.00pm)			
Intersection	Average Delay	LoS	Average Delay	LoS		
	Scen	ario 0				
Wallgrove Rd-Wonderland Dr	24	В	32	С		
Interchange Dr -Wonderland Dr	11	А	13	A		
Wonderland Dr -Honeycomb Dr	14	А	10	A		
Honeycomb Dr -Grevillea St	12	А	9	A		
Honeycomb Dr -Kangaroo Ave	10	А	9	A		
Scenario 1a						
Wallgrove Rd-Wonderland Dr	32	С	32	С		
Interchange Dr -Wonderland Dr	11	А	13	A		
Wonderland Dr -Honeycomb Dr	14	А	10	A		
Honeycomb Dr -Grevillea St	12	A	9	A		
Honeycomb Dr -Kangaroo Ave	10	А	9	A		

Table 6.9: SIDRA Results for Proposal Traffic Modelling Scenarios



	AM Peak (7.00am – 8.00am)		PM Peak (4.00pm – 5.00pm)			
Intersection	Average Delay	LoS	Average Delay	LoS		
	Scend	ario 1b				
Wallgrove Rd-Wonderland Dr	32	С	33	С		
Interchange Dr -Wonderland Dr	11	A	13	A		
Wonderland Dr -Honeycomb Dr	15	В	10	A		
Honeycomb Dr -Grevillea St	12	A	10	A		
Honeycomb Dr -Kangaroo Ave	10	A	10	A		
	Scenc	irio 1c				
Wallgrove Rd-Wonderland Dr	32	С	33	С		
Interchange Dr -Wonderland Dr	11	A	13	A		
Wonderland Dr -Honeycomb Dr	15	В	10	А		
Honeycomb Dr -Grevillea St	12	А	10	А		
Honeycomb Dr -Kangaroo Ave	11	А	10	А		
	Scend	ario 2a				
Wallgrove Rd-Wonderland Dr	33	С	35	С		
Interchange Dr -Wonderland Dr	11	А	13	А		
Wonderland Dr -Honeycomb Dr	15	В	10	А		
Honeycomb Dr -Grevillea St	12	A	9	А		
Honeycomb Dr -Kangaroo Ave	10	А	9	А		
	Scend	ario 2b				
Wallgrove Rd-Wonderland Dr	33	С	35	С		
Interchange Dr -Wonderland Dr	12	A	14	А		
Wonderland Dr -Honeycomb Dr	15	В	10	А		
Honeycomb Dr -Grevillea St	12	А	10	А		
Honeycomb Dr -Kangaroo Ave	11	А	10	А		
Scenario 2c						
Wallgrove Rd-Wonderland Dr	34	С	35	С		
Interchange Dr -Wonderland Dr	12	А	14	A		
Wonderland Dr -Honeycomb Dr	15	В	10	А		
Honeycomb Dr -Grevillea St	12	А	10	А		
Honeycomb Dr -Kangaroo Ave	11	А	11	A		



Scenario 0 (Existing Conditions)

All intersections operate at a level of service (LoS) A in the AM peak and PM peak periods, with the exception of Wallgrove Road-Wonderland Drive. This intersection operates at LoS B with an average delay per vehicle of 24 seconds in the AM peak hour and LoS C with an average delay of 32 seconds in the PM peak hour.

Scenario 1a

When background traffic growth is added into the future year 2025 models, all intersections would operate at the same level of service and similar average delay with the exception of Wallgrove Road-Wonderland Drive which would change to LoS C in the AM peak hour (+8 seconds average delay). In the PM peak hour, this intersection would continue to operate at LoS C (32 seconds average delay).

Scenario 1b

Once the development traffic for the average operational day is considered in the future year 2025, all intersections would continue to operate satisfactorily at a LoS C or better. The development traffic would result in a marginal increase of 1 second in average delay at most intersections in the peak periods which would result in a negligible impact on the intersection operation.

Scenario 1c

All intersections would continue to operate at a LoS C or better even with the addition of development traffic for the <u>peak operational day</u> in the year 2025. Similar to Scenario 1b, the development traffic would result in a marginal increase of 1 second in average delay at most intersections compared with Scenario 1a (no site-generated traffic) which would result in a negligible impact on the intersection operation.

Scenario 2a

In 2035, ten years post opening of the Proposal and having consideration for background traffic growth alone, all the intersections would operate satisfactorily at a LoS C or better.

Scenario 2b

In 2035, when background traffic growth and development traffic for the average <u>operational day</u> are considered together, the level of service at all intersections would be maintained at a satisfactorily LoS C or better which is similar to the performance in Scenario 2a (no site-generated traffic). The development traffic would result in a marginal increase of 1 second in average delay at most intersections in the peak periods. Notwithstanding, this would result in a negligible impact on the intersection performance.



Scenario 2c

The level of service at all intersections would be maintained at a satisfactory LoS C or better when background traffic growth and development traffic for the peak operational <u>day</u> are considered together in 2035. The development traffic would result in a marginal increase of 1-2 seconds in average delay at most intersections in the peak periods which would result in a negligible impact on the intersection operation.

Overall, the traffic assessment identifies that the Proposal would have a negligible impact on the performance of the surrounding road network. Traffic generated by the Proposal is not expected to compromise the safety or function of the surrounding road network. On this basis, road upgrades, infrastructure works, or new roads would not be required for the development.



7 Parking Assessment and Access

7.1 Car Parking Requirements

The State Environmental Planning Policy (Planning Systems) 2021, Part 2, Section 2.10 stipulates that Council Development Control Plans do not apply to State Significant Developments. However, having due regard to the objectives and guidelines as set by Council for industrial developments, the provision for car parking of the proposed development has been assessed in accordance with Council guidelines.

According to Blacktown City Council's website states that "In addition to the Blacktown Development Control Plan 2006, there are a number of deemed Development Control Plans contained within various State Environmental Planning Policies (SEPPs).", one of which is the Eastern Creek Precinct Plan Stage 3 - Prepared under SEPP 59. This Employment Lands Precinct Plan provides car parking rates for developments in the Eastern Creek Precinct which includes the Proposal Site. Therefore, future car parking provisions have been assessed in-line with this Plan.

The Eastern Creek Precinct Plan Stage 3 stipulates parking rates for industrial and office land uses with the following car parking rates:

- Buildings 7,500 m² or less 1 space per 100 m² GFA.
- Building greater than 7,500 m²GFA 1 space per 200 m² GFA only for the area in excess of 7,500 m² where there is a specific end user which would not demand a higher rate and where employee parking is adequately catered for.
- 1 space per 40 m² GFA for office use.

To estimate the parking requirement according to the Eastern Creek Precinct Plan Stage 3, floor area at the various resource recovery facilities at the Proposal Site that would be used for material receival, processing and product storage has been categorised as "industrial" while office/ amenities are categorised as "office" space. Based on the above-mentioned rates, the Proposal Site would generate a parking requirement as summarised in Table 7.1.

Use	Facility On-site	GFA (m²)	Parking Requirement
Industrial	MPC 1	9,040	83
	MPC 2	10,935	92
	SMA	40,000	238
	Maintenance and Manufacturing shed	8,500	80
Office	Site Office	390	10
	503 spaces		

Table 7.1: Eastern Creek Precinct Plan Stage 3 Car Parking Requirements



However, it is important to consider that there is already parking approved to satisfy the ECREP parking requirements under the most recent modification of the Project Approval (Mod 8 MP06-019) which provides for an additional 122 light vehicle spaces to the south-east of MPC2 which will be accessed via Honeycomb Drive. Therefore, a more appropriate method of estimating parking demand to be generated by the Proposal would be by using a 'first principle' approach as this would be based on the number of employees and shift times rather than floor area.. This information is presented in Table 7.2.

Employees at the Eastern Creek REP would carry out work on-site across two (2) shift times, namely, 5am - 3pm (day shift) and 3pm - 1am (night shift). Shift times may alter from time to time and based on operational and market conditions, however, this would be on rare occasions. Additional employees may occasionally be used to cover absences or leave.

Site office staff hours would be between 6am and 6pm daily. Workshop and maintenance staff hours would be between 6am and 6pm daily.

	No. of Employees					
Facility/ Activity	Stage 1		Stage 2		Stage 3	
	Day Shift	Night Shift	Day Shift	Night Shift	Day Shift	Night Shift
MPC1 and MPC2	72	61	77	66	77	66
Landfill	12	2	12	2	12	2
Crushing and SMA	16	0	16	0	16	0
Site Management	6	0	6	0	6	0
Site Office	25	0	25	0	25, until 6pm	0
Maintenance & Manufacturing	0	0	0	0	25	25
Sub-total	131	63	136	68	161	93
Total	194		204		254	

Table 7.2: Future Operational Staff

As shown in Table 7.2, in the future there could be up to 161 staff on-site during the daytime and 93 staff on-site during the night time periods.

The greatest number of employees on-site at any one time would occur at the shift changeover which would occur at around 3pm, as night workers arrive to the site to commence their shift and day workers conclude their shift. Assuming an overlap of 75% of day shift workers (121) and 75% of night shift workers (70) on-site at the same time, there would be up to 191 staff.



7.2 Future Car Parking Provision

Subject to detailed design it is proposed to provide a total of 276 car parking spaces on-site (including 122 spaces approved under Mod 8 MP06_139) as follows:

- 266 parking spaces for staff, including three (3) accessible spaces.
- 10 parking spaces for visitors, including two (2) accessible spaces.

As such, the 266 staff car parking spaces would be able to accommodate the peak parking demand associated with 191 staff on-site at one time (as calculated in Section 7.1).

7.2.1 Accessible Parking

The Eastern Creek Precinct Plan Stage 3 stipulates accessible parking rates. Developments of more than 50 car parking spaces must provide at least 2%, or part thereof, of those spaces for disabled drivers, clearly marked and signposted for this purpose.

Applying this rate to the Proposal Site, it would be required to provide five (5) accessible parking spaces. The proposed design includes five (5) accessible parking spaces, which satisfies the requirements of the Eastern Creek Precinct Plan for accessible parking.

7.2.2 Visitor Parking

The Eastern Creek Precinct Plan Stage 3 does not stipulate visitor parking rates. As a general 'rule of thumb', a visitor parking of 5% has been applied.

On this basis, there would be 10 car parking spaces allocated for visitors which would accommodate the visitation demands of the Proposal Site, subject to detail design.

7.3 Parking Layout

Blacktown Development Control Plan (DCP) 2015 Part A Section 6.4.4 stipulates land uses with low employee parking turnover are to be provided in accordance with the minimum dimensions as follows:

- Parking aisle width of 7.0 m.
- Bay width of 2.5 m.
- Bay length of 5.2 m.

The design of the on-site car park layout for the Proposal is to be consistent with the above requirements, and will be assessed during the detailed design stage of the Proposal.



7.4 Vehicle Access and Circulation

During Stage 1, all vehicles will access the Proposal Site as per the existing conditions. Heavy vehicles and operation staff will enter and exit the site via the existing Proposal Site access off Kangaroo Avenue. The site office will be accessed via a new driveway off Honeycomb Drive. Stage 1 would not result in any changes to the internal traffic flows described in Section 3.4.

As shown in Figure 7.1, during Stage 2 and Stage 3, landfill vehicles will enter and exit the Eastern Creek REP via the existing site access off Kangaroo Avenue. Resource recovery vehicles will enter the Proposal Site via the existing site access but exit the Proposal Site via the two new exit points (i.e. Kangaroo Avenue north of the site and Honeycomb Drive extension south-west of the site). Operation staff will enter and exit the Proposal Site via the existing site access off Kangaroo Avenue. The site office centre will be accessed via the new driveway off Honeycomb Drive. Vehicles entering and exiting the Maintenance and Manufacturing Workshop will do so via the new driveways on Kangaroo Avenue.

All other internal traffic flows would remain the same for both Stage 2 and Stage 3.Figure 7.1: Stage 2 and Stage 3 – Operational Vehicle Access



7.5 On-Site Vehicle Stacking

A stacking capacity analysis has been undertaken to determine whether all heavy vehicles accessing the Proposal Site can be fully accommodated on site at once at any point in time. The stacking capacity analysis is a factor of the number of stacking spaces available on site and duration per vehicle.



There are two critical locations on-site where stacking capacity has been assessed, namely, at the main site entrance where there would be the six tidal weighbridges and the MPC2 area where the majority of the increased throughput would be received and processed. The stacking capacity analysis at both locations is detailed herein.

Available Stacking Space at Inbound weighbridges (off Kangaroo Avenue)

The length of the internal entrance road measured between the frontage road (Kangaroo Avenue) and the six tidal weighbridges is approximately 220 m. During the operational peak hour, up to five weighbridges could operate as 'inbound' while one weighbridge operates as 'outbound'. Within this length, a total of 29 vehicles could physically stack along the internal road which includes the weighbridges themselves as shown in Figure 7.3.

The quantum of stacking spaces depends on the length of the vehicle. The stacking analysis has taken into consideration the vehicle sizes and the portion of each vehicle size (based on the expected vehicle composition from the existing weighbridge data) which would be entering the Proposal Site. The number of stacking spaces at the inbound weighbridges has been apportioned as follows:

- 62% 19 m Articulated Vehicles (AV) = 18 spaces.
- 32% 12.5 m Heavy Rigid Vehicles (HRV) = 9 spaces.
- 3% 8.8 m Medium Rigid vehicles (MRV) = 1 space.
- 3% 6.4 m Small Rigid Vehicles (SRV) = 1 space.

The above split considers vehicles accessing all areas across the Proposal Site during the operational peak hour.



Figure 7.2: Stacking Capacity



It is estimated that the weigh-in process will take an average of 2-10 minutes per vehicle, which factors in manoeuvring onto the weighbridge, electronic recording of entry data (time, date, type of vehicle, customer details, type of material), generation of an entry receipt, and driving off from the weighbridge. This process would rarely take up to 15 minutes per vehicle, unless for unique circumstances, such as data entry of a new customer. Applying a conservative rate of 15 minutes per vehicle, each stacking space could accommodate four vehicles in one hour (60 minutes / 15 minutes). Therefore, in one hour the 29 stacking spaces would be able to turnover a total of 116 vehicles (4 vehicles x 29 spaces).

On this basis, the available 29 spaces are able to accommodate the peak demand on site of 50 waste transportation vehicles in Stage 3. This is the sum of landfill, SMA, MPC1 and MPC2 vehicles in Table 6.6.

Having consideration for the peak operational day, the number of waste transportation vehicles would in the order of 66 vehicles (50 vehicles x 1.3). In this worst case scenario, the number of vehicles (66) would still be less than the stacking threshold (116). As such, all vehicles would be accommodated on-site.

Available Stacking Space within MPC2

It is anticipated that the majority of the throughput increase will be processed through MPC2, therefore a vehicle stacking analysis has been undertaken for the facility. There is a total of 13 bays proposed to service MPC2, with eight bays on the northern side of the facility and five bays on the eastern side.

It is expected that on-site activities will take approximately 15 minutes per vehicle. Theoretically, each bay is able to accommodate 4 vehicles (60 minutes / 15minutes). Therefore, in one hour, there would be a turnover of 52 vehicles (4 vehicles x 13 bays). However, only 13 waste vehicles are expected to visit MPC2 during the peak hour. Therefore, the available 13 bays are able to accommodate the peak demand at MPC2.

Having consideration for the peak operational day, which has been conservatively considered to generate 30% greater traffic volumes than the average day, the number of MPC2 vehicles would in the order of 17 vehicles (13 vehicles x 1.3). In this worst case scenario, the number of vehicles (17) would still be less than the stacking threshold (52). As such, all vehicles would be accommodated on-site.



8 Mitigation Measures

As assessed within this report, traffic generated by the Proposal is not expected to compromise the safety or function of the surrounding road network. Notwithstanding this, the following measures are proposed to mitigate any traffic impact.

8.1 Construction Traffic Management Plan

A Construction Traffic Management Plan (CTMP) will be prepared to mitigate potential construction traffic impact. The CTMP will address the specific traffic control requirements during the construction phase of the Proposal. The CTMP will assess the provision of traffic control measures, including:

- Site signage and road signage.
- Site traffic rules and traffic management requirements.
- Any road closures and associated traffic detour routes.

Additionally, the CTMP will include:

- Measures to enforce speed limits for construction traffic on site
- Provision of safe access and thoroughfare for pedestrians and cyclists
- Management of the Proposal Site such that all trucks would enter and leave the site in a forward direction, where feasible and reasonable
- Preparation of site-specific traffic control plans (TCPs) in accordance with the principles and guidance set out in the Traffic control at work sites Technical Manual (TfNSW, 2020), to outline how construction vehicle manoeuvres could be accommodated in and out of the work site
- Requirements for regular inspection of traffic controls and review of TCPs to identify potential safety hazards and enable implementation of corrective solutions
- Any workers required to undertake works or traffic control within the public domain shall be suitably trained and will be covered by adequate and appropriate insurances. All traffic control personnel will be required to hold Transport for NSW accreditation.
- Provision of tool box talks or alternative communication to inform workers of any changes to site traffic management.

8.2 Operational Mitigation Measures

Operational traffic will be managed as per the existing Environmental Management Strategy (EMS) for Eastern Creek REP. The currently approved EMS will be reviewed and updated to include as a minimum, the new operational traffic flows, and new internal pedestrian routes.



9 Summary and Conclusion

Based on the analysis and discussions presented within this report, the following summary and conclusions are made:

- Bingo is proposing to enhance resource recovery outcomes across the Greater Sydney area by increasing throughput at the Eastern Creek REP to capitalise on the underutilised state-of -the-art processing facilities, namely MPC2, and plant and equipment within the Eastern Creek REP. The Applicant is therefore proposing to increase the total throughput of the Eastern Creek REP by 950,000 tpa and carry out minor infrastructure upgrades works across the Proposal Site. The Proposal would include the upgrade and construction of supporting infrastructure to optimise the current operation at the Eastern Creek REP and facilitate the increased throughput proposed to be received at the Proposal Site.
- The operation and construction phases of the development are proposed to be staged in a manner which allows for ongoing resource recovery operation on-site.
- The site-generated parking demands have been assessed to be adequately accommodated on-site in the future. On the average day of operation, Proposal Site is expected to generate an additional seven (7) vehicles per hour in Stage 1 and an additional six (6) vehicles per hour in Stage 2. Once the Proposal Site has reached the full material throughput growth of an additional 950,000 tpa, the Proposal site would generate an additional 13 vehicles per hour.
- A comparison of the future peak road network performance in the opening year (2025) and opening year plus 10 years (2035) shows that the impact of site-generated traffic on an average operational day would be minor. A peak operational day was also assessed, which showed similar intersection operating conditions to the average day site generated traffic volumes.
- Construction would generate in the order of an additional six (6) vehicles per hour (in Stage 2) which would not have a material impact on the road network operation.
- Traffic impacts due to the Proposal site operation and construction phases have been assessed to be minor. On this basis, road upgrades, infrastructure works, or new roads would not be required for the development.



Appendix A

Architectural Site Plans




CONTINUED ON SHEET C3			
PROPOSED CARPARK EXTENSION PROPOSED ACCESS RAMP TO CARPARK		EXISTING CARPARK	
	HONEYCOMB DF (NOT PART OF THIS V REFER TO BCC DA	RIVE EXTENSION VORKS)	
GAS	GAS		000
	Client	Scales Draw	n JD Pro

THIS DRAWING CANNOT BE COPIED OR REPRODUCED IN ANY FORM OR USED FOR ANY OTHER PURPOSE OTHER THAN THAT ORIGINALLY INTENDED WITHOUT THE WRITTEN PERMISSION OF AT&L



Scales	1,500	Drawn	JD	Proj
	1.500	Designed	JD	
Grid	MGA94	Checked		
Height Datum	AHD	Approved		Title
				TILLE

SSD 11606719









Appendix B

Swept Path Analysis



100mm on Original

Proje Title



EASTERN CREEK RECYCLING ECOLOGY PARK THROUGHPUT INCREASE	Civil Engineers and Project Managers Level 7, 153 Walk North Sydney NSV ABN 96 130 882 4 Tel: 02 9439 17 Fax: 02 9923 10 www.atl.net.au	er Street V 2060 105 777)55
VEHICLE TURNPATHS	Status FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION	A1
SHEET 1	Project - Drawing No. 19-692-C360	Issue A

F:\19-692 BINGO\6.0 Drgs\Civil\Final\C300 Package - Throughput\19-692-C360.dwg





EASTERN CREEK RECYCLING ECOLOGY PARK THROUGHPUT INCREASE	Civil Engineers and Project Managers Level 7, 153 Walk North Sydney NSV ABN 96 130 882 4 Tel: 02 9439 17 Fax: 02 9923 10 www.atl.net.au info@atl.net.au	er Street W 2060 05 777 055
VEHICLE TURNPATHS	Status FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION	A1
SHEET 2	Project - Drawing No. 19-692-C361	Issue A

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Appendix C

SIDRA Intersection Modelling Results

Site: 101 [Wallgrove-Wonderland Ex.AM (Site Folder: Existing)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 149 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov	Turn	INF	DT	DEM	AND	Deg.	Aver.	Level of	95% B/	ACK OF	Prop. E	Effective	Aver.	Aver.
ID			JMES	FLC	WS	Satn	Delay	Service	QU	EUE	Que	Stop	No.	Speed
		l Iotai veh/h	HV J veh/h	l Iotai veh/h	нvј %	v/c	sec		Į ven. veh	Dist j m		Rate	Cycles	km/h
Sout	h: Wall	grove Ro	I (S)											
1	L2	327	94	344	28.7	0.283	10.4	LOS A	5.9	51.1	0.28	0.66	0.28	53.3
2	T1	807	191	849	23.7	*0.515	28.6	LOS C	20.8	175.1	0.73	0.70	0.73	43.1
3	R2	4	0	4	0.0	0.038	78.8	LOS F	0.3	2.1	0.96	0.64	0.96	26.6
Appr	oach	1138	285	1198	25.0	0.515	23.6	LOS B	20.8	175.1	0.60	0.69	0.60	45.5
East:	Wond	lerland D	r (E)											
4	L2	3	1	3	33.3	0.478	104.4	LOS F	0.5	3.9	1.00	0.65	1.14	21.9
5	T1	1	0	1	0.0	*0.478	98.4	LOS F	0.5	3.9	1.00	0.65	1.14	22.4
6	R2	1	0	1	0.0	0.478	104.0	LOS F	0.5	3.9	1.00	0.65	1.14	22.2
Appr	oach	5	1	5	20.0	0.478	103.1	LOS F	0.5	3.9	1.00	0.65	1.14	22.1
North	n: Wall	grove Rd	(N)											
7	L2	7	0	7	0.0	0.555	16.8	LOS B	23.5	187.2	0.53	0.49	0.53	49.5
8	T1	1167	188	1228	16.1	0.555	10.8	LOS A	23.5	187.2	0.50	0.46	0.50	50.9
9	R2	482	86	507	17.8	*0.655	50.3	LOS D	12.2	98.3	0.96	0.92	0.96	32.4
Appr	oach	1656	274	1743	16.5	0.655	22.3	LOS B	23.5	187.2	0.64	0.60	0.64	43.7
West	: Wone	derland D	Dr (W)											
10	L2	183	96	193	52.5	0.147	7.4	LOS A	0.6	6.5	0.08	0.52	0.08	52.8
11	T1	1	0	1	0.0	*0.442	65.2	LOS E	5.4	59.3	0.96	0.78	0.96	27.9
12	R2	149	98	157	65.8	0.442	71.5	LOS F	5.4	59.3	0.96	0.78	0.96	27.0
Appr	oach	333	194	351	58.3	0.442	36.2	LOS C	5.4	59.3	0.48	0.64	0.48	36.9
All Vehic	cles	3132	754	3297	24.1	0.655	24.4	LOS B	23.5	187.2	0.61	0.63	0.61	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.

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

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance													
Mov Crossing	Input	Dem.	Aver.	Level of A	VERAGE		Prop. Ef	fective	Travel	Travel	Aver.		
	VOI.	FIOW	Delay	Service	[Ped	Dist]	Que	Rate	TITLE	Dist.	Speeu		
	ped/h	ped/h	sec		ped	m			sec	m	m/sec		
South: Wallgro	South: Wallgrove Rd (S)												
East: Wonderl	and Dr (E	Ξ)											
P2 Full	50	53	68.8	LOS F	0.2	0.2	0.96	0.96	229.2	208.6	0.91		
North: Wallgro	ve Rd (N)											
P3 Full	50	53	68.8	LOS F	0.2	0.2	0.96	0.96	243.5	227.1	0.93		

West: Wonderland Dr (W)											
P4 Full	50	53	68.8	LOS F	0.2	0.2	0.96	0.96	235.8	217.2	0.92
P4B ^{Slip/} Bypass	50	53	31.6	LOS D	0.1	0.1	0.92	0.92	188.7	204.3	1.08
All Pedestrians	200	211	59.5	LOS E	0.2	0.2	0.95	0.95	224.3	214.3	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay) Pedestrian movement LOS values are based on average delay per pedestrian movement. Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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W Site: 101 [Interchange-Wonderland Ex.AM (Site Folder: Existing)]

New Site Site Category: (None) Roundabout

Vehi	Vehicle Movement Performance													
Mov	Turn	INP		DEM	AND	Deg.	Aver.	Level of	95% BA		Prop. E	ffective	Aver.	Aver.
שו		VOLU [Total		FLU [Total	иv5 ц\/1	Sath	Delay	Service		EUE Diet 1	Que	Stop	NO.	Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m		Tale	Cycles	km/h
Sout	h: Inter	rchange [Dr (S)											
1	L2	2	0	2	0.0	0.005	6.2	LOS A	0.0	0.1	0.49	0.59	0.49	53.3
2	T1	1	0	1	0.0	0.005	6.3	LOS A	0.0	0.1	0.49	0.59	0.49	54.8
3	R2	1	0	1	0.0	0.005	11.1	LOS A	0.0	0.1	0.49	0.59	0.49	54.9
Appr	oach	4	0	4	0.0	0.005	7.5	LOS A	0.0	0.1	0.49	0.59	0.49	54.1
East	Wond	lerland D	r (E)											
4	L2	1	0	1	0.0	0.258	3.9	LOS A	1.4	11.9	0.09	0.36	0.09	55.7
5	T1	547	152	576	27.8	0.258	4.4	LOS A	1.4	11.9	0.09	0.41	0.09	56.2
6	R2	143	20	151	14.0	0.258	9.2	LOS A	1.4	11.3	0.09	0.50	0.09	55.0
Appr	oach	691	172	727	24.9	0.258	5.4	LOS A	1.4	11.9	0.09	0.42	0.09	55.9
North	n: Inter	change D	Dr (N)											
7	L2	57	29	60	50.9	0.091	6.0	LOS A	0.3	3.4	0.41	0.60	0.41	52.6
8	T1	1	0	1	0.0	0.091	5.1	LOS A	0.3	3.4	0.41	0.60	0.41	55.5
9	R2	9	4	9	44.4	0.091	11.1	LOS A	0.3	3.4	0.41	0.60	0.41	54.0
Appr	oach	67	33	71	49.3	0.091	6.6	LOS A	0.3	3.4	0.41	0.60	0.41	52.8
West	: Wone	derland D	r (W)											
10	L2	16	11	17	68.8	0.136	5.8	LOS A	0.6	6.2	0.30	0.46	0.30	52.4
11	T1	228	145	240	63.6	0.136	5.5	LOS A	0.6	6.2	0.31	0.46	0.31	54.5
12	R2	2	0	2	0.0	0.136	9.6	LOS A	0.6	6.1	0.31	0.46	0.31	55.9
Appr	oach	246	156	259	63.4	0.136	5.5	LOS A	0.6	6.2	0.31	0.46	0.31	54.4
All Vehio	cles	1008	361	1061	35.8	0.258	5.5	LOS A	1.4	11.9	0.16	0.44	0.16	55.3

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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₩ Site: 101 [Wonderland-Honeycomb Ex.AM (Site Folder: Existing)]

New Site Site Category: (None) Roundabout

Vehi	Vehicle Movement Performance													
Mov	Turn	INF	PUT	DEM	AND	Deg.	Aver.	Level of	95% BA	CK OF	Prop.	Effective	Aver.	Aver.
ID		VOLL	JMES	FLO	WS	Satn	Delay	Service	QUE	EUE	Que	Stop	No.	Speed
		[lotal	HV J	[lotal	HV J	NIO	~~~		[Veh.	Dist J		Rate	Cycles	lum/h
Sout	h: Hon	eycomb l	Dr (S)	ven/n	70	V/C	Sec		ven	111	_		_	K111/11
2	Т1	2	0	2	0.0	0.048	67	LOSA	0.2	25	0.59	0 70	0 59	50.2
3	R2	26	19	27	73.1	0.048	13.9	LOSA	0.2	2.5	0.59	0.70	0.59	48.4
Appr	oach	28	19	29	67.9	0.048	13.4	LOSA	0.2	2.5	0.59	0.70	0.59	48.5
East:	Wond	lerland D	r (E)											
4	L2	53	8	56	15.1	0.346	4.0	LOS A	2.3	19.8	0.04	0.61	0.04	51.9
6	R2	452	121	476	26.8	0.346	9.0	LOS A	2.3	19.8	0.04	0.61	0.04	51.9
Appr	oach	505	129	532	25.5	0.346	8.5	LOS A	2.3	19.8	0.04	0.61	0.04	51.9
North	n: Hone	eycomb [Dr (N)											
7	L2	190	116	200	61.1	0.180	4.7	LOS A	1.1	11.6	0.19	0.46	0.19	52.5
8	T1	2	2	2	100.0	0.180	5.3	LOS A	1.1	11.6	0.19	0.46	0.19	53.3
Appr	oach	192	118	202	61.5	0.180	4.7	LOS A	1.1	11.6	0.19	0.46	0.19	52.5
All Vehic	cles	725	266	763	36.7	0.346	7.7	LOS A	2.3	19.8	0.10	0.58	0.10	51.9

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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₩ Site: 101 [Honeycomb-Grevillea Ex.AM (Site Folder: Existing)]

New Site Site Category: (None) Roundabout

Vehi	Vehicle Movement Performance													
Mov	Turn	INF	TUT	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID				FLO	WS LIV1	Satn	Delay	Service	QUI [\/ab		Que	Stop	No.	Speed
		veh/h	⊓vj veh/h	veh/h	⊓vj %	v/c	sec		ven. veh	m Dist		Rale	Cycles	km/h
South	n: Grev	/illea St (S)											
1	L2	1	0	1	0.0	0.029	5.4	LOS A	0.1	1.3	0.47	0.64	0.47	46.3
3	R2	21	11	22	52.4	0.029	11.6	LOS A	0.1	1.3	0.47	0.64	0.47	49.3
Appro	oach	22	11	23	50.0	0.029	11.3	LOS A	0.1	1.3	0.47	0.64	0.47	49.2
East:	Hone	ycomb D	r (E)											
4	L2	56	17	59	30.4	0.239	4.2	LOS A	1.4	12.0	0.03	0.41	0.03	54.0
5	T1	290	79	305	27.2	0.239	4.3	LOS A	1.4	12.0	0.03	0.41	0.03	37.7
Appro	oach	346	96	364	27.7	0.239	4.3	LOS A	1.4	12.0	0.03	0.41	0.03	40.8
West	: Hone	ycomb D	0r (W)											
11	T1	127	79	134	62.2	0.120	4.3	LOS A	0.7	7.1	0.15	0.39	0.15	50.4
12	R2	2	0	2	0.0	0.120	8.8	LOS A	0.7	7.1	0.15	0.39	0.15	53.8
Appro	oach	129	79	136	61.2	0.120	4.3	LOS A	0.7	7.1	0.15	0.39	0.15	50.4
All Vehic	les	497	186	523	37.4	0.239	4.6	LOS A	1.4	12.0	0.08	0.41	0.08	43.2

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Honeycomb-Kangaroo Ex.AM (Site Folder: Existing)]

New Site Site Category: (None) Give-Way (Two-Way)

Vehi	Vehicle Movement Performance													
Mov	Turn	INF		DEM	AND	Deg.	Aver.	Level of	95% BA		Prop.	Effective	Aver.	Aver.
טו		VOLU [Total	ЛИЕS ЦV 1	FLU [Total]	иvs ыvл	Sath	Delay	Service	QUI [\/eh	EUE Diet 1	Que	Stop Rate	INO. Cycles	Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m		Itale	Cycles	km/h
East:	Hone	ycomb D	r (E)											
5	T1	54	15	57	27.8	0.034	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	228	67	240	29.4	0.196	5.6	LOS A	0.9	8.0	0.10	0.55	0.10	47.5
Appro	oach	282	82	297	29.1	0.196	4.6	NA	0.9	8.0	0.08	0.44	0.08	49.5
North	n: Kang	garoo Ave	e (N)											
7	L2	112	74	118	66.1	0.120	6.4	LOS A	0.5	5.1	0.09	0.54	0.09	46.4
9	R2	3	1	3	33.3	0.006	9.5	LOS A	0.0	0.2	0.48	0.61	0.48	49.7
Appro	oach	115	75	121	65.2	0.120	6.5	LOS A	0.5	5.1	0.10	0.54	0.10	46.6
West	: Hone	eycomb D	r (W)											
10	L2	3	2	3	66.7	0.003	6.7	LOS A	0.0	0.0	0.00	0.57	0.00	50.9
11	T1	13	7	14	53.8	0.009	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appro	oach	16	9	17	56.3	0.009	1.3	NA	0.0	0.0	0.00	0.11	0.00	57.2
All Vehic	les	413	166	435	40.2	0.196	5.0	NA	0.9	8.0	0.08	0.46	0.08	48.9

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Site: 101 [Wallgrove-Wonderland Ex.PM (Site Folder: Existing)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 126 seconds (Site User-Given Phase Times)

Vehicle Movement Performance														
Mov	Turn	INF	PUT	DEM	AND	Deg.	Aver.	Level of	95% B/	ACK OF	Prop.	Effective	Aver.	Aver.
ID		UOU [Total	JMES	FLC	WS цул	Satn	Delay	Service	QU [Veh	EUE Diet 1	Que	Stop Rate	No.	Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m		Trate	Cycles	km/h
South	n: Wall	grove Ro	I (S)											
1	L2	84	55	88	65.5	0.079	8.2	LOS A	0.5	5.1	0.14	0.60	0.14	54.0
2	T1	892	76	939	8.5	*0.553	27.3	LOS B	20.7	155.6	0.78	0.73	0.78	43.7
3	R2	3	1	3	33.3	0.088	78.5	LOS F	0.2	1.9	1.00	0.62	1.00	26.4
Appro	oach	979	132	1031	13.5	0.553	25.8	LOS B	20.7	155.6	0.72	0.72	0.72	44.3
East:	Wond	lerland D	r (E)											
4	L2	8	1	8	12.5	0.421	78.9	LOS F	1.2	8.9	1.00	0.69	1.00	25.8
5	T1	1	0	1	0.0	*0.421	73.2	LOS F	1.2	8.9	1.00	0.69	1.00	26.3
6	R2	8	0	8	0.0	0.421	78.8	LOS F	1.2	8.9	1.00	0.69	1.00	26.0
Appro	oach	17	1	18	5.9	0.421	78.5	LOS F	1.2	8.9	1.00	0.69	1.00	26.0
North	: Wall	grove Rd	(N)											
7	L2	1	0	1	0.0	0.365	12.9	LOS A	10.6	84.1	0.42	0.37	0.42	52.3
8	T1	868	132	914	15.2	0.365	7.5	LOS A	10.9	86.1	0.42	0.38	0.42	53.4
9	R2	115	62	121	53.9	*0.237	34.2	LOS C	2.3	23.5	0.88	0.74	0.88	37.2
Appro	oach	984	194	1036	19.7	0.365	10.6	LOS A	10.9	86.1	0.48	0.42	0.48	50.8
West	: Wone	derland D	Dr (W)											
10	L2	552	53	581	9.6	0.354	7.9	LOS A	2.5	19.2	0.14	0.56	0.14	54.1
11	T1	1	0	1	0.0	* 1.043	132.1	LOS F	19.8	162.0	1.00	1.24	1.92	18.3
12	R2	379	74	399	19.5	1.043	137.9	LOS F	19.8	162.0	1.00	1.24	1.92	18.1
Appro	oach	932	127	981	13.6	1.043	60.9	LOS E	19.8	162.0	0.49	0.84	0.86	29.9
All Vehic	les	2912	454	3065	15.6	1.043	32.2	LOS C	20.7	162.0	0.57	0.66	0.69	39.7

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

Pedestrian M	Novem	ent Perf	orman	ce									
Mov	Input	Dem.	Aver.	Level of	AVERAGE	BACK OF	Prop. Ef	fective	Travel	Travel	Aver.		
ID Crossing	Vol.	Flow	Delay	Service	QUE	EUE Diat 1	Que	Stop	Time	Dist.	Speed		
[Ped Dist] Rate ped/h ped/h sec ped m sec South: Wallgrove Rd (S)													
South: Wallgro	ove Rd (S)											
South: Wallgrove Rd (S) East: Wonderland Dr (E)													
P2 Full	50	53	57.3	LOS E	0.2	0.2	0.95	0.95	217.7	208.6	0.96		
North: Wallgro	ve Rd (I	N)											
P3 Full	50	53	57.3	LOS E	0.2	0.2	0.95	0.95	232.0	227.1	0.98		
West: Wonder	land Dr	(W)											

P4 Full	50	53	57.3	LOS E	0.2	0.2	0.95	0.95	224.3	217.2	0.97
P4B ^{Slip/} Bypass	50	53	25.8	LOS C	0.1	0.1	0.91	0.91	183.0	204.3	1.12
All Pedestrians	200	211	49.4	LOS E	0.2	0.2	0.94	0.94	214.3	214.3	1.00

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay) Pedestrian movement LOS values are based on average delay per pedestrian movement. Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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W Site: 101 [Interchange-Wonderland Ex.PM (Site Folder: Existing)]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfo	rmance										
Mov	Turn	INP	DT	DEM	AND	Deg.	Aver.	Level of	95% BA		Prop. E	ffective	Aver.	Aver.
ח ו				FLU [Totol		Sath	Delay	Service	QUI [\/ob	EUE Diet 1	Que	Stop	INO.	Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m		Trate	Cycles	km/h
Sout	h: Inter	rchange [Dr (S)											
1	L2	1	0	1	0.0	0.004	4.3	LOS A	0.0	0.1	0.27	0.53	0.27	53.3
2	T1	1	0	1	0.0	0.004	4.6	LOS A	0.0	0.1	0.27	0.53	0.27	54.7
3	R2	2	0	2	0.0	0.004	9.6	LOS A	0.0	0.1	0.27	0.53	0.27	54.8
Appr	oach	4	0	4	0.0	0.004	7.0	LOS A	0.0	0.1	0.27	0.53	0.27	54.4
East	Wond	lerland D	r (E)											
4	L2	1	0	1	0.0	0.063	3.9	LOS A	0.3	3.0	0.04	0.36	0.04	55.9
5	T1	118	80	124	67.8	0.063	4.4	LOS A	0.3	3.0	0.04	0.39	0.04	55.7
6	R2	23	14	24	60.9	0.063	9.7	LOS A	0.3	2.9	0.04	0.46	0.04	53.8
Appr	oach	142	94	149	66.2	0.063	5.2	LOS A	0.3	3.0	0.04	0.40	0.04	55.4
North	n: Inter	change D	Dr (N)											
7	L2	168	13	177	7.7	0.210	6.2	LOS A	0.8	6.1	0.51	0.70	0.51	53.9
8	T1	1	0	1	0.0	0.210	6.1	LOS A	0.8	6.1	0.51	0.70	0.51	55.7
9	R2	2	1	2	50.0	0.210	12.9	LOS A	0.8	6.1	0.51	0.70	0.51	53.9
Appr	oach	171	14	180	8.2	0.210	6.2	LOS A	0.8	6.1	0.51	0.70	0.51	53.9
West	: Won	derland D	r (W)											
10	L2	6	4	6	66.7	0.211	4.8	LOS A	0.9	7.5	0.12	0.38	0.12	53.3
11	T1	552	87	581	15.8	0.211	4.3	LOS A	0.9	7.4	0.12	0.38	0.12	56.6
12	R2	1	0	1	0.0	0.211	9.1	LOS A	0.9	7.4	0.12	0.38	0.12	57.0
Appr	oach	559	91	588	16.3	0.211	4.3	LOS A	0.9	7.5	0.12	0.38	0.12	56.5
All Vehio	cles	876	199	922	22.7	0.211	4.9	LOS A	0.9	7.5	0.18	0.45	0.18	55.8

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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₩ Site: 101 [Wonderland-Honeycomb Ex.PM (Site Folder: Existing)]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	rmance										
Mov	Turn	INF	PUT	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLL	JMES	FLO	WS	Satn	Delay	Service	QUE	EUE	Que	Stop	No.	Speed
		[Total	HV]	[Total	HV]				[Veh.	Dist]		Rate	Cycles	1 //
		veh/h	veh/h	veh/h	%	V/C	sec		veh	m				km/h
Sout	h: Hon	eycomb	Dr (S)											
2	T1	2	0	2	0.0	0.043	4.7	LOS A	0.2	1.5	0.29	0.60	0.29	51.9
3	R2	45	6	47	13.3	0.043	9.6	LOS A	0.2	1.5	0.29	0.60	0.29	52.0
Appr	oach	47	6	49	12.8	0.043	9.4	LOS A	0.2	1.5	0.29	0.60	0.29	52.0
East:	Wond	lerland D	r (E)											
4	L2	7	4	7	57.1	0.089	4.4	LOS A	0.5	5.0	0.02	0.60	0.02	50.7
6	R2	102	71	107	69.6	0.089	9.5	LOS A	0.5	5.0	0.02	0.60	0.02	50.2
Appr	oach	109	75	115	68.8	0.089	9.2	LOS A	0.5	5.0	0.02	0.60	0.02	50.2
North	n: Hone	eycomb [Dr (N)											
7	L2	440	72	463	16.4	0.337	4.3	LOS A	2.3	18.1	0.23	0.46	0.23	53.9
8	T1	1	0	1	0.0	0.337	4.4	LOS A	2.3	18.1	0.23	0.46	0.23	55.9
Appr	oach	441	72	464	16.3	0.337	4.3	LOS A	2.3	18.1	0.23	0.46	0.23	53.9
All Vehic	cles	597	153	628	25.6	0.337	5.6	LOS A	2.3	18.1	0.19	0.50	0.19	53.0

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.

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

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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₩ Site: 101 [Honeycomb-Grevillea Ex.PM (Site Folder: Existing)]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	DT	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLL	JMES	FLO	WS	Satn	Delay	Service	QUE	EUE	Que	Stop	No.	Speed
		[lotal	HV J	[lotal	HV J	vlo			[Veh.	Dist J		Rate	Cycles	km/b
South	n: Grev	/illea St (S)	ven/n	70	V/C	Sec	_	ven	111	_	_	_	KIII/II
1	L2	4	1	4	25.0	0.043	4.6	LOS A	0.2	1.6	0.22	0.59	0.22	46.8
3	R2	45	7	47	15.6	0.043	9.3	LOS A	0.2	1.6	0.22	0.59	0.22	51.6
Appro	oach	49	8	52	16.3	0.043	8.9	LOS A	0.2	1.6	0.22	0.59	0.22	51.3
East:	Hone	ycomb D	r (E)											
4	L2	20	14	21	70.0	0.065	4.5	LOS A	0.3	3.5	0.02	0.42	0.02	52.7
5	T1	59	39	62	66.1	0.065	4.6	LOS A	0.3	3.5	0.02	0.42	0.02	37.2
Appro	oach	79	53	83	67.1	0.065	4.6	LOS A	0.3	3.5	0.02	0.42	0.02	41.8
West	: Hone	ycomb D	Dr (W)											
11	T1	281	42	296	14.9	0.220	4.3	LOS A	1.3	10.0	0.20	0.40	0.20	52.1
12	R2	1	1	1	100.0	0.220	9.3	LOS A	1.3	10.0	0.20	0.40	0.20	47.8
Appro	oach	282	43	297	15.2	0.220	4.3	LOS A	1.3	10.0	0.20	0.40	0.20	52.1
All Vehic	les	410	104	432	25.4	0.220	4.9	LOS A	1.3	10.0	0.17	0.43	0.17	49.5

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Honeycomb-Kangaroo Ex.PM (Site Folder: Existing)]

New Site Site Category: (None) Give-Way (Two-Way)

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	TUY	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLL	JMES	FLO	WS	Satn	Delay	Service	QUI	EUE	Que	Stop	No.	Speed
		[lotal	HV J	[lotal	HV J	vic	202		[Veh.	Dist J		Rate	Cycles	km/h
East:	Hone	ycomb D	r (E)	VCII/II	70	v/C	300	_	VCII		_		_	K11/11
5	T1	11	5	12	45.5	0.008	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	53	37	56	69.8	0.057	6.1	LOS A	0.2	2.6	0.20	0.54	0.20	44.9
Appr	oach	64	42	67	65.6	0.057	5.0	NA	0.2	2.6	0.17	0.45	0.17	47.0
North	n: Kang	garoo Ave	e (N)											
7	L2	209	37	220	17.7	0.193	6.1	LOS A	0.8	6.4	0.19	0.55	0.19	47.6
9	R2	3	3	3	100.0	0.006	8.9	LOS A	0.0	0.3	0.36	0.55	0.36	47.4
Appr	oach	212	40	223	18.9	0.193	6.2	LOS A	0.8	6.4	0.19	0.55	0.19	47.6
West	: Hone	eycomb D	0r (W)											
10	L2	3	0	3	0.0	0.002	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
11	T1	64	7	67	10.9	0.037	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appr	oach	67	7	71	10.4	0.037	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
All Vehic	cles	343	89	361	25.9	0.193	4.8	NA	0.8	6.4	0.15	0.43	0.15	49.5

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Site: 101 [Wallgrove-Wonderland Fu25.AM (Site Folder: Future Base (2025))]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 191 seconds (Site User-Given Cycle Time)

Vehi	cle M	ovemen	t Perfo	rmance										
Mov	Turn	INF	PUT	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLL	JMES	FLC	WS .	Satn	Delay	Service	QUI	EUE	Que	Stop	No.	Speed
		[Iotal veh/h	HV J veh/h	[Iotai veh/h	HVJ %	v/c	sec		ر ven. veh	Dist J m		Rate	Cycles	km/h
Sout	n: Wall	grove Rd	l (S)											
1	L2	355	102	374	28.7	0.320	11.7	LOS A	8.5	74.3	0.31	0.67	0.31	52.3
2	T1	875	207	921	23.7	0.653	48.0	LOS D	33.8	284.8	0.86	0.79	0.86	35.1
3	R2	4	0	4	0.0	*0.072	107.1	LOS F	0.4	2.8	0.99	0.64	0.99	22.0
Appr	oach	1234	309	1299	25.0	0.653	37.8	LOS C	33.8	284.8	0.70	0.76	0.70	38.7
East:	Wond	lerland D	r (E)											
4	L2	3	1	3	33.3	0.088	106.1	LOS F	0.5	4.1	0.99	0.65	0.99	21.7
5	T1	1	0	1	0.0	* 0.088	100.1	LOS F	0.5	4.1	0.99	0.65	0.99	22.2
6	R2	1	0	1	0.0	0.088	105.7	LOS F	0.5	4.1	0.99	0.65	0.99	22.0
Appr	oach	5	1	5	20.0	0.088	104.8	LOS F	0.5	4.1	0.99	0.65	0.99	21.9
North	n: Walle	grove Rd	(N)											
7	L2	8	0	8	0.0	0.658	24.0	LOS B	41.1	326.9	0.63	0.59	0.63	45.1
8	T1	1265	204	1332	16.1	*0.658	17.2	LOS B	41.1	326.9	0.58	0.54	0.58	46.8
9	R2	522	93	549	17.8	0.650	43.5	LOS D	15.0	120.6	0.95	0.83	0.95	34.5
Appr	oach	1795	297	1889	16.5	0.658	24.8	LOS B	41.1	326.9	0.69	0.62	0.69	42.4
West	: Wone	derland D	9r (W)											
10	L2	198	104	208	52.5	*0.162	7.7	LOS A	1.1	11.1	0.10	0.53	0.10	52.8
11	T1	1	0	1	0.0	0.551	85.3	LOS F	7.6	82.9	0.98	0.79	0.98	24.2
12	R2	161	106	169	65.8	0.551	91.6	LOS F	7.6	82.9	0.98	0.79	0.98	23.5
Appr	oach	360	210	379	58.3	0.551	45.5	LOS D	7.6	82.9	0.49	0.65	0.49	33.9
All Vehic	les	3394	817	3573	24.1	0.658	31.9	LOS C	41.1	326.9	0.67	0.68	0.67	39.9

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

Pedestrian M	loveme	ent Perf	ormano	e									
Mov	Input	Dem.	Aver.	Level of A	AVERAGE	BACK OF	Prop. Ef	fective	Travel	Travel	Aver.		
ID Crossing	Vol.	Flow	Delay	Service	QUE		Que	Stop	Time	Dist.	Speed		
	is a d /b	is a d /b			[Pea	Distj		Rate					
	pea/n	pea/n	sec		pea	m			sec	m	m/sec		
South: Wallgro	ped/h ped/h sec ped m sec m m/sec South: Wallgrove Rd (S)												
South: Wallgrove Rd (S) East: Wonderland Dr (E)													
P2 Full	50	53	89.8	LOS F	0.3	0.3	0.97	0.97	250.3	208.6	0.83		
North: Wallgro	ve Rd (N	I)											
P3 Full	50	53	89.8	LOS F	0.3	0.3	0.97	0.97	264.5	227.1	0.86		

West: Wonder	land Dr (W)									
P4 Full	50	53	89.8	LOS F	0.3	0.3	0.97	0.97	256.9	217.2	0.85
P4B ^{Slip/} Bypass	50	53	42.5	LOS E	0.1	0.1	0.94	0.94	199.7	204.3	1.02
All Pedestrians	200	211	78.0	LOS F	0.3	0.3	0.96	0.96	242.8	214.3	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay) Pedestrian movement LOS values are based on average delay per pedestrian movement. Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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W Site: 101 [Interchange-Wonderland Fu25.AM (Site Folder: Future Base (2025))]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfo	rmance										
Mov	Turn	INP	TUT	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop. E	ffective	Aver.	Aver.
UI				FLU [Totol		Sath	Delay	Service	QUI [\/ob	EUE Diet 1	Que	Stop	INO.	Speed
		veh/h	veh/h	veh/h	пvј %	v/c	sec		veh	m Dist j		Rale	Cycles	km/h
Sout	h: Intei	rchange [Dr (S)											
1	L2	2	0	2	0.0	0.005	6.4	LOS A	0.0	0.1	0.50	0.59	0.50	53.3
2	T1	1	0	1	0.0	0.005	6.4	LOS A	0.0	0.1	0.50	0.59	0.50	54.7
3	R2	1	0	1	0.0	0.005	11.2	LOS A	0.0	0.1	0.50	0.59	0.50	54.8
Appr	oach	4	0	4	0.0	0.005	7.6	LOS A	0.0	0.1	0.50	0.59	0.50	54.0
East:	Wond	lerland D	r (E)											
4	L2	1	0	1	0.0	0.269	3.9	LOS A	1.5	12.6	0.09	0.36	0.09	55.7
5	T1	571	159	601	27.8	0.269	4.4	LOS A	1.5	12.6	0.09	0.41	0.09	56.2
6	R2	149	21	157	14.1	0.269	9.2	LOS A	1.4	12.0	0.09	0.50	0.09	55.0
Appr	oach	721	180	759	25.0	0.269	5.4	LOS A	1.5	12.6	0.09	0.42	0.09	55.9
North	n: Inter	change D	Dr (N)											
7	L2	59	30	62	50.8	0.094	6.0	LOS A	0.4	3.6	0.42	0.60	0.42	52.6
8	T1	1	0	1	0.0	0.094	5.1	LOS A	0.4	3.6	0.42	0.60	0.42	55.5
9	R2	9	4	9	44.4	0.094	11.2	LOS A	0.4	3.6	0.42	0.60	0.42	53.9
Appr	oach	69	34	73	49.3	0.094	6.7	LOS A	0.4	3.6	0.42	0.60	0.42	52.8
West	: Won	derland D	0r (W)											
10	L2	16	11	17	68.8	0.143	5.9	LOS A	0.6	6.5	0.31	0.46	0.31	52.3
11	T1	238	151	251	63.4	0.143	5.5	LOS A	0.6	6.5	0.32	0.46	0.32	54.5
12	R2	2	0	2	0.0	0.143	9.6	LOS A	0.6	6.4	0.32	0.46	0.32	55.9
Appr	oach	256	162	269	63.3	0.143	5.6	LOS A	0.6	6.5	0.32	0.46	0.32	54.4
All Vehio	cles	1050	376	1105	35.8	0.269	5.5	LOS A	1.5	12.6	0.17	0.45	0.17	55.3

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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W Site: 101 [Wonderland-Honeycomb Fu25.AM (Site Folder: Future Base (2025))]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemer	nt Perfor	mance										
Mov ID	Turn	INF VOLI	PUT JMES	DEM. FLO	AND WS	Deg. Satn	Aver. Delav	Level of Service	95% BA QUE	ACK OF EUE	Prop. Que	Effective Stop	Aver. No.	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
Sout	h: Hon	eycomb	Dr (S)											
2	T1	2	0	2	0.0	0.051	6.9	LOS A	0.2	2.6	0.60	0.71	0.60	50.0
3	R2	27	20	28	74.1	0.051	14.2	LOS A	0.2	2.6	0.60	0.71	0.60	48.2
Appr	oach	29	20	31	69.0	0.051	13.7	LOS A	0.2	2.6	0.60	0.71	0.60	48.3
East:	Wond	lerland D	r (E)											
4	L2	55	8	58	14.5	0.361	4.0	LOS A	2.5	21.1	0.04	0.61	0.04	51.9
6	R2	472	126	497	26.7	0.361	9.0	LOS A	2.5	21.1	0.04	0.61	0.04	51.9
Appr	oach	527	134	555	25.4	0.361	8.5	LOS A	2.5	21.1	0.04	0.61	0.04	51.9
North	n: Hone	eycomb l	Or (N)											
7	L2	198	121	208	61.1	0.188	4.7	LOS A	1.1	12.2	0.20	0.46	0.20	52.4
8	T1	2	2	2	100.0	0.188	5.3	LOS A	1.1	12.2	0.20	0.46	0.20	53.3
Appr	oach	200	123	211	61.5	0.188	4.7	LOS A	1.1	12.2	0.20	0.46	0.20	52.4
All Vehic	cles	756	277	796	36.6	0.361	7.7	LOS A	2.5	21.1	0.11	0.58	0.11	51.9

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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W Site: 101 [Honeycomb-Grevillea Fu25.AM (Site Folder: Future Base (2025))]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	TUY	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLU	JMES	FLO	WS	Satn	Delay	Service	QUI	=UE	Que	Stop	No.	Speed
		[Iotal		[Iotal	HV J	vio			[Veh.	Dist J		Rate	Cycles	km/b
Sout	h: Grev	villea St (S)	Ven/m	70	V/C	Sec	_	ven	111	_	_	_	KIII/II
1	L2	1	0	1	0.0	0.029	5.5	LOS A	0.1	1.3	0.48	0.64	0.48	46.2
3	R2	21	11	22	52.4	0.029	11.7	LOS A	0.1	1.3	0.48	0.64	0.48	49.2
Appr	oach	22	11	23	50.0	0.029	11.4	LOS A	0.1	1.3	0.48	0.64	0.48	49.1
East:	Hone	ycomb D	r (E)											
4	L2	59	18	62	30.5	0.250	4.2	LOS A	1.5	12.8	0.03	0.41	0.03	54.0
5	T1	303	83	319	27.4	0.250	4.3	LOS A	1.5	12.8	0.03	0.41	0.03	37.7
Appr	oach	362	101	381	27.9	0.250	4.3	LOS A	1.5	12.8	0.03	0.41	0.03	40.8
West	: Hone	eycomb D	Dr (W)											
11	T1	133	83	140	62.4	0.126	4.3	LOS A	0.7	7.5	0.15	0.39	0.15	50.4
12	R2	2	0	2	0.0	0.126	8.8	LOS A	0.7	7.5	0.15	0.39	0.15	53.8
Appr	oach	135	83	142	61.5	0.126	4.3	LOS A	0.7	7.5	0.15	0.39	0.15	50.4
All Vehic	cles	519	195	546	37.6	0.250	4.6	LOS A	1.5	12.8	0.08	0.41	0.08	43.2

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Honeycomb-Kangaroo Fu25.AM (Site Folder: Future Base (2025))]

New Site Site Category: (None) Give-Way (Two-Way)

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	PUT	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
U		VOLU	JMES	FLO	WVS	Sath	Delay	Service	QUI	EUE	Que	Stop	NO.	Speed
		[lotal	HV J	[lotal	HV J	vlo			[Veh.	Dist J		Rate	Cycles	km/b
East:	Hone	ycomb D	r (E)	VEH/H	70	V/C	360	_	ven	111	_		_	N111/11
5	T1	57	16	60	28.1	0.036	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	238	70	251	29.4	0.204	5.7	LOS A	1.0	8.5	0.10	0.55	0.10	47.5
Appr	oach	295	86	311	29.2	0.204	4.6	NA	1.0	8.5	0.08	0.44	0.08	49.5
North	n: Kang	garoo Ave	e (N)											
7	L2	117	77	123	65.8	0.125	6.4	LOS A	0.5	5.4	0.09	0.54	0.09	46.4
9	R2	3	1	3	33.3	0.006	9.7	LOS A	0.0	0.2	0.49	0.61	0.49	49.6
Appr	oach	120	78	126	65.0	0.125	6.5	LOS A	0.5	5.4	0.10	0.54	0.10	46.6
West	: Hone	eycomb D	Dr (W)											
10	L2	3	2	3	66.7	0.003	6.8	LOS A	0.0	0.0	0.00	0.57	0.00	50.9
11	T1	13	7	14	53.8	0.009	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appr	oach	16	9	17	56.3	0.009	1.3	NA	0.0	0.0	0.00	0.11	0.00	57.2
All Vehic	cles	431	173	454	40.1	0.204	5.0	NA	1.0	8.5	0.08	0.46	0.08	48.9

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Site: 101 [Wallgrove-Wonderland Fu25.PM (Site Folder: Future Base (2025))]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 158 seconds (Site User-Given Cycle Time)

Vehi	cle M	ovemen	t Perfo	rmance										
Mov	Turn	INF	PUT	DEM	AND	Deg.	Aver.	Level of	95% B/	ACK OF	Prop. I	Effective	Aver.	Aver.
ID			JMES	FLO	WS	Satn	Delay	Service	QU	EUE	Que	Stop	No.	Speed
		l Iotai veh/h	HV J veh/h	l Iotai veh/h	нvј %	v/c	sec		ι ven. veh	Dist j m		Rate	Cycles	km/h
Sout	h: Wall	grove Ro	I (S)											
1	L2	88	58	93	65.9	0.081	8.4	LOS A	0.6	6.8	0.14	0.60	0.14	53.9
2	T1	935	80	984	8.6	*0.630	39.0	LOS C	29.4	221.2	0.85	0.78	0.85	38.4
3	R2	3	1	3	33.3	0.055	90.0	LOS F	0.2	2.2	0.99	0.63	0.99	24.3
Appr	oach	1026	139	1080	13.5	0.630	36.5	LOS C	29.4	221.2	0.78	0.77	0.78	39.3
East	Wond	lerland D	r (E)											
4	L2	8	1	8	12.5	0.264	90.3	LOS F	1.4	10.5	1.00	0.70	1.00	23.9
5	T1	1	0	1	0.0	*0.264	84.7	LOS F	1.4	10.5	1.00	0.70	1.00	24.3
6	R2	8	0	8	0.0	0.264	90.2	LOS F	1.4	10.5	1.00	0.70	1.00	24.1
Appr	oach	17	1	18	5.9	0.264	90.0	LOS F	1.4	10.5	1.00	0.70	1.00	24.0
North	n: Wall	grove Rd	(N)											
7	L2	1	0	1	0.0	0.573	34.2	LOS C	26.8	211.8	0.75	0.67	0.75	40.1
8	T1	909	138	957	15.2	0.573	28.3	LOS B	26.8	211.8	0.74	0.66	0.74	41.0
9	R2	121	65	127	53.7	*0.624	49.5	LOS D	2.9	29.7	1.00	0.79	1.06	32.2
Appr	oach	1031	203	1085	19.7	0.624	30.8	LOS C	26.8	211.8	0.77	0.67	0.77	39.7
West	: Won	derland D	Dr (W)											
10	L2	579	56	609	9.7	0.377	8.4	LOS A	4.0	30.6	0.15	0.58	0.15	54.0
11	T1	1	0	1	0.0	*0.640	51.6	LOS D	13.5	110.3	0.89	0.81	0.89	31.0
12	R2	398	78	419	19.6	0.640	57.4	LOS E	13.5	110.3	0.89	0.81	0.89	30.5
Appr	oach	978	134	1029	13.7	0.640	28.4	LOS B	13.5	110.3	0.45	0.67	0.45	41.1
All Vehio	cles	3052	477	3213	15.6	0.640	32.3	LOS C	29.4	221.2	0.67	0.70	0.68	39.9

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

Pedestrian M	loveme	nt Perf	ormano	ce										
Mov	Input	Dem.	Aver.	Level of .	AVERAGE	BACK OF	Prop. Ef	fective	Travel	Travel	Aver.			
ID Crossing	Vol.	Flow	Delay	Service	QUE	EUE	Que	Stop	Time	Dist.	Speed			
					[Ped	Dist]		Rate						
	ped/h	ped/h	sec		ped	m			sec	m	m/sec			
South: Wallgro	ped/h ped/h sec ped m sec m m/sec outh: Wallgrove Rd (S)													
East: Wonderl	and Dr (E	Ξ)												
P2 Full	50	53	73.3	LOS F	0.2	0.2	0.96	0.96	233.7	208.6	0.89			
North: Wallgro	ve Rd (N	I)												
P3 Full	50	53	73.3	LOS F	0.2	0.2	0.96	0.96	248.0	227.1	0.92			

West: Wonder	land Dr (W)									
P4 Full	50	53	73.3	LOS F	0.2	0.2	0.96	0.96	240.4	217.2	0.90
P4B ^{Slip/} Bypass	50	53	34.0	LOS D	0.1	0.1	0.93	0.93	191.2	204.3	1.07
All Pedestrians	200	211	63.5	LOS F	0.2	0.2	0.95	0.95	228.3	214.3	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay) Pedestrian movement LOS values are based on average delay per pedestrian movement. Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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W Site: 101 [Interchange-Wonderland Fu25.PM (Site Folder: Future Base (2025))]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfoi	rmance										
Mov	Turn	INF	DT	DEM	AND	Deg.	Aver.	Level of	95% BA		Prop. E	ffective	Aver.	Aver.
D				FLC Total		Sath	Delay	Service	QUI [\/ob	EUE Diet 1	Que	Stop	NO.	Speed
		veh/h	veh/h	veh/h	пvј %	v/c	sec		veh	m		Nale	Cycles	km/h
Sout	h: Intei	rchange [Dr (S)											
1	L2	1	0	1	0.0	0.004	4.4	LOS A	0.0	0.1	0.28	0.53	0.28	53.3
2	T1	1	0	1	0.0	0.004	4.6	LOS A	0.0	0.1	0.28	0.53	0.28	54.7
3	R2	2	0	2	0.0	0.004	9.7	LOS A	0.0	0.1	0.28	0.53	0.28	54.8
Appr	oach	4	0	4	0.0	0.004	7.1	LOS A	0.0	0.1	0.28	0.53	0.28	54.4
East:	Wond	lerland D	r (E)											
4	L2	1	0	1	0.0	0.067	3.9	LOS A	0.3	3.2	0.04	0.36	0.04	55.9
5	T1	127	86	134	67.7	0.067	4.4	LOS A	0.3	3.2	0.04	0.39	0.04	55.7
6	R2	25	15	26	60.0	0.067	9.7	LOS A	0.3	3.2	0.04	0.46	0.04	53.8
Appr	oach	153	101	161	66.0	0.067	5.2	LOS A	0.3	3.2	0.04	0.40	0.04	55.4
North	n: Inter	change D	Dr (N)											
7	L2	181	14	191	7.7	0.231	6.3	LOS A	0.9	6.8	0.53	0.72	0.53	53.8
8	T1	1	0	1	0.0	0.231	6.3	LOS A	0.9	6.8	0.53	0.72	0.53	55.6
9	R2	2	1	2	50.0	0.231	13.2	LOS A	0.9	6.8	0.53	0.72	0.53	53.8
Appr	oach	184	15	194	8.2	0.231	6.4	LOS A	0.9	6.8	0.53	0.72	0.53	53.8
West	: Won	derland D	0r (W)											
10	L2	6	4	6	66.7	0.228	4.9	LOS A	1.0	8.2	0.12	0.38	0.12	53.2
11	T1	596	94	627	15.8	0.228	4.3	LOS A	1.0	8.2	0.13	0.39	0.13	56.5
12	R2	1	0	1	0.0	0.228	9.1	LOS A	1.0	8.2	0.13	0.39	0.13	57.0
Appr	oach	603	98	635	16.3	0.228	4.3	LOS A	1.0	8.2	0.13	0.39	0.13	56.5
All Vehio	cles	944	214	994	22.7	0.231	4.9	LOS A	1.0	8.2	0.19	0.45	0.19	55.8

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Wonderland-Honeycomb Fu25.PM (Site Folder:

Future Base (2025))]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	TUY	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLL	JMES	FLO	WS	Satn	Delay	Service	QUE	EUE	Que	Stop	No.	Speed
		[Total	HV]	[Total	HV]				[Veh.	Dist]		Rate	Cycles	1 //
		ven/n	ven/n	ven/n	%	V/C	sec		ven	m				Km/n
Sout	h: Hon	eycomb l	Dr (S)											
2	T1	2	0	2	0.0	0.046	4.8	LOS A	0.2	1.6	0.30	0.60	0.30	51.8
3	R2	48	6	51	12.5	0.046	9.6	LOS A	0.2	1.6	0.30	0.60	0.30	52.0
Appr	oach	50	6	53	12.0	0.046	9.4	LOS A	0.2	1.6	0.30	0.60	0.30	52.0
East:	Wond	lerland D	r (E)											
4	L2	7	4	7	57.1	0.096	4.4	LOS A	0.5	5.5	0.02	0.60	0.02	50.7
6	R2	110	77	116	70.0	0.096	9.5	LOS A	0.5	5.5	0.02	0.60	0.02	50.2
Appr	oach	117	81	123	69.2	0.096	9.2	LOS A	0.5	5.5	0.02	0.60	0.02	50.2
North	n: Hone	eycomb [Dr (N)											
7	L2	475	78	500	16.4	0.365	4.4	LOS A	2.6	20.4	0.24	0.46	0.24	53.8
8	T1	1	0	1	0.0	0.365	4.4	LOS A	2.6	20.4	0.24	0.46	0.24	55.9
Appr	oach	476	78	501	16.4	0.365	4.4	LOS A	2.6	20.4	0.24	0.46	0.24	53.8
All Vehic	cles	643	165	677	25.7	0.365	5.6	LOS A	2.6	20.4	0.21	0.50	0.21	52.9

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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W Site: 101 [Honeycomb-Grevillea Fu25.PM (Site Folder: Future Base (2025))]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	DT	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLU	JMES	FLO	WS	Satn	Delay	Service	QUE	EUE	Que	Stop	No.	Speed
		[Iotal	HV J	[Iotal	HV J	vic	500		[Ven.	Dist j		Rate	Cycles	km/b
Sout	h: Grev	villea St (S)	VEII/II	/0	v/C	360	_	VEIT	111	_	_	_	N111/11
1	L2	4	1	4	25.0	0.047	4.6	LOS A	0.2	1.7	0.23	0.59	0.23	46.7
3	R2	49	8	52	16.3	0.047	9.3	LOS A	0.2	1.7	0.23	0.59	0.23	51.5
Appr	oach	53	9	56	17.0	0.047	9.0	LOS A	0.2	1.7	0.23	0.59	0.23	51.2
East:	Hone	ycomb D	r (E)											
4	L2	21	15	22	71.4	0.070	4.6	LOS A	0.3	3.8	0.02	0.42	0.02	52.7
5	T1	64	42	67	65.6	0.070	4.6	LOS A	0.3	3.8	0.02	0.42	0.02	37.2
Appr	oach	85	57	89	67.1	0.070	4.6	LOS A	0.3	3.8	0.02	0.42	0.02	41.7
West	: Hone	eycomb D	Dr (W)											
11	T1	303	45	319	14.9	0.238	4.4	LOS A	1.4	11.1	0.21	0.40	0.21	52.0
12	R2	1	1	1	100.0	0.238	9.4	LOS A	1.4	11.1	0.21	0.40	0.21	47.7
Appr	oach	304	46	320	15.1	0.238	4.4	LOS A	1.4	11.1	0.21	0.40	0.21	52.0
All Vehic	cles	442	112	465	25.3	0.238	5.0	LOS A	1.4	11.1	0.18	0.43	0.18	49.4

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Honeycomb-Kangaroo Fu25.PM (Site Folder: Future Base (2025))]

New Site Site Category: (None) Give-Way (Two-Way)

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF		DEM	AND	Deg.	Aver.	Level of	95% BA		Prop.	Effective	Aver.	Aver.
שו		J_OV [Total]	ЛИЕЗ Ц\/1	FLU [Total	ило П	Salli	Delay	Service		Diet 1	Que	Rate	Cvcles	Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m		Trate	Cycles	km/h
East:	Hone	ycomb D	r (E)											
5	T1	11	5	12	45.5	0.008	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	57	40	60	70.2	0.062	6.1	LOS A	0.3	2.8	0.22	0.55	0.22	44.9
Appr	oach	68	45	72	66.2	0.062	5.1	NA	0.3	2.8	0.18	0.46	0.18	46.8
North	n: Kang	garoo Ave	e (N)											
7	L2	226	40	238	17.7	0.210	6.2	LOS A	0.9	7.1	0.20	0.55	0.20	47.6
9	R2	3	3	3	100.0	0.006	9.1	LOS A	0.0	0.3	0.38	0.55	0.38	47.3
Appr	oach	229	43	241	18.8	0.210	6.2	LOS A	0.9	7.1	0.20	0.55	0.20	47.6
West	: Hone	eycomb E	Dr (W)											
10	L2	3	0	3	0.0	0.002	5.7	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
11	T1	70	8	74	11.4	0.041	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appr	oach	73	8	77	11.0	0.041	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.5
All Vehic	cles	370	96	389	25.9	0.210	4.8	NA	0.9	7.1	0.16	0.43	0.16	49.4

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Site: 101 [Wallgrove-Wonderland Fu25.AM+Dev (Site Folder:

Future Base (2025) + Dev)]

New Site

Site Category: (None) Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 191 seconds (Site User-Given Cycle Time)

Vehi	cle M	ovemen	t Perfoi	rmance										
Mov ID	Turn	INP VOLU [Total	PUT JMES HV]	DEM FLC [Total	AND WS HV]	Deg. Satn	Aver. Delay	Level of Service	95% B/ QUI [Veh.	ACK OF EUE Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
South	a: \Mall	veh/h grovo Pd	veh/h	veh/h	%	V/C	sec		veh	m				km/h
Jour	i. vvan		(3)	000	04.4	0.000	40.4	1001	0.0	00.0	0.00	0.00	0.00	50.0
1	L2	367	114	386	31.1	0.338	12.1	LOSA	9.3	82.0	0.32	0.68	0.32	52.0
2	11	875	207	921	23.7	0.653	48.0	LOS D	33.8	284.8	0.86	0.79	0.86	35.1
3	R2	4	0	4	0.0	*0.072	107.1	LOSF	0.4	2.8	0.99	0.64	0.99	22.0
Appro	bach	1246	321	1312	25.8	0.653	37.7	LOS C	33.8	284.8	0.70	0.76	0.70	38.7
East:	Wond	erland D	r (E)											
4	L2	3	1	3	33.3	0.102	108.1	LOS F	0.5	4.1	1.00	0.65	1.00	21.5
5	T1	1	0	1	0.0	*0.102	102.1	LOS F	0.5	4.1	1.00	0.65	1.00	21.9
6	R2	1	0	1	0.0	0.102	107.7	LOS F	0.5	4.1	1.00	0.65	1.00	21.8
Appro	oach	5	1	5	20.0	0.102	106.8	LOS F	0.5	4.1	1.00	0.65	1.00	21.6
North	: Wallę	grove Rd	(N)											
7	L2	8	0	8	0.0	0.656	23.5	LOS B	40.7	324.2	0.62	0.58	0.62	45.4
8	T1	1265	204	1332	16.1	*0.656	16.6	LOS B	40.7	324.2	0.57	0.53	0.57	47.2
9	R2	533	104	561	19.5	0.657	43.4	LOS D	15.4	125.5	0.95	0.84	0.95	34.5
Appro	oach	1806	308	1901	17.1	0.657	24.6	LOS B	40.7	324.2	0.68	0.62	0.68	42.5
West	: Wond	derland D	9r (W)											
10	L2	209	115	220	55.0	0.173	7.8	LOS A	1.2	12.0	0.10	0.53	0.10	52.7
11	T1	1	0	1	0.0	*0.647	86.7	LOS F	8.3	91.6	0.99	0.81	1.02	24.0
12	R2	173	118	182	68.2	0.647	93.0	LOS F	8.3	91.6	0.99	0.81	1.02	23.3
Appro	oach	383	233	403	60.8	0.647	46.5	LOS D	8.3	91.6	0.50	0.66	0.52	33.5
All Vehic	les	3440	863	3621	25.1	0.657	31.9	LOS C	40.7	324.2	0.67	0.68	0.67	39.9

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

Pedestrian M	loveme	nt Perf	ormano	e										
Mov Crossing	Input	Dem.	Aver.	Level of A	VERAGE		Prop. Ef	fective	Travel	Travel	Aver.			
D crocoing	VOI.	FIOW	Delay	Service	[Ped	Dist]	Que	Rate	TITLE	Dist.	Speed			
	ped/h	ped/h	sec		ped	m			sec	m	m/sec			
South: Wallgro	ped/h ped/h sec ped m sec m m/sec puth: Wallgrove Rd (S)													
East: Wonderl	and Dr (E	Ξ)												
P2 Full	50	53	89.8	LOS F	0.3	0.3	0.97	0.97	250.3	208.6	0.83			
North: Wallgro	ve Rd (N)												
P3 Full	50	53	89.8	LOS F	0.3	0.3	0.97	0.97	264.5	227.1	0.86			

West: Wonder	land Dr (W)									
P4 Full	50	53	89.8	LOS F	0.3	0.3	0.97	0.97	256.9	217.2	0.85
P4B ^{Slip/} Bypass	50	53	42.5	LOS E	0.1	0.1	0.94	0.94	199.7	204.3	1.02
All Pedestrians	200	211	78.0	LOS F	0.3	0.3	0.96	0.96	242.8	214.3	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay) Pedestrian movement LOS values are based on average delay per pedestrian movement. Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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₩ Site: 101 [Interchange-Wonderland Fu25.AM+Dev (Site Folder: Future Base (2025) + Dev)]

New Site Site Category: (None) Roundabout

Vehi	icle M	ovemen	t Perfo	rmance										
Mov	Turn	INP	UT	DEM	AND	Deg.	Aver.	Level of	95% BA		Prop. E	ffective	Aver.	Aver.
טו		JJUV [Total	ЛИЕЗ Ц\/ 1	FLU [Total	иvS ц\/1	Sath	Delay	Service	QUI [\/oh	EUE Diet 1	Que	Stop	NO. Cycles	Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m		Trate	Cycles	km/h
Sout	h: Inter	rchange [Dr (S)											
1	L2	2	0	2	0.0	0.005	6.5	LOS A	0.0	0.1	0.50	0.60	0.50	53.3
2	T1	1	0	1	0.0	0.005	6.5	LOS A	0.0	0.1	0.50	0.60	0.50	54.7
3	R2	1	0	1	0.0	0.005	11.3	LOS A	0.0	0.1	0.50	0.60	0.50	54.8
Appr	oach	4	0	4	0.0	0.005	7.7	LOS A	0.0	0.1	0.50	0.60	0.50	54.0
East	Wond	lerland D	r (E)											
4	L2	1	0	1	0.0	0.280	3.9	LOS A	1.5	13.6	0.09	0.36	0.09	55.6
5	T1	594	182	625	30.6	0.280	4.5	LOS A	1.5	13.6	0.09	0.40	0.09	56.1
6	R2	149	21	157	14.1	0.280	9.2	LOS A	1.5	12.9	0.09	0.49	0.09	55.0
Appr	oach	744	203	783	27.3	0.280	5.4	LOS A	1.5	13.6	0.09	0.42	0.09	55.9
North	n: Inter	change D	0r (N)											
7	L2	59	30	62	50.8	0.097	6.2	LOS A	0.4	3.6	0.44	0.62	0.44	52.5
8	T1	1	0	1	0.0	0.097	5.2	LOS A	0.4	3.6	0.44	0.62	0.44	55.4
9	R2	9	4	9	44.4	0.097	11.3	LOS A	0.4	3.6	0.44	0.62	0.44	53.9
Appr	oach	69	34	73	49.3	0.097	6.9	LOS A	0.4	3.6	0.44	0.62	0.44	52.7
West	t: Wond	derland D	9r (W)											
10	L2	16	11	17	68.8	0.157	5.9	LOS A	0.7	7.4	0.32	0.46	0.32	52.3
11	T1	261	174	275	66.7	0.157	5.6	LOS A	0.7	7.4	0.32	0.47	0.32	54.4
12	R2	2	0	2	0.0	0.157	9.6	LOS A	0.7	7.3	0.33	0.47	0.33	55.8
Appr	oach	279	185	294	66.3	0.157	5.6	LOS A	0.7	7.4	0.32	0.47	0.32	54.3
All Vehie	cles	1096	422	1154	38.5	0.280	5.6	LOS A	1.5	13.6	0.17	0.45	0.17	55.3

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Wonderland-Honeycomb Fu25.AM+Dev (Site

Folder: Future Base (2025) + Dev)]

New Site Site Category: (None) Roundabout

Vehicle Movement Performance														
Mov	v Turn INPU		TUY	JT DEN		Deg.	Aver.	Level of	95% BACK OF		Prop.	Effective	Aver.	Aver.
ID			JMES	FLOWS		Satn	Delay	Service	QUE		Que	Stop	No.	Speed
		veh/h	veh/h	veh/h	нvј %	v/c	sec		ven. veh	m Dist		Rate	Cycles	km/h
South: Honeycomb Dr (S)														
2	T1	2	0	2	0.0	0.052	7.1	LOS A	0.2	2.7	0.62	0.72	0.62	49.7
3	R2	27	20	28	74.1	0.052	14.6	LOS B	0.2	2.7	0.62	0.72	0.62	48.0
Appr	oach	29	20	31	69.0	0.052	14.1	LOS A	0.2	2.7	0.62	0.72	0.62	48.1
East: Wonderland Dr (E)														
4	L2	55	8	58	14.5	0.381	4.0	LOS A	2.7	23.5	0.04	0.61	0.04	51.9
6	R2	495	149	521	30.1	0.381	9.1	LOS A	2.7	23.5	0.04	0.61	0.04	51.8
Appr	oach	550	157	579	28.5	0.381	8.6	LOS A	2.7	23.5	0.04	0.61	0.04	51.8
North	North: Honeycomb Dr (N)													
7	L2	221	144	233	65.2	0.212	4.8	LOS A	1.3	14.4	0.21	0.46	0.21	52.3
8	T1	2	2	2	100.0	0.212	5.3	LOS A	1.3	14.4	0.21	0.46	0.21	53.3
Appr	oach	223	146	235	65.5	0.212	4.8	LOS A	1.3	14.4	0.21	0.46	0.21	52.3
All Vehic	cles	802	323	844	40.3	0.381	7.7	LOS A	2.7	23.5	0.11	0.57	0.11	51.8

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Honeycomb-Grevillea Fu25.AM+Dev (Site Folder:

Future Base (2025) + Dev)]

New Site Site Category: (None) Roundabout

Vehicle Movement Performance														
Mov	Turn					Deg.	Aver.	Level of	95% BACK OF		Prop.	Effective	Aver.	Aver.
U						Sath	Delay	Service	QUE [\/ob	EUE	Que	Stop	NO.	Speed
		veh/h	veh/h	veh/h	пvј %	v/c	sec		veh.	m m		Nale	Cycles	km/h
South: Grevillea St (S)														
1	L2	1	0	1	0.0	0.030	5.6	LOS A	0.1	1.4	0.50	0.65	0.50	46.0
3	R2	21	11	22	52.4	0.030	12.0	LOS A	0.1	1.4	0.50	0.65	0.50	49.0
Appr	oach	22	11	23	50.0	0.030	11.7	LOS A	0.1	1.4	0.50	0.65	0.50	48.9
East: Honeycomb Dr (E)														
4	L2	59	18	62	30.5	0.270	4.2	LOS A	1.6	14.5	0.03	0.41	0.03	54.0
5	T1	325	105	342	32.3	0.270	4.4	LOS A	1.6	14.5	0.03	0.41	0.03	37.6
Approach		384	123	404	32.0	0.270	4.3	LOS A	1.6	14.5	0.03	0.41	0.03	40.6
West: Honeycomb Dr (W)														
11	T1	155	105	163	67.7	0.148	4.3	LOS A	0.8	9.3	0.16	0.39	0.16	50.1
12	R2	2	0	2	0.0	0.148	8.8	LOS A	0.8	9.3	0.16	0.39	0.16	53.7
Appr	oach	157	105	165	66.9	0.148	4.3	LOS A	0.8	9.3	0.16	0.39	0.16	50.2
All Vehic	les	563	239	593	42.5	0.270	4.6	LOS A	1.6	14.5	0.08	0.41	0.08	43.1

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Honeycomb-Kangaroo Fu25.AM+Dev (Site Folder:

Future Base (2025) + Dev)]

New Site Site Category: (None) Give-Way (Two-Way)

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	PUT	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
D		VOLU	JMES	FLO	WS	Sath	Delay	Service	QU	EUE	Que	Stop	NO.	Speed
		[lotal	HV J veh/h	[lotal	HV J %	vic	202		[Veh.	Dist J		Rate	Cycles	km/h
East:	Hone	ycomb D	r (E)	VCII/II	/0	V/C	300	_	VCII		_		_	K11/11
5	T1	57	16	60	28.1	0.036	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	261	93	275	35.6	0.239	5.9	LOS A	1.2	10.6	0.19	0.55	0.19	46.8
Appr	oach	318	109	335	34.3	0.239	4.8	NA	1.2	10.6	0.16	0.45	0.16	48.7
North	n: Kang	garoo Ave	e (N)											
7	L2	117	77	123	65.8	0.131	6.7	LOS A	0.5	5.6	0.17	0.54	0.17	46.1
9	R2	3	1	3	33.3	0.007	10.7	LOS A	0.0	0.2	0.53	0.64	0.53	48.9
Appr	oach	120	78	126	65.0	0.131	6.8	LOS A	0.5	5.6	0.18	0.54	0.18	46.2
West	: Hone	eycomb E	Dr (W)											
10	L2	3	2	3	66.7	0.003	6.8	LOS A	0.0	0.0	0.00	0.57	0.00	50.9
11	T1	36	30	38	83.3	0.030	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appr	oach	39	32	41	82.1	0.030	0.5	NA	0.0	0.0	0.00	0.04	0.00	58.7
All Vehic	cles	477	219	502	45.9	0.239	5.0	NA	1.2	10.6	0.15	0.44	0.15	48.8

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Site: 101 [Wallgrove-Wonderland Fu25.PM+Dev (Site Folder:

Future Base (2025) + Dev)]

New Site

Site Category: (None) Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 158 seconds (Site User-Given Cycle Time)

Vehi	cle M	ovemen	t Perfor	rmance										
Mov ID	Turn	INF VOLU [Total veh/h	PUT JMES HV] veh/h	DEM FLO [Total veh/h	AND WS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BA QUI [Veh. veh	ACK OF EUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Sout	n: Wall	grove Rd	I (S)											
1 2 3	L2 T1 R2	100 935 3	70 80 1	105 984 3	70.0 8.6 33.3	0.094 * 0.659 0.055	8.5 41.6 90.0	LOS A LOS C LOS F	0.8 30.4 0.2	8.7 228.7 2.2	0.15 0.87 0.99	0.60 0.80 0.63	0.15 0.87 0.99	53.6 37.4 24.3
Appr	oach	1038	151	1093	14.5	0.659	38.5	LOS C	30.4	228.7	0.80	0.78	0.80	38.4
East:	Wond	erland D	r (E)											
4	L2	8	1	8	12.5	0.264	90.3	LOS F	1.4	10.5	1.00	0.70	1.00	23.9
5	T1	1	0	1	0.0	*0.264	84.7	LOS F	1.4	10.5	1.00	0.70	1.00	24.3
6	R2	8	0	8	0.0	0.264	90.2	LOS F	1.4	10.5	1.00	0.70	1.00	24.1
Appr	oach	17	1	18	5.9	0.264	90.0	LOS F	1.4	10.5	1.00	0.70	1.00	24.0
North	n: Wallę	grove Rd	(N)											
7	L2	1	0	1	0.0	0.591	35.8	LOS C	27.7	219.1	0.77	0.69	0.77	39.4
8	T1	909	138	957	15.2	0.591	29.8	LOS C	27.7	219.1	0.76	0.68	0.76	40.3
9	R2	132	76	139	57.6	*0.641	49.0	LOS D	3.0	31.9	1.00	0.80	1.07	32.3
Appr	oach	1042	214	1097	20.5	0.641	32.3	LOS C	27.7	219.1	0.79	0.69	0.80	39.1
West	: Wond	derland D	Or (W)											
10	L2	590	67	621	11.4	0.388	8.4	LOS A	4.2	32.0	0.16	0.58	0.16	53.9
11	T1	1	0	1	0.0	*0.652	50.1	LOS D	13.7	114.2	0.88	0.81	0.88	31.4
12	R2	410	90	432	22.0	0.652	55.9	LOS D	13.7	114.2	0.88	0.81	0.88	30.9
Appr	oach	1001	157	1054	15.7	0.652	27.9	LOS B	13.7	114.2	0.45	0.67	0.45	41.3
All Vehic	les	3098	523	3261	16.9	0.659	33.3	LOS C	30.4	228.7	0.69	0.71	0.69	39.4

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

Pedestrian M	loveme	nt Perf	ormano	e										
Mov Crossing	Input	Dem.	Aver.	Level of A	VERAGE		Prop. Ef	fective	Travel	Travel	Aver.			
	VOI.	FIOW	Delay	Service	[Ped	Dist]	Que	Rate	TITLE	DISI.	Speeu			
	ped/h	ped/h	sec		ped	m			sec	m	m/sec			
South: Wallgro	ped/h ped/h sec ped m sec m m/sec outh: Wallgrove Rd (S)													
East: Wonderl	and Dr (E	E)												
P2 Full	50	53	73.3	LOS F	0.2	0.2	0.96	0.96	233.7	208.6	0.89			
North: Wallgro	ve Rd (N)												
P3 Full	50	53	73.3	LOS F	0.2	0.2	0.96	0.96	248.0	227.1	0.92			

West: Wonder	land Dr (W)									
P4 Full	50	53	73.3	LOS F	0.2	0.2	0.96	0.96	240.4	217.2	0.90
P4B ^{Slip/} Bypass	50	53	34.3	LOS D	0.1	0.1	0.93	0.93	191.5	204.3	1.07
All Pedestrians	200	211	63.5	LOS F	0.2	0.2	0.95	0.95	228.4	214.3	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay) Pedestrian movement LOS values are based on average delay per pedestrian movement. Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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₩ Site: 101 [Interchange-Wonderland Fu25.PM+Dev (Site Folder: Future Base (2025) + Dev)]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfo	rmance										
Mov	Turn	INP	UT	DEM	AND	Deg.	Aver.	Level of	95% BA		Prop. E	ffective	Aver.	Aver.
ח ו		VOLU [Total		FLU [Total	иvs ц\/1	Sath	Delay	Service		EUE Diet 1	Que	Stop	INO.	Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m		Trate	Cycles	km/h
Sout	h: Inter	change [Dr (S)											
1	L2	1	0	1	0.0	0.004	4.5	LOS A	0.0	0.1	0.30	0.54	0.30	53.2
2	T1	1	0	1	0.0	0.004	4.7	LOS A	0.0	0.1	0.30	0.54	0.30	54.6
3	R2	2	0	2	0.0	0.004	9.8	LOS A	0.0	0.1	0.30	0.54	0.30	54.7
Appr	oach	4	0	4	0.0	0.004	7.2	LOS A	0.0	0.1	0.30	0.54	0.30	54.3
East	Wond	erland D	r (E)											
4	L2	1	0	1	0.0	0.078	3.9	LOS A	0.3	3.9	0.04	0.36	0.04	55.9
5	T1	150	109	158	72.7	0.078	4.4	LOS A	0.3	3.9	0.04	0.39	0.04	55.6
6	R2	25	15	26	60.0	0.078	9.7	LOS A	0.3	3.8	0.04	0.45	0.04	53.8
Appr	oach	176	124	185	70.5	0.078	5.2	LOS A	0.3	3.9	0.04	0.40	0.04	55.3
North	n: Inter	change D	0r (N)											
7	L2	181	14	191	7.7	0.234	6.5	LOS A	0.9	6.9	0.54	0.74	0.54	53.7
8	T1	1	0	1	0.0	0.234	6.4	LOS A	0.9	6.9	0.54	0.74	0.54	55.5
9	R2	2	1	2	50.0	0.234	13.3	LOS A	0.9	6.9	0.54	0.74	0.54	53.7
Appr	oach	184	15	194	8.2	0.234	6.5	LOS A	0.9	6.9	0.54	0.74	0.54	53.7
West	: Wone	derland D	9r (W)											
10	L2	6	4	6	66.7	0.239	4.9	LOS A	1.1	9.0	0.13	0.38	0.13	53.2
11	T1	619	117	652	18.9	0.239	4.3	LOS A	1.1	8.9	0.13	0.38	0.13	56.5
12	R2	1	0	1	0.0	0.239	9.1	LOS A	1.1	8.9	0.13	0.39	0.13	57.0
Appr	oach	626	121	659	19.3	0.239	4.4	LOS A	1.1	9.0	0.13	0.38	0.13	56.4
All Vehio	cles	990	260	1042	26.3	0.239	4.9	LOS A	1.1	9.0	0.19	0.45	0.19	55.7

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Wonderland-Honeycomb Fu25.PM+Dev (Site

Folder: Future Base (2025) + Dev)]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	it Perfor	rmance										
Mov	Turn	INF	PUT	DEM	AND	Deg.	Aver.	Level of	95% BA	CK OF	Prop.	Effective	Aver.	Aver.
ID			JMES	FLO	WS	Sath	Delay	Service	QUE		Que	Stop	No.	Speed
		[IOtal veh/h	HV J veh/h	[IOtal veh/h	HV J %	v/c	sec		[Veh. veh	DIST J m		Rate	Cycles	km/h
Sout	h: Hon	eycomb	Dr (S)	Ven/m		0,0	000		<u></u>					KI1/11
2	T1	2	0	2	0.0	0.047	4.9	LOS A	0.2	1.7	0.34	0.61	0.34	51.7
3	R2	48	6	51	12.5	0.047	9.8	LOS A	0.2	1.7	0.34	0.61	0.34	51.9
Appr	oach	50	6	53	12.0	0.047	9.6	LOS A	0.2	1.7	0.34	0.61	0.34	51.9
East	Wond	lerland D	r (E)											
4	L2	7	4	7	57.1	0.116	4.4	LOS A	0.6	7.0	0.02	0.60	0.02	50.7
6	R2	133	100	140	75.2	0.116	9.6	LOS A	0.6	7.0	0.02	0.60	0.02	50.0
Appr	oach	140	104	147	74.3	0.116	9.3	LOS A	0.6	7.0	0.02	0.60	0.02	50.0
North	n: Hone	eycomb [Dr (N)											
7	L2	498	101	524	20.3	0.389	4.4	LOS A	2.8	23.2	0.25	0.46	0.25	53.6
8	T1	1	0	1	0.0	0.389	4.4	LOS A	2.8	23.2	0.25	0.46	0.25	55.8
Appr	oach	499	101	525	20.2	0.389	4.4	LOS A	2.8	23.2	0.25	0.46	0.25	53.6
All Vehic	cles	689	211	725	30.6	0.389	5.8	LOS A	2.8	23.2	0.21	0.50	0.21	52.7

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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W Site: 101 [Honeycomb-Grevillea Fu25.PM+Dev (Site Folder:

Future Base (2025) + Dev)]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	UT	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLL	JMES	FLO	WS	Satn	Delay	Service	QUE	EUE	Que	Stop	No.	Speed
		[lotal	HV J	[lotal	HV J	vla	~~~		[Veh.	Dist J		Rate	Cycles	lum/h
Sout	h: Grev	ven/n villea St (S)	ven/n	70	V/C	Sec	_	ven	111	_	_	_	K/11/11
oouu		villed or (0)											
1	L2	4	1	4	25.0	0.049	4.8	LOS A	0.2	1.8	0.27	0.60	0.27	46.5
3	R2	49	8	52	16.3	0.049	9.5	LOS A	0.2	1.8	0.27	0.60	0.27	51.4
Appr	oach	53	9	56	17.0	0.049	9.2	LOS A	0.2	1.8	0.27	0.60	0.27	51.1
East:	Hone	ycomb D	r (E)											
4	L2	21	15	22	71.4	0.091	4.6	LOS A	0.5	5.3	0.02	0.41	0.02	52.7
5	T1	87	65	92	74.7	0.091	4.7	LOS A	0.5	5.3	0.02	0.41	0.02	37.1
Appr	oach	108	80	114	74.1	0.091	4.7	LOS A	0.5	5.3	0.02	0.41	0.02	40.7
West	: Hone	eycomb D	Dr (W)											
11	T1	326	68	343	20.9	0.262	4.4	LOS A	1.6	13.3	0.22	0.40	0.22	51.6
12	R2	1	1	1	100.0	0.262	9.4	LOS A	1.6	13.3	0.22	0.40	0.22	47.6
Appr	oach	327	69	344	21.1	0.262	4.4	LOS A	1.6	13.3	0.22	0.40	0.22	51.6
All Vehic	cles	488	158	514	32.4	0.262	5.0	LOS A	1.6	13.3	0.18	0.43	0.18	48.6

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Honeycomb-Kangaroo Fu25.PM+Dev (Site Folder:

Future Base (2025) + Dev)]

New Site Site Category: (None) Give-Way (Two-Way)

Vehi	icle M	ovemen	t Perfor	mance										
Mov	Turn	INF	PUT	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLL	JMES	FLO	WS	Satn	Delay	Service	QUI	EUE	Que	Stop	No.	Speed
		[Total	HV]	[Total	HV]				[Veh.	Dist]		Rate	Cycles	1 //
		ven/n	ven/n	ven/h	%	V/C	sec		ven	m				Km/h
East:	Hone	ycomb D	r (E)											
5	T1	11	5	12	45.5	0.008	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	80	63	84	78.8	0.095	6.5	LOS A	0.4	4.6	0.28	0.56	0.28	44.2
Appr	oach	91	68	96	74.7	0.095	5.7	NA	0.4	4.6	0.25	0.50	0.25	45.7
North	n: Kang	garoo Ave	e (N)											
7	L2	226	40	238	17.7	0.218	6.4	LOS A	0.9	7.4	0.25	0.57	0.25	47.3
9	R2	3	3	3	100.0	0.007	10.4	LOS A	0.0	0.3	0.45	0.59	0.45	46.5
Appr	oach	229	43	241	18.8	0.218	6.4	LOS A	0.9	7.4	0.26	0.57	0.26	47.3
West	t: Hone	eycomb D	0r (W)											
10	L2	3	0	3	0.0	0.002	5.7	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
11	T1	93	31	98	33.3	0.061	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appr	oach	96	31	101	32.3	0.061	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehic	cles	416	142	438	34.1	0.218	4.8	NA	0.9	7.4	0.19	0.42	0.19	49.3

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.

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Site: 101 [Wallgrove-Wonderland Fu35.AM (Site Folder: Future Base (2035))]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 191 seconds (Site User-Given Cycle Time)

Vehi	cle M	ovemen	t Perfoi	rmance										
Mov	Turn	INP	UT	DEM	AND	Deg.	Aver.	Level of	95% B/	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLU	IMES		WS	Satn	Delay	Service	QUI	EUE	Que	Stop	No.	Speed
		veh/h	veh/h	veh/h	нvј %	v/c	sec		ven. veh	m Dist		Rale	Cycles	km/h
South	n: Wall	grove Rd	(S)											
1	L2	397	114	418	28.7	0.366	13.1	LOS A	11.2	97.3	0.36	0.69	0.36	51.3
2	T1	980	232	1032	23.7	0.722	49.4	LOS D	39.3	331.3	0.89	0.82	0.89	34.6
3	R2	5	0	5	0.0	*0.090	107.5	LOS F	0.5	3.5	0.99	0.65	0.99	22.0
Appro	oach	1382	346	1455	25.0	0.722	39.2	LOS C	39.3	331.3	0.74	0.79	0.74	38.1
East:	Wond	erland Di	r (E)											
4	L2	3	1	3	33.3	0.102	108.1	LOS F	0.5	4.1	1.00	0.65	1.00	21.5
5	T1	1	0	1	0.0	*0.102	102.1	LOS F	0.5	4.1	1.00	0.65	1.00	21.9
6	R2	1	0	1	0.0	0.102	107.7	LOS F	0.5	4.1	1.00	0.65	1.00	21.8
Appro	oach	5	1	5	20.0	0.102	106.8	LOS F	0.5	4.1	1.00	0.65	1.00	21.6
North	n: Wallo	grove Rd	(N)											
7	L2	8	0	8	0.0	0.725	24.7	LOS B	49.3	392.4	0.68	0.64	0.68	44.7
8	T1	1417	228	1492	16.1	*0.725	17.5	LOS B	49.3	392.4	0.61	0.57	0.61	46.6
9	R2	585	104	616	17.8	0.714	44.4	LOS D	17.4	140.0	0.97	0.85	0.97	34.2
Appro	oach	2010	332	2116	16.5	0.725	25.3	LOS B	49.3	392.4	0.72	0.65	0.72	42.2
West	: Wond	derland D	r (W)											
10	L2	223	117	235	52.5	0.183	8.0	LOS A	1.3	12.8	0.10	0.53	0.10	52.7
11	T1	1	0	1	0.0	*0.718	90.0	LOS F	8.9	97.1	0.99	0.85	1.10	23.5
12	R2	181	119	191	65.7	0.718	96.3	LOS F	8.9	97.1	0.99	0.85	1.10	22.8
Appro	oach	405	236	426	58.3	0.718	47.6	LOS D	8.9	97.1	0.50	0.67	0.55	33.2
All Vehic	les	3802	915	4002	24.1	0.725	32.9	LOS C	49.3	392.4	0.70	0.70	0.71	39.5

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

Pedestrian M	loveme	nt Perf	ormano	e										
Mov Crossing	Input	Dem.	Aver.	Level of A	VERAGE		Prop. Ef	fective	Travel	Travel	Aver.			
D crocoing	VOI.	FIOW	Delay	Service	[Ped	Dist]	Que	Rate	TITLE	Dist.	Speed			
	ped/h	ped/h	sec		ped	m			sec	m	m/sec			
South: Wallgro	ped/h ped/h sec ped m sec m m/sec outh: Wallgrove Rd (S)													
East: Wonderl	and Dr (E	Ξ)												
P2 Full	50	53	89.8	LOS F	0.3	0.3	0.97	0.97	250.3	208.6	0.83			
North: Wallgro	ve Rd (N)												
P3 Full	50	53	89.8	LOS F	0.3	0.3	0.97	0.97	264.5	227.1	0.86			

West: Wonder	land Dr ('	W)									
P4 Full	50	53	89.8	LOS F	0.3	0.3	0.97	0.97	256.9	217.2	0.85
P4B ^{Slip/} Bypass	50	53	42.4	LOS E	0.1	0.1	0.94	0.94	199.6	204.3	1.02
All Pedestrians	200	211	77.9	LOS F	0.3	0.3	0.96	0.96	242.8	214.3	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay) Pedestrian movement LOS values are based on average delay per pedestrian movement. Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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W Site: 101 [Interchange-Wonderland Fu35.AM (Site Folder: Future Base (2035))]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfo	rmance										
Mov	Turn	INF	TUT	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop. E	ffective	Aver.	Aver.
U				FLC Totol		Sath	Delay	Service	QUI [\/ob	EUE Diet 1	Que	Stop	NO.	Speed
		veh/h	veh/h	veh/h	пvј %	v/c	sec		veh	m m		Nale	Cycles	km/h
Sout	h: Inte	rchange [Dr (S)											
1	L2	2	0	2	0.0	0.005	6.6	LOS A	0.0	0.1	0.51	0.60	0.51	53.2
2	T1	1	0	1	0.0	0.005	6.6	LOS A	0.0	0.1	0.51	0.60	0.51	54.6
3	R2	1	0	1	0.0	0.005	11.4	LOS A	0.0	0.1	0.51	0.60	0.51	54.7
Appr	oach	4	0	4	0.0	0.005	7.8	LOS A	0.0	0.1	0.51	0.60	0.51	53.9
East	Wond	lerland D	r (E)											
4	L2	1	0	1	0.0	0.292	3.9	LOS A	1.6	14.2	0.10	0.36	0.10	55.6
5	T1	616	171	648	27.8	0.292	4.5	LOS A	1.6	14.2	0.10	0.41	0.10	56.1
6	R2	162	23	171	14.2	0.292	9.2	LOS A	1.6	13.5	0.10	0.50	0.10	55.0
Appr	oach	779	194	820	24.9	0.292	5.5	LOS A	1.6	14.2	0.10	0.42	0.10	55.9
North	n: Inter	change D	Dr (N)											
7	L2	65	33	68	50.8	0.107	6.2	LOS A	0.4	4.1	0.44	0.62	0.44	52.5
8	T1	1	0	1	0.0	0.107	5.2	LOS A	0.4	4.1	0.44	0.62	0.44	55.4
9	R2	11	5	12	45.5	0.107	11.4	LOS A	0.4	4.1	0.44	0.62	0.44	53.8
Appr	oach	77	38	81	49.4	0.107	6.9	LOS A	0.4	4.1	0.44	0.62	0.44	52.7
West	: Won	derland D	Or (W)											
10	L2	18	12	19	66.7	0.157	5.9	LOS A	0.7	7.2	0.33	0.47	0.33	52.3
11	T1	258	164	272	63.6	0.157	5.6	LOS A	0.7	7.2	0.33	0.47	0.33	54.4
12	R2	2	0	2	0.0	0.157	9.7	LOS A	0.7	7.1	0.34	0.48	0.34	55.8
Appr	oach	278	176	293	63.3	0.157	5.7	LOS A	0.7	7.2	0.33	0.47	0.33	54.3
All Vehio	cles	1138	408	1198	35.9	0.292	5.6	LOS A	1.6	14.2	0.18	0.45	0.18	55.3

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Wonderland-Honeycomb Fu35.AM (Site Folder:

Future Base (2035))]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	rmance										
Mov	Turn	INF	PUT	DEM	AND	Deg.	Aver.	Level of	95% BA	CK OF	Prop.	Effective	Aver.	Aver.
D		VOLU	JMES	FLO	WS .	Satn	Delay	Service	QUE	EUE	Que	Stop	NO.	Speed
		[lotal	HV J	[lotal	HV J	vlo	~~~		[Veh.	Dist J		Rate	Cycles	km/b
South	n: Hon	evcomb	Dr (S)	ven/n	70	v/C	360	_	ven		_	_	_	KI11/11
		- ,	(-)	-										
2	11	2	0	2	0.0	0.056	7.2	LOSA	0.3	2.9	0.62	0.73	0.62	49.6
3	R2	29	21	31	72.4	0.056	14.6	LOS B	0.3	2.9	0.62	0.73	0.62	48.0
Appro	oach	31	21	33	67.7	0.056	14.2	LOS A	0.3	2.9	0.62	0.73	0.62	48.1
East:	Wond	lerland D	r (E)											
4	L2	60	9	63	15.0	0.389	4.0	LOS A	2.8	23.7	0.04	0.61	0.04	51.9
6	R2	509	136	536	26.7	0.389	9.0	LOS A	2.8	23.7	0.04	0.61	0.04	51.9
Appro	oach	569	145	599	25.5	0.389	8.5	LOS A	2.8	23.7	0.04	0.61	0.04	51.9
North	n: Hone	eycomb [Dr (N)											
7	L2	214	131	225	61.2	0.204	4.8	LOS A	1.3	13.5	0.21	0.46	0.21	52.4
8	T1	2	2	2	100.0	0.204	5.3	LOS A	1.3	13.5	0.21	0.46	0.21	53.3
Appro	oach	216	133	227	61.6	0.204	4.8	LOS A	1.3	13.5	0.21	0.46	0.21	52.4
All Vehic	les	816	299	859	36.6	0.389	7.7	LOS A	2.8	23.7	0.11	0.58	0.11	51.9

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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W Site: 101 [Honeycomb-Grevillea Fu35.AM (Site Folder: Future Base (2035))]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	TUT	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
U		JLOV		FLO [Total	ws ыvı	Sath	Delay	Service	QUI [\/eh	EUE Diet 1	Que	Stop	NO. Cycles	Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m		Trate	Cycles	km/h
Sout	h: Grev	villea St (S)											
1	L2	1	0	1	0.0	0.033	5.6	LOS A	0.2	1.5	0.50	0.65	0.50	46.0
3	R2	23	12	24	52.2	0.033	11.9	LOS A	0.2	1.5	0.50	0.65	0.50	49.0
Appro	oach	24	12	25	50.0	0.033	11.7	LOS A	0.2	1.5	0.50	0.65	0.50	48.9
East:	Hone	ycomb D	r (E)											
4	L2	63	19	66	30.2	0.269	4.2	LOS A	1.6	14.1	0.03	0.41	0.03	54.0
5	T1	327	89	344	27.2	0.269	4.3	LOS A	1.6	14.1	0.03	0.41	0.03	37.7
Appr	oach	390	108	411	27.7	0.269	4.3	LOS A	1.6	14.1	0.03	0.41	0.03	40.8
West	: Hone	eycomb E	0r (W)											
11	T1	143	89	151	62.2	0.135	4.3	LOS A	0.8	8.2	0.16	0.39	0.16	50.3
12	R2	2	0	2	0.0	0.135	8.8	LOS A	0.8	8.2	0.16	0.39	0.16	53.7
Appr	oach	145	89	153	61.4	0.135	4.4	LOS A	0.8	8.2	0.16	0.39	0.16	50.4
All Vehic	cles	559	209	588	37.4	0.269	4.6	LOS A	1.6	14.1	0.08	0.41	0.08	43.2

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Honeycomb-Kangaroo Fu35.AM (Site Folder: Future Base (2035))]

New Site Site Category: (None) Give-Way (Two-Way)

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF		DEM		Deg.	Aver.	Level of	95% BA		Prop.	Effective	Aver.	Aver.
		[Total	HV 1	[Total	HV 1	Jain	Delay	Service	[Veh	Dist 1	Que	Rate	Cvcles	Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m		rtato	0,000	km/h
East:	Hone	ycomb D	r (E)											
5	T1	61	17	64	27.9	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	258	76	272	29.5	0.222	5.7	LOS A	1.1	9.4	0.11	0.55	0.11	47.5
Appr	oach	319	93	336	29.2	0.222	4.6	NA	1.1	9.4	0.09	0.44	0.09	49.5
North	n: Kang	garoo Ave	e (N)											
7	L2	126	83	133	65.9	0.135	6.4	LOS A	0.5	5.9	0.09	0.54	0.09	46.4
9	R2	3	1	3	33.3	0.006	10.1	LOS A	0.0	0.2	0.51	0.63	0.51	49.3
Appr	oach	129	84	136	65.1	0.135	6.5	LOS A	0.5	5.9	0.10	0.54	0.10	46.5
West	: Hone	eycomb D	Dr (W)											
10	L2	3	2	3	66.7	0.003	6.8	LOS A	0.0	0.0	0.00	0.57	0.00	50.9
11	T1	15	8	16	53.3	0.011	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appr	oach	18	10	19	55.6	0.011	1.1	NA	0.0	0.0	0.00	0.09	0.00	57.4
All Vehic	cles	466	187	491	40.1	0.222	5.0	NA	1.1	9.4	0.09	0.46	0.09	48.9

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Site: 101 [Wallgrove-Wonderland Fu35.PM (Site Folder: Future Base (2035))]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 158 seconds (Site User-Given Cycle Time)

Vehi	cle M	ovemen	t Perfo	rmance										
Mov	Turn	INP	DT	DEM	AND	Deg.	Aver.	Level of	95% B/	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLL	JMES	FLC	WS	Satn	Delay	Service	QU	EUE	Que	Stop	No.	Speed
		l Iotai veh/h	HV J veh/h	l Iotai veh/h	нvј %	v/c	sec		ι ven. veh	Dist j m		Rate	Cycles	km/h
Sout	h: Wall	grove Rd	l (S)											
1	L2	99	65	104	65.7	0.091	8.5	LOS A	0.8	8.3	0.15	0.60	0.15	53.8
2	T1	1047	89	1102	8.5	*0.727	42.5	LOS D	35.3	264.8	0.90	0.83	0.90	37.0
3	R2	3	1	3	33.3	0.055	90.0	LOS F	0.2	2.2	0.99	0.63	0.99	24.3
Appr	oach	1149	155	1209	13.5	0.727	39.7	LOS C	35.3	264.8	0.84	0.81	0.84	38.0
East:	Wond	erland D	r (E)											
4	L2	9	1	9	11.1	0.294	90.5	LOS F	1.6	11.7	1.00	0.70	1.00	23.9
5	T1	1	0	1	0.0	*0.294	84.8	LOS F	1.6	11.7	1.00	0.70	1.00	24.2
6	R2	9	0	9	0.0	0.294	90.4	LOS F	1.6	11.7	1.00	0.70	1.00	24.0
Appr	oach	19	1	20	5.3	0.294	90.2	LOS F	1.6	11.7	1.00	0.70	1.00	24.0
North	n: Wall	grove Rd	(N)											
7	L2	1	0	1	0.0	0.659	37.3	LOS C	32.4	256.3	0.81	0.73	0.81	38.8
8	T1	1019	155	1073	15.2	0.659	31.2	LOS C	32.4	256.3	0.79	0.71	0.79	39.7
9	R2	135	73	142	54.1	* 0.698	50.7	LOS D	3.2	33.2	1.00	0.82	1.13	31.9
Appr	oach	1155	228	1216	19.7	0.698	33.5	LOS C	32.4	256.3	0.82	0.73	0.83	38.6
West	: Wone	derland D	9r (W)											
10	L2	648	62	682	9.6	0.421	9.1	LOS A	4.8	36.3	0.17	0.58	0.17	54.0
11	T1	1	0	1	0.0	*0.724	52.1	LOS D	15.4	125.8	0.89	0.83	0.92	30.9
12	R2	445	87	468	19.6	0.724	57.9	LOS E	15.4	125.8	0.89	0.83	0.92	30.4
Appr	oach	1094	149	1152	13.6	0.724	29.0	LOS C	15.4	125.8	0.46	0.68	0.47	41.0
All Vehic	cles	3417	533	3597	15.6	0.727	34.5	LOS C	35.3	264.8	0.71	0.74	0.72	39.0

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.

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

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

Pedestrian M	loveme	nt Perf	ormano	e							
Mov Crossing	Input	Dem.	Aver.	Level of A	VERAGE		Prop. Ef	fective	Travel	Travel	Aver.
	VOI.	FIOW	Delay	Service	[Ped	Dist]	Que	Rate	TITLE	DISI.	Speeu
	ped/h	ped/h	sec		ped	m			sec	m	m/sec
South: Wallgro	ove Rd (S	5)									
East: Wonderl	and Dr (E	E)									
P2 Full	50	53	73.3	LOS F	0.2	0.2	0.96	0.96	233.7	208.6	0.89
North: Wallgro	ve Rd (N)									
P3 Full	50	53	73.3	LOS F	0.2	0.2	0.96	0.96	248.0	227.1	0.92

West: Wonder	land Dr (W)									
P4 Full	50	53	73.3	LOS F	0.2	0.2	0.96	0.96	240.4	217.2	0.90
P4B ^{Slip/} Bypass	50	53	34.2	LOS D	0.1	0.1	0.93	0.93	191.4	204.3	1.07
All Pedestrians	200	211	63.5	LOS F	0.2	0.2	0.95	0.95	228.4	214.3	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay) Pedestrian movement LOS values are based on average delay per pedestrian movement. Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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W Site: 101 [Interchange-Wonderland Fu35.PM (Site Folder: Future Base (2035))]

New Site Site Category: (None)

Roundabout

Vehi	icle M	ovemen	t Perfoi	rmance										
Mov	Turn	INP	UT	DEM	AND	Deg.	Aver.	Level of	95% BA		Prop. E	ffective	Aver.	Aver.
UI				FLU [Totol		Sath	Delay	Service	QUI [Vob	EUE	Que	Stop	NO.	Speed
		veh/h	veh/h	veh/h	пvј %	v/c	sec		veh	m		Nale	Cycles	km/h
Sout	h: Intei	rchange [Dr (S)											
1	L2	1	0	1	0.0	0.004	4.4	LOS A	0.0	0.1	0.29	0.53	0.29	53.2
2	T1	1	0	1	0.0	0.004	4.7	LOS A	0.0	0.1	0.29	0.53	0.29	54.7
3	R2	2	0	2	0.0	0.004	9.7	LOS A	0.0	0.1	0.29	0.53	0.29	54.8
Appr	oach	4	0	4	0.0	0.004	7.1	LOS A	0.0	0.1	0.29	0.53	0.29	54.3
East	Wond	lerland D	r (E)											
4	L2	1	0	1	0.0	0.072	3.9	LOS A	0.3	3.5	0.04	0.36	0.04	55.9
5	T1	136	92	143	67.6	0.072	4.4	LOS A	0.3	3.5	0.04	0.39	0.04	55.7
6	R2	26	16	27	61.5	0.072	9.7	LOS A	0.3	3.4	0.04	0.46	0.04	53.8
Appr	oach	163	108	172	66.3	0.072	5.2	LOS A	0.3	3.5	0.04	0.40	0.04	55.4
North	n: Inter	change D	0r (N)											
7	L2	192	15	202	7.8	0.249	6.5	LOS A	1.0	7.4	0.55	0.74	0.55	53.7
8	T1	1	0	1	0.0	0.249	6.4	LOS A	1.0	7.4	0.55	0.74	0.55	55.5
9	R2	2	1	2	50.0	0.249	13.4	LOS A	1.0	7.4	0.55	0.74	0.55	53.7
Appr	oach	195	16	205	8.2	0.249	6.6	LOS A	1.0	7.4	0.55	0.74	0.55	53.7
West	t: Won	derland D	9r (W)											
10	L2	7	5	7	71.4	0.242	4.9	LOS A	1.1	8.9	0.13	0.39	0.13	53.1
11	T1	632	100	665	15.8	0.242	4.3	LOS A	1.1	8.8	0.13	0.39	0.13	56.5
12	R2	1	0	1	0.0	0.242	9.1	LOS A	1.1	8.8	0.14	0.39	0.14	57.0
Appr	oach	640	105	674	16.4	0.242	4.3	LOS A	1.1	8.9	0.13	0.39	0.13	56.5
All Vehio	cles	1002	229	1055	22.9	0.249	4.9	LOS A	1.1	8.9	0.20	0.46	0.20	55.7

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Wonderland-HoneycombFu35.PM (Site Folder:

Future Base (2035))]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	TUY	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID		VOLL	JMES	FLO	WS	Satn	Delay	Service	QUE	EUE	Que	Stop	No.	Speed
		[lotal	HV J	[lotal	HV J				[Veh.	Dist J		Rate	Cycles	l con /la
Sout	h [.] Hon	ven/n evcomb l	Dr (S)	ven/n	%	V/C	sec	_	ven	m	_	_	_	Km/n
Cout	1. 11011	eyeenib i	51 (0)											
2	T1	2	0	2	0.0	0.050	4.8	LOS A	0.2	1.8	0.31	0.61	0.31	51.8
3	R2	52	7	55	13.5	0.050	9.7	LOS A	0.2	1.8	0.31	0.61	0.31	51.9
Appr	oach	54	7	57	13.0	0.050	9.5	LOS A	0.2	1.8	0.31	0.61	0.31	51.9
East:	Wond	lerland D	r (E)											
4	L2	8	5	8	62.5	0.101	4.5	LOS A	0.5	5.9	0.02	0.60	0.02	50.6
6	R2	116	81	122	69.8	0.101	9.5	LOS A	0.5	5.9	0.02	0.60	0.02	50.2
Appr	oach	124	86	131	69.4	0.101	9.2	LOS A	0.5	5.9	0.02	0.60	0.02	50.2
North	n: Hone	eycomb [Dr (N)											
7	L2	503	82	529	16.3	0.389	4.4	LOS A	2.8	22.3	0.26	0.47	0.26	53.7
8	T1	1	0	1	0.0	0.389	4.4	LOS A	2.8	22.3	0.26	0.47	0.26	55.8
Appr	oach	504	82	531	16.3	0.389	4.4	LOS A	2.8	22.3	0.26	0.47	0.26	53.7
All Vehic	cles	682	175	718	25.7	0.389	5.7	LOS A	2.8	22.3	0.22	0.50	0.22	52.9

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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W Site: 101 [Honeycomb-Grevillea Fu35.PM (Site Folder: Future Base (2035))]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	DT	DEM	AND	Deg.	Aver.	Level of	95% BA	ACK OF	Prop.	Effective	Aver.	Aver.
ID			JMES	FLO	WS	Satn	Delay	Service	QUE	EUE	Que	Stop	No.	Speed
		[IOtal veh/h	HV J veh/h	l Iotai veh/h	HVJ %	v/c	sec		į ven. veh	DIST J m		Rate	Cycles	km/h
Sout	h: Grev	villea St (S)	Voni/H	,,,	10			Volt					
1	L2	4	1	4	25.0	0.050	4.6	LOS A	0.2	1.8	0.24	0.59	0.24	46.7
3	R2	52	8	55	15.4	0.050	9.4	LOS A	0.2	1.8	0.24	0.59	0.24	51.5
Appr	oach	56	9	59	16.1	0.050	9.0	LOS A	0.2	1.8	0.24	0.59	0.24	51.2
East:	Hone	ycomb D	r (E)											
4	L2	23	16	24	69.6	0.075	4.5	LOS A	0.4	4.1	0.02	0.42	0.02	52.7
5	T1	68	45	72	66.2	0.075	4.6	LOS A	0.4	4.1	0.02	0.42	0.02	37.2
Appr	oach	91	61	96	67.0	0.075	4.6	LOS A	0.4	4.1	0.02	0.42	0.02	41.8
West	: Hone	eycomb D	Dr (W)											
11	T1	322	48	339	14.9	0.254	4.4	LOS A	1.5	12.0	0.22	0.41	0.22	51.9
12	R2	1	1	1	100.0	0.254	9.4	LOS A	1.5	12.0	0.22	0.41	0.22	47.6
Appr	oach	323	49	340	15.2	0.254	4.4	LOS A	1.5	12.0	0.22	0.41	0.22	51.9
All Vehic	cles	470	119	495	25.3	0.254	5.0	LOS A	1.5	12.0	0.19	0.43	0.19	49.3

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Honeycomb-Kangaroo Fu35.PM (Site Folder: Future Base (2035))]

New Site Site Category: (None) Give-Way (Two-Way)

Vehi	cle M	ovemen	t Perfor	mance										
Mov ID	Turn	INF VOLU	PUT JMES	DEM FLO	AND WS	Deg. Satn	Aver. Delay	Level of Service	95% BA QUI	ACK OF EUE Dist 1	Prop. Que	Effective Stop	Aver. No.	Aver. Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m		Trate	Cycles	km/h
East:	Hone	ycomb D	r (E)											
5	T1	13	6	14	46.2	0.009	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	60	42	63	70.0	0.066	6.1	LOS A	0.3	3.0	0.22	0.55	0.22	44.8
Appr	oach	73	48	77	65.8	0.066	5.0	NA	0.3	3.0	0.18	0.45	0.18	47.0
North	n: Kang	garoo Ave	∋ (N)											
7	L2	239	42	252	17.6	0.222	6.2	LOS A	0.9	7.6	0.21	0.55	0.21	47.5
9	R2	3	3	3	100.0	0.006	9.3	LOS A	0.0	0.3	0.39	0.56	0.39	47.2
Appr	oach	242	45	255	18.6	0.222	6.2	LOS A	0.9	7.6	0.21	0.55	0.21	47.5
West	: Hone	eycomb D	Dr (W)											
10	L2	3	0	3	0.0	0.002	5.7	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
11	T1	73	8	77	11.0	0.042	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appr	oach	76	8	80	10.5	0.042	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.5
All Vehic	les	391	101	412	25.8	0.222	4.8	NA	0.9	7.6	0.16	0.43	0.16	49.4

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Site: 101 [Wallgrove-Wonderland Fu35.AM+Dev (Site Folder:

Future Base (2035) + Dev)]

New Site

Site Category: (None) Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 191 seconds (Site User-Given Cycle Time)

Vehi	cle M	ovemen	t Perfor	rmance										
Mov ID	Turn	INF VOLL [Total veh/h	PUT JMES HV] veh/h	DEM FLO [Total veh/h	AND WS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BA QUI [Veh. veh	ACK OF EUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Sout	n: Wall	grove Rd	I (S)											
1	L2	409	126	431	30.8	0.384	13.9	LOS A	12.2	108.2	0.38	0.69	0.38	50.7
2	T1	980	232	1032	23.7	*0.740	51.2	LOS D	40.1	337.6	0.91	0.84	0.91	34.0
3	R2	5	0	5	0.0	0.090	107.5	LOS F	0.5	3.5	0.99	0.65	0.99	22.0
Appr	oach	1394	358	1467	25.7	0.740	40.4	LOS C	40.1	337.6	0.75	0.79	0.75	37.6
East:	Wond	erland D	r (E)											
4	L2	3	1	3	33.3	0.102	108.1	LOS F	0.5	4.1	1.00	0.65	1.00	21.5
5	T1	1	0	1	0.0	*0.102	102.1	LOS F	0.5	4.1	1.00	0.65	1.00	21.9
6	R2	1	0	1	0.0	0.102	107.7	LOS F	0.5	4.1	1.00	0.65	1.00	21.8
Appr	oach	5	1	5	20.0	0.102	106.8	LOS F	0.5	4.1	1.00	0.65	1.00	21.6
North	n: Wallę	grove Rd	(N)											
7	L2	8	0	8	0.0	0.737	26.0	LOS B	51.1	406.8	0.70	0.66	0.70	44.0
8	T1	1417	228	1492	16.1	0.737	18.7	LOS B	51.1	406.8	0.64	0.59	0.64	45.9
9	R2	596	115	627	19.3	*0.740	44.1	LOS D	17.6	143.7	0.97	0.85	0.97	34.3
Appr	oach	2021	343	2127	17.0	0.740	26.2	LOS B	51.1	406.8	0.73	0.67	0.73	41.7
West	: Wond	derland D	0r (W)											
10	L2	234	128	246	54.7	0.194	8.0	LOS A	1.3	13.7	0.10	0.53	0.10	52.7
11	T1	1	0	1	0.0	*0.750	89.6	LOS F	9.5	105.0	0.99	0.86	1.12	23.5
12	R2	193	131	203	67.9	0.750	96.0	LOS F	9.5	105.0	0.99	0.86	1.12	22.8
Appr	oach	428	259	451	60.5	0.750	47.8	LOS D	9.5	105.1	0.50	0.68	0.56	33.2
All Vehic	les	3848	961	4051	25.0	0.750	33.9	LOS C	51.1	406.8	0.72	0.71	0.72	39.0

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.

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

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

Pedestrian M	loveme	nt Perf	ormano	e							
Mov Crossing	Input	Dem.	Aver.	Level of A	VERAGE		Prop. Ef	fective	Travel	Travel	Aver.
D crocoing	VOI.	FIOW	Delay	Service	[Ped	Dist]	Que	Rate	TITLE	Dist.	Speed
	ped/h	ped/h	sec		ped	m			sec	m	m/sec
South: Wallgro	ove Rd (S	5)									
East: Wonderl	and Dr (E	Ξ)									
P2 Full	50	53	89.8	LOS F	0.3	0.3	0.97	0.97	250.3	208.6	0.83
North: Wallgro	ve Rd (N)									
P3 Full	50	53	89.8	LOS F	0.3	0.3	0.97	0.97	264.5	227.1	0.86

West: Wonder	land Dr (W)									
P4 Full	50	53	89.8	LOS F	0.3	0.3	0.97	0.97	256.9	217.2	0.85
P4B ^{Slip/} Bypass	50	53	42.6	LOS E	0.1	0.1	0.94	0.94	199.8	204.3	1.02
All Pedestrians	200	211	78.0	LOS F	0.3	0.3	0.96	0.96	242.8	214.3	0.88

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay) Pedestrian movement LOS values are based on average delay per pedestrian movement. Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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₩ Site: 101 [Interchange-Wonderland Fu35.AM+Dev (Site Folder: Future Base (2035) + Dev)]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfo	rmance										
Mov	Turn	INP	UT	DEM	AND	Deg.	Aver.	Level of	95% BA		Prop. E	ffective	Aver.	Aver.
ח ו		VOLU [Total		FLU [Total	иv5 цv/1	Sath	Delay	Service		EUE Diet 1	Que	Stop	INO.	Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m		Trate	Cycles	km/h
Sout	h: Inter	rchange [Dr (S)											
1	L2	2	0	2	0.0	0.005	6.7	LOS A	0.0	0.1	0.52	0.60	0.52	53.1
2	T1	1	0	1	0.0	0.005	6.6	LOS A	0.0	0.1	0.52	0.60	0.52	54.6
3	R2	1	0	1	0.0	0.005	11.5	LOS A	0.0	0.1	0.52	0.60	0.52	54.7
Appr	oach	4	0	4	0.0	0.005	7.9	LOS A	0.0	0.1	0.52	0.60	0.52	53.9
East	Wond	lerland D	r (E)											
4	L2	1	0	1	0.0	0.303	3.9	LOS A	1.7	15.2	0.10	0.36	0.10	55.6
5	T1	639	194	673	30.4	0.303	4.5	LOS A	1.7	15.2	0.10	0.40	0.10	56.0
6	R2	162	23	171	14.2	0.303	9.2	LOS A	1.7	14.4	0.11	0.49	0.11	55.0
Appr	oach	802	217	844	27.1	0.303	5.5	LOS A	1.7	15.2	0.10	0.42	0.10	55.8
North	n: Inter	change D	0r (N)											
7	L2	65	33	68	50.8	0.110	6.3	LOS A	0.4	4.2	0.46	0.64	0.46	52.4
8	T1	1	0	1	0.0	0.110	5.3	LOS A	0.4	4.2	0.46	0.64	0.46	55.3
9	R2	11	5	12	45.5	0.110	11.5	LOS A	0.4	4.2	0.46	0.64	0.46	53.7
Appr	oach	77	38	81	49.4	0.110	7.1	LOS A	0.4	4.2	0.46	0.64	0.46	52.6
West	: Won	derland D	9r (W)											
10	L2	18	12	19	66.7	0.171	6.0	LOS A	0.7	8.1	0.34	0.48	0.34	52.3
11	T1	280	186	295	66.4	0.171	5.7	LOS A	0.7	8.1	0.34	0.48	0.34	54.3
12	R2	2	0	2	0.0	0.171	9.7	LOS A	0.7	8.0	0.35	0.48	0.35	55.8
Appr	oach	300	198	316	66.0	0.171	5.7	LOS A	0.7	8.1	0.34	0.48	0.34	54.2
All Vehio	cles	1183	453	1245	38.3	0.303	5.7	LOS A	1.7	15.2	0.19	0.45	0.19	55.2

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Wonderland-Honeycomb Fu35.AM+Dev (Site

Folder: Future Base (2035) + Dev)]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	TUY	DEM	AND	Deg.	Aver.	Level of	95% BA	CK OF	Prop.	Effective	Aver.	Aver.
ID		VOLU	JMES	FLO	WS	Satn	Delay	Service	QUE	UE	Que	Stop	No.	Speed
		[IOtal veh/h	HV J veh/h	[Iotal veh/h	HV J %	v/c	sec		[Veh. veh	DIST J m		Rate	Cycles	km/h
Sout	h: Hon	eycomb I	Dr (S)	Voliviti	,,,	110			Von					111/11
2	T1	2	0	2	0.0	0.058	7.5	LOS A	0.3	3.0	0.64	0.74	0.64	49.4
3	R2	29	21	31	72.4	0.058	15.0	LOS B	0.3	3.0	0.64	0.74	0.64	47.7
Appr	oach	31	21	33	67.7	0.058	14.5	LOS B	0.3	3.0	0.64	0.74	0.64	47.8
East:	Wond	erland D	r (E)											
4	L2	60	9	63	15.0	0.410	4.0	LOS A	3.0	26.3	0.05	0.61	0.05	51.9
6	R2	532	159	560	29.9	0.410	9.1	LOS A	3.0	26.3	0.05	0.61	0.05	51.8
Appr	oach	592	168	623	28.4	0.410	8.6	LOS A	3.0	26.3	0.05	0.61	0.05	51.8
North	n: Hone	eycomb [Dr (N)											
7	L2	237	154	249	65.0	0.228	4.8	LOS A	1.4	15.8	0.22	0.46	0.22	52.3
8	T1	2	2	2	100.0	0.228	5.3	LOS A	1.4	15.8	0.22	0.46	0.22	53.2
Appr	oach	239	156	252	65.3	0.228	4.8	LOS A	1.4	15.8	0.22	0.46	0.22	52.3
All Vehic	cles	862	345	907	40.0	0.410	7.7	LOS A	3.0	26.3	0.11	0.57	0.11	51.7

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Honeycomb-Grevillea Fu35.AM+Dev (Site Folder:

Future Base (2035) + Dev)]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	TUT	DEM	AND	Deg.	Aver.	Level of	95% BA	CK OF	Prop.	Effective	Aver.	Aver.
U				FLU Tatal		Sath	Delay	Service	QUE [\/ob	EUE	Que	Stop	NO.	Speed
		veh/h	veh/h	veh/h	пvј %	v/c	sec		veh	m Dist j		Rale	Cycles	km/h
Sout	h: Grev	/illea St (S)											
1	L2	1	0	1	0.0	0.034	5.8	LOS A	0.2	1.6	0.52	0.66	0.52	45.7
3	R2	23	12	24	52.2	0.034	12.2	LOS A	0.2	1.6	0.52	0.66	0.52	48.8
Appr	oach	24	12	25	50.0	0.034	11.9	LOS A	0.2	1.6	0.52	0.66	0.52	48.7
East:	Hone	ycomb D	r (E)											
4	L2	63	19	66	30.2	0.290	4.2	LOS A	1.8	16.0	0.03	0.41	0.03	54.0
5	T1	350	112	368	32.0	0.290	4.4	LOS A	1.8	16.0	0.03	0.41	0.03	37.6
Appr	oach	413	131	435	31.7	0.290	4.3	LOS A	1.8	16.0	0.03	0.41	0.03	40.6
West	: Hone	ycomb D	0r (W)											
11	T1	166	112	175	67.5	0.159	4.3	LOS A	0.9	10.1	0.17	0.39	0.17	50.1
12	R2	2	0	2	0.0	0.159	8.8	LOS A	0.9	10.1	0.17	0.39	0.17	53.7
Appr	oach	168	112	177	66.7	0.159	4.4	LOS A	0.9	10.1	0.17	0.39	0.17	50.1
All Vehic	cles	605	255	637	42.1	0.290	4.6	LOS A	1.8	16.0	0.09	0.41	0.09	43.1

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Honeycomb-Kangaroo Fu35.AM+Dev (Site Folder:

Future Base (2035) + Dev)]

New Site Site Category: (None) Give-Way (Two-Way)

Vehi	cle M	ovemen	t Perfor	mance										
Mov ID	Turn	INF VOLL	PUT JMES	DEM. FLO	AND WS	Deg. Satn	Aver. Delav	Level of Service	95% BA QUI	ACK OF EUE	Prop. Que	Effective Stop	Aver. No.	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
East:	Hone	ycomb D	r (E)											
5	T1	61	17	64	27.9	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	281	99	296	35.2	0.258	5.9	LOS A	1.3	11.6	0.20	0.55	0.20	46.8
Appr	oach	342	116	360	33.9	0.258	4.9	NA	1.3	11.6	0.17	0.45	0.17	48.7
North	n: Kang	garoo Ave	e (N)											
7	L2	126	83	133	65.9	0.141	6.7	LOS A	0.6	6.1	0.18	0.54	0.18	46.1
9	R2	3	1	3	33.3	0.007	11.3	LOS A	0.0	0.2	0.55	0.66	0.55	48.5
Appr	oach	129	84	136	65.1	0.141	6.8	LOS A	0.6	6.1	0.18	0.54	0.18	46.2
West	: Hone	eycomb E	Dr (W)											
10	L2	3	2	3	66.7	0.003	6.9	LOS A	0.0	0.0	0.00	0.57	0.00	50.9
11	T1	38	31	40	81.6	0.031	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appr	oach	41	33	43	80.5	0.031	0.5	NA	0.0	0.0	0.00	0.04	0.00	58.8
All Vehic	cles	512	233	539	45.5	0.258	5.0	NA	1.3	11.6	0.16	0.44	0.16	48.7

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.

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Site: 101 [Wallgrove-Wonderland Fu35.PM+Dev (Site Folder:

Future Base (2035) + Dev)]

New Site

Site Category: (None) Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 158 seconds (Site User-Given Cycle Time)

Vehi	cle M	ovemen	t Perfoi	rmance										
Mov ID	Turn	INF VOLL [Total	PUT JMES HV]	DEM FLO [Total	AND WS HV]	Deg. Satn	Aver. Delay	Level of Service	95% B/ QUI [Veh.	ACK OF EUE Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
Sout	h: Wall	grove Rd	l (S)	ven/n	70	V/C	sec	_	ven	111	_		_	KIII/II
1	L2	111	77	117	69.4	0.105	8.6	LOS A	0.9	10.4	0.15	0.61	0.15	53.5
2	T1	1047	89	1102	8.5	*0.738	43.4	LOS D	35.6	267.7	0.91	0.84	0.91	36.7
3	R2	3	1	3	33.3	0.055	90.0	LOS F	0.2	2.2	0.99	0.63	0.99	24.3
Appr	oach	1161	167	1222	14.4	0.738	40.2	LOS C	35.6	267.7	0.84	0.81	0.84	37.8
East:	Wond	erland D	r (E)											
4	L2	9	1	9	11.1	0.294	90.5	LOS F	1.6	11.7	1.00	0.70	1.00	23.9
5	T1	1	0	1	0.0	*0.294	84.8	LOS F	1.6	11.7	1.00	0.70	1.00	24.2
6	R2	9	0	9	0.0	0.294	90.4	LOS F	1.6	11.7	1.00	0.70	1.00	24.0
Appr	oach	19	1	20	5.3	0.294	90.2	LOS F	1.6	11.7	1.00	0.70	1.00	24.0
North	n: Wall	grove Rd	(N)											
7	L2	1	0	1	0.0	0.671	38.2	LOS C	33.1	261.6	0.82	0.74	0.82	38.4
8	T1	1019	155	1073	15.2	0.671	32.0	LOS C	33.1	261.6	0.80	0.72	0.80	39.4
9	R2	146	84	154	57.5	*0.768	52.8	LOS D	3.6	37.4	1.00	0.85	1.22	31.3
Appr	oach	1166	239	1227	20.5	0.768	34.7	LOS C	33.1	261.6	0.83	0.74	0.85	38.1
West	: Wond	derland D	0r (W)											
10	L2	659	73	694	11.1	0.432	9.2	LOS A	5.0	38.0	0.17	0.58	0.17	53.9
11	T1	1	0	1	0.0	*0.751	52.9	LOS D	16.1	133.2	0.89	0.84	0.95	30.7
12	R2	457	99	481	21.7	0.751	58.7	LOS E	16.1	133.2	0.89	0.84	0.95	30.2
Appr	oach	1117	172	1176	15.4	0.751	29.5	LOS C	16.1	133.2	0.46	0.69	0.49	40.8
All Vehic	cles	3463	579	3645	16.7	0.768	35.2	LOS C	35.6	267.7	0.72	0.75	0.73	38.7

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

* Critical Movement (Signal Timing)

Pedestrian M	loveme	nt Perf	ormano	e							
Mov Crossing	Input	Dem.	Aver.	Level of A	VERAGE		Prop. Ef	fective	Travel	Travel	Aver.
	VOI.	FIOW	Delay	Service	[Ped	Dist]	Que	Rate	TITLE	DISI.	Speeu
	ped/h	ped/h	sec		ped	m			sec	m	m/sec
South: Wallgro	ove Rd (S	5)									
East: Wonderl	and Dr (E	E)									
P2 Full	50	53	73.3	LOS F	0.2	0.2	0.96	0.96	233.7	208.6	0.89
North: Wallgro	ve Rd (N)									
P3 Full	50	53	73.3	LOS F	0.2	0.2	0.96	0.96	248.0	227.1	0.92

West: Wonder	land Dr (W)									
P4 Full	50	53	73.3	LOS F	0.2	0.2	0.96	0.96	240.4	217.2	0.90
P4B ^{Slip/} Bypass	50	53	34.3	LOS D	0.1	0.1	0.93	0.93	191.5	204.3	1.07
All Pedestrians	200	211	63.5	LOS F	0.2	0.2	0.95	0.95	228.4	214.3	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay) Pedestrian movement LOS values are based on average delay per pedestrian movement. Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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₩ Site: 101 [Interchange-Wonderland Fu35.PM+Dev (Site Folder: Future Base (2035) + Dev)]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfo	rmance										
Mov	Turn	INP	UT	DEM	AND	Deg.	Aver.	Level of	95% BA		Prop. E	ffective	Aver.	Aver.
ח ו		VOLU [Total		FLU [Total	vv5 ы\/ 1	Sath	Delay	Service		EUE Diet 1	Que	Stop	NO.	Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m		Trate	Cycles	km/h
Sout	h: Intei	rchange [Dr (S)											
1	L2	1	0	1	0.0	0.004	4.5	LOS A	0.0	0.1	0.31	0.54	0.31	53.2
2	T1	1	0	1	0.0	0.004	4.8	LOS A	0.0	0.1	0.31	0.54	0.31	54.6
3	R2	2	0	2	0.0	0.004	9.8	LOS A	0.0	0.1	0.31	0.54	0.31	54.7
Appr	oach	4	0	4	0.0	0.004	7.2	LOS A	0.0	0.1	0.31	0.54	0.31	54.3
East	Wond	lerland D	r (E)											
4	L2	1	0	1	0.0	0.083	3.9	LOS A	0.4	4.2	0.04	0.36	0.04	55.9
5	T1	159	115	167	72.3	0.083	4.4	LOS A	0.4	4.2	0.04	0.39	0.04	55.6
6	R2	26	16	27	61.5	0.083	9.7	LOS A	0.4	4.1	0.04	0.44	0.04	53.9
Appr	oach	186	131	196	70.4	0.083	5.2	LOS A	0.4	4.2	0.04	0.40	0.04	55.3
North	n: Inter	change D	0r (N)											
7	L2	192	15	202	7.8	0.253	6.6	LOS A	1.0	7.5	0.56	0.75	0.56	53.6
8	T1	1	0	1	0.0	0.253	6.5	LOS A	1.0	7.5	0.56	0.75	0.56	55.4
9	R2	2	1	2	50.0	0.253	13.5	LOS A	1.0	7.5	0.56	0.75	0.56	53.6
Appr	oach	195	16	205	8.2	0.253	6.7	LOS A	1.0	7.5	0.56	0.75	0.56	53.6
West	: Won	derland D	9r (W)											
10	L2	7	5	7	71.4	0.254	4.9	LOS A	1.2	9.6	0.13	0.39	0.13	53.1
11	T1	655	123	689	18.8	0.254	4.3	LOS A	1.2	9.6	0.14	0.39	0.14	56.4
12	R2	1	0	1	0.0	0.254	9.1	LOS A	1.2	9.6	0.14	0.39	0.14	57.0
Appr	oach	663	128	698	19.3	0.254	4.4	LOS A	1.2	9.6	0.14	0.39	0.14	56.4
All Vehio	cles	1048	275	1103	26.2	0.254	4.9	LOS A	1.2	9.6	0.20	0.46	0.20	55.7

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Wonderland-Honeycomb Fu35.PM+Dev (Site

Folder: Future Base (2035) + Dev)]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF	TUY	DEM	AND	Deg.	Aver.	Level of	95% BA	CK OF	Prop.	Effective	Aver.	Aver.
ID		VOLU	JMES	FLO	WS	Satn	Delay	Service	QUE	EUE	Que	Stop	No.	Speed
		[Iotal veh/h	HV J veh/h	[Iotal veh/h	HV J %	v/c	sec		[Veh. veh	Dist J m		Rate	Cycles	km/h
Sout	h: Hon	eycomb l	Dr (S)											
2	T1	2	0	2	0.0	0.051	5.0	LOS A	0.2	1.9	0.35	0.62	0.35	51.7
3	R2	52	7	55	13.5	0.051	9.9	LOS A	0.2	1.9	0.35	0.62	0.35	51.8
Appr	oach	54	7	57	13.0	0.051	9.7	LOS A	0.2	1.9	0.35	0.62	0.35	51.8
East:	Wond	erland D	r (E)											
4	L2	8	5	8	62.5	0.122	4.5	LOS A	0.6	7.4	0.02	0.60	0.02	50.6
6	R2	139	104	146	74.8	0.122	9.6	LOS A	0.6	7.4	0.02	0.60	0.02	50.0
Appr	oach	147	109	155	74.1	0.122	9.3	LOS A	0.6	7.4	0.02	0.60	0.02	50.0
North	n: Hone	eycomb [Dr (N)											
7	L2	526	105	554	20.0	0.413	4.5	LOS A	3.1	25.3	0.27	0.47	0.27	53.6
8	T1	1	0	1	0.0	0.413	4.4	LOS A	3.1	25.3	0.27	0.47	0.27	55.7
Appr	oach	527	105	555	19.9	0.413	4.5	LOS A	3.1	25.3	0.27	0.47	0.27	53.6
All Vehic	cles	728	221	766	30.4	0.413	5.8	LOS A	3.1	25.3	0.23	0.51	0.23	52.6

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Honeycomb-Grevillea Fu35.PM+Dev (Site Folder:

Future Base (2035) + Dev)]

New Site Site Category: (None) Roundabout

Vehi	cle M	ovemen	t Perfor	mance										
Mov	Turn	INF		DEM	AND	Deg.	Aver.	Level of	95% BA		Prop.	Effective	Aver.	Aver.
שו		I Total	HV 1	FLU [Total	4005 HV 1	Sain	Delay	Service	[Veh	Dist 1	Que	Stop Rate	Cvcles	Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m				km/h
Sout	h: Grev	/illea St (S)											
1	L2	4	1	4	25.0	0.051	4.8	LOS A	0.2	1.9	0.28	0.60	0.28	46.5
3	R2	52	8	55	15.4	0.051	9.5	LOS A	0.2	1.9	0.28	0.60	0.28	51.4
Appr	oach	56	9	59	16.1	0.051	9.2	LOS A	0.2	1.9	0.28	0.60	0.28	51.1
East:	Hone	ycomb D	r (E)											
4	L2	23	16	24	69.6	0.096	4.5	LOS A	0.5	5.6	0.02	0.41	0.02	52.7
5	T1	91	68	96	74.7	0.096	4.7	LOS A	0.5	5.6	0.02	0.41	0.02	37.1
Appr	oach	114	84	120	73.7	0.096	4.7	LOS A	0.5	5.6	0.02	0.41	0.02	40.8
West	: Hone	eycomb D	0r (W)											
11	T1	345	71	363	20.6	0.278	4.4	LOS A	1.7	14.3	0.23	0.41	0.23	51.6
12	R2	1	1	1	100.0	0.278	9.4	LOS A	1.7	14.3	0.23	0.41	0.23	47.6
Appr	oach	346	72	364	20.8	0.278	4.4	LOS A	1.7	14.3	0.23	0.41	0.23	51.6
All Vehic	cles	516	165	543	32.0	0.278	5.0	LOS A	1.7	14.3	0.19	0.43	0.19	48.6

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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V Site: 101 [Honeycomb-Kangaroo Fu35.PM+Dev (Site Folder:

Future Base (2035) + Dev)]

New Site Site Category: (None) Give-Way (Two-Way)

Vehi	cle M	ovemer	t Perfor	mance										
Mov	Turn			DEM	AND	Deg.	Aver.	Level of	95% BA		Prop.	Effective	Aver.	Aver.
שו		Total		FLO [Total	HV/1	Salli	Delay	Service	[\/eh	Dist 1	Que	Rate	Cycles	Speed
		veh/h	veh/h	veh/h	%	v/c	sec		veh	m		T tato	Cycles	km/h
East:	Hone	ycomb D	r (E)											
5	T1	13	6	14	46.2	0.009	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	83	65	87	78.3	0.099	6.5	LOS A	0.4	4.8	0.28	0.57	0.28	44.2
Appr	oach	96	71	101	74.0	0.099	5.6	NA	0.4	4.8	0.25	0.49	0.25	45.8
North	n: Kang	garoo Ave	e (N)											
7	L2	239	42	252	17.6	0.231	6.4	LOS A	1.0	7.9	0.26	0.57	0.26	47.3
9	R2	3	3	3	100.0	0.007	10.6	LOS A	0.0	0.3	0.46	0.59	0.46	46.4
Appr	oach	242	45	255	18.6	0.231	6.5	LOS A	1.0	7.9	0.26	0.57	0.26	47.3
West	: Hone	eycomb E	Dr (W)											
10	L2	3	0	3	0.0	0.002	5.7	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
11	T1	96	31	101	32.3	0.063	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appr	oach	99	31	104	31.3	0.063	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehic	cles	437	147	460	33.6	0.231	4.9	NA	1.0	7.9	0.20	0.43	0.20	49.3

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.

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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

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

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

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Appendix D

Sydney Strategic Traffic Forecasting Model (STFM) Growth Plots by Transport for NSW

ROAD TRAFFIC GROWTH (%YR, 2HRSPK) LINKS & INTERSECTIONS



ROAD TRAFFIC GROWTH (%YR, 2HRSPK) LINKS & INTERSECTIONS



ROAD TRAFFIC GROWTH (%YR, 2HRSPK) LINKS & INTERSECTIONS



ROAD TRAFFIC GROWTH (%YR, 2HRSPK) LINKS & INTERSECTIONS


The Transport Planning Partnership Suite 402 Level 4, 22 Atchison Street St Leonards NSW 2065

> P.O. Box 237 St Leonards NSW 1590

> > 02 8437 7800

info@ttpp.net.au

www.ttpp.net.au