## St Marys Freight Hub

Traffic and Transport Assessment Post Exhibition Version


## Document Control Sheet

## Issue History

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## ExECUTIVE Summary

## Background

The proposed St Marys Freight Hub will provide a local intermodal container handling terminal for Western Sydney. The site for the freight hub is to the south of Lee Holm Road, west of Forrester Road and north of the Main Western Rail Line. The Planning Secretary's Environmental Assessment Requirements (SEARs) for the proposal dated 23 rd October 2018 includes a number of traffic and transport assessment items. The SEARs items can be aggregated into the following categories:

- operational period impacts on traffic capacity and safety;
- operational period needs and impacts associated with active transport, public transport and the need for Travel Demand Management (TDM);
- the suitability of vehicular access to the site and the ability for development traffic to manoeuvre and park within the site; and
- construction period traffic and transport impacts.

This report addresses these items.
Following the exhibition of this report as part of the Environmental Impact Assessment (EIS), in a letter dated 27 June 2019, Penrith City Council (PCC) raised concerns regarding the use of Lee Holm Road for heavy vehicle access and egress. To address this issue, three alternative truck route options (in addition to the original option included in the exhibition version) have been assessed and presented in this report. PCC has also stated that it believes that the truck trip traffic generation calculated for the site underestimates the likely traffic generation. This post-exhibition version of the report provides further detail around the traffic generation assumptions. It also addresses the other comments made by PCC in its submission on the EIS Traffic and Transport Assessment.

## Operational Period: Traffic Capacity and Safety Assessment

The development proposal is for a container terminal which will be operational 24 hours a day and 7 days per week. Full containers will arrive from Port Botany by freight train and will be unloaded into the terminal. They will then be collected by semi-trailers or B-doubles and distributed to customers within Sydney. Empty containers will be returned to the site. The number of truck movements is directly linked to the number of train movements and a maximum of five train paths per day in and out have been provisionally allocated for the terminal.

Considering the number of containers per train, and using current rates for containers per truck, the truck trip generation has been calculated as 15 movements in and 15 movements out per hour, coincident with the adjacent road peak hours of 8:00am to 9:00am and 4:30pm to 5:30pm. Only 40-45 staff will be on-site during the day and will start and end their shifts before the road network's AM and PM peak hours. For these reasons, staff-based traffic impacts have not been considered further and the assessment has focussed on truck trip impacts on the surrounding road network in peak hours. There will be absolutely no packing or unpacking of boxes on-site and no additional trucks as a consequence. Also, it is economically rational to assume highly efficient movement and handling across the day spreading out the use of resources uniformly across the day.

The distribution of trucks to/from local areas has been based on the database of Pacific National (PN) customer locations and through identifying those customer locations that would be more efficiently serviced via St Marys rather than directly via Port Botany. Trucks will use classified state and regional roads and approved B-double routes for access to/from the site. A total of 13 intersections have been nominated in the SEARs and by PCC for operational capacity assessment in consideration of four (4) different route options identified by PN in response to the concerns raised. The truck volumes generated by the freight hub and using these intersections are summarised below. The intersections considered in this analysis, the intersection control type, PN truck volumes at each intersection across the peak hours and the percentage of total traffic that this additional truck volume represents, are shown in Table ES1.

The highest proportion of truck movements will occur in the opening year, with background traffic growth diminishing this percentage over time.

Table ES1: $\quad$ St Marys Freight Hub Truck Trips Through Key Intersections (Opening Year)

| No. | Intersection | Control <br> Type | Development <br> Truck Trips per <br> Hour (max.) | $\%$ of Intersection <br> Peak Hour <br> Volumes $^{1}$ |
| :---: | :--- | :--- | :--- | :--- |
| 1 | Richmond Road / Dunheved Road | Signalised | 0 | $0 \%$ |
| 2 | Great Western Highway / Parker Street | Signalised | 0 | $0 \%$ |
| 3 | Great Western Highway / Werrington Road / Reserve Road | Signalised | 0 | $0 \%$ |
| 4 | Great Western Highway / Queen Street / Mamre Road | Signalised | 26 | $<1 \%$ |
| 5 | Great Western Highway / Carlisle Avenue | Signalised | 2 | $<0.1 \%$ |
| 6 | Mamre Road / M4 Western Motorway (south) | Signalised | 2 | $<0.1 \%$ |
| 7 | Mamre Road / M4 Western Motorway (north) | Signalised | 26 | $<1 \%$ |
| 8 | Great Western Highway / Glossop Street | Signalised | 30 | $<1 \%$ |
| 9 | Glossop Street / Harris Street | Priority | 30 | $1.1 \%$ |
| 10 | Forrester Road / Harris Street | Priority | 30 | $13.2 \%$ |
| 11 | Forrester Road / Glossop Street | Signalised | 30 | $1.6 \%$ |
| 12 | Forrester Road / Boronia Street / Christie Street | Roundabout | 30 | $<1 \%$ |
| 13 | Christie Street / Dunheved Road / Werrington Road | Roundabout | 30 | $1.2 \%$ |
| 1 Worst case percentage |  |  |  |  |

Four (4) route options were assessed in order to identify the routes with the least operational and safety impacts on the network, with the aim of addressing PCC concerns. The routes assessed, as shown in Figure ES1, were:

- Option 1: Base Case (exhibited option) - the route proposed in the report that went on exhibition (Glossop Street - Forrester Road - Christie Street - Lee Holm Road);
- Option 2: Alternate route A - two-way access at the Lee Holm Road entrance via Christie Street and Werrington Road;
- Option 3: Alternate route B - two-way access at the Forrester Road entrance with Harris Street used for inbound truck movements and Forrester Road used for outbound truck movements. This option would require the left turn restriction from Glossop Street into Harris Street (7-metre-long vehicles, buses excepted) to be lifted; and
- Option 4: Alternate route C - two-way access at Forrester Road entrance with Glossop Street/Forrester Road as the nearest intersection accommodating inbound and outbound movements.

The first eight (8) intersections in Table ES1 have been analysed using SIDRA for the 2030 Base Case, 2030 With Development Case and 2030 With Development $+20 \%$ Case. The year 2030 was selected as the assessment year in accordance with the Roads and Maritime Services (Roads and Maritime) Guide to Traffic Generating Developments (2002), which nominates the full development year +10 years as the assessment year for traffic impact assessments. The 2030 With Development + 20\% Case was a sensitivity test scenario requested by Roads and Maritime.

For all intersections, the Level of Service (LoS) and the Degree of Saturation (DoS) were compared between the Base Case and the With Development cases. At all intersections there was no change in intersection LoS and DoS increased by a maximum of $5 \%$ when the site's truck traffic was added.

The analysis did foreshadow future peak traffic capacity issues at the Parker Street and the Werrington Road intersections with the Great Western Highway in the 2030 Base Case however the Freight Hub's trucks do not worsen this situation. Many of the major intersections on the roads north of the site are also forecast to be at capacity by 2030 primarily due to the extent of growth predicted in the catchments to the north. These intersections include those on the Option 2 route and particularly the Christie Street intersections at Forrester Road and Werrington Road which are forecast to be well over capacity by 2030.


Adapted from https://www.rms.nsw.gov.au/business-industry/heavy-vehicles/maps/restricted-access-vehicles-map/map/index.html
Figure ES1: Assessed Route Options and Approved 25-26m B-double Routes
There are clear benefits in the Freight Hub's truck traffic avoiding Christie Street/Lee Holm Road in the future, even though it would contribute a negligible proportion of the trips through these intersections. Also, Werrington Road is an impractical route for truck access and egress as it requires much longer travel distances and travel times. This route also includes school zones and a pedestrian crossing. Option 2 has been discarded on this basis.

Option 3 overcomes the issue with using roads to the north and west by limiting truck traffic to Glossop Street and Harris Street, however the key limitation with this route is that Harris Street is not designed for B-doubles, despite that it being a classified Super B-double road approved by Roads and Maritime. Specifically, the left turn from Glossop Street into Harris Street is not permitted for vehicles longer than 7 m because it would require tracking into the middle lane to make the turn, which is undesirable on safety and efficiency grounds. Also, Harris Street is a key access to the

St Marys Station Park and Ride car park and has parking on each side of it. B-doubles would essentially block traffic coming the other way because there would be insufficient width for two-way traffic in some sections. Upgrading Harris Street to cater for B-doubles is not a pragmatic option. On this basis, Option 3 has been discarded.

The intersection analysis has revealed that Option 4 provides the least impacts to surrounding intersections given that the route passes through intersections which are not projected to be well over-capacity in the future and uses roads that have been created for use by truck traffic with the minimum impacts on residential property amenity possible given the current road network options. Option 4 requires trucks to both enter and leave via the Forrester Road entry and whilst the probability of an entering truck and an exiting truck needing to use this crossover at the same time ( $\mathrm{p}<1.0 \%$ per peak hour), the entrance driveway can be designed to cater for simultaneous inbound and outbound B-double turning manoeuvres. As a four lane divided carriageway, Forrester Road remains well within its capacity beyond year 2030.

A road safety assessment was completed by evaluating the crash patterns identified at the 13 intersections listed in Table ES1 against the specific turning movements that the Freight Hub's trucks will be making at those intersections. In all locations, the very small increase in truck movements at these intersections will result in a negligible change in crash likelihood and hence crash risk at these locations. The two intersections of Glossop Street/Harris Street and Forrester Road/Harris Street were deemed unsuitable for the purpose of B-double movements and the route option associated with these intersections (Option 2) was dismissed.

## Operational Period: Alternative Transport Mode Assessment

The Freight Hub will have approximately $40-45$ staff during daytime hours. On-site parking will be sufficient to accommodate staff and visitors and that there is plenty of area available to do this. Based on the location of the development and the proposed shift times, the site is unlikely to attract many (if any) active transport or public transport trips. If there was a need for site staff to walk, cycle or use or public transport to access the site, sufficient facilities are available with footpaths, cycleways, bus stops and a train station all surrounding the site. Furthermore, the office-based travel demand is considered to be too small and too diverse to warrant a workplace-specific TDM program for this development.

## Site Access, Manoeuvring and Parking

The access options considered for the development involved:

- A two-way access off Lee Holm Road north of the development with a light vehicle only entry off Forrester Road, for route Option 1;
- A two-way access only off Lee Holm Road north of the development via Christie Street and Werrington Road for route Option 1; and
- A two-way access/egress near the southern (cul-de-sac) end of Forrester Road for heavy vehicles with light vehicles access via Lee Holm Road, aligned with Option 3 and 4.

Both access locations are on roads that already carry industrial traffic and are designed to cater for these vehicles. Both access locations have well in excess of the required sight distances for safe entry and exit. Swept path assessments have also been run for B-doubles and each access, and each driveway area, can be constructed to accommodate these vehicles. Access management strategies have been identified for the options with two-way movement at the Forrester Road crossover to safely manage the rare case of a simultaneous arrival and departure of B-doubles. The driveway and crossover can be widened at this access to allow an existing B-double to wait until an entering B-double has completed its movement.

Within the site, manoeuvring areas for trucks are sufficient and the proposed 62 car parking spaces and one Person With a Disability (PWD) car parking space are readily accessible.

## Construction Period Traffic and Transport Assessment

The construction period is expected to generate between 8-12 trucks per peak hour carting in materials for construction of the hardstand and driveway areas, as well as for the on-site buildings. The truck volumes are less than those expected during the operational period and would similarly be expected to have negligible impact on the surrounding road network. Also, there is sufficient room within the site to accommodate parked construction worker vehicles as well as waiting delivery trucks and these requirements can be specified as part of the Construction Traffic Management Plan (CTMP). The construction of the two access points is likely to also require Traffic Control Plans (TCPs) which would need to be created in due course.

## Conclusions

The St Marys site is ideal for a freight hub because:

- It will be located on a Spur Line with direct access to the Port;
- It is within an Industrial area;
- It is serviced by classified State and Regional Roads;
- It is surrounded by B-Double routes; and
- It is relatively close access to the M4 with Super B-Double routes between the M4 and the site.

Whilst the site area is relatively large, its traffic generation is not, and the maximum truck-trip generated by the site is fundamentally limited by the five train paths in/out being provided by Sydney Trains. No more train paths are being provided than this. Also, the site will not function as a truck-to-truck intermodal terminal and all trucks will be associated with dropping off empty containers for loading on trains and picking full containers for distribution to surrounding areas for import only containers. There is no exporting of containers in this proposal. No unpacking and re-packing of boxes will occur on-site. The maximum of 15 trucks per hour in and 15 trucks per hour out generated by the site, when assigned to the road network, does not significantly worsen any traffic capacity or road safety conditions across the network in either of the four route options assessed.

There are no new committed major motorway or arterial roads in close proximity to the site and it is unreasonable for the development to provide such roads given its relatively low traffic generation. Of the route options using existing roads that were assessed, Option 4 which comprises the two-way access at the Forrester Road entrance was found to be the preferred route option because:

- It uses classified Super B-double roads as determined by Roads and Maritime;
- It avoids Lee Holm Road which is the preference of PCC and the roads to the north of the site which are expected to be congested in the future;
- It is the most efficient route available with 430,000 fewer truck-km p.a. passing through fewer intersections than Option 1, and is the most direct permitted connection to the M4;
- It limits truck trips to Forrester Road and to Glossop Street which are classified Regional Roads and roads designed and suitable for the carriage of an additional maximum of 30 B-double movements per peak hour;
- It limits intersection truck turning movement impacts to the intersection of Forrester Road/Glossop Street which is an intersection well placed to accommodate this relatively minor increase in truck movements (on average 1-2 truck movements per signal cycle);
- A wide access driveway can be provided catering for simultaneous inbound/outbound B-double access. That is, an entering and an exiting B-double can be stored simultaneously within the first 30 m of the driveway; and
- It minimises the number of residential properties which trucks need to pass by on the available road network.

The number of permanent staff on-site does not warrant any specific provisions related to walking, cycling and public transport, although sufficient facilities are available if they are desired to be used by staff. Both site accesses can be accommodated from industrial standard roads and the site layout accommodates on-site needs during both construction and operations.

Overall, the development will not generate any significant impacts on the surrounding traffic and transport networks and no mitigation works are warranted external to the site.

## CONTENTS

Page
EXECUTIVE Summary ..... II

1. Introduction ..... 1
1.1 BACKGROUND ..... 1
1.2 SEARs ..... 2
1.3 Early Engagement process ..... 3
1.4 Penrith City Council Response - Post Exhibition ..... 4
2. Existing Conditions ..... 5
Road Network ..... 5
2.1
Network Structure and Major Roads ..... 5
Approved B-double Routes ..... 5
. ..... 2.1.3
Great Western Highway ..... 62.1.42.1.52.1.6
Lee Holm Road ..... 7
M4 Western Motorway ..... 7
Parker Street - Richmond Road - The Northern Road ..... 8
Mamre Road ..... 8
Glossop Street - Forrester Road ..... 9
Dunheved Road - Christie Street ..... 9
Werrington Road ..... 10
2.2 Surrounding Land Uses ..... 11
2.3 Public Transport and Active Transport Networks ..... 12
Rail Network ..... 12
Bus Network ..... 12
Walking and Cycling Networks ..... 14
2.4 TRAFFIC Volumes ..... 14
2.5 Crash Data Analysis ..... 17
General Trends ..... 17
2.5.1 Casualties
17
17
2.5.
Crash Type ..... 18
Intersection-Specific Data ..... 19
Forrester Road at and south of Glossop Street ..... 21Near the Site Accesses21
Glossop Street/Adelaide Street ..... 21
2.6 Planned Developments and Network Upgrades ..... 22
2.6.1 Jordan Springs Development ..... 22
2.6.2 Outer Sydney Orbital ..... 22
2.6.3 North-South Rail Line ..... 23
2.6.4 Network Upgrades ..... 23
3. Development Proposal Detalls ..... 26
3.1 Development Description ..... 26
3.2 Proposed Development Operating Hours ..... 28
3.3 Light Vehicle Traffic Generation Considerations ..... 29
$3.4 \quad$ Truck-Traffic Generation Calculations ..... 29
3.4.1 Step 1: Train Paths and Container Deliveries to and from St Marys ..... 293.4.2
Step 2: Truck Pick-ups Per Day ..... 30
3.4.3 Step 3: Daily Profile Distribution Assumptions and Peak Hour Truck Trips ..... 30
3.5 Traffic Distribution ..... 31
3.6 Peak Traffic Volumes ..... 34
4. Traffic Capacity Assessment ..... 44
4.1 Methodology ..... 44
4.1.1 Intersection Modelling Software ..... 44
4.1.2 Capacity Impact Criteria ..... 44
4.2 2018/2019 BASE CASE ANALYSIS ..... 45
4.2.1 Intersection Volumes ..... 45
4.2.2 Model Calibration ..... 46
4.2.3 Intersection Performance Summary ..... 48
4.3 2030 Base Case Analysis ..... 49
4.3.1 Creating Year 2030 Traffic Volumes ..... 49
4.3.2 Intersection Volumes ..... 50
4.3.3 SIDRA Modelling Results ..... 51
4.4 2030 Base Case With Upgrades ..... 52
4.5 2030 With Development ..... 53
4.5.1 Creating Year 2030 With Development Traffic Volumes ..... 53
4.5.2 Intersection Volumes ..... 53
4.5.3 $\quad$ SIDRA Modelling Results - Option 1 ..... 56
4.5.4 $\quad$ SIDRA Modelling Results - Option 2 ..... 57
4.5.5 $\quad$ SIDRA Modelling Results - Option 3 ..... 58
4.5.6 SIDRA Modelling Results - Option 4 ..... 59
$4.6 \quad 2030$ With Development Sensitivity Test ..... 60
4.7 Comparison Summary of Intersection Operations ..... 60
$4.8 \quad$ Truck Route Assessment Summary ..... 61
5. Traffic Safety Assessment ..... 62
5.1 Truck Turning Movements at Key Intersections ..... 62
5.2 Influences on Existing Crash Patterns ..... 62
5.2.1 Great Western Highway / Glossop Street ..... 62
5.2.2 Great Western Highway / Queen Street / Mamre Road ..... 63
5.2.3 Mamre Road / M4 Western Motorway (northern intersection) ..... 64
6. Public Transport, Active Transport and Travel Demand Management. ..... 65
6.1 Public Transport Assessment ..... 65
6.2 Active Transport Assessment ..... 65
6.3 Travel Demand Management Programs ..... 65
7. Site Configuration Assessment ..... 66
7.1 Access Assessment ..... 66
7.2 Manoeuvring and Parking ..... 67
7.2.1 Lee Holm Road Access Option ..... 67
7.2.2 Forrester Road Access Option ..... 67
7.2.3 Light Vehicle Access and On-Site Parking ..... 69
7.3 Other Design Requirements ..... 69
8. Responses to Other Penrith City Council Issues ..... 70
9. Construction Period Traffic Assessment ..... 72
9.1 Construction Traffic Volumes ..... 72
9.2 Construction Period Traffic Assessment ..... 72
9.3 Construction Period Parking Assessment ..... 72
9.4 Construction Traffic Management Plan ..... 72
9.5 Traffic Control Plans ..... 72
10. Conclusions ..... 73

## Tables

Table 1.1: $\quad$ SEARs Items and Response Locations
Table 1.2: Penrith City Council Items and Response Locations
Table 2.1: $\quad$ Bus Routes and Frequency
Table 2.2: Intersection Traffic Count Survey Locations
Table 2.3: $\quad$ Crash Severity and Number of Casualties
Table 2.4: $\quad$ Crash Type and Number of Casualties
Table 2.5: $\quad$ St Marys Development Site Intersection Upgrades Relevant to Our Study Area
Table 3.1: $\quad$ Proposed St Marys Freight Hub Operating Hours
Table 3.2: TEU Ratios
Table 3.3: $\quad$ Assumed Traffic Volume Distribution
Table 4.1: $\quad$ Roads and Maritime Level of Service Criteria for Signalised Intersections
Table 4.2: 2018/2019 Base Model Calibration Results
Table 4.3: Intersection SIDRA Results Summary - 2018/2019 Base Case
Table 4.4: Intersection SIDRA Results Summary - 2030 Base Case
Table 4.5: 2030 Base Case Models Proposed Intersection Upgrades
Table 4.6: Intersection SIDRA Results Summary - 2030 Base Case With Upgrades
Table 4.7: Intersection SIDRA Results Summary - 2030 With Development - Option 1
Table 4.8: Intersection SIDRA Results Summary - 2030 With Development - Option 2
Table 4.9: Intersection SIDRA Results Summary - 2030 With Development - Option 3

Table 4.10: Intersection SIDRA Results Summary - 2030 With Development - Option 4
Table 4.11: Intersection SIDRA Results Summary - 2030 With Development + 20\%
Table 4.12: Intersection SIDRA Results Summary - Average Delay and Level of Service
Table 7.1: $\quad$ Safe Intersection Sight Distances - Cars and Trucks
Table 7.2: Responses to Other Design Requirements
Table 8.1: $\quad$ Responses to Traffic-related Matters

## Figures

Figure 1.1: Site Location and Study Area
Figure 2.1: Road Network Near the Site
Figure 2.2: Approved 25-26m B-double Routes Near the Site
Figure 2.3: Typical Cross-section of the Great Western Highway
Figure 2.4: Typical Cross-section of Lee Holm Road
Figure 2.5: Typical Cross-section of the M4 Western Motorway
Figure 2.6: Typical Cross-section of Parker Street
Figure 2.7: Typical Cross-section of Mamre Road
Figure 2.8: Typical Cross-section of Glossop Street
Figure 2.9: Typical Cross-section of Dunheved Road
Figure 2.10: Typical Cross-section of Werrington Road
Figure 2.11: Cross-section of the Werrington Road north approach at the Great Western Highway intersection
Figure 2.12: Existing Land Uses Near the Site
Figure 2.13: Railway Stations Within the Study Area
Figure 2.14: Bus Routes within the Study Area
Figure 2.15: Cycleways Within the Study Area
Figure 2.16: Traffic Volumes Summary
Figure 2.17: Summary of Reported Crashes between 2013 and 2017
Figure 2.18: Outer Sydney Orbital recommended corridor through St Marys
Figure 2.19: North South Rail Line recommended corridor through St Marys
Figure 3.1: Proposed St Marys Freight Hub Location and Access Roads
Figure 3.2: Proposed St Marys Freight Hub Layout
Figure 3.3: $\quad$ Workers' Modes of Travel to St Marys
Figure 3.4: Assumed Daily Traffic Profile Distribution
Figure 3.5: $\quad$ Traffic Distribution Source Data Example
Figure 3.6: Truck-Trip Distribution - Route Option 1
Figure 3.7: $\quad$ Truck-Trip Distribution - Route Option 2
Figure 3.8: $\quad$ Truck-Trip Distribution - Route Option 3
Figure 3.9: $\quad$ Truck-Trip Distribution - Route Option 4
Figure 3.10: Development Traffic Volume Increase at Each Intersection based on 2018/2019 AM Peak Background Data - Option 1
Figure 3.11: Development Traffic Volume Increase at Each Intersection based on 2018/2019 PM Peak Background Data - Option 1
Figure 3.12: Development Traffic Volume Increase at Each Intersection based on 2018/2019 AM Peak Background Data - Option 2
Figure 3.13: Development Traffic Volume Increase at Each Intersection based on 2018/2019 PM Peak Background Data - Option 2
Figure 3.14: Development Traffic Volume Increase at Each Intersection based on 2018/2019 AM Peak Background Data - Option 3
Figure 3.15: Development Traffic Volume Increase at Each Intersection based on 2018/2019 PM Peak Background Data - Option 3
Figure 3.16: Development Traffic Volume Increase at Each Intersection based on 2018/2019 AM Peak Background Data - Option 4
Figure 3.17: Development Traffic Volume Increase at Each Intersection based on 2018/2019 PM Peak Background Data - Option 4
Figure 4.1: 2018 Base Case Traffic Volumes - Intersections 1-8
Figure 4.2: 2019 Base Case Traffic Volumes - Intersections 9-13
Figure 4.3: 2030 Base Case Traffic Volumes - Intersections 1-8
Figure 4.4: 2030 Base Case Traffic Volumes - Intersections 9-13
Figure 4.5: 2030 With Development Case Traffic Volumes - Option 1
Figure 4.6: 2030 With Development Case Traffic Volumes - Option 2
Figure 4.7: 2030 With Development Case Traffic Volumes - Option 3
Figure 4.8: 2030 With Development Case Traffic Volumes - Option 4
Figure 5.1: Great Western Highway to Glossop Street Left Turn
Figure 5.2: Mamre Road to Great Western Highway Right Turn

Figure 5.3: $\quad$ Mamre Road to M4 Western Motorway On-Ramp
Figure 7.1: $\quad$ Safe Intersection Sight Distances - Forrester Road
Figure 7.2: $\quad$ Safe Intersection Sight Distances - Lee Holm Road
Figure 7.3: Lee Holm Road Access Swept Path and Access Width Needs
Figure 7.4: Forrester Road Access Swept Path and Access Width Needs
Figure 7.5: Forrester Road Access Widening

## Appendices

Appendix A: Traffic Count Data
Appendix B: Crash Data
Appendix C: SIDRA Modelling Outputs
Appendix D: Draft Construction Traffic Management Plan

## 1. INTRODUCTION

### 1.1 BACKGROUND

Bitzios Consulting has been engaged by Pacific National to undertake a Traffic and Transport Assessment as part of an Environmental Impact Statement (EIS) for the proposed St Marys Freight Hub; an inland container terminal proposed to be located in the Penrith Local Government Area, NSW. The site is proposed to be operational 24 hours a day, 7 days a week. The site location and study area are shown in Figure 1.1.


Adapted from Google Maps and Nearmap
Figure 1.1: $\quad$ Site Location and Study Area

### 1.2 SEARs

The Planning Secretary released its revised Environmental Assessment Requirements (SEARs) for this development on $23^{\text {rd }}$ October 2018. Table 1.1 details the SEARs relevant to traffic and transport considerations along with where they are addressed in this report.

Table 1.1: $\quad$ SEARs Items and Response Locations

| SEARS Requirement | Addressed in Section |
| :---: | :---: |
| Provide a Traffic Impact Assessment (TIA) that identifies upgrades and other mitigation measures required to achieve the objective of not exceeding the capacity of the following intersections: <br> i. Dunheved Road and Northern Road; <br> ii. Parker Street and Great Western Highway; <br> iii. Werrington Road and Great Western Highway; <br> iv. Glossop Street and Great Western Highway; <br> v. Mamre Road and Great Western Highway; <br> vii. Mamre Road and M4 Western Motorway; <br> vii. Carlisle Avenue and Great Western Highway; and <br> viii. Aurora Drive and Debrincat Avenue. | Multiple sections |
| Take into account the Guide to Traffic Generating Development (Roads and Maritime Services). Transport for NSW should be consulted on the proposed traffic generation rates. | Error! Reference source not found. |
| Provide details of the proposed access to the site, including emergency vehicle access arrangements, from the road network including intersection location, design and sight distance. | 3.1, 7.1 |
| Service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times) | 7.1 |
| Details of proposed access arrangements, including car and bus pickup/drop-off facilities and impacts on public transport, pedestrian and bicycle networks, including pedestrian crossing and refuges and speed control devices and zones. | 7.1 |
| Provide detailed plans of the proposed layout of the internal road network and parking on-site in accordance with the relevant Australian Standards. | 3.1 |
| Accurate details of the current daily and peak hour vehicle, public transport, pedestrian and cycle movement and existing traffic and transport facilities provided on the road network located adjacent to the proposed development. | 3.6 |
| Provide accurate daily and peak traffic forecasts, including vehicle, public transport, pedestrian and bicycle trips, generated by the project during construction and operation, including details of heavy vehicle transport routes to the State Road networks and types of vehicles. | 0-3.6, 9.1 |
| Provide an assessment of the predicted impacts of this traffic on road safety and the capacity of the road and bus network, including consideration of cumulative traffic impacts at key intersections using a traffic network traffic model pre-agreed with Transport for NSW and Roads and Maritime. Undertake detailed model analysis to confirm network operation and identify intersection upgrade requirements. | 4 |
| The impact of the proposed development on existing and future public transport infrastructure within the vicinity of the site in consultation with Roads and Maritime Services and Transport for NSW and identify measures to integrate the development with the transport network. | 6.1 |
| Include detailed plans of any proposed road upgrades, infrastructure works or new roads required for the development | Multiple sections |
| The adequacy of public transport, pedestrian and bicycle networks and infrastructure to meet the likely future demand of the proposed development | 5 |
| The proposed active transport access arrangements and connections to public transport services. | 6.2 |
| An assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures. | 7.1 |
| Measures to maintain road and personal safety in line with CPTED principles. | 7.1 |
| Consider the constructability constraints of proposed intersection upgrades such as vehicle swept paths, geometry and sight lines, and avoidance of removal of bus lanes. | 7.2 |


| SEARS Requirement | Addressed <br> in Section |
| :--- | :---: |
| Details of travel demand management measures to minimise the impact on general traffic and bus <br> operations and to encourage sustainable travel choices and details programs for implementation. | 6.3 |
| The proposed car and bicycle parking provision, including end-of trip facilities, which must be taken into <br> consideration of the availability of public transport and the requirements of Council's relevant parking codes <br> and Australian Standards | $6.1,7.2$ |
| Proposed bicycle parking facilities in secure, convenient, accessible areas close to main entries <br> incorporating lighting and passive surveillance | 7.2 |
| In relation to construction traffic, provide assessment of cumulative impacts associated with other <br> construction activities (if any). | 9.2 |
| In relation to construction traffic, assessment of road safety at key intersection and locations subject to <br> heavy vehicle construction traffic movements and high pedestrian activity | 2.5 |
| In relation to construction traffic provide details of construction program detailing the anticipated construction <br> duration and highlighting significant milestone stages and events during the construction process | 9.1 |
| In relation to construction traffic provide details of anticipated peak hour and daily construction vehicles <br> movements to and from the site | 9.1 |
| In relation to construction traffic provide details of access arrangements of construction vehicles, <br> construction worker to and from the site, emergency vehicles and service vehicles | 9.2 |
| In relation to construction traffic details of temporary cycling and pedestrian access during construction | 9.2 |
| Details of proposed construction vehicle access arrangements at all stages of construction and traffic and <br> transport impacts during construction, including cumulative impacts associated with other construction <br> activities, and how these impacts will be mitigated for any associated traffic, pedestrian, cyclists, parking <br> and public transport, including the preparation of a draft Construction Traffic Management Plan to <br> demonstrate the proposed management of the impact (which must include vehicle routes, number of trucks, <br> hours of operation, access arrangements and traffic control measures for all demolition/construction <br> activities). | $9.3,9.4$, <br> Appendix <br> D |

### 1.3 Early Engagement process

The project team met with representatives from Roads and Maritime Services (Roads and Maritime), Transport for New South Wales (TfNSW) and Sydney Trains on the $29^{\text {th }}$ November 2018. One of the purposes of this meeting was to clarify the intent of a number of the traffic and transport items contained in the SEARs and to understand the level of investigation and reporting required to respond to some of these items. After briefing the agencies on the nature of the proposal and its potential level of traffic and truck trip generation, the discussion then turned to clarification of the scope of the assessment.

Key outcomes from this meeting which have framed the scope of the assessment provided in this report included:

- the scope of the assessment nominated in the SEARs was on the basis that at the time of writing the SEARs, Roads and Maritime and TfNSW did not have a lot of detail regarding the development proposal;
- SIDRA modelling, or SIDRA network modelling for closely spaced intersections, would be sufficient to address the network modelling item in the SEARs; and
- trip generation and trip distribution estimates would need to be explained and justified.

Trip generation and distribution assumptions were subsequently submitted to Roads and Maritime and TfNSW and discussed at a meeting on the $11^{\text {th }}$ January 2019.

### 1.4 Penrith City Council Response - Post Exhibition


#### Abstract

Following the Public Exhibition Period, PCC raised a number of traffic-related issues in a letter to the Department of Planning and Environment on 27 ${ }^{\text {th }}$ June 2019. Table 1.2 details the Council requirements relevant to traffic and transport considerations along with where they are addressed in this post-exhibition version of the report.


Table 1.2: $\quad$ Penrith City Council Items and Response Locations

| Penrith City Council Requirement | Addressed in Section |
| :---: | :---: |
| PCC does not support use of Lee Holm Road for heavy vehicle access. | 2.1 |
| PCC seeks upgrades to local \& regional road infrastructure (i.e. Christie Street, Forrester Road, Dunheved Road \& future Werrington arterial). | 0, 4.4 |
| PCC does not support mix of light \& heavy vehicles within local road network due to inadequate road widths and intersection functionality | 2.1 |
| PCC (and DPE) are concerned about the use and capacity of Lee Holm Road | 2.1 |
| PCC do not accept traffic generation figures \& state truck movements for St Marys are "grossly underestimate". | 8 |
| PCC has benchmarked Moorebank traffic generation for St Marys | 8 |
| PCC concerned with truck distribution through local/residential streets (e.g. Glossop Street \& Mamre Road) | 0, 4, 8 |
| TfNSW has requested sensitivity analysis on backloading truck movements | 8 |
| The Traffic and Transport Assessment (TTA) prepared by Bitzios, dated 18 April 2019 indicates that all vehicular access including Bdouble trucks will be via Lee Holm Road and Forrester Road, via Glossop Street and Mamre Road to the M4 Motorway. With the exception of Mamre Road, the proposed access route relies solely on local roads, predominantly residential streets. This is totally unacceptable from a road safety and amenity perspective and is raised as a significant concern. | 0, 4 |
| In considering the above, Council considers that heavy vehicle traffic generated by this development should be directly connected to the arterial road network and that the arterial road network should be upgraded to accommodate the increased heavy vehicle traffic. Any connections to Christie Street should include upgrading of Christie Street and connections to Dunheved Road, future Werrington Arterial Stage 2 (to be reconstructed by RMS), Forrester Road with additional connections to the proposed Outer Sydney Orbital. Access via local residential streets is completely unacceptable and the application should be refused on these grounds. | 0,4.4 |
| The previous Environmental Impact Statement (EIS) for the Moorebank Intermodal Terminal (IMT) Project, has a capacity for 500,000 Twenty-foot Equivalent Units (TEU) per year. Please note that a TEU equates to a standard shipping container size. The Moorebank Intermodal Terminal is serviced by heavy vehicles as well as 12 interstate trains per week which load and unload at the facility. The Environmental Impact Assessment (EIS) for the Moorebank Intermodal Terminal Project has predicted that this will generate 2,174 heavy vehicle trips per day, with a trip being a journey either to or from the facility (as set out in chapter 11 on page 23 of the EIS). | 8 |
| The SMI has $60.2 \%$ of the maximum operating capacity that IMT proposes. Based upon IMT EIS's Chapter 11, principles, the predicated trips for SMI would be around 1309 total daily trips (based on the ratio of maximum operating capacity between IMT and SMI), which is higher than TTA. | 8 |
| In considering the above, Council considers the current assumptions grossly underestimate what could actually occur and recommends that traffic generation needs to be reassessed based upon the existing MTI and Chullora. | 8 |
| There was no assessment of SIDRA for the Lee Holm Road/Christie Street, Christie Street/Forrester Road, Forrester Road/Glossop Street and / Dunheved Road / Christie Street intersections. These intersections require assessment travelling paths for intended use by both heavy vehicles including 26 m B-double truck access and likely car access. | 4 |
| Sealed pedestrian and cyclist access is to be provided from the southern end of Forrester Road (near St Marys Station) to the site; | 7.3 |
| The car park entry / exit should be separate from the heavy vehicle entry / exit driveways; | 7.3 |
| Separate accessible pedestrian access is to be provided from the footway and the car park to the building entrance in accordance with AS 2890 car park access and AS 1428 Mobility accessible paths of travel; | 7.3 |
| The access driveway widths must accommodate swept movements of the largest vehicle servicing the site and be designed to conform with AS 2890.2; | 7.3 |
| Sight distance requirements and driveway widths are to be met in accordance with AS/NZS 2890.1: 2004 and Council requirements. This is to include the requirements set out in AS 2890.1 Figure 3.2 Sight Distance Requirements at Driveways and Figure 3.3 Minimum Sight Lines for Pedestrian Safety. Also, AS 2890.2 Figure 3.3 Sight Distance Requirements at Access Driveway Exits and Figure 3.4 Minimum Dimensions for Access Driveway Sight Splays for Pedestrians; | 7.3 |
| The required sight lines around the driveway entrance and exit are not to be compromised by street trees, landscaping, fencing or signposting | 7.3 |
| All car parking and manoeuvring must be in accordance with AS 2890.1, AS 2890.2, AS 2890.3, AS 2890.5, AS 2890.6 and Council requirements | 7.3 |
| All car spaces are to be sealedlline marked and dedicated for the parking of vehicles only and not be used for storage of materials/products/waste materials etc. | 7.3 |

2. EXISTING CONDITIONS

### 2.1 Road Network

### 2.1.1 Network Structure and Major Roads

The major through traffic roads in the study area are Parker Street and Richmond Road to the west of the site, and the Great Western Highway and M4 Western Motorway to the south of the site. Nearer to the site, Mamre Road, Glossop Street, Forrester Road, Dunheved Road, Christie Street, Werrington Road and Lee Holm Road provide more localised traffic collection and distribution functions.

Within the study area, the areas north of the Main Western Railway Line are linked to areas to the south by four rail bridges: via Parker Street, Werrington Road, Glossop Street and Carlisle Avenue.

The road network in the study area is illustrated in Figure 2.1.


Adapted from Google Maps
Figure 2.1: Road Network Near the Site

### 2.1.2 Approved B-double Routes

The approved $25-26 \mathrm{~m}$ B-double routes within the study area are illustrated in Figure 2.2. Lee Holm Road, Forrester Road, Werrington Road, Glossop Street and Mamre Road are all approved 25/26m B-double routes.


Source: https://www.rms.nsw.gov.au/business-industry/heavy-vehicles/maps/restricted-access-vehicles-map/map/index.html
Figure 2.2: Approved $\mathbf{2 5}$-26m B-double Routes Near the Site

### 2.1.3 Great Western Highway

The Great Western Highway is a state road running east-west linking the Blue Mountains with Sydney. For most of its length it has three lanes in each direction, with two lanes each way between O'Connell Street and Water Street. The sections between O'Connell Street and the South Creek Bridge, and east of Melbourne Street have a signposted $80 \mathrm{~km} / \mathrm{h}$ speed limit. The rest of this road has a signposted $60 \mathrm{~km} / \mathrm{h}$ speed limit including the sections near the subject site. The Great Western Highway is a classified State Road and is an approved $25-26 \mathrm{~m}$ B-double route. A typical cross-section of the Great Western Highway is illustrated in Figure 2.3.


Source: Google Street View
Figure 2.3: Typical Cross-section of the Great Western Highway
2.1.4 Lee Holm Road

Lee Holm Road is under jurisdiction of PCC and is an approved 25-26m B-double route. Lee Holm Road has a signposted $60 \mathrm{~km} / \mathrm{h}$ speed limit and the pavement quality is in fair condition along its length. Lee Holm Road provides access to several industrial land uses on both sides of it and has sufficient capacity to accommodate heavy vehicle traffic projected to be generated by the proposed development. A typical cross-section of Lee Holm Road is illustrated in Figure 2.4.


Source: Google Street View
Figure 2.4: Typical Cross-section of Lee Holm Road

### 2.1.5 M4 Western Motorway

The M4 Western Motorway is a state road with three lanes in each direction and running east-west between Strathfield and Glenbrook. Within the study area, interchanges are located at The Northern Road, Kent Road, Mamre Road and Roper Road. The M4 Western Motorway runs parallel to the Great Western Highway, has a signposted $110 \mathrm{~km} / \mathrm{h}$ speed limit in each direction within the study area and is an approved $25-26 \mathrm{~m}$ Bdouble route. A typical cross-section of the M4 Western Motorway is illustrated in Figure 2.5.


Source: Google Street View
Figure 2.5: $\quad$ Typical Cross-section of the M4 Western Motorway

### 2.1.6 Parker Street - Richmond Road - The Northern Road

Parker Street is a state-controlled road running north-south, intersecting with the Great Western Highway at Penrith. It continues as Richmond Road in the north and intersects with Dunheved Road. Towards the south, Parker Street continues as The Northern Road and intersects with the M4 Western Motorway. All three roads have a signposted 70km/h speed limit, and Parker Street has a 40km/h school zone (8:00am-9:30am and 2:30pm-4:00pm) between Cox Avenue and Glebe Place. Parker Street has two lanes in each direction between Dunheved Road and Copeland Street, and three lanes in each direction between Copeland Street and Jamison Road. For most of the section of Parker Street within the study area, the carriageways are separated by a wide raised median. All three roads are approved $25-26 \mathrm{~m}$ B-double routes. A typical crosssection of Parker Street is illustrated in Figure 2.6.


Source: Google Street View
Figure 2.6: Typical Cross-section of Parker Street

### 2.1.7 Mamre Road

Mamre Road is a classified State Road running north-south between the Great Western Highway and Elizabeth Drive, intersecting with the M4 Western Motorway entry/exit ramps. It has two lanes in each direction, a signposted $60 \mathrm{~km} / \mathrm{h}$ speed limit and a $40 \mathrm{~km} / \mathrm{h}$ school zone (8:00am-9:30am and 2:30pm-4:00pm) extending approximately 60 metres north and south of the Saddington Street intersection. The road cross section also includes a raised median near the M4 Western Motorway interchange. Mamre Road is an approved $25-26 \mathrm{~m}$ B-double route. A typical cross-section of Mamre Road is illustrated in Figure 2.7.


Source: Google Street View
Figure 2.7: Typical Cross-section of Mamre Road

### 2.1.8 Glossop Street - Forrester Road

Glossop Street is a classified Regional Road running north-south and ending at its intersection with the Great Western Highway in the south. It has two lanes in each direction with a wide raised median. In the north, Glossop Street ends at Forrester Road, which continues north to intersect with Christie Street. Forrester Road is also a classified Regional Road with two lanes in each direction and a wide raised median between Glossop Street and Christie Street. Glossop Street and Forrester Road north of Glossop Street have a signposted $60 \mathrm{~km} / \mathrm{h}$ speed limit, while Forrester Road south of Glossop Street has a signposted $50 \mathrm{~km} / \mathrm{h}$ speed limit and a 40km/h school zone (8:00am-9:30am and 2:30pm-4:00pm) north of Harris Street. Glossop Street and Forrester Road are approved $25-26 \mathrm{~m}$ B-double routes. A typical cross-section of Glossop Street is illustrated in Figure 2.8.


Source: Google Street View
Figure 2.8: Typical Cross-section of Glossop Street

### 2.1.9 Dunheved Road - Christie Street

Dunheved Road and Christie Street are both regional roads running east-west, ending at Parker Street in the west. Both roads have one lane in each direction. Dunheved Road has a signposted $70 \mathrm{~km} / \mathrm{h}$ speed limit, while Christie Street has a signposted $60 \mathrm{~km} / \mathrm{h}$ speed limit within the industrial areas of St Marys. Both roads are approved $25-26 \mathrm{~m}$ B-double routes A typical cross-section of Dunheved Road is illustrated in Figure 2.9.


Source: Google Street View
Figure 2.9: Typical Cross-section of Dunheved Road

### 2.1.10 Werrington Road

Werrington Road is a regional road running north-south, intersecting with the Dunheved Road/Christie Street roundabout at its northern end and the Great Western Highway at its southern end. It has one lane in each direction and the southbound approach to the Great Western Highway widens to two lanes. The road has a signposted 70km/h speed limit between Dunheved Road and Rance Road, a signposted 60km/h speed limit between Rance Road and the Great Western Highway, and a 40km/h school zone (8:00am-9:30am and 2:30pm-4:00pm) between Gipps Street and the Great Western Highway. The school zone includes a pedestrian crossing. Werrington Road is an approved $25-26 \mathrm{~m}$ B-double route. A typical cross-section of Werrington Road is illustrated in Figure 2.10 and the cross-section of the intersection with the Great Western Highway is shown in Figure 2.11. South of Great Western Highway, Werrington Road continues as a short local road named Reserve Road, terminating at a T-intersection with Putland Street.


Source: Google Street View
Figure 2.10: Typical Cross-section of Werrington Road


Source: Google Street View
Figure 2.11: Cross-section of the Werrington Road north approach at the Great Western Highway intersection

### 2.2 SURROUNDING LAND USES

As shown in Figure 2.12, the existing land uses surrounding the site north of the Main Western Railway Line include industrial west of Forrester Road and on both sides of Glossop Street, and low-density residential east of Forrester Road. To the south, there is mixed use, and medium and high-density residential land uses near St Marys Town Centre, the Great Western Highway and Mamre Road. The subject site is currently zoned IN1 General Industrial, as is the entire St Marys industrial area. As such, the proposed Freight Hub is consistent with the existing local industrial area and B-double access routes in the area, including Glossop Street and Mamre Road.


Source: Penrith Local Environmental Plan 2010 Land Zoning Map No. 19
Figure 2.12: Existing Land Uses Near the Site

### 2.3 Public Transport and Active Transport Networks

### 2.3.1 Rail Network

There are three railway stations within the study area; namely Kingswood, Werrington and St Marys as shown in Figure 2.13. These stations are serviced by the T1 Western Line between Emu Plains and the City via Blacktown, Parramatta and Strathfield. Services are every 15 minutes throughout the day, with higher frequencies during peak periods. Trains on the Blue Mountains Line and freight trains pass through all three stations without stopping. The railway line just east of St Marys Railway Station has four tracks. Further west, the line reduces to two tracks.

The rail junction of the former Dunheved Railway spur line is located approximately 300 metres west of the St Marys Railway Station. The two-track spur line, part of the former Ropes Crossing Railway Line, was truncated from its full length and is currently not used.


Source: $h$ ttps://transportnsw.info/routes/details/sydney-trains/t1/020T1
Figure 2.13: Railway Stations Within the Study Area

### 2.3.2 Bus Network

The study area is serviced by several existing bus routes, all operated by Busways. The bus routes are located predominantly south of the Main Western Railway Line and along the Great Western Highway and Mamre Road, around St Marys Railway Station and along Glossop Street over the railway line.

North-south bus routes travel via Parker Street, Glossop Street or Carlisle Avenue, all via bridges over the railway line. No public bus routes operate along Werrington Road over the railway line.

Bus routes within the study area are shown in Figure 2.14. Bus route destinations and of service frequencies are summarised in Table 2.1.


Source: https://busways.com.au/sites/default/files/network_maps/Region1NetworkMap030618.pdf
Figure 2.14: Bus Routes within the Study Area
Table 2.1: Bus Routes and Frequency

| Route No. | Destination | Direction | Frequency |
| :---: | :--- | :--- | :--- |
| 745 | St Marys to Castle Hill via <br> Stanhope Gardens | Both directions | 60 mins (Monday to Saturday) |
| 758 | St Marys to Mount Druitt <br> via Tregear \& Shalvey | Both directions | 30 mins (Monday to Saturday) <br> 60 mins (Sunday and public holidays) |
| 759 | St Marys to Mount Druitt <br> via Ropes Crossing | Both directions | 30 mins (Monday to Saturday) <br> 60 mins (Sunday and public holidays) |
| 770 | Mount Druitt to Penrith via <br> St Marys | Both directions | 30 mins (Monday to Friday) <br> 60 mins (weekends and public holidays) |
| 771 | Mount Druitt to St Marys <br> via Colyton | Both directions | 30 mins (peak periods) <br> 60 mins (off-peak periods) |
| 774 | Mount Druitt to Penrith via <br> Nepean Hospital | Both directions | 30 mins (Monday to Friday) <br> 60 mins (weekends and public holidays) |
| 776 | Mount Druitt to Penrith via <br> Erskine Park | Both directions <br> St Clair | 30 mins (Monday to Friday) <br> 60 mins (weekends and public holidays) |
| 779 | Erskine Park to St Marys | St Marys to Erskine Park | Erskine Park to St Marys |
| 780 mins (AM peak periods) | 30 mins (PM peak periods) |  |  |
| 782 | Mount Druitt to Penrith via <br> Ropes Crossing | Both directions | $10-30$ mins (peak periods) <br> 60 mins (off-peak periods) |
| 785 | St Marys to Penrith via <br> Werrington | St Marys to Penrith via <br> Glenmore Park | Both Prath directions |

In addition to the above bus services, NightRide bus route N70 operates late at night, travelling along the Great Western Highway, Queen Street and Glossop Street within St Marys.

### 2.3.3 Walking and Cycling Networks

Formal footpaths exist along most roads within the study area, providing adequate connectivity between the site and key locations. The surrounding cycling network consists of both on-road and off-road routes, ranging from 'low difficulty' to 'high difficulty' facilities (as defined by Roads and Maritime's classification system). All cycling routes within the study area are shown in Figure 2.15. As shown in this figure, the routes surrounding the subject site do not connect directly with the wider cycling network. The facilities surrounding the site are:

- a low difficulty on-road path along Forrester Road north of Harris Street;
- a moderate difficulty on-road path along Forrester Road between Glossop Street and Christie Street, continuing along Christie Street to the South Creek Bridge; and
- a short off-road shared path along the southern side of Christie Street between the South Creek Bridge and just before Werrington Road.


### 2.4 Traffic Volumes

Traffic surveys were undertaken between 6:00am-10:00am and between 3:00pm-7:00pm on Tuesday, $20^{\text {th }}$ November 2018 at the intersections identified in the SEARs and listed in Table 2.2. The intersection throughput volumes for the peak one hour in the weekday morning (AM) and evening (PM) peak periods are summarised in Figure 2.16. The highest volume peak hours identified were 8:00am to 9:00am for the AM peak and 4:30pm to $5: 30 \mathrm{pm}$ for the PM peak. The traffic counts were also classified into light vehicles, light trucks, heavy trucks, buses, bicycles and pedestrians.

Following the public exhibition of the EIS, traffic surveys were also undertaken on Tuesday, $30^{\text {th }}$ July 2019 during the AM and PM peak hours at the four additional intersections (numbers 9-13) for the purpose of further SIDRA modelling at the additional intersections requested by PCC.

The full AM and PM peak traffic counts for each intersection are provided in Appendix A.
Table 2.2: Intersection Traffic Count Survey Locations

| No. | Intersection | Control Type |
| :---: | :--- | :---: |
| 1 | Richmond Road / Dunheved Road | Signalised |
| 2 | Great Western Highway / Parker Street | Signalised |
| 3 | Great Western Highway / Werrington Road / Reserve Road | Signalised |
| 4 | Great Western Highway / Queen Street / Mamre Road | Signalised |
| 5 | Great Western Highway / Carlisle Avenue | Signalised |
| 6 | Mamre Road / M4 Western Motorway (south) | Signalised |
| 7 | Mamre Road / M4 Western Motorway (north) | Signalised |
| 8 | Great Western Highway / Glossop Street | Signalised |
| 9 | Glossop Street / Harris Street | Priority |
| 10 | Forrester Road / Harris Street | Priority |
| 11 | Forrester Road / Glossop Street | Signalised |
| 12 | Forrester Road / Boronia Street / Christie Street | Roundabout |
| 13 | Christie Street / Dunheved Road / Werrington Road | Roundabout |



Source: https://huw.rms.nsw.gov.au/maps/cycleway finder
Figure 215: Cycleways Within the Study Area


Adapted from Google Maps
Traffic volumes have been rounded to the nearest 100 vehicles
Figure 216: Traffic Volumes Summary

### 2.5 Crash Data Analysis

### 2.5.1 General Trends

The most recent five years of crash data, dated between 2013 and 2017, was obtained from TfNSW for each of the eight intersections nominated in SEARSs. Forrester Road crashes were also assessed as were crashes at the proposed site access points. During the five-year period, a total of 202 crashes were reported, equating to an average of 40 crashes per year. The crash data was mapped in GIS and is provided in Appendix B showing detailed information on crash severity and type (by road user movement), along with a summary list of crashes.

Figure 2.17 shows the trends in the number of crashes per year between 2013 and 2017 aggregated across all locations reviewed. The number of crashes has decreased every year and reduced overall by $40 \%$ during the five-year period.


Figure 2.17: Summary of Reported Crashes between 2013 and 2017

### 2.5.2 Casualties

Of the 202 crashes in the five-year period ending 2017, 115 of these crashes resulted in 133 casualties. This equates to an average of 33 casualties per year. Table 2.3 summarises the crash severity and number of casualties. One person was killed in 2017 at the Forrester Road/Glossop Street intersection. It was classified as 'off end of road/T-intersection'. 38 people were seriously injured.

Table 2.3: Crash Severity and Number of Casualties

| Crash Severity | No. of Crashes | $\%$ | No. of Casualties |
| :--- | :---: | :---: | :---: |
| Fatal | 1 | $0 \%$ | 1 |
| Serious Injury | 28 | $14 \%$ | 38 |
| Moderate Injury | 43 | $21 \%$ | 48 |
| Minor/Other Injury | 43 | $21 \%$ | 46 |
| Non-casualty (towaway) | 87 | $43 \%$ | 0 |
| Total | $\mathbf{2 0 2}$ | $\mathbf{1 0 0 \%}$ | $\mathbf{1 3 3}$ |

### 2.5.3 Crash Type

Table 2.4 provides a breakdown of all crash types which occurred in the study area including the number of crashes and casualties. Between 2013 and 2017, the most common type of crash was 'rear end' (88 of these reflecting $40 \%$ of all reported crashes), followed by 27 'right-through' crashes ( $13 \%$ of all reported crashes) and 11 'right-near' crashes (5\% of all reported crashes).

Table 2.4: $\quad$ Crash Type and Number of Casualties

| Crash Type | No. of Crashes | \% | No. of Casualties | \% |
| :---: | :---: | :---: | :---: | :---: |
| Cross traffic | 8 | 4\% | 9 | 7\% |
| Cutting in | 1 | 0\% | 1 | 1\% |
| Emerging from driveway | 2 | 1\% | 0 | 0\% |
| From footpath | 1 | 0\% | 1 | 1\% |
| Head on | 3 | 1\% | 3 | 2\% |
| Lane change left | 3 | 1\% | 1 | 1\% |
| Lane change right | 7 | 3\% | 5 | 4\% |
| Lane sideswipe | 2 | 1\% | 1 | 1\% |
| Left far | 1 | 0\% | 1 | 1\% |
| Left near | 1 | 0\% | 0 | 0\% |
| Left off carriageway into object/parked vehicle | 9 | 4\% | 5 | 4\% |
| Left rear | 2 | 1\% | 2 | 2\% |
| Left turn sideswipe | 2 | 1\% | 0 | 0\% |
| Off carriageway left on left bend into object/parked vehicle | 0 | 0\% | 0 | 0\% |
| Off carriageway left on right bend into object/parked vehicle | 5 | 2\% | 2 | 2\% |
| Off carriageway right on left bend into object/parked vehicle | 5 | 2\% | 2 | 2\% |
| Off carriageway to left | 1 | 0\% | 0 | 0\% |
| Off end of road/T-intersection | 1 | 0\% | 0 | 0\% |
| Other opposing | 2 | 1\% | 1 | 1\% |
| Other same direction | 10 | 5\% | 3 | 2\% |
| Out of control on carriageway straight | 1 | 0\% | 1 | 1\% |
| Out of control on carriageway through | 1 | 0\% | 1 | 1\% |
| Pedestrian far side | 2 | 1\% | 2 | 2\% |
| Pedestrian near side | 2 | 1\% | 2 | 2\% |
| Rear end | 80 | 40\% | 49 | 37\% |
| Right far | 2 | 1\% | 0 | 0\% |
| Right near | 11 | 5\% | 8 | 6\% |
| Right off carriageway into object/parked vehicle | 3 | 1\% | 0 | 0\% |
| Right rear | 6 | 3\% | 6 | 5\% |
| Right through | 27 | 13\% | 26 | 20\% |
| Right turn sideswipe | 1 | 0\% | 0 | 0\% |
| Total | 202 | 100\% | 132 | 100\% |

### 2.5.4 Intersection-Specific Data

## Richmond Road / Dunheved Road

There was a total of 15 crashes at or near the Richmond Road/Dunheved Road intersection between 2013 and 2017. Four crashes resulted in four casualties.

The most common type of crash was 'right-through' (20\%), which resulted in one casualty, followed by two 'rear end' and two 'lane change right' (both 13\%). Additionally, nine crashes occurred in daylight and six in darkness.

Eleven crashes occurred at the intersection, two on Richmond Road and two on Dunheved Road near the intersection.

No crash pattern can be related to the geometry of this intersection.

## Great Western Highway / Parker Street

There was a total of 35 crashes at or near the Great Western Highway/Parker Street intersection between 2013 and 2017. Twenty-one crashes resulted in 24 casualties.
The most common type of crash was 'rear end' (54\%), which resulted in 14 casualties, followed by three 'cross-traffic' crashes (9\%). Three crashes involved a pedestrian, resulting in two serious casualties and one moderate casualty. Additionally, 26 crashes occurred in daylight and eight in darkness.

Seventeen crashes occurred at the intersection, 11 on the Great Western Highway and seven on Parker Street within approximately 130 metres of the intersection. Crashes were evenly split across all of the intersection's approaches.

A 'rear end' crash pattern was detected at this intersection. A further analysis of 'rear end' crashes revealed that nine of them occurred right and six occurred on approach to or departure from the intersection. The majority of these vehicles were travelling westbound.

## Great Western Highway / Werrington Road / Reserve Road

There was a total of 20 crashes at or near the Great Western Highway/Werrington Road/Reserve Road intersection between 2013 and 2017. Eleven crashes resulted in fourteen casualties.

The most common type of crash was 'right-through' (40\%), which resulted in seven casualties, followed by six 'rear end' crashes (30\%). Thirteen crashes occurred in daylight and seven in darkness.

Seventeen crashes occurred at the intersection, two on Werrington Road approaching the intersection and one approximately 40 metres east of the intersection on the Great Western Highway westbound.
A 'right-through' crash pattern was detected at this intersection. Further analysis of 'right through' crashes revealed that all occurred in the middle of the intersection. Six crashes involved vehicles travelling westbound and two eastbound, most likely caused when vehicles turned right on a red signal. All crashes occurred between 2013 and 2015.

## Great Western Highway / Queen Street / Mamre Road

There was a total of 19 crashes at or near the Great Western Highway/Queen Street/Mamre Road intersection between 2013 and 2017. Twelve crashes resulted in 14 casualties.

The most common type of crash was 'rear end' ( $32 \%$ ), which resulted in three casualties, followed by three 'cross-traffic' crashes and three 'other same direction' crashes (both 16\%). Additionally, 12 crashes occurred in daylight and seven in darkness.
Thirteen crashes occurred at the intersection, five on the Great Western Highway within approximately 55 metres of the intersection and one at the Mamre Road/Sainsbury Street intersection approximately 70 metres south.

No crash pattern was detected at this intersection.

## Great Western Highway / Carlisle Avenue

There was a total of 36 crashes at or near the Great Western Highway/Carlisle Avenue intersection between 2013 and 2017. Nineteen crashes resulted in 21 casualties.

The most common type of crash was 'rear end' (58\%), which resulted in 12 casualties, followed by three 'off carriageway left on right bend into object/parked vehicle' crashes (8\%). Additionally, 22 crashes occurred in daylight and 14 in darkness.

Twenty-seven crashes occurred at the intersection, including 13 'rear end' crashes. Five crashes occurred within approximately 80 metres east of the intersection on the Great Western Highway westbound, and three south and one north of the intersection on Carlisle Avenue.

A 'rear end' crash pattern was detected at this intersection, which has a speed limit of $80 \mathrm{~km} / \mathrm{h}$. A further analysis of 'rear end' crashes revealed that 13 of them occurred at the intersection and eight occurred on approach to or on the departure from the intersection. The majority of vehicles were travelling eastbound.

## Mamre Road / M4 Western Motorway

The Mamre Road/M4 Western Motorway interchange includes the Mamre Road/M4 Western Motorway north and south intersections, Mamre Road and the M4 Western Motorway on and off-ramps. There was a total of 40 crashes within this section between 2013 and 2017. Twenty-four crashes resulted in 30 casualties.

The most common type of crash was 'rear end' (40\%), which resulted in 10 casualties, followed by 12 right through' crashes (30\%). Additionally, 26 crashes occurred in daylight and 14 in darkness.

Eighteen crashes occurred at the Mamre Road/M4 Western Motorway north intersection, including 10 'rightthrough' crashes. Three crashes occurred within approximately 80 metres north of the intersection on Mamre Road, two crashes approximately 90 metres south of the intersection on Mamre Road southbound and one crash on the M4 Western Motorway eastbound on-ramp.

Nine crashes occurred at the Mamre Road/M4 Western Motorway south intersection, including five 'rear end' crashes. Five crashes occurred within approximately 90 metres south of the intersection on Mamre Road and two crashes on the M4 Western Motorway westbound on-ramp.

Two crash patterns were detected at this interchange, namely 'rear end' and 'right-through'. A further analysis of 'right-through' crashes revealed that 10 crashes occurred at the Mamre Road/M4 Western Motorway north intersection, most likely caused when southbound vehicles turned right on a red signal. Five crashes resulted in nine serious injuries and six crashes occurred in darkness.

A further analysis of 'rear end' crashes revealed that eight of them occurred at or near the Mamre Road/M4 Western Motorway south intersection, with nearly all of them along Mamre Road in either direction. Three crashes resulted in two moderate casualties and one minor/other casualty. Six crashes occurred in daylight.

## Great Western Highway / Glossop Street

There was a total of 11 crashes at or near the Great Western Highway/Glossop Street intersection between 2013 and 2017. Nine crashes resulted in nine casualties.

The most common type of crash was 'rear end' (36\%), followed by two 'lane change right' crashes (18\%) and all crashes resulting in six casualties. Additionally, eight crashes occurred in daylight and three in darkness.
Five crashes occurred at the intersection, including two 'rear end'. Four crashes occurred within approximately 80 metres north of the intersection on Glossop Street and one east of the intersection on the Great Western Highway westbound.

No crash pattern was detected at this intersection.

### 2.5.5 Forrester Road at and south of Glossop Street

There was a total of 11 crashes at or within approximately 166 metres south of the Forrester Road/Glossop Street intersection between 2013 and 2017. Six crashes resulted in six casualties, including one fatality.

The most common type of crash was two 'rear end' (27\%), followed by two 'off carriageway left on right bend into object/parked vehicle (18\%). Additionally, all but one crash occurred in daylight.

Seven crashes occurred at the Forrester Road/Glossop Street intersection, including two 'rear end'. One of these 'rear end' crashes in 2017 involved a heavy truck and resulted in a towaway. Another crash in 2016 at the intersection involving a heavy truck was 'pedestrian near side' and resulted in serious injury.

Another crash approximately 47 metres south of the intersection in 2017 also involved a heavy truck. This was a 'rear end' crash and resulted in a towaway.

No specific crash patterns could be identified based on this data.

### 2.5.6 Near the Site Accesses

The options for site access include Forrester Road south of Harris Street as well as Lee Holm Road near Maxim Place.

In these general areas, there were a total of 15 crashes recorded between 2013 and 2017. Nine crashes resulted in 11 casualties. The most common type of crash was 'right near' (40\%), followed by three 'rear end' crashes (20\%), all resulting in seven casualties. Additionally, nine crashes occurred in daylight and six in darkness.

Eight crashes occurred on Christie Street, including seven at its intersection with Lee Holm Road and three 'rear end' crashes, resulting in nine casualties. Five crashes occurred at the Forrester Road/Wordoo Street intersection, including four 'right-near' crashes, resulting in one casualty. One crash occurred at the Lee Holm Road/Maxim Place intersection and one at the Forrester Road/Harris Street intersection.

No specific crash patterns could be identified based on this data.

### 2.5.7 Glossop Street/Adelaide Street

One fatality has been recorded at this intersection in 2015 involving a car and light truck. This was a 'rightnear' crash inferring it was moist likely associated with a car tuning right out of Adelaide Street being struck by a southbound through vehicle on Glossop Street. The additional 15 trucks per hour due to the development is minimal in the context of the southbound through traffic on Glossop Street and would therefore have a negligible influence on the likelihood of crashes at this intersection.

### 2.6 Planned Developments and Network Upgrades

### 2.6.1 Jordan Springs Development

Jordan Springs is located approximately 1.6 km north of the Richmond Road/Dunheved Road intersection. The development connects to The Northern Road which continues north from Richmond Road, meaning future growth in the suburb will increase traffic volumes on the Parker Street -Richmond Road - The Northern Road corridor. A number of road and intersection upgrades have been proposed by the development.

### 2.6.2 Outer Sydney Orbital

TfNSW is investigating a north-south motorway and freight rail corridor between Box Hill in the north and the M31 Hume Motorway near Menangle in the south, known as the Outer Sydney Orbital. It would provide a major transport link between the North-West and South-West Growth Areas, as well as connect to the future Western Sydney Airport. Whilst still in early planning phases, the corridor is proposed to pass adjacent to the St Marys Freight Hub, as shown in Figure 2.18.


Source: Maps for consultation Outer Sydney Orbital recommended corridor (Transport for NSW, March 2018)
Figure 2.18: Outer Sydney Orbital recommended corridor through St Marys

### 2.6.3 North-South Rail Line

In addition to the Outer Sydney Orbital, TfNSW is also investigating a North-South Rail Line between St Marys and Macarthur/Leppington via the future Western Sydney Airport. It is proposed to be in tunnel near St Marys Railway Station and pass south of the site as shown in Figure 2.19. The North-South Rail Line will provide a major transport link between the North-West, Western Sydney Airport, South-West and Greater Macarthur Growth Areas and support future town centres along the corridor.


Source: Maps for consultation North South Rail Line \& South West Rail Link Extension recommended corridors (Transport for NSW, March 2018)
Figure 2.19: $\quad$ North South Rail Line recommended corridor through St Marys

### 2.6.4 Network Upgrades

In 2016, WSP undertook traffic modelling of the broader St Marys development area, with a focus on Jordan Springs, to assess the impact on the existing road network of five new precincts due for completion in 2021. The study area was bounded by Ninth Avenue/Eighth Avenue/Palmyra Avenue in the north, Glossop Street/Forrester Road in the east, the Great Western Highway in the south and The Northern Road in the west. SIDRA modelling was also undertaken to assess the existing and future performance of key intersections. Upgrade works were identified at a number of intersections relevant to the study area for this project and these are summarised in Table 2.5. These upgrades also considered the extension of Links Road from the Dunheved Precinct to Christie Street. Upgrades were deemed not to be required at the Richmond Road/Dunheved Road and Great Western Highway/Glossop Street intersections.

Table 2.5: $\quad$ St Marys Development Site Intersection Upgrades Relevant to Our Study Area

| Intersection | Description of Upgrades | SIDRA Layout ${ }^{1}$ | Comments |
| :---: | :---: | :---: | :---: |
| Great Western <br> Highway / <br> Parker Street | - 115 m short through lane on north approach <br> - 100 m right turn bay on east approach <br> - $105 m$ short through lane on south approach |  | Upgrades required for 2021. Further upgrades required for 2031. |
| Forrester Road <br> / Christie Street <br> / Boronia Road | - Installation of traffic signals <br> - Significant upgrades on north, south and west legs |  | Upgrades required for 2021. |
| Forrester Road / Christie Street <br> / Boronia Road | - Additional 60 m left turn slip lane on north approach <br> - Additional left turn slip lane on east approach <br> - Additional 100 m through and exit lanes on north and south legs in both directions |  | Upgrades required for 2031. |


| mesesetion | Sespipenolverese | soma |  |
| :---: | :---: | :---: | :---: |
|  |  |  |  |
|  | $\begin{aligned} & \text { Installation of traffic } \\ & \text { signals } \\ & \text { Duplication of Werrington } \\ & \text { Road } \end{aligned}$ |  | Hpyene |
|  |  |  |  |
|  |  |  |  |

${ }^{1}$ SIDRA layouts derived from the St Marys Development Site Regional Traffic Modelling Traffic and Transport Assessment (WSP, October 2017)

## 3. Development Proposal Details

### 3.1 Development Description

The St Marys Freight Hub proposal is for a 9.9 hectare road and rail inland container terminal, with a maximum operating capacity of 301,000 Twenty-Foot Equivalent Units (TEUs) per annum. The St Marys Freight Hub will receive full containers from Port Botany by Rail. An onsite truck fleet transports the full containers from the site to customers throughout Western Sydney. The trucks return to the site with empty containers which are transported back to Port Botany by train. The distribution of these containers is currently mostly undertaken via truck trips to/from Port Botany and locating this facility in Western Sydney will reduce the length of trucks on the wider Sydney road network.

The proposed St Marys Freight Hub site and access roads are shown in Figure 3.1. The site concept plan is shown in Figure 3.2. The development will include:

- access roads from Forrester Road and/or from Lee Holm Road for cars and trucks (subject to which truck route option is ultimately selected. The preferred option though is for heavy vehicles to enter and exit exclusively from Forrester Road and light vehicles to enter and exit exclusively from Lee Holm Road);
- rail sidings for loading and unloading of trains accessed via the Dunheved Railway spur line which connects with the existing Main Western Railway Line;
- hardstand areas for container storage, loading and unloading;
- utilities such as drainage, potable water, fire water, power, data, security and sewerage;
- an office building and staff amenities; and
- sufficient car parking spaces to cater for the 40-45 (maximum) staff on-site during the day as well as 7 truck parking spaces.


Adapted from Google Maps
Figure 3.1: Proposed St Marys Freight Hub Location and Access Roads


Source: BG\&E
Figure 3.2: Proposed St Marys Freight Hub Layout

### 3.2 Proposed Development Operating Hours

The St Marys Freight Hub's transport operations are proposed to be $24 / 7$ with a cease of operations from Saturday $2 p m$ to Sunday 4am. Rail intermodal operations are also proposed to be 24/7. Empty depot operations are proposed to be 24 hours Monday to Friday and possibly Saturday 5am-12pm. The St Marys Freight Hub's proposed operating hours for staff are summarised in Table 3.1.
Table 3.1: Proposed St Marys Freight Hub Operating Hours

| Section | Approx. Staff | Hours | Comments |
| :---: | :---: | :---: | :---: |
| 1. Administrative/management staff per mantle deployed to St Marys | 25 | 4am-4pm (day shift) | Office staff generally work a max 10-hour shift within the span of hours provided |
|  | 7 | 4pm-4am (night shift) |  |
| 2. Truck drivers starting and ending their shifts at St Marys | 55 | 7 trucks 5am-3pm and 8 trucks 6 am4 pm (day shift) | Drivers generally work 10 hours per day |
|  | 35 | 7 trucks 3pm-1am and 8 trucks 4pm2 am (night shift) |  |
| 3. Permanent service/maintenance staff stationed at St Marys | 8 | Usually 5am-5pm | Staff generally work a max 10-hour shift within the span of hours provided |
|  | 2 | Usually 5pm-5am |  |
| 4. Permanent terminal staff (reach stacker, forklift operators, and any other administrative/ground staff) | 20 | 24 hours | 3 equal shifts which will not coincide with road peak hours |

2016 Australian Bureau of Statistics Journey to Work Census data was interrogated to indicate the mode share of existing employees to St Marys and inform on-site car park numbers. This is shown in Figure 3.3.


Source: ABS TableBuilder 2016
Figure 3.3: Workers' Modes of Travel to St Marys

### 3.3 Light Vehicle Traffic Generation Considerations

As shown in Table 3.1, private vehicle movements for site-based staff will occur at times which do not coincide with the peak hours of the surrounding road network. In terms of private vehicle traffic, taking a conservative assumption that all staff will drive their own vehicles, daily two-way traffic would be approximately 124 private vehicle-movements per day with a maximum of approximately 40-45 staff vehicles on-site during the day. Given the low level of staff traffic arriving during daytime hours and that this traffic will typically be outside of the road peak hours, the traffic generation calculations and traffic impact assessments at key intersection have been limited to the impacts of truck movements.

### 3.4 Truck-Traffic Generation Calculations

### 3.4.1 Step 1: Train Paths and Container Deliveries to and from St Marys

Trains will deliver full containers from Port Botany to St Marys and return empty containers from St Marys to Port Botany a maximum five times a day. There will be a maximum capacity of 87 TEUs per train and this capacity is constrained by the overall train length of 600 m as per Sydney Trains and Australian Rail Track Corporation requirements. The 87 TEU slots equate to 54.4 containers which are a combination of approximately $60 \%$ of 40 ft containers and $40 \%$ of 20 ft containers per train service. There are five confirmed train paths, and this translates to maximum of 218 truck movements out of the Freight Hub and 218 empty container truck movements returning to the Freight Hub per day. These calculations are conservative and based purely on semi-trailer trucking movements which are limited to 2 TEU equivalents. Whereby B-doubles have a 3 TEU load capacity and form part of the ACFS truck fleet. Therefore, 218 in 218 out truck movements per day is worst case scenario as modelled on using semi-trailers only. Table 3.2 provides a justification of this ratio.

Table 3.2: TEU Ratios

| Boxes | 40ft Boxes | 20ft Boxes | TEUs | Ratio of 40ft containers | Ratio of Box/TEU |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 40 | 24 | 16 | 64 | 0.6 | 0.625 |
| 41 | 24.6 | 16.4 | 65.6 | 0.6 | 0.625 |
| 42 | 25.2 | 16.8 | 67.2 | 0.6 | 0.625 |
| 43 | 25.8 | 17.2 | 68.8 | 0.6 | 0.625 |
| 44 | 26.4 | 17.6 | 70.4 | 0.6 | 0.625 |
| 45 | 27 | 18 | 72 | 0.6 | 0.625 |
| 46 | 27.6 | 18.4 | 73.6 | 0.6 | 0.625 |
| 47 | 28.2 | 18.8 | 75.2 | 0.6 | 0.625 |
| 48 | 28.8 | 19.2 | 76.8 | 0.6 | 0.625 |
| 49 | 29.4 | 19.6 | 78.4 | 0.6 | 0.625 |
| 50 | 30 | 20 | 80 | 0.6 | 0.625 |
| 51 | 30.6 | 20.4 | 81.6 | 0.6 | 0.625 |
| 52 | 31.2 | 20.8 | 83.2 | 0.6 | 0.625 |
| 53 | 31.8 | 21.2 | 84.8 | 0.6 | 0.625 |
| 54 | 32.4 | 21.6 | 86.4 | 0.6 | 0.625 |
| 54.1 | 32.46 | 21.64 | 86.56 | 0.6 | 0.625 |
| 54.2 | 32.52 | 21.68 | 86.72 | 0.6 | 0.625 |
| 54.3 | 32.58 | 21.72 | 86.88 | 0.6 | 0.625 |
| 54.4 | 32.64 | 21.76 | 87.04 | 0.6 | 0.625 |
| 54.5 | 32.7 | 21.8 | 87.2 | 0.6 | 0.625 |
| 54.6 | 32.76 | 21.84 | 87.36 | 0.6 | 0.625 |
| 54.7 | 32.82 | 21.88 | 87.52 | 0.6 | 0.625 |
| 54.8 | 32.88 | 21.92 | 87.68 | 0.6 | 0.625 |
| 54.9 | 32.94 | 21.96 | 87.84 | 0.6 | 0.625 |
| 55 | 33 | 22 | 88 | 0.6 | 0.625 |

The site's capacity is restricted by the train paths, train capacity and system capacity. The site will not be used for localised container storage associated with truck movements only. That is, full containers will arrive by train and be picked up from the site and delivered by truck to their destination. Empty containers will be picked up from surrounding locations and returned to the site and then loaded onto trains for the return trip to Port Botany. The site will not act as an export operation (import only), and no unpacking of containers or distribution will take place on-site.

It is important to highlight that the site will not be used as a truck-to-truck intermodal facility and that the volume of truck trips generated by the site will be limited to the number of train paths approved by Sydney Trains. There is no basis to assume additional trucks will be generated based on these limitations.

### 3.4.2 Step 2: Truck Pick-ups Per Day

The 54 containers per train multiplied by the maximum permissible five scheduled train trips per day equates to 272 containers IN and 272 containers OUT of the proposed St Marys Freight Hub per day. Based on current truck to container ratio data, each truck will carry on average 1.25 containers ( 2 TEUs $\times 0.625$ ) using a mix of 19 m semi-trailers ( 2 TEUs) and 26 m B-doubles ( 3 TEUs ). The maximum number of daily truck movements (based on 100\% use of semi-trailers) equates to 218 trucks movements $\mathbb{I N}$ and 218 truck movements OUT of the site per day ( 87 TEUs inbound $x 5$ train paths and 87 TEUs outbound $x 5$ train paths which equates to $100 \%$ asset utilisation (maximum capacity)). It is important to note that this traffic generation is controlled by the five available train paths per day. In practice, it is likely that a mix of semi-trailers and Bdoubles will be used and that the daily heavy vehicle trip generation will be well below 218 IN/218 OUT per day.

It should also be highlighted that several conservative assumptions have been made to generate the absolute maximum likely traffic generation that the site is capable of producing. The conservative volumes presented below will be higher than the average day site traffic generation.

### 3.4.3 Step 3: Daily Profile Distribution Assumptions and Peak Hour Truck Trips

The site will be a ' $24 / 7$ ' operation and many of the container destinations will accept 'after dark' deliveries due to the nature of their businesses. To account for this, but taking a conservative approach, it has been assumed that approximately 80\% of all daily trips will take place between 6:00am and 6:00pm (174 trips each way). This results in 15 trucks IN and 15 trucks OUT during both the AM and PM peaks using a uniform trip distribution profile between 6:00am and 6:00pm and aligned with efficient handling processes which is what an optimised business model would achieve at the Freight Hub. A relatively flat profile across the day is reasonable and common as it provides the most cost-efficient way for the business to use human resources and equipment resources across the day. The assumed daily traffic profile distribution is shown in Figure 3.4. The AM and PM peak hours for the intersections surrounding the development are 8:00am to 9:00am and 4:30pm to 5:30pm.


Source: Pacific National
Figure 3.4: Assumed Daily Traffic Profile Distribution
There will not be a significant number of employees on-site and the private vehicle arrival and departure times are highly unlikely to coincide with the road network peak hours due to the varying nature of shift times for on-site staff.

### 3.5 TRAFFIC DISTRIBUTION

The distribution of truck trips has been based on a detailed customer spreadsheet available for existing deliveries to/from Port Botany. This spreadsheet details the number of trips each month to each site over a 12-month period. A sample of the customer location database is shown in Figure 3.5.


Figure 3.5: Traffic Distribution Source Data Example
The following methodology was used to determine the AM and PM peak traffic distribution onto the surrounding road network and intersections:

1. the site addresses were aggerated into suburb names;
2. eastern suburbs (i.e. Sydney CBD, Port Botany, Alexandria, St Peters etc.) were excluded as it was assumed that deliveries to these areas would continue to be directly from Port Botany;
3. suburb-based movements were further aggregated into general delivery 'directions' to/from the St Marys Freight Hub;
4. the online National Heavy Vehicle Regulator (NHVR) Journey Planner was used to identify suitable Bdouble routes to each destination; and
5. total truck volumes per peak hour were calculated through and as far as the location of the surveyed intersections nominated by Roads and Maritime (for assessment under the SEARs requirements) and PCC.

The expected truck-traffic distribution is illustrated from Figure 3.6 to Figure 3.9 for the following proposed access route options under assessment:

- Option 1: Base Case - the route proposed in the report that went on exhibition (Glossop Street Forrester Road - Christie Street - Lee Holm Road);
- Option 2: Alternate route A - two-way access at the Lee Holm Road entrance via Christie Street and Werrington Road;
- Option 3: Alternate route B - two-way access at the Forrester Road entrance with Harris Street used for inbound truck movements and Forrester Road used for outbound truck movements. This option would require the left turn restriction from Glossop Street into Harris Street (7-metre-long vehicles, buses excepted) to be lifted; and
- Option 4: Alternate route C - two-way access at Forrester Road entrance with Glossop Street/Forrester Road as the nearest intersection accommodating inbound and outbound movements.

The interpretation of the destination distribution data along with the route option paths highlights that:

- more than $80 \%$ of trucks under Option 1, 3 and 4 are likely to use the Glossop Street - Great Western Highway - Mamre Road route;
- more than $95 \%$ of trucks under Option 2 are likely to use the Werrington Road - Great Western Highway to Mamre Road route, while more than $80 \%$ are also likely to use the Mamre Road route.

The routes which were calculated as having $<1 \%$ of peak hour truck movements were not considered further in splitting the 15 AM peak and 15 PM peak truck- trips given they equate to less than one truck trip per hour.


Adapted from Google Maps
Figure 3.6: $\quad$ Truck-Trip Distribution - Route Option 1


Adapted from Google Maps
Figure 3.7: Truck-Trip Distribution - Route Option 2


Adapted from Google Maps
Figure 3.8: $\quad$ Truck-Trip Distribution - Route Option 3


Adapted from Google Maps
Figure 3.9: $\quad$ Truck-Trip Distribution - Route Option 4

## $3.6 \quad$ Peak Traffic Volumes

Based on the calculated traffic distribution, the AM and PM peak traffic volumes calculated for each route are summarised in Table 3.3.

Table 3.3: $\quad$ Assumed Traffic Volume Distribution

| Route $^{1}$ |  | AM Peak |  | PM Peak |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  |  | Out | In | Out |  |
| Red | 11 | 11 | 11 | 11 |  |
| Blue | 2 | 2 | 2 | 2 |  |
| Green | 2 | 2 | 2 | 2 |  |
| Purple | 0 | 0 | 0 | 0 |  |
| Grey | 0 | 0 | 0 | 0 |  |

The 2018 AM and PM 'base' and 'with development' traffic volumes for each intersection for each peak one hour for each proposed access route are summarised from Figure 3.10 to Figure 3.17. The following summarises the key intersections which will have the maximum increase of 30 trucks during both the AM and PM peaks under each option. The percentage increase in traffic due to development trucks is also shown below:

- Options 1, 3 and 4:
- Great Western Highway/Glossop Street (an increase of $0.9 \%$ and $0.7 \%$ respectively based on 2018 traffic volumes); and
- Glossop Street/Harris Street (increase of 1.1\% and 0.9\% respectively based on 2019 traffic volumes);
- Option 1:
- Forrester Road/Glossop Street (increase of 1.7\% and 1.4\% respectively based on 2019 traffic volumes); and
- Forrester Road/Boronia Street/Christie Street (increase of 1.0\% and 0.9\% respectively based on 2019 traffic volumes);
- Option 2 :
- Great Western Highway/Werrington Road/Reserve Road (increase of 0.9\% and 0.8\% respectively based on 2018 traffic volumes);
- Great Western Highway/Queen Street/Mamre Road (increase of 0.8\% and 0.7\% respectively based on 2018 traffic volumes); and
- Christie Street/Dunheved Road/Werrington Road (increase of 1.3\% and 1.1\% respectively based on 2019 traffic volumes);
- Option 3:
- Forrester Road/Harris Street (increase of $13.2 \%$ and $8.2 \%$ respectively based on 2019 traffic volumes); and
- Option 4:
- Forrester Road/Glossop Street (increase if 1.6\% and 1.3\% respectively based on 2019 traffic volumes).

Additionally:

- Great Western Highway/Mamre Road will increase by 26 trucks per peak hour under Options 1, 3 and 4;
- Mamre Road/M4 Western Motorway north will increase by 26 trucks per peak hour under all options;
- Mamre Road/M4 Western Motorway south will increase by 15 trucks per peak hour under all options;
- Forrester Road/Glossop Street will increase by 15 trucks per peak hour under Option 4;
- from the surveyed intersections, Richmond Road/Dunheved Road and Great Western Highway/Parker Street are not expected to be impacted by any additional trucks during either the AM or PM peaks; and
- the Freight Hub adds only 9\% to Forrester Road traffic during peak hours, which is well within the road capacity. Forrester Road just south of Glossop Street carries 176 vehicles per hour southbound in the AM peak and 281 vehicles per hour northbound in the PM peak. These volumes are well below the typical capacity of a single lane urban road at 1,200 vehicles per hour.

It should be noted that the Freight Hub will reduce the length of many truck trips that are currently accessing customers via Port Botany (1 truck from St Marys replaces 9 to 10 trucks from Port Botany). It is very difficult to quantify this reduction, however, assuming that St Marys represents the centre of the market which receives its containers from Port Botany, approximately 55 km per one-way truck trip generated will be reduced on the broader network. With 436 truck trips per day ( 218 IN and 2018 OUT), this equates to 23,980 truck-kms per day removed off the regional road network or 8,752,700 truck-kms per annum.

Key benefits to the regional road network associated with this reduction include:

- contributing to reducing road congestion and improving journey times for other road users;
- reducing the extent of pavement impacts on major roads;
- reducing travel times, operating costs and hence reducing the economic impacts of freight movements; and
- reducing emissions and noise on the road network.

In general, rail freight transport is three times more energy efficient and produces one-third of the emissions of road-based freight transport (https://www.artc.com.au/move-your-freight-on-rail/environmental-benefits-of-rail/). There are wider economic and community benefits in moving freight from road to rail for more of the freight carriage distance.


Adapted from Google Maps
Note: when distribution percentages have been applied, volumes have been rounded up
The development is not expected to be open until 2020
Figure 3.10: Development Traffic Volume Increase at Each Intersection based on 2018/2019 AM Peak Background Data - Option 1


Adapted from Google Maps
When distribution percentages have been applied, volumes have been rounded up
The development is not expected to be open until 2020
Figure 3.11: Development Traffic Volume Increase at Each Intersection based on 2018/2019 PM Peak Background Data - Option 1


Adapted from Google Maps
Note: when distribution percentages have been applied, volumes have been rounded up
The development is not expected to be open until 2020
Figure 3.12: Development Traffic Volume Increase at Each Intersection based on 2018/2019 AM Peak Background Data - Option 2


Adapted from Google Maps
When distribution percentages have been applied, volumes have been rounded up
The development is not expected to be open until 2020
Figure 3.13: Development Traffic Volume Increase at Each Intersection based on 2018/2019 PM Peak Background Data - Option 2


Adapted from Google Maps
Note: when distribution percentages have been applied, volumes have been rounded up
The development is not expected to be open until 2020
Figure 3.14: Development Traffic Volume Increase at Each Intersection based on 2018/2019 AM Peak Background Data - Option 3


Adapted from Google Maps
When distribution percentages have been applied, volumes have been rounded up
The development is not expected to be open until 2020
Figure 3.15: Development Traffic Volume Increase at Each Intersection based on 2018/2019 PM Peak Background Data - Option 3


Adapted from Google Maps
Note: when distribution percentages have been applied, volumes have been rounded up
The development is not expected to be open until 2020
Figure 3.16: Development Traffic Volume Increase at Each Intersection based on 2018/2019 AM Peak Background Data - Option 4


Adapted from Google Maps
When distribution percentages have been applied, volumes have been rounded up
The development is not expected to be open until 2020
Figure 3.17: Development Traffic Volume Increase at Each Intersection based on 2018/2019 PM Peak Background Data - Option 4

## 4. Traffic Capacity Assessment

### 4.1 Methodology

### 4.1.1 Intersection Modelling Software

The 13 surveyed intersections nominated in the SEARs and requested by PCC post-exhibition were modelled using SIDRA intersection analysis software (version 8.0) to assess the operational impact of the development traffic for the AM (8:00am-9:00am) and PM (4:30pm-5:30pm) peak hours.

This process involved:

- creating, calibrating and validating year 2018 and 2019 Base Case models;
- factoring up 2018 and 2019 traffic demands to represent 2030 traffic demands which represents a conventional 10-year assessment horizon after the expected opening year (the '2030 Base Case');
- adding the development traffic to create the '2030 With Development Case'; and
- adding $20 \%$ more development traffic as a sensitivity test as requested by Roads and Maritime to create the ' 2030 With Development $+20 \%$ Case'.

The Great Western Highway/Queen Street/Mamre Road and Great Western Highway/Glossop Street intersections were modelled as a network in 'SIDRA', as were the Mamre Road/M4 Western Motorway north and south intersections. Both 'SIDRA Network' models incorporate intersection offset times obtained from the Roads and Maritime LX file. All other intersections were modelled as isolated intersections. All articulated trucks were coded in the SIDRA models using SIDRA's 'Large Trucks' Movement Class, which has a vehicle length of 22 metres which appropriately represents the mix of 19 m semi-trailers and 26 m B-doubles.

### 4.1.2 Capacity Impact Criteria

Level of Service (LoS) is a measure of an intersection's operational performance and is related to the average number of seconds vehicles are delayed at an intersection or on each approach. Table 4.1 shows the standard criteria adopted by Roads and Maritime in assessing the LoS of signalised intersections.
Table 4.1: Roads and Maritime Level of Service Criteria for Signalised Intersections

| Level of <br> Service | Average Delay <br> (sec/veh) | Traffic Signals and <br> Roundabouts | Give Way Signs |
| :---: | :---: | :---: | :---: |
| A | $<14$ | Good operation | Good operation |
| B | 15 to 28 | Good with acceptable delays <br> and spare capacity | Acceptable delays and spare <br> capacity |
| C | 29 to 42 | Satisfactory | Satisfactory, but accident study <br> required |
| D | 43 to 56 | Operating near capacity | Near capacity and accident study <br> required |
| E | 57 to 70 | At capacity; roundabouts <br> require other control mode | At capacity, requires other control <br> mode |
| F | $>70$ | Flow breakdown; forced flow | Intersection failure |

Source: Roads and Maritime Guide to Traffic Generating Developments (2002)
Degree of Saturation (DoS) is a measure of an intersection's operating capacity (volume/capacity ratio). The Roads and Maritime Traffic Modelling Guidelines (2013) state that the maximum practical DoS for signalised intersections is 0.90 , for roundabouts is 0.85 and for sign-controlled intersections is 0.80 .

Within Greater Sydney, there are many signalised intersections which currently operate beyond the desirable thresholds for LoS and DoS. This is likely to be the case within the study area under background growth (i.e. the 2030 Base Case), primarily due to the level of growth in Western Sydney generally.

For this assessment, the development has been considered to introduce an impact if its truck traffic:

- results in a change in intersection LoS between the 2030 Base Case and the 2030 With Development Case; or
- results in a change in the intersection DoS between the 2030 Base Case and the 2030 With Development Case of more than $5 \%$, and the DoS exceeds 0.90 .


## $4.2 \quad$ 2018/2019 Base CASE ANALYSIS

### 4.2.1 Intersection Volumes

Figure 4.1 shows the peak hour turning volumes at each of the eight intersections identified in the SEARs and for which SIDRA models have been created for.


Figure 4.1: 2018 Base Case Traffic Volumes - Intersections 1-8
Figure 4.2 shows the peak hour turning volumes at each of the five additional intersections for which SIDRA models have been created for.


Figure 4.2: 2019 Base Case Traffic Volumes - Intersections 9-13

### 4.2.2 Model Calibration

Year 2018 and 2019 base SIDRA models were coded, calibrated and validated based on:

- 2018 and 2019 traffic count surveys;
- back of queue count data;
- SCATS data and the LX file obtained from Roads and Maritime; and
- aerial imagery from Nearmap and Google Maps.

The $95^{\text {th }}$ percentile vehicle queues were compared against the observed back of queue data in order to calibrate the 2018 and 2019 Base SIDRA models. The queue length calibration comparison results are presented in Table 4.2.

Whilst the queues do not match precisely, which is typically not a requirement for SIDRA model calibration, the modelled queues are generally in a similar range of the observed queues and the SIDRA models are considered to be fit for the purpose of assessing the impacts of the Freight Hub's trucks on the 13 intersections.

Table 4.2: $\quad$ 2018/2019 Base Model Calibration Results

| Intersection | Peak Period | Approach | Observed 95 ${ }^{\text {th }}$ \%ile Queue (veh) | SIDRA Output 95 ${ }^{\text {th }}$ \%ile Queue (veh) |
| :---: | :---: | :---: | :---: | :---: |
| Richmond Road / Dunheved Road | AM | North | 17 | 20 |
|  |  | East | 10 | 15 |
|  |  | South | 12 | 14 |
|  | PM | North | 12 | 20 |
|  |  | East | 12 | 18 |
|  |  | South | 15 | 23 |
| Great Western Highway / Parker Street | AM | North | 18 | 29 |
|  |  | East | 22 | 29 |
|  |  | South | 16 | 27 |
|  |  | West | 12 | 20 |
|  | PM | North | 21 | 28 |
|  |  | East | 16 | 29 |
|  |  | South | 19 | 27 |
|  |  | West | 17 | 22 |
| Great Western Highway / Werrington Road / Reserve Road | AM | North | 14 | 34 |
|  |  | East | 18 | 26 |
|  |  | South | 3 | 4 |
|  |  | West | 15 | 21 |
|  | PM | North | 18 | 39 |
|  |  | East | 21 | 28 |
|  |  | South | 4 | 5 |
|  |  | West | 17 | 24 |
| Great Western Highway / Queen Street / Mamre Road | AM | North | 8 | 9 |
|  |  | East | 16 | 22 |
|  |  | South | 18 | 34 |
|  |  | West | 13 | 19 |
|  | PM | North | 10 | 21 |
|  |  | East | 13 | 27 |
|  |  | South | 16 | 21 |
|  |  | West | 11 | 15 |


| Intersection | Peak Period | Approach | Observed 95 ${ }^{\text {th }}$ \%ile Queue (veh) | SIDRA Output 95 ${ }^{\text {th }}$ \%ile Queue (veh) |
| :---: | :---: | :---: | :---: | :---: |
| Great Western Highway / Carlisle Avenue | AM | North | 12 | 21 |
|  |  | East | 10 | 13 |
|  |  | South | 11 | 17 |
|  |  | West | 16 | 23 |
|  | PM | North | 14 | 33 |
|  |  | East | 11 | 28 |
|  |  | South | 12 | 20 |
|  |  | West | 16 | 18 |
| Mamre Road / M4 Western Motorway (south) | AM | North | 15 | 15 |
|  |  | East | 11 | 6 |
|  |  | South | 16 | 22 |
|  | PM | North | 22 | 25 |
|  |  | East | 16 | 10 |
|  |  | South | 35 | 31 |
| Mamre Road / M4 Western Motorway (north) | AM | North | 22 | 19 |
|  |  | South | 13 | 20 |
|  |  | West | 12 | 16 |
|  | PM | North | 22 | 31 |
|  |  | South | 14 | 28 |
|  |  | West | 17 | 21 |
| Great Western Highway / Glossop Street | AM | North | 17 | 18 |
|  |  | East | 10 | 17 |
|  |  | West | 15 | 24 |
|  | PM | North | 13 | 21 |
|  |  | East | 12 | 20 |
|  |  | West | 13 | 13 |
| Glossop Street / Harris Street | AM | West | 1 | 0 |
|  | PM | West | 2 | 0 |
| Forrester Road / Harris Street | AM | East | 1 | 0 |
|  | PM | East | 4 | 0 |
| Forrester Road / Glossop Street | AM | North | 24 | 22 |
|  |  | East | 11 | 12 |
|  |  | South | 4 | 3 |
|  |  | West | 1 | 0 |
|  | PM | North | 13 | 15 |
|  |  | East | 16 | 17 |
|  |  | South | 7 | 6 |
|  |  | West | 1 | 0 |
| Forrester Road / Boronia Street / Christie Street | AM | North | 15 | 14 |
|  |  | East | 3 | 13 |
|  |  | South | 9 | 15 |
|  |  | West | 11 | 16 |
|  | PM | North | 16 | 12 |
|  |  | East | 4 | 2 |
|  |  | South | 10 | 14 |
|  |  | West | 10 | 14 |


| Intersection | Peak Period | Approach | Observed 95 ${ }^{\text {th }}$ \%ile Queue (veh) | SIDRA Output 95 ${ }^{\text {th }}$ \%ile Queue (veh) |
| :---: | :---: | :---: | :---: | :---: |
| Christie Street / Dunheved Road / Werrington Road | AM | East | 3 | 3 |
|  |  | South | 5 | 4 |
|  |  | West | 5 | 5 |
|  | PM | East | 4 | 5 |
|  |  | South | 7 | 7 |
|  |  | West | 10 | 7 |

### 4.2.3 Intersection Performance Summary

Table 4.3 summarises the 2018 and 2019 AM and PM peak base intersection performance. In viewing all the results, the:

- LoS for signalised intersections is based on the average vehicle delay for all movements;
- LoS for roundabouts and priority-controlled intersections is based on the movement with the highest delay; and
- DoS and 95th percentile queue is based on the worst movement for all intersections.

Table 4.3: Intersection SIDRA Results Summary - 2018/2019 Base Case

| Intersection | AM Peak |  |  |  | PM Peak |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Degree of Saturation (v/c) | Average Delay (sec/veh) | Level of Service | Percentile Queue (m) | Degree of Saturation (v/c) | Average (sec/veh) | Level of Service | 95th Percentile Queue (m) |
| Richmond Road/ Dunheved Road | 0.79 | 21 | B | 149 | 0.82 | 23 | B | 161 |
| Great Western Highway/ Parker Street | 0.96 | 47 | D | 230 | 0.88 | 44 | D | 213 |
| Great Western Highwayl Werrington Road/ Reserve Road | 0.88 | 44 | D | 261 | 0.96 | 48 | D | 285 |
| Great Western Highwayl Queen Street/Mamre Road | 0.85 | 51 | D | 282 | 0.83 | 44 | D | 192 |
| Great Western Highway/ Carlisle Avenue | 0.70 | 43 | D | 175 | 0.71 | 46 | D | 250 |
| Mamre Road/M4 Western Motorway (south) | 0.60 | 18 | B | 167 | 0.95 | 24 | B | 231 |
| Mamre Road/M4 Western Motorway (north) | 1.06 | 26 | B | 159 | 0.96 | 27 | B | 225 |
| Great Western Highway/ Glossop Street | 0.80 | 35 | C | 181 | 0.83 | 31 | C | 156 |
| Glossop Street/Harris Street | 0.40 | 9 | A | 1 | 0.46 | 9 | A | 3 |
| Forrester Road/Harris Street | 0.06 | 8 | A | 1 | 0.17 | 8 | A | 4 |
| Forrester Road/Glossop Street | 0.84 | 27 | B | 171 | 0.76 | 27 | B | 128 |
| Forrester Road/Boronia Street/Christie Street | 0.82 | 24 | B | 86 | 0.89 | 37 | C | 102 |
| Christie Street/Dunheved Road/Werrington Road | 0.55 | 18 | B | 38 | 0.65 | 18 | B | 51 |

The above results indicate that:

- the Great Western Highway/Queen Street/Mamre Road and Great Western Highway/Carlisle Avenue intersections currently operate below practical capacity and at a LoS D during both peaks;
- the Great Western Highway/Glossop Street intersection currently operates below practical capacity and at a LoS C during both peaks;
- the following intersections currently operate above practical capacity in one or more of their approaches, but below theoretical capacity during one peak:
- Great Western Highway/Parker Street - AM peak;
- Great Western Highway/Werrington Road/Reserve Road - PM peak; and
- Mamre Road/M4 Western Motorway south and north - PM peak;
- Mamre Road/M4 Western Motorway north is the only intersection currently operating above theoretical capacity at one approach (north approach right turn bay) during the AM peak;
- the Mamre Road/M4 Western Motorway south intersection currently operates below practical capacity during the AM peak and at an acceptable LoS B during both peaks;
- the Richmond Road/Dunheved Road is the only intersection currently operating both below practical capacity and at an acceptable LoS B during both peaks; and
- all other intersections currently operate both below practical capacity and at a satisfactory LoS during both peaks.

In general, all of the 13 intersections modelled are either approaching or at their practical capacity, synonymous with traffic conditions at key intersections in rapidly growing areas in Western Sydney.

## $4.3 \quad 2030$ Base Case Analysis

### 4.3.1 Creating Year 2030 Traffic Volumes

The 2030 traffic demands were derived by calculating future growth rates from the Sydney Strategic Transport Model (STM) outputs provided by Roads and Maritime for each intersection approach. On some approaches in some peak periods, STM traffic volumes in 2036 were reported as being lower than year 2018/2019 volumes, most likely due to over-capacity effects elsewhere in the network. In these situations, the approach volumes in 2030 were retained at their 2018/2019 levels.
The 2030 Base Case scenario models use existing intersection configurations and phase times, as do the 2030 With Development scenario models, but only where the traffic demand can be met.

### 4.3.2 Intersection Volumes

Figure 4.3 shows the peak hour turning volumes at each of the eight intersections identified in the SEARs.


Figure 4.3: $\quad 2030$ Base Case Traffic Volumes - Intersections 1-8
Figure 4.4 shows the peak hour turning volumes at each of the five additional intersections for which SIDRA models have been created for.


Figure 4.4: 2030 Base Case Traffic Volumes - Intersections 9-13

### 4.3.3 SIDRA Modelling Results

Table 4.4 summarises the 2030 AM and PM peak base intersection performance results.
Table 4.4: Intersection SIDRA Results Summary - 2030 Base Case

| Intersection | AM Peak |  |  |  | PM Peak |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Degree of <br> Saturation <br> (v/c) | Average <br> Delay <br> (sec/veh) | Level of <br> Service | 95th <br> Percentile <br> Queue (m) | Degree of <br> Saturation <br> (v/c) | Average <br> Delay <br> (sec/veh) | Level of <br> Service | 95th <br> Percentile <br> Queue (m) |
| Richmond Road/Dunheved Road | 0.95 | 27 | B | 392 | 1.08 | 37 | C | 357 |
| Great Western Highway/Parker <br> Street | 1.10 | 81 | F | 554 | 1.04 | 67 | E | 453 |
| Great Western Highway/ <br> Werrington Road/Reserve Road | 1.22 | 77 | F | 760 | 1.04 | 56 | D | 414 |
| Great Western Highway/Queen <br> Street/Mamre Road | 0.90 | 54 | D | 322 | 1.01 | 49 | D | 301 |
| Great Western Highway/Carlisle <br> Avenue | 0.67 | 19 | B | 216 | 0.79 | 46 | D | 278 |
| Mamre Road/M4 Western <br> Motorway (south) | 0.67 | 19 | B | 216 | 1.21 | 49 | D | 592 |
| Mamre Road/M4 Western <br> Motorway (north) | 0.84 | 27 | B | 266 | 0.92 | 33 | C | 522 |
| Great Western Highway/Glossop <br> Street | 0.62 | 38 | C | 223 | 0.90 | 32 | C | 197 |
| Glossop Street/Harris Street | 0.51 | 13 | A | 7 | 0.54 | 12 | A | 4 |
| Forrester Road/Harris Street | 0.13 | 8 | A | 4 | 0.17 | 8 | A | 4 |
| Forrester Road/Glossop Street | 1.40 | 230 | F | 1716 | 1.08 | 105 | F | 659 |
| Forrester Road/Boronia Street// <br> Christie Street | 1.61 | 564 | F | 2004 | 1.63 | 578 | F | 1951 |
| Christie Street/Dunheved Road/ <br> Werrington Road | 1.50 | 486 | F | 1028 | 1.73 | 678 | F | 2104 |

The above results indicate that the:

- following intersections are forecast to operate within practical capacity during one or both peaks:
- Great Western Highway/Carlisle Avenue - both peaks;
- Mamre Road/M4 Western Motorway (south) - AM peak;
- Great Western Highway/Glossop Street - both peaks;
- Glossop Street/Harris Street - both peaks; and
- Forrester Road/Harris Street - both peaks;
- Great Western Highway/Parker Street intersection is forecast to operate at a LoS F during AM peak, as well as the Great Western Highway/Werrington Road/Reserve Road intersection during the AM peak;
- Great Western Highway/Parker Street intersection is forecast to operate at a LoS E during the PM peak;
- Richmond Road/Dunheved Road and Great Western Highway/Queen Street/Mamre Road intersections are forecast to operate above practical capacity, but below theoretical capacity during the AM peak; and
- Mamre Road/M4 Western Motorway south intersection is forecast to operate below practical capacity and at an acceptable LoS B during the AM peak;
- the Forrester Road/Glossop Street, Forrester Road/Boronia Street/ Christie Street and Christie Street/Dunheved Road/ Werrington Road intersections are forecast to operate above theoretical capacity and at a LoS F during both peaks; and
- long queues will be expected along approaches with DoS over 0.90.

It is important to note that when using SIDRA network, such as at the Mamre Road interchange with the M4 Western Motorway, some intersection performance results may improve compared to the 2018/2019 results, but only because traffic at the other intersection(s) in the network is much worse and not releasing traffic into the better performing intersection.

### 4.4 2030 Base Case With Upgrades

The Forrester Road/Glossop Street 2030 Base Case models were assessed with upgrades. The Forrester Road/Boronia Street/Christie Street and Christie Street/Dunheved Road/Werrington Road 2030 Base Case models were assessed with the 2031 required upgrades as shown in Table 2.5 with minor alterations. The proposed upgrades/alterations are detailed in Table 4.5.
Table 4.5: $\quad 2030$ Base Case Models Proposed Intersection Upgrades

| Intersection | Description of <br> Upgrades/Alterations |
| :--- | :--- |

SIDRA Layout



Table 4.6 summarises the 2030 AM and PM peak base with intersection upgrades performance results.
Table 4.6: Intersection SIDRA Results Summary - 2030 Base Case With Upgrades

| Intersection | AM Peak |  |  |  |  | PM Peak |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Degree of <br> Saturation <br> (v/c) | Average <br> Delay <br> (sec/veh) | Level of <br> Service | 95th <br> Percentile <br> Queue $(\boldsymbol{m})$ | Degree of <br> Saturation <br> (v/c) | Average <br> Delay <br> (sec/veh) | Level of <br> Service | 95th <br> Percentile <br> Queue (m) |  |
| Forrester Road/Glossop Street | 0.88 | 23 | B | 212 | 0.88 | 31 | C | 310 |  |
| Forrester Road/Boronia Street// <br> Christie Street | 1.05 | 72 | F | 633 | 1.13 | 111 | F | 721 |  |
| Christie Street/Dunheved Road/ <br> Werrington Road | 0.80 | 28 | B | 221 | 0.61 | 28 | B | 171 |  |

As shown above, the upgraded Forrester Road/Glossop Street and Christie Street/Dunheved Road/ Werrington Road intersections are forecast to operate below practical capacity and at a LoS B/C during both peaks, and as such all 2030 With Development model scenarios incorporate the upgraded intersection layouts. However, the upgraded Forrester Road/Boronia Street/Christie Street intersection is forecast to operate above theoretical capacity and at a LoS F during both peaks. Despite this, all 2030 With Development model scenarios also incorporated the upgraded intersection layout given it is an ultimate scenario and the low number of trucks generated by the development.

### 4.5 2030 With Development

### 4.5.1 Creating Year 2030 With Development Traffic Volumes

The development traffic volumes described in Section 3.6 were added to the year 2030 Base Case traffic volumes to create the year 2030 With Development traffic volumes. Year 2030 Base Case analyses were undertaken for all 13 intersections, however, the 2030 'With Development' analyses exclude the Richmond Road/Dunheved Road and Great Western Highway/Parker Street intersections, which will not be impacted at all by Freight Hub traffic.

### 4.5.2 Intersection Volumes

Figure 4.5 to Figure 4.8 show the peak hour turning volumes for the 2030 With Development Options 1 to 4 respectively.


Figure 4.5: $\quad 2030$ With Development Case Traffic Volumes - Option 1


Figure 4.6: 2030 With Development Case Traffic Volumes - Option 2


Figure 4.7: $\quad 2030$ With Development Case Traffic Volumes - Option 3


Figure 4.8: $\quad 2030$ With Development Case Traffic Volumes - Option 4

### 4.5.3 SIDRA Modelling Results - Option 1

Table 4.7 summarises the 2030 With Development Option 1 intersection performance for eight of the 13 intersections where intersection volumes increase with the development.
Table 4.7: Intersection SIDRA Results Summary - 2030 With Development - Option 1

| Intersection | AM Peak |  |  |  | PM Peak |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Degree of <br> Saturation <br> (v/c) | Average <br> Delay <br> (sec/veh) | Level of <br> Service | 95th <br> Percentile <br> Queue (m) | Degree of <br> Saturation <br> (v/c) | Average <br> Delay <br> (sec/veh) | Level of <br> Service | 95th <br> Percentile <br> Queue (m) |
| Great Western Highwayl <br> Queen Street/Mamre Road | 0.92 | 55 | D | 355 | 1.09 | 53 | D | 404 |
| Great Western Highway/ <br> Carlisle Avenue | 0.80 | 44 | D | 199 | 0.79 | 46 | D | 278 |
| Mamre Road/M4 Western <br> Motorway (south) | 0.67 | 20 | B | 218 | 1.21 | 54 | D | 592 |
| Mamre Road/M4 Western <br> Motorway (north) | 0.84 | 28 | B | 274 | 0.95 | 36 | C | 570 |
| Great Western Highwayl <br> Glossop Street | 0.66 | 39 | C | 230 | 0.90 | 33 | C | 209 |
| Glossop Street//Warris Street | 0.52 | 13 | A | 7 | 0.55 | 13 | A | 4 |
| Forrester Road/Glossop <br> Street | 0.90 | 26 | B | 277 | 0.90 | 33 | C | 341 |
| Forrester Road/Boronia <br> Street/ Christie Street | 1.05 | 72 | F | 633 | 1.13 | 111 | F | 721 |

The above results indicate that the:

- following intersections are forecast to operate within practical capacity during one or both peaks:
- Great Western Highway/Carlisle Avenue - both peaks;
- Mamre Road/M4 Western Motorway (south) - AM peak;
- Great Western Highway/Glossop Street - both peaks;
- Glossop Street/Harris Street - both peaks; and
- Forrester Road/Glossop Street - both peaks;
- Great Western Highway/Queen Street/Mamre Road intersection is forecast to operate above practical capacity, but below theoretical capacity, and at a LoS D during both peaks;
- Mamre Road/M4 Western Motorway south intersection is forecast to operate within practical capacity and at an acceptable LoS B during the AM peak; and
- Forrester Road/Boronia Street/Christie Street intersection is forecast to operate above theoretical capacity and at a LoS F during both peaks.

With or without the development, the Great Western Highway/Queen Street/Mamre Road intersection and the Mamre Road/M4 Western Motorway interchange intersections will be expected to be operating at capacity in the 2030 PM peak.

### 4.5.4 SIDRA Modelling Results - Option 2

Table 4.8 summarises the 2030 With Development Option 2 intersection performance for seven (7) of the 13 intersections where intersection volumes increase with the development.
Table 4.8: Intersection SIDRA Results Summary - 2030 With Development - Option 2

| Intersection | AM Peak |  |  |  | PM Peak |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Degree of <br> Saturation <br> (v/c) | Average <br> Delay <br> (sec/veh) | Level of <br> Service | 95th <br> Percentile <br> Queue $(\mathrm{m})$ | Degree of <br> Saturation <br> (v/c) | Average <br> Delay <br> (sec/veh) | Level of <br> Service | 95th <br> Percentile <br> Queue (m) |
| Great Western Highway/ <br> Werrington Road/Reserve <br> Road | 1.21 | 78 | F | 762 | 1.02 | 57 | E | 390 |
| Great Western Highway/ <br> Queen Street/Mamre Road | 0.93 | 57 | E | 351 | 0.98 | 48 | D | 277 |
| Great Western Highway/ <br> Carlisle Avenue | 0.80 | 44 | D | 199 | 0.79 | 46 | D | 278 |
| Mamre Road/M4 Western <br> Motorway (south) | 0.67 | 20 | B | 218 | 1.21 | 54 | D | 592 |
| Mamre Road/M4 Western <br> Motorway (north) | 0.84 | 28 | B | 274 | 0.95 | 36 | C | 570 |
| Great Western Highway/ <br> Glossop Street | 0.63 | 38 | C | 224 | 0.90 | 32 | C | 197 |
| Christie Street/Dunheved <br> Road/ Werrington Road | 0.81 | 28 | B | 233 | 0.61 | 28 | B | 171 |

The above results indicate that the:

- following intersections are forecast to operate within practical capacity during one or both peaks:
- Great Western Highway/Carlisle Avenue - both peaks;
- Mamre Road/M4 Western Motorway (south) - AM peak;
- Great Western Highway/Glossop Street - both peaks; and
- Christie Street/Dunheved Road/Werrington Road - both peaks;
- Great Western Highway/Werrington Road/Reserve Road intersection is forecast to operate at a LoS F during the AM peak;
- Great Western Highway/Queen Street/Mamre Road intersection is forecast to operate above practical capacity, but below theoretical capacity, and at a LoS D during the PM peak; and
- Mamre Road/M4 Western Motorway south intersection is forecast to operate within practical capacity and at an acceptable LoS B during the AM peak.


### 4.5.5 SIDRA Modelling Results - Option 3

Table 4.9 summarises the 2030 With Development Option 3 intersection performance for eight of the 13 intersections where intersection volumes increase with the development.
Table 4.9: Intersection SIDRA Results Summary - 2030 With Development - Option 3

| Intersection | AM Peak |  |  |  | PM Peak |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Degree of Saturation (v/c) | Average Delay (sec/veh) | Level of Service | 95th Percentile Queue (m) | Degree of Saturation (v/c) | Average Delay (sec/veh) | Level of Service | 95th Percentile Queue (m) |
| Great Western Highway/ Queen Street/Mamre Road | 0.92 | 55 | D | 355 | 1.09 | 53 | D | 404 |
| Great Western Highway/ Carlisle Avenue | 0.80 | 44 | D | 199 | 0.79 | 46 | D | 278 |
| Mamre Road/M4 Western Motorway (south) | 0.67 | 20 | B | 218 | 1.21 | 54 | D | 592 |
| Mamre Road/M4 Western Motorway (north) | 0.84 | 28 | B | 274 | 0.95 | 36 | C | 570 |
| Great Western Highwayl Glossop Street | 0.66 | 39 | C | 230 | 0.90 | 33 | C | 209 |
| Glossop Street/Harris Street | 0.52 | 12 | A | 6 | 0.55 | 12 | A | 4 |
| Forrester Road/Harris Street | 0.20 | 11 | A | 8 | 0.24 | 11 | A | 8 |
| Forrester Road/Glossop Street | 0.90 | 25 | B | 278 | 0.88 | 32 | C | 310 |

The above results indicate that the:

- following intersections are forecast to operate within practical capacity during one or both peaks:
- Great Western Highway/Carlisle Avenue - both peaks;
- Mamre Road/M4 Western Motorway (south) - AM peak;
- Great Western Highway/Glossop Street - both peaks;
- Glossop Street/Harris Street - both peaks;
- Forrester Road/Harris Street - both peaks; and
- Forrester Road/Glossop Street - both peaks.
- Great Western Highway/Queen Street/Mamre Road intersection is forecast to operate above practical capacity, but below theoretical capacity, and at a LoS D during both peaks; and
- Mamre Road/M4 Western Motorway south intersection is forecast to operate within practical capacity and at an acceptable LoS B during the AM peak.


### 4.5.6 SIDRA Modelling Results - Option 4

Table 4.10 summarises the 2030 With Development Option 4 intersection performance for eight of the eight intersections where intersection volumes increase with the development.
Table 4.10: Intersection SIDRA Results Summary - 2030 With Development - Option 4

| Intersection | AM Peak |  |  |  | PM Peak |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Degree of Saturation (v/c) | Average Delay (sec/veh) | Level of Service | 95th Percentile Queue (m) | Degree of Saturation (v/c) | Average Delay (sec/veh) | Level of Service | 95th Percentile Queue (m) |
| Great Western Highway/ Queen Street/Mamre Road | 0.92 | 55 | D | 355 | 1.09 | 53 | D | 404 |
| Great Western Highway/ Carlisle Avenue | 0.80 | 44 | D | 199 | 0.79 | 46 | D | 278 |
| Mamre Road/M4 Western Motorway (south) | 0.67 | 20 | B | 218 | 1.21 | 54 | D | 592 |
| Mamre Road/M4 Western Motorway (north) | 0.84 | 28 | B | 274 | 0.95 | 36 | C | 570 |
| Great Western Highwayl Glossop Street | 0.66 | 39 | C | 230 | 0.90 | 33 | C | 209 |
| Glossop Street/Harris Street | 0.52 | 13 | A | 7 | 0.55 | 13 | A | 4 |
| Forrester Road/Harris Street | 0.16 | 8 | A | 5 | 0.21 | 8 | A | 6 |
| Forrester Road/Glossop Street | 0.90 | 26 | B | 278 | 0.90 | 34 | C | 344 |

The above results indicate that the:

- following intersections are forecast to operate within practical capacity during one or both peaks:
- Great Western Highway/Carlisle Avenue - both peaks;
- Mamre Road/M4 Western Motorway (south) - AM peak;
- Great Western Highway/Glossop Street - both peaks;
- Glossop Street/Harris Street - both peaks;
- Forrester Road/Harris Street - both peaks; and
- Forrester Road/Glossop Street - both peaks;
- Great Western Highway/Queen Street/Mamre Road intersection is forecast to operate above practical capacity, but below theoretical capacity, and at a LoS D during the AM peak; and
- Mamre Road/M4 Western Motorway south intersection is forecast to operate within practical capacity and at an acceptable LoS B during the AM peak.


### 4.6 2030 With Development Sensitivity Test

As requested by Roads and Maritime, a 2030 sensitivity test was undertaken for the five affected intersections by adding 20\% more to the development traffic generation at each intersection.

Table 4.11 summarises the 2030 AM and PM peak 'with development + 20\%' case intersection performance.
Table 4.11: Intersection SIDRA Results Summary - 2030 With Development + 20\%

|  | AM Peak |  |  |  | PM Peak |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Intersection <br> Degree of <br> Saturation <br> (v/c) | Average <br> Delay <br> (sec/veh) | Level of <br> Service | 95th <br> Percentile <br> Queue (m) | Degree of <br> Saturation <br> (v/c) | Average <br> Delay <br> (sec/veh) | Level of <br> Service | 95th <br> Percentile <br> Queue (m) |
|  | 0.93 | 56 | D | 357 | 1.11 | 54 | D | 440 |
| Great Western Highwayl <br> Carlisle Avenue | 0.80 | 44 | D | 199 | 0.79 | 46 | D | 278 |
| Mamre Road/M4 Western <br> Motorway (south) | 0.69 | 20 | B | 219 | 1.21 | 55 | D | 592 |
| Mamre Road/M4 Western <br> Motorway (north) | 0.84 | 28 | B | 278 | 0.95 | 37 | C | 582 |
| Great Western Highwayl <br> Glossop Street | 0.66 | 39 | C | 230 | 0.91 | 33 | C | 213 |

The 2030 With Development $+20 \%$ modelling results show that all intersections will operate almost identically to the 2030 With Development Case. This is largely expected given the relatively small volumes of Freight Hub trucks compared to all other traffic at each intersection.

### 4.7 Comparison Summary of Intersection Operations

Table 4.12 summarises the 2018 base, 2030 base and 2030 with development $+20 \%$ intersection average delay and LoS.
Table 4.12: Intersection SIDRA Results Summary - Average Delay and Level of Service

| Intersection | AM Peak |  |  | PM Peak |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 2018 <br> Base | 2030 <br> Base | 2030 With <br> Development + <br> $20 \%$ | 2018 <br> Base | 2030 <br> Base | 2030 With <br> Development + <br> $20 \%$ |
| Richmond Road/Dunheved Road | 21 (B) | 27 (B) |  | 23 (B) | 37 (C) |  |
| Great Western Highway/Parker <br> Street | 47 (D) | 81 (F) |  | 44 (D) | 67 (E) |  |
| Great Western Highway/ <br> Werrington Road/ Reserve Road | 44 (D) | 77 (F) |  | 48 (D) | 56 (D) |  |
| Great Western Highway/Queen <br> Street/Mamre Road | 51 (D) | 54 (D) | 56 (D) | 44 (D) | 49 (D) | 54 (D) |
| Great Western Highway/Carlisle <br> Avenue | 43 (D) | 44 (D) | 44 (D) | 46 (D) | 46 (D) | 46 (D) |
| Mamre Road/M4 Western <br> Motorway (south) | 18 (B) | 19 (B) | 20 (B) | 24 (B) | 49 (D) | $55($ (D) |
| Mamre Road/M4 Western <br> Motorway (north) | 26 (B) | 27 (B) | 28 (B) | 27 (B) | 33 (C) | 37 (C) |
| Great Western Highway/Glossop <br> Street | 35 (C) | 38 (C) | 39 (C) | 31 (C) | 32 (C) | 33 (C) |

The above traffic capacity assessment concludes that additional mitigation measures are not warranted at any of the intersections due to the proposed development, even with a $20 \%$ increase in assumed development traffic. Detailed SIDRA modelling outputs are provided in Appendix C.

### 4.8 Truck Route Assessment Summary

The intersection analysis has identified that whilst the Freight Hub will not exacerbate intersection delays/LoS at any of the intersections used under any of the route options (because truck trip generation is relatively low), there are clear benefits in trucks avoiding Lee Holm Road and Christie Street due to over-capacity conditions at its intersections and the stated desire of PCC for additional trucks to avoid this route.

Route Option 1 has trucks exiting Lee Holm Road and Route Option 2 has both exits and entries via Lee Holm Road. Route Option 2 uses Werrington Road which is not a practical route as it is longer and adds significantly more travel time to truck deliveries and return trips.
Route Option 3 has trucks accessing the site vis Glossop Street - Harris Street and Forrester Road. Option 3 overcomes the issues of Options 1 and 2 by limiting truck traffic to Glossop Street and Harris Street however the key limitation with this route is that Harris Street is not designed for B-doubles. Specifically, the left turn from Glossop Street into Harris Street is not permitted for vehicles longer than 7 m because it would require tracking into the middle lane to make the turn, which is undesirable on safety and efficiency grounds. Also, Harris Street has parking on each side of it and B-doubles down this street would essentially block traffic coming the other way because there would be insufficient width for two-way traffic in some sections. Upgrading Harris Street to cater for B-doubles is not a pragmatic option. On this basis, Option 3 has been discarded.

The intersection analysis has revealed that Option 4 provides the least impacts to surrounding intersections given that the route passes through the fewest major intersections, it avoids Christie Street and it uses roads that have been nominated for use by truck traffic. Option 4 requires trucks to both enter and leave via the Forrester Road entry and whilst the probability of an entering truck and an exiting truck needing to use this crossover at the same time ( $\mathrm{p}<1.0 \%$ per peak hour), management strategy options have been presented in this report to control this conflict point and ensure that clearing Forrester Road of queueing trucks is prioritised over exiting truck-traffic (see Section 7.2.2).

Overall, Route Option 4 with truck entries and exits via the Forrester Road crossover (and light vehicle only access/egress via Lee Holm Road) is preferred.

## 5. Traffic Safety Assessment

### 5.1 Truck Turning Movements at Key Intersections

All B-double movements would be limited to approved B-double routes. Whilst semi-trailers could take alternative routes to the B-double to/from the site, it is unlikely that they would because the B-double routes are the most direct and efficient for accessing the motorway and highway network.

There are only three key intersections where Freight Hub truck traffic volumes exceed two trucks per hour and the traffic safety assessment has focussed on these locations. These intersections and the associated development truck turning movements are:

- Great Western Highway/Glossop Street: Most Freight Hub trucks at this intersection would be turning from north to west and from west to north on route between the site and the M4 Western Motorway Interchange;
- Great Western Highway/Queen Street/Mamre Road: Freight hub trucks would be turning from east to south and from south to east at this intersection to travel between the site and the M4 Western Motorway interchange; and
- Mamre Road / M4 Western Motorway (northern intersection): Freight Hub trucks would be turning from north to east at this intersection heading away from the Freight Hub whilst trucks heading towards the Freight Hub would be passing through the intersection from south to north.


### 5.2 Influences on Existing Crash Patterns

### 5.2.1 Great Western Highway / Glossop Street

There was no crash pattern evident in the review of the crash data at this intersection. Four crashes in five years occurred on the northern approach to the intersection most likely related to rear-end crashes. It is likely that the trucks from the Freight Hub will store in the centre (right turn) lane on the northern approach to make it easier to then turn left at Mamre Road. Site observations identified that this is what most drivers of larger trucks do now. Given that the right turn is a signal-controlled movement, and that there are essentially two lanes for trucks to turn into on the Great Western Highway westbound, no exacerbation of existing crash likelihood is expected to be generated by Freight Hub traffic.

Similarly, the west to north movement allows larger trucks to turn from the left-most lane in the Great Western Highway eastbound and into two northbound lanes in Glossop Street. Pavement markings observed on-site show that larger vehicles make this turn within the available lanes. Freight Hub trucks are unlikely to generate any noticeable increase in crash likelihood for this movement.


Source: Google Street View
Figure 5.1: Great Western Highway to Glossop Street Left Turn

### 5.2.2 Great Western Highway / Queen Street / Mamre Road

Most of the crashes recorded at this intersection were right at the intersection and may be partly due to queues not clearing the intersection fast enough before the next (opposing) phase is initiated, or red-light 'running'.

For Freight Hub trucks turning left (from east to south) at this intersection, they are required to prop at the 'high angle' left turn and give way to through traffic coming from Queen Street. The intersection is wide enough and sight lines clear enough for an oncoming southbound vehicle to observe a large truck entering at this location.

For the movement from south to east, there is no specific right turn pocket and the right turn movement is shared with the through movement (see Figure 5.2). This is currently managed with Queen Street and Mamre Road each running their own signal phases such that the Mamre Road right turn and through movements occurring at the same time, with no vehicles stopped and blocking the approach lanes. Also, for the right turn from north to east large trucks have two lanes they can use to turn into within the Great Western Highway.


Source: Google Street View
Figure 5.2: Mamre Road to Great Western Highway Right Turn
The Freight Hub traffic essentially relates to one additional right turn and one additional left turn truck movement at this intersection per signal cycle; which is not expected to significant impact the crash likelihood at this location.

### 5.2.3 Mamre Road / M4 Western Motorway (northern intersection)

This intersection recorded 18 crashes in five years, including 10 'right-through' crashes. This is most likely due to sight line limitations for vehicles turning right onto the eastbound loop on ramp not observing the red arrow and proceeding against an oncoming northbound through vehicle on Mamre Road (see Figure 5.3).
Drivers in the Freight Hub trucks making this turn due their height above ground would have better sight lines than drivers in cars would and it is unlikely that additional right turn truck movements at this location of the scale introduced by the Freight Hub would exacerbate existing crash risks.


Source: Google Street View
Figure 5.3: Mamre Road to M4 Western Motorway On-Ramp
For the left turn from the M4 ramps onto Mamre Road northbound, truck drivers would again have a sufficient sight line to oncoming traffic for gap selection. Furthermore, the lane widths for this turn mean that trucks can turn into the left lane without disturbing northbound through traffic in the right hand through lane.

## 6. Public Transport, Active Transport and Travel Demand Management

### 6.1 PUBLIC TRANSPORT ASSESSMENT

The development will have a maximum of approximately 40-45 staff on-site during daytime hours. Most of the shift start times for office-based staff and maintenance staff will start before 6 am and are unlikely to attract many (if any) public transport trips. In any case, the site has adequate access to public transport. St Marys Railway Station is located in close proximity to the site (approximately 500 metres east), with frequent services running at least every 15 minutes. Furthermore, the high number of bus routes within the study area provide a range of travel options between St Marys and several surrounding suburbs in all directions. No supporting services or stops are considered necessary due to the devilment. Furthermore, the development's truck volumes will not have any tangible impact on bus services or stops in the study area.

### 6.2 AcTIVE TRANSPORT ASSESSMENT

The development is highly unlikely to be accessed by bicycle or walking with most shifts for office-based staff and maintenance staff likely to finish or start in the early morning before 6am.

In any case, the availability of formal footpaths along most roads within the study area provide adequate connectivity between the site and key locations, including St Marys Railway Station and nearby bus stops. Whilst, the existing cycling routes immediately surrounding the site do not directly connect with the wider cycling network, additional cycling infrastructure is not warranted for this level of development, including no need for formal on-site bike storage or parking facilities or end of trip facilities.

### 6.3 Travel Demand Management Programs

Travel Demand Management (TDM) programs are most relevant for sites which generate large volumes of private vehicle trips at similar times of the day.

The site will generate a very low volume of private vehicle trips based on the number of proposed employees, and most of this private vehicle traffic is likely to be generated outside of the peak hours and at times where there are few public transport services running and it is too dark to make walking or cycling attractive options for site-staff.

On this basis, there is considered to be no need for, or benefit arising from, a TDM program for this development.

## 7. Site Configuration Assessment

### 7.1 Access Assessment

A sightline assessment was undertaken of the Forrester Road and Lee Holm Road site access points using the Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections. The minimum desirable safe intersection sight distances (SISD) from the proposed access points for cars and trucks are shown in Table 7.1, Figure 7.1 and Figure 7.2.
Table 7.1: $\quad$ Safe Intersection Sight Distances - Cars and Trucks

| Location | Design Speed Limit |
| :--- | :--- | :---: | :---: |
|  |  |$\quad$| Safe Intersection Sight Distances |  |  |
| :---: | :---: | :---: |
|  | Forrester Road | $60 \mathrm{~km} / \mathrm{h}(50 \mathrm{~km} / \mathrm{h})$ north of access |
|  |  | 123 m |
| Lee Holm Road | $70 \mathrm{~km} / \mathrm{h}(60 \mathrm{~km} / \mathrm{h})$ | 32 m |



Adapted from Nearmap
Figure 7.1: $\quad$ Safe Intersection Sight Distances - Forrester Road


Adapted from Nearmap
Figure 7.2: $\quad$ Safe Intersection Sight Distances - Lee Holm Road
At both locations, buildings are sufficiently set back and there is sufficient SISD for all approaches.

Assessment of pedestrian movements, cyclist movements and Crime Prevention Through Environmental Design (CPTED) are not relevant given the nature of the proposed freight hub development and the very low peak hour private vehicle traffic generation.

### 7.2 Manoeuvring and Parking

A swept path assessment was undertaken at both the Forrester Road and Lee Holm Road site access driveway options. B-double turning templates have also been run across the internal site configuration shown in Figure 3.2 and all manoeuvring areas have been designed to accommodate the design vehicle in each area.

### 7.2.1 Lee Holm Road Access Option

The proposed crossover on Lee Holm Road will need to be configured to cover the area as shown in Figure 7.3Error! Reference source not found..


Figure 7.3: Lee Holm Road Access Swept Path and Access Width Needs
A crossover would need to be constructed as shown above to allow a B-double to exit the site onto Lee Holm Road and the exiting vehicle would track across the opposite side of the road as is usual for B-double egress movements.

### 7.2.2 Forrester Road Access Option

For the Forrester Road access, the assessment revealed that a 26 m long B-double can enter the site via the existing crossover on Forrester Road without any impacts or widening required (see Figure 7.4).


Figure 7.4: Forrester Road Access Swept Path and Access Width Needs
The need to manage entries and exits is heightened in this location compared to the Lee Holm Road location due to the presence of the train station to the south of the driveway. Widening the driveway to the property boundary extents allows entering and exiting B-doubles to pass each other as shown in Figure 7.5.


Figure 7.5: Forrester Road Access Widening

### 7.2.3 Light Vehicle Access and On-Site Parking

Light vehicles will enter and exit the site via Lee Holm Drive. Minimum of 62 parking spaces and one PWD car parking space are proposed on the site although there is the area to add more parking if required. This provision is consistent with the percentage of existing employees that drive to St Marys and the approximate number of proposed on-site staff as shown in Section 3.2. All spaces will need to be designed in accordance with AS2890.1 and AS2890.6.

### 7.3 OTHER DESIGN REQUIREMENTS

Responses to other design requirements raised by PCC in its submission to the traffic and transport assessment report that was on exhibition are detailed in Table 7.2.

## Table 7.2: Responses to Other Design Requirements

| Item | Response |
| :--- | :--- |
| Sealed pedestrian and cyclist access is to be provided from the <br> southern end of Forrester Road (near St Marys Station) to the site; | This should be provided if necessary. |
| The car park entry / exit should be separate from the heavy vehicle <br> entry / exit driveways; | The preferred option is for heavy vehicles access <br> exclusively via the Forrester Road driveway and light <br> vehicle access exclusively via Lee Holm Road. |
| Separate accessible pedestrian access is to be provided from the <br> footway and the car park to the building entrance in accordance with <br> AS 2890 car park access and AS 1428 Mobility accessible paths of <br> travel; | This should be provided if necessary. |
| The access driveway widths must accommodate swept path <br> movements of the largest vehicle servicing the site and be designed to <br> conform with AS 2890.2; | Widening the Forrester Road access driveway to the <br> property boundary extents allows entering and <br> exiting B-doubles to pass each other as shown in <br> Figure 7.5. |
| Sight distance requirements and driveway widths are to be met in <br> accordance with AS/NZS 2890.1: 2004 and Council requirements. This <br> is to include the requirements set out in AS 2890.1 Figure 3.2 Sight <br> Distance Requirements at Driveways and Figure 3.3 Minimum Sight <br> Lines for Pedestrian Safety. Also, AS 2890.2 Figure 3.3 Sight Distance | As stated in Section 7.1, at both driveway locations, <br> buildings are sufficiently set back and there is <br> sufficient SISD for all approaches. |
| Requirements at Access Driveway Exits and Figure 3.4 Minimum <br> Dimensions for Access Driveway Sight Splays for Pedestrians; | The |
| The required sight lines around the driveway entrance and exit are not <br> to be compromised by street trees, landscaping, fencing or signposting; | Noted. This will be addressed during further design <br> development. |
| All car parking and manoeuvring must be in accordance with AS <br> 2890.1, AS 2890.2, AS 2890.3, AS 2890.5, AS 2890.6 and Council <br> requirements; and | Noted. This will be addressed during further design <br> development. |
| All car spaces are to be sealed/line marked and dedicated for the <br> parking of vehicles only and not be used for storage of <br> materials/products/waste materials etc. | Noted. This will be addressed during further design <br> development. |

8. Responses to Other Penrith City Council Issues

Responses to other traffic-related matters raised by PCC in its review of the exhibited Traffic and Transport Assessment Report are detailed in Table 8.1.

## Table 8.1: $\quad$ Responses to Traffic-related Matters

$\left.\begin{array}{|l|l|}\hline \text { Item } & \text { Response } \\ \text { PCC do not accept traffic generation figures \& state truck } \\ \text { movements for St Marys are "grossly underestimate". } & \begin{array}{l}\text { The site is approved for a maximum of five trains in/out per } \\ \text { day and each train will carry a maximum of 87 TEUs. This } \\ \text { equates to 435 TEUs per day which would require 218 semi- } \\ \text { trailers trips per day to collect and deliver them. If B-doubles } \\ \text { are also used, as expected, then the 218 trucks in/out per day } \\ \text { would be reduced. } \\ \text { The terminal is not proposed to be a truck-to-truck transfer } \\ \text { location and is solely for the purposes of inter-modal } \\ \text { transfers. Hence, truck demand is inextricably linked to train } \\ \text { container volumes. } \\ \text { It should be noted that a number of conservatively high truck } \\ \text { traffic generation assumptions have already been made to }\end{array} \\ \text { generate the maximum likely traffic generation that the } \\ \text { development is capable of producing under the 5 trains per } \\ \text { day limitation. } \\ \text { The truck trip generation methodology and assumptions were } \\ \text { documented in the TTA Assumptions technical note (dated 15 }\end{array}\right\}$

| Item | Response |
| :--- | :--- |
| The previous Environmental Impact Statement (EIS) for the <br> Moorebank Intermodal Terminal (IMT) Project, has a capacity <br> for 500,000 Twenty-foot Equivalent Units (TEU) per year. | The Moorebank Intermodal Terminal is not an appropriate <br> pasis for comparison to the St Marys proposal. <br> Please note that a TEU equates to a standard shipping <br> container size. The Moorebank Intermodal Terminal is <br> serviced by heavy vehicles as well as 12 interstate trains per <br> week which load and unload at the facility. The Environmental |
| Impact Assessment (EIS) for the Moorebank Intermodal |  |
| Terminal Project has predicted that this will generate 2,174 |  |
| heavy vehicle trips per day, with a trip being a journey either |  |
| to or from the facility (as set out in chapter 11 on page 23 of |  |
| the EIS). |  |

## 9. CONSTRUCTION PERIOD TRAFFIC ASSESSMENT

### 9.1 Construction Traffic Volumes

The majority of the construction task involves the construction of large engineered pavement concrete pads for the container storage area, as well as the approach driveways and manoeuvring areas. This is not a labour-intensive task and construction traffic will primarily be related to the movement of materials to the site.

Primary materials to be delivered to the site include:

- quarry materials / road base;
- bituminous product;
- stormwater products;
- building materials; and
- stabilisation agents.

There will be between 4,100 and 4,500 truck movements during the entire construction period. The maximum number of movements per day is expected to be between 100 and 140. With a likely (minimum) 12-hour construction work day, the number of peak period construction trucks is likely to be less than the operation period demand. This occurs for a period of between five to six months only.

At this stage, very little spoil will be removed from the site. All excess materials will be stockpiled on the other side of the railway line as these may be used for future stages.

### 9.2 Construction Period Traffic Assessment

The 13 intersections assessed are currently operating below practical or theoretical capacity during both the AM and PM peaks (except for the Mamre Road/M4 Western Motorway north intersection during the AM peak) with a maximum average delay of 51 seconds (LoS D).

The projected number of daily truck movements of between 100 and 140 translates to approximately 8 to 12 trucks per peak hour which will have a negligible impact on the key intersections in the study area.

### 9.3 Construction Period Parking Assessment

It is anticipated that there will may be up to 30 and 40 construction workers per day. Workers will be encouraged to travel by train to the site. Irrespective of this, the site is very large with no issues at all in being able to accommodate temporary construction-worker parking on-site.

### 9.4 Construction Traffic Management Plan

A site-specific Construction Traffic Management Plan (CTMP) will be prepared for each work area during each stage by the Principal Contractor engaged to undertake the works. The CTMP is most appropriately created following confirmation of construction activities, staging and milestones as the development planning progresses however an 'outline' CTMP is provided in Appendix D. The CTMP will need to detail vehicle routes, numbers of trucks, hours of operation, access arrangements and traffic and pedestrian control measures for all construction activities when these details are known.

### 9.5 Traffic Control Plans

Prior to implementation, construction traffic management measures will require the preparation of approved detailed Traffic Control Plans (TCPs) consistent with the CTMP. Each TCP should be prepared in accordance with Roads and Maritime's Traffic Control at Works Sites Manual. Any traffic control devices to be used during construction are also to be implemented into the TCPs in accordance with the manual.

## 10. CONCLUSIONS

The key findings from the Traffic and Transport Assessment for the proposed St Marys Freight Hub in relation to the SEARs are summarised as follows:

## Operational Period Traffic Generation, Traffic Capacity and Traffic Safety

- The site will generate a negligible volume of private vehicle trips in the AM and PM peak hours. A maximum of approximately $40-45$ office-based and maintenance/operations staff will be on-site during the day with almost all of these staff starting and ending their daytime shifts outside of road network peak hours. Even if some of these trips coincide with peak period conditions, this traffic has a negligible effect on operations when dispersed across all access routes toffrom the site. On this basis, the traffic impact assessment has focussed on the impacts of truck trips generated by the site on the surrounding road network;
- The site will generate 218 truck entries and 218 truck exits per day, which is capped by the five (5) available freight train paths in/out per day to the site (Maximum allowed by Sydney Trains). This equates to a maximum of 15 trucks IN and 15 trucks OUT in the AM and PM peak hours, comprising a mix of semi-trailers and B -doubles. This is not considered a lot of trucks in the context of surrounding truck movements within an industrial area
- Intersection analysis of 13 key intersections along four different route options has revealed that the additional trucks generated by the development represent less than $14.0 \%$ of total traffic volumes at any of these intersections and hence have a negligible incremental impact on intersection performance at the assessment year of 2030 . On this basis, the operational impacts of the Freight Hub are minimal to negligible on all of the routes assessed
- Glossop Street and Mamre Road are classified Regional and State Roads respectively, which connect with the Regional road network. Considering the small increases in traffic volumes from the proposal there is not significant impact on amenity levels for the residential properties adjacent to these highorder roads resulting from the St Marys Freight Hub.
- This development is consistent with the St Marys industrial area and B-double access routes in the area given existing surrounding land uses. A standard industrial development in this area would have similar or more impacts because it would generate greater impacts; and
- The relatively low volume of truck turning movements generated by the site is not expected to exacerbate any prevailing crash patterns at the key intersections and roads surrounding the site.


## Preferred Truck Route, Access and Parking

- Three additional route options have been identified and assessed based on PCC feedback which raised concerns over the use of Lee Holm Road by large trucks. Of the total four route options assessed (original Route Option 1 plus three post-exhibition route options), Option 4 is the preferred option because it minimises the number of congested intersections trucks need to make turning movements through, followed by Option 1 if Option 4 is not accepted;
- There are sufficient sight lines to/from potential access driveways on Lee Holm Road and on Forrester Road which are on industrial standard roads commensurate with accommodating the semi-trailers and B -doubles generated by the site;
- Option 4 has no impact on any local residential streets;
- Option 4 has minimal impact on Council road network and B -double roads through industrial areas will be used;
- If Route Option 4 is selected, given the proximity of the Forrester Road crossover to Harris Street and to the train station, the driveway will need to be widened to the property boundary extents allows entering and exiting B -doubles to pass each other at the same time; and
- The on-site configuration accommodates the swept path of the vehicle sizes expected and the site has sufficient areas for manoeuvring and parking of vehicles.


## Public Transport, Active Transport and Travel Demand Management

- The site has a relatively small number of permanent on-site staff, will not generate many trips and many of the staff arrival and departure times will be before 6am when public transport, walking and cycling usage is minimal. The surrounding pedestrian and cycling connections, and access to public transport stops are sufficient to cater for any trips that may be generated by these modes of transport for access the site; and
- The nature of the development and the very small size of the on-site workforce suggests that Travel Demand Management programs are not warranted to be implemented.


## Construction Period Impacts

- The site will generate between 8-12 peak hour truck movements during the construction phase, mostly associated with the construction of on-site facilities and particularly the large concrete pad and driveway areas required. This volume of trucks is less than the expected truck traffic generation in the operational phase and like the operational period assessment findings, is not expected to introduce any significant impacts to the surrounding road system; and
- The on-site area is sufficient to accommodate the parking of construction worker vehicles and to store trucks waiting to load or unload (such as for concrete pours). There is also plenty of available room on-site for stockpiling material and little spoil is expected to be removed off-site during construction.

Overall, the development will not generate any significant impacts on the surrounding traffic and transport networks and no mitigation works are warranted external to the site. The development has not tangible impact on local amenity.

ApPENDIX A

## TRAFFIC COUNT DATA























APPENDIX B
Crash Data



















| Year | Crash ID | Degree of crash | RUM - code | RUM - description | Type of location | Natural lighting | Longitude | Latitude | No Killed | No Injured |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2013 | 822674 | Non-casualty (towaway) | 13 | Right near | T-junction | Daylight | 150.7159 | -33.74234 | 0 | 0 |
| 2013 | 827352 | Serious Injury | 21 | Right through | X-intersection | Darkness | 150.7579 | -33.76833 | 0 | 1 |
| 2013 | 829024 | Minor/Other Injury | 30 | Rear end | T-junction | Daylight | 150.7793 | -33.7714 | 0 | 1 |
| 2013 | 829543 | Minor/Other Injury | 10 | Cross traffic | X-intersection | Darkness | 150.8144 | -33.77934 | 0 | 1 |
| 2013 | 830305 | Minor/Other Injury | 30 | Rear end | T-junction | Daylight | 150.7796 | -33.77054 | 0 | 1 |
| 2013 | 830885 | Non-casualty (towaway) | 30 | Rear end | 2-way undivided | Dusk | 150.771 | -33.78408 | 0 | 0 |
| 2013 | 831257 | Serious Injury | 0 | Ped nearside | Divided road | Daylight | 150.7119 | -33.75729 | 0 | 1 |
| 2013 | 831747 | Non-casualty (towaway) | 16 | Left near | X-intersection | Daylight | 150.7579 | -33.76819 | 0 | 0 |
| 2013 | 832172 | Moderate Injury | 30 | Rear end | X-intersection | Daylight | 150.712 | -33.75695 | 0 | 1 |
| 2013 | 832223 | Moderate Injury | 21 | Right through | X-intersection | Darkness | 150.8144 | -33.7792 | 0 | 1 |
| 2013 | 834136 | Serious Injury | 21 | Right through | X-intersection | Darkness | 150.7122 | -33.75687 | 0 | 1 |
| 2013 | 834862 | Non-casualty (towaway) | 30 | Rear end | 2-way undivided | Daylight | 150.7708 | -33.78545 | 0 | 0 |
| 2013 | 835508 | Minor/Other Injury | 30 | Rear end | Divided road | Darkness | 150.8147 | -33.77929 | 0 | 1 |
| 2013 | 836663 | Serious Injury | 85 | Off rt/lft bnd=>obj | Other | Darkness | 150.7716 | -33.78509 | 0 | 1 |
| 2013 | 836703 | Non-casualty (towaway) | 13 | Right near | T-junction | Daylight | 150.7761 | -33.75314 | 0 | 0 |
| 2013 | 836720 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Daylight | 150.7122 | -33.75687 | 0 | 0 |
| 2013 | 837311 | Non-casualty (towaway) | 30 | Rear end | Divided road | Daylight | 150.7741 | -33.7702 | 0 | 0 |
| 2013 | 837740 | Non-casualty (towaway) | 30 | Rear end | 2-way undivided | Daylight | 150.7706 | -33.7861 | 0 | 0 |
| 2013 | 838326 | Non-casualty (towaway) | 30 | Rear end | Divided road | Dusk | 150.7132 | -33.75718 | 0 | 0 |
| 2013 | 838714 | Moderate Injury | 71 | Off rd left => obj | Divided road | Daylight | 150.7109 | -33.75659 | 0 | 1 |
| 2013 | 839158 | Non-casualty (towaway) | 30 | Rear end | Divided road | Daylight | 150.7137 | -33.7573 | 0 | 0 |
| 2013 | 839485 | Minor/Other Injury | 30 | Rear end | Other | Daylight | 150.7709 | -33.78528 | 0 | 1 |
| 2013 | 840156 | Non-casualty (towaway) | 36 | Right turn sideswipe | T-junction | Dawn | 150.7159 | -33.74234 | 0 | 0 |
| 2013 | 844530 | Non-casualty (towaway) | 13 | Right near | T-junction | Daylight | 150.7761 | -33.75314 | 0 | 0 |
| 2013 | 844881 | Non-casualty (towaway) | 70 | Off road to left | Divided road | Daylight | 150.7114 | -33.75671 | 0 | 0 |
| 2013 | 846999 | Moderate Injury | 21 | Right through | X-intersection | Darkness | 150.7579 | -33.76833 | 0 | 1 |
| 2013 | 847435 | Serious Injury | 10 | Cross traffic | X-intersection | Dawn | 150.7121 | -33.75686 | 0 | 2 |
| 2013 | 847626 | Moderate Injury | 54 | Cutting in | 2-way undivided | Daylight | 150.7161 | -33.74238 | 0 | 1 |
| 2013 | 848270 | Non-casualty (towaway) | 11 | Right far | T-junction | Darkness | 150.7159 | -33.74234 | 0 | 0 |
| 2013 | 849014 | Moderate Injury | 10 | Cross traffic | T-junction | Daylight | 150.7795 | -33.77158 | 0 | 1 |
| 2013 | 850154 | Serious Injury | 30 | Rear end | Divided road | Daylight | 150.7118 | -33.7568 | 0 | 1 |
| 2013 | 851919 | Serious Injury | 71 | Off rd left => obj | X-intersection | Darkness | 150.7736 | -33.76998 | 0 | 1 |
| 2013 | 853211 | Non-casualty (towaway) | 21 | Right through | T-junction | Daylight | 150.7159 | -33.74234 | 0 | 0 |
| 2013 | 853581 | Moderate Injury | 30 | Rear end | X-intersection | Daylight | 150.7708 | -33.78522 | 0 |  |
| 2013 | 853737 | Non-casualty (towaway) | 13 | Right near | T-junction | Dusk | 150.7761 | -33.75314 | 0 | 0 |
| 2013 | 854131 | Non-casualty (towaway) | 30 | Rear end | 2-way undivided | Daylight | 150.8143 | -33.77956 | 0 | 0 |
| 2013 | 856306 | Moderate Injury | 30 | Rear end | Divided road | Daylight | 150.7127 | -33.75706 | 0 | 1 |
| 2013 | 856327 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Dawn | 150.7735 | -33.76992 | 0 | 0 |
| 2013 | 856387 | Non-casualty (towaway) | 21 | Right through | X-intersection | Daylight | 150.7579 | -33.76819 | 0 | 0 |
| 2013 | 857011 | Non-casualty (towaway) | 30 | Rear end | Divided road | Daylight | 150.771 | $-33.78408$ | 0 | 0 |
| 2013 | 857100 | Non-casualty (towaway) | 10 | Cross traffic | X-intersection | Darkness | 150.7121 | -33.75686 | 0 | 0 |
| 2013 | 857198 | Moderate Injury | 30 | Rear end | Other | Daylight | 150.7714 | -33.78238 | 0 | 2 |
| 2013 | 1000498 | Non-casualty (towaway) | 30 | Rear end | Divided road | Daylight | 150.8145 | -33.77876 | 0 | 0 |
| 2013 | 1001610 | Non-casualty (towaway) | 71 | Off rd left => obj | X-intersection | Daylight | 150.8145 | -33.77919 | 0 | 0 |
| 2013 | 1002412 | Non-casualty (towaway) | 30 | Rear end | Divided road | Daylight | 150.8156 | -33.77951 | 0 | 0 |
| 2013 | 1002732 | Non-casualty (towaway) | 85 | Off rt/fft bnd=>obj | Other | Dusk | 150.7708 | -33.78323 | 0 | 0 |
| 2013 | 1003014 | Moderate Injury | 81 | Off left/rt bnd=>obj | X-intersection | Daylight | 150.8144 | -33.7792 | 0 | 1 |
| 2013 | 1004181 | Non-casualty (towaway) | 30 | Rear end | Divided road | Daylight | 150.7733 | -33.76992 | 0 | 0 |
| 2013 | 1004433 | Minor/Other Injury | 30 | Rear end | X-intersection | Daylight | 150.8143 | -33.77919 | 0 | 1 |
| 2013 | 1007111 | Non-casualty (towaway) | 73 | Off rd rght => obj | X-intersection | Darkness | 150.7734 | -33.77005 | 0 | 0 |
| 2013 | 1008938 | Moderate Injury | 34 | Lane change right | Divided road | Daylight | 150.7712 | -33.78285 | 0 | 1 |
| 2014 | 1009639 | Non-casualty (towaway) | 30 | Rear end | Divided road | Daylight | 150.7119 | -33.75729 | 0 | 0 |
| 2013 | 1009748 | Serious Injury | 30 | Rear end | Divided road | Daylight | 150.8156 | -33.77951 | 0 | 1 |
| 2013 | 1012073 | Serious Injury | 33 | Lane sideswipe | X-intersection | Daylight | 150.8146 | -33.77941 | 0 | 1 |
| 2014 | 1012365 | Non-casualty (towaway) | 85 | Off rt/lft bnd=>obj | X-intersection | Daylight | 150.8145 | -33.77924 | 0 | 0 |
| 2014 | 1015377 | Non-casualty (towaway) | 21 | Right through | T-junction | Dawn | 150.7711 | -33.78322 | 0 | 0 |
| 2014 | 1015850 | Moderate Injury | 30 | Rear end | Divided road | Daylight | 150.8143 | -33.77979 | 0 | 1 |
| 2014 | 1015863 | Non-casualty (towaway) | 21 | Right through | X-intersection | Darkness | 150.7579 | -33.76819 | 0 | 0 |
| 2014 | 1017631 | Minor/Other Injury | 32 | Right rear | 2-way undivided | Daylight | 150.7754 | -33.75797 | 0 | 1 |
| 2014 | 1018136 | Non-casualty (towaway) | 21 | Right through | T-junction | Daylight | 150.7711 | -33.78322 | 0 | 0 |
| 2014 | 1021134 | Non-casualty (towaway) | 37 | Left turn sideswipe | X-intersection | Daylight | 150.7579 | -33.76819 | 0 | 0 |
| 2014 | 1021621 | Non-casualty (towaway) | 81 | Off left/rt bnd=>obj | X-intersection | Daylight | 150.8144 | -33.7792 | 0 | 0 |
| 2014 | 1022503 | Minor/Other Injury | 85 | Off rt/ft bnd=>obj | Other | Daylight | 150.7704 | -33.78386 | 0 | 1 |
| 2014 | 1022533 | Non-casualty (towaway) | 35 | Lane change left | 2-way undivided | Dusk | 150.7166 | -33.74247 | 0 | 0 |
| 2014 | 1022878 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Daylight | 150.8143 | -33.77919 | 0 | 0 |
| 2014 | 1023752 | Moderate Injury | 71 | Off rd left => obj | X-intersection | Darkness | 150.8145 | -33.77924 | 0 | 1 |
| 2014 | 1024351 | Moderate Injury | 30 | Rear end | X-intersection | Daylight | 150.8143 | -33.77917 | 0 | 2 |
| 2014 | 1025240 | Serious Injury | 21 | Right through | X-intersection | Daylight | 150.7579 | -33.76819 | 0 | 2 |


| Year | Crash ID | Degree of crash | RUM - code | RUM - description | Type of location | Natural lighting | Longitude | Latitude | No Killed | No Injured |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2014 | 1026026 | Moderate Injury | 30 | Rear end | Other | Daylight | 150.7113 | -33.7567 | 0 | 1 |
| 2014 | 1026740 | Non-casualty (towaway) | 37 | Left turn sideswipe | T-junction | Daylight | 150.7761 | -33.75314 | 0 | 0 |
| 2014 | 1027596 | Non-casualty (towaway) | 30 | Rear end | Divided road | Darkness | 150.8145 | -33.77956 | 0 | 0 |
| 2014 | 1027649 | Non-casualty (towaway) | 81 | Off left/rt bnd=>obj | X-intersection | Daylight | 150.8142 | -33.77931 | 0 | 0 |
| 2014 | 1029839 | Non-casualty (towaway) | 35 | Lane change left | Divided road | Daylight | 150.7132 | -33.75718 | 0 | 0 |
| 2014 | 1030767 | Non-casualty (towaway) | 30 | Rear end | T-junction | Daylight | 150.771 | -33.78317 | 0 | 0 |
| 2014 | 1030875 | Non-casualty (towaway) | 81 | Off left/rt bnd=>obj | T-junction | Daylight | 150.7756 | -33.75652 | 0 | 0 |
| 2014 | 1031897 | Non-casualty (towaway) | 21 | Right through | T-junction | Daylight | 150.7711 | -33.78322 | 0 | 0 |
| 2014 | 1033049 | Serious Injury | 2 | Ped far side | Divided road | Darkness | 150.7123 | -33.75632 | 0 | 1 |
| 2014 | 1033223 | Minor/Other Injury | 21 | Right through | X-intersection | Daylight | 150.7579 | -33.76819 | 0 | 1 |
| 2014 | 1033987 | Non-casualty (towaway) | 30 | Rear end | T-junction | Darkness | 150.7707 | -33.78524 | 0 | 0 |
| 2014 | 1034943 | Minor/Other Injury | 30 | Rear end | T-junction | Daylight | 150.7712 | -33.78329 | 0 | 1 |
| 2014 | 1036505 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Darkness | 150.8145 | -33.7794 | 0 | 0 |
| 2014 | 1037536 | Moderate Injury | 10 | Cross traffic | X-intersection | Darkness | 150.7122 | -33.75687 | 0 | 1 |
| 2014 | 1038000 | Moderate Injury | 13 | Right near | T-junction | Dawn | 150.7761 | -33.75314 | 0 | 1 |
| 2014 | 1039700 | Non-casualty (towaway) | 71 | Off rd left => obj | 2-way undivided | Darkness | 150.758 | -33.76793 | 0 | 0 |
| 2014 | 1040099 | Serious Injury | 13 | Right near | T-junction | Darkness | 150.775 | -33.76119 | 0 |  |
| 2014 | 1044382 | Moderate Injury | 31 | Left rear | X-intersection | Daylight | 150.7119 | -33.75683 | 0 | - 1 |
| 2014 | 1044914 | Serious Injury | 10 | Cross traffic | X-intersection | Daylight | 150.7735 | -33.77007 | 0 | 1 |
| 2014 | 1045346 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Dusk | 150.8143 | -33.77939 | 0 | 0 |
| 2014 | 1046096 | Moderate Injury |  | Ped far side | Divided road | Daylight | 150.7113 | -33.75668 | 0 | 1 |
| 2014 | 1046369 | Moderate Injury | 30 | Rear end | Divided road | Daylight | 150.7796 | -33.77099 | 0 | 1 |
| 2014 | 1046999 | Minor/Other Injury | 30 | Rear end | Divided road | Daylight | 150.7123 | -33.75642 | 0 | 1 |
| 2014 | 1048036 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Darkness | 150.7122 | -33.75687 | 0 | 0 |
| 2014 | 1048685 | Moderate Injury | 71 | Off rd left => obj | T-junction | Daylight | 150.7159 | -33.74231 | 0 |  |
| 2014 | 1048739 | Non-casualty (towaway) | 34 | Lane change right | Divided road | Daylight | 150.7158 | -33.74258 | 0 | 0 |
| 2014 | 1050699 | Moderate Injury | 21 | Right through | T-junction | Daylight | 150.7159 | -33.74234 | 0 | $\square 1$ |
| 2014 | 1051255 | Minor/Other Injury | 30 | Rear end | X-intersection | Daylight | 150.8145 | -33.77938 | 0 | - 1 |
| 2014 | 1053225 | Non-casualty (towaway) | 39 | Other same direction | X-intersection | Daylight | 150.7735 | -33.76996 | 0 | 0 |
| 2014 | 1054007 | Minor/Other Injury | 39 | Other same direction | T-junction | Daylight | 150.7734 | -33.77072 | 0 | 1 |
| 2014 | 1054196 | Non-casualty (towaway) | 39 | Other same direction | Y-junction | Darkness | 150.7708 | -33.78552 | 0 | 0 |
| 2014 | 1054447 | Non-casualty (towaway) | 39 | Other same direction | Divided road | Daylight | 150.7707 | -33.78514 | 0 | 0 |
| 2014 | 1055311 | Minor/Other Injury | 30 | Rear end | X-intersection | Daylight | 150.7122 | -33.75691 | 0 |  |
| 2015 | 1055727 | Minor/Other Injury | 30 | Rear end | X-intersection | Dawn | 150.8143 | -33.77917 | 0 | 1 |
| 2015 | 1057565 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Daylight | 150.7122 | -33.75693 | 0 | 0 |
| 2015 | 1057611 | Minor/Other Injury | 32 | Right rear | X-intersection | Daylight | 150.8145 | -33.77924 | 0 |  |
| 2015 | 1059699 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Daylight | 150.7122 | -33.75687 | 0 | 0 |
| 2015 | 1060053 | Minor/Other Injury | 30 | Rear end | T-junction | Daylight | 150.7712 | -33.78328 | 0 | - 1 |
| 2015 | 1060120 | Minor/Other Injury | 34 | Lane change right | Divided road | Daylight | 150.78 | -33.77172 | 0 | - 1 |
| 2015 | 1060859 | Moderate Injury | 39 | Other same direction | T-junction | Daylight | 150.7796 | -33.7705 | 0 | 1 |
| 2015 | 1064923 | Moderate Injury | 21 | Right through | X-intersection | Darkness | 150.7579 | -33.76819 | 0 | 1 |
| 2015 | 1066060 | Non-casualty (towaway) | 13 | Right near | X-intersection | Darkness | 150.8144 | -33.7792 | 0 | 0 |
| 2015 | 1067809 | Minor/Other Injury | 30 | Rear end | X-intersection | Daylight | 150.7122 | -33.75691 | 0 |  |
| 2015 | 1069150 | Minor/Other Injury | 21 | Right through | X-intersection | Dawn | 150.7579 | -33.76819 | 0 |  |
| 2015 | 1072578 | Moderate Injury | 30 | Rear end | 2-way undivided | Darkness | 150.7672 | -33.74791 | 0 | 2 |
| 2015 | 1073373 | Moderate Injury | 20 | Head on | 2-way undivided | Daylight | 150.7642 | -33.74909 | 0 | $\square 1$ |
| 2015 | 1075868 | Serious Injury | 71 | Off rd left => obj | 2-way undivided | Darkness | 150.7755 | -33.75751 | 0 | 1 |
| 2015 | 1075957 | Non-casualty (towaway) | 71 | Off rd left => obj | X-intersection | Daylight | 150.7579 | -33.76833 | 0 | 0 |
| 2015 | 1076449 | Non-casualty (towaway) | 30 | Rear end | Divided road | Daylight | 150.7584 | -33.76845 | 0 | 0 |
| 2015 | 1076583 | Minor/Other Injury | 32 | Right rear | T-junction | Daylight | 150.7707 | -33.78524 | 0 | 1 |
| 2015 | 1077152 | Serious Injury | 21 | Right through | X-intersection | Darkness | 150.8144 | -33.77934 | 0 |  |
| 2015 | 1078084 | Minor/Other Injury | 32 | Right rear | X-intersection | Daylight | 150.7735 | -33.77007 | 0 | 1 |
| 2015 | 1079594 | Minor/Other Injury | 30 | Rear end | X-intersection | Daylight | 150.7121 | -33.75686 | 0 | 2 |
| 2015 | 1079889 | Minor/Other Injury | 30 | Rear end | X-intersection | Daylight | 150.712 | -33.75684 | 0 |  |
| 2015 | 1079953 | Non-casualty (towaway) | 11 | Right far | T-junction | Daylight | 150.7712 | -33.7832 | 0 | 0 |
| 2015 | 1081324 | Non-casualty (towaway) | 39 | Other same direction | Divided road | Daylight | 150.7708 | -33.78552 | 0 | 0 |
| 2015 | 1081743 | Minor/Other Injury | 30 | Rear end | Divided road | Daylight | 150.7706 | -33.78601 | 0 | 1 |
| 2015 | 1081816 | Non-casualty (towaway) | 39 | Other same direction | Divided road | Daylight | 150.7121 | -33.75654 | 0 | 0 |
| 2015 | 1082844 | Non-casualty (towaway) | 73 | Off rd rght => obj | T-junction | Daylight | 150.7757 | -33.75663 | 0 | 0 |
| 2015 | 1083471 | Non-casualty (towaway) | 47 | Emerging from drive | T-junction | Daylight | 150.7714 | -33.75448 | 0 | 0 |
| 2015 | 1083740 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Daylight | 150.8145 | -33.7794 | 0 | 0 |
| 2015 | 1083742 | Minor/Other Injury | 35 | Lane change left | Divided road | Daylight | 150.815 | -33.77951 | 0 | 1 |
| 2015 | 1084172 | Minor/Other Injury | 34 | Lane change right | T-junction | Daylight | 150.7795 | -33.77135 | 0 | - 1 |
| 2015 | 1087055 | Moderate Injury | 30 | Rear end | Other | Daylight | 150.77 | -33.7843 | 0 | - 1 |
| 2015 | 1087180 | Moderate Injury | 30 | Rear end | 2-way undivided | Daylight | 150.758 | -33.76801 | 0 | 1 |
| 2015 | 1087579 | Serious Injury | 21 | Right through | T-junction | Daylight | 150.7711 | -33.78322 | 0 | 2 |
| 2015 | 1087724 | Moderate Injury | 30 | Rear end | Divided road | Daylight | 150.7732 | -33.77002 | - 0 | $\square 1$ |


| Year | Crash ID | Degree of crash | RUM - code | RUM - description | Type of location | Natural lighting | Longitude | Latitude | No Killed | No Injured |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2015 | 1087908 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Darkness | 150.8144 | -33.7792 | 0 | 0 |
| 2016 | 1092329 | Non-casualty (towaway) | 30 | Rear end | T-junction | Daylight | 150.7159 | -33.74234 | 0 | 0 |
| 2015 | 1092432 | Minor/Other Injury | 20 | Head on | Divided road | Daylight | 150.7732 | -33.76991 | 0 | 1 |
| 2015 | 1092562 | Serious Injury | 21 | Right through | T-junction | Darkness | 150.7708 | -33.78524 | 0 | 2 |
| 2016 | 1092628 | Minor/Other Injury | 30 | Rear end | Divided road | Daylight | 150.7712 | -33.78282 | 0 | 1 |
| 2016 | 1094810 | Non-casualty (towaway) | 34 | Lane change right | Divided road | Daylight | 150.7158 | -33.74258 | 0 | 0 |
| 2016 | 1094982 | Serious Injury | 13 | Right near | X-intersection | Daylight | 150.7579 | -33.76819 | 0 | 3 |
| 2016 | 1097025 | Non-casualty (towaway) | 30 | Rear end | T-junction | Daylight | 150.7708 | -33.78524 | 0 | 0 |
| 2016 | 1100131 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Dawn | 150.7735 | -33.76996 | 0 | 0 |
| 2016 | 1100622 | Minor/Other Injury | 12 | Left far | T-junction | Daylight | 150.7679 | -33.74761 | 0 | 1 |
| 2016 | 1101211 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Dusk | 150.7579 | -33.76819 | 0 | 0 |
| 2016 | 1102092 | Minor/Other Injury | 30 | Rear end | Divided road | Daylight | 150.7119 | -33.75729 | 0 | 1 |
| 2016 | 1102921 | Non-casualty (towaway) | 33 | Lane sideswipe | Divided road | Darkness | 150.7796 | -33.77099 | 0 | 0 |
| 2016 | 1103345 | Moderate Injury | 32 | Right rear | T-junction | Dawn | 150.7679 | -33.74761 | 0 | 1 |
| 2016 | 1103964 | Moderate Injury | 30 | Rear end | X-intersection | Dusk | 150.8145 | -33.77924 | 0 | 1 |
| 2016 | 1105103 | Moderate Injury | 21 | Right through | T-junction | Darkness | 150.7711 | -33.78322 | 0 | 1 |
| 2016 | 1106588 | Non-casualty (towaway) | 39 | Other same direction | T-junction | Dusk | 150.7158 | -33.7423 | 0 | $\square$ |
| 2016 | 1106673 | Moderate Injury | 48 | From footpath | X-intersection | Daylight | 150.7579 | -33.76833 | 0 | $\square 1$ |
| 2016 | 1107039 | Serious Injury | 0 | Ped nearside | T-junction | Daylight | 150.7757 | -33.75651 | 0 | - 1 |
| 2016 | 1109128 | Non-casualty (towaway) | 30 | Rear end | Divided road | Daylight | 150.8153 | -33.77945 | 0 | 0 |
| 2016 | 1109267 | Non-casualty (towaway) | 71 | Off rd left => obj | Divided road | Darkness | 150.7795 | -33.77077 | 0 | 0 |
| 2016 | 1110643 | Minor/Other Injury | 30 | Rear end | X-intersection | Dusk | 150.8145 | -33.77938 | 0 | 1 |
| 2016 | 1111657 | Serious Injury | 21 | Right through | T-junction | Daylight | 150.7711 | -33.78322 | 0 |  |
| 2016 | 1115690 | Non-casualty (towaway) | 47 | Emerging from drive | 2-way undivided | Daylight | 150.7754 | -33.75825 | 0 | 0 |
| 2016 | 1116799 | Minor/Other Injury | 30 | Rear end | X-intersection | Daylight | 150.7579 | -33.76819 | 0 |  |
| 2016 | 1117078 | Moderate Injury | 30 | Rear end | Divided road | Darkness | 150.7707 | -33.7851 | 0 |  |
| 2016 | 1117793 | Moderate Injury | 29 | Other opposing | T-junction | Daylight | 150.7711 | -33.78322 | 0 | $\square 1$ |
| 2016 | 1121009 | Minor/Other Injury | 30 | Rear end | X-intersection | Daylight | 150.7121 | -33.75686 | 0 | 2 |
| 2016 | 1121121 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Daylight | 150.8145 | -33.77924 | 0 | 0 |
| 2016 | 1123352 | Minor/Other Injury | 30 | Rear end | X-intersection | Darkness | 150.8145 | -33.77938 | 0 | 2 |
| 2016 | 1123829 | Minor/Other Injury | 32 | Right rear | X-intersection | Darkness | 150.7735 | -33.76996 | 0 | - 1 |
| 2016 | 1124029 | Moderate Injury | 13 | Right near | T-junction | Daylight | 150.7711 | -33.78317 | 0 | 1 |
| 2016 | 1125675 | Minor/Other Injury | 30 | Rear end | X-intersection | Daylight | 150.7579 | -33.76833 | 0 |  |
| 2017 | 1125806 | Non-casualty (towaway) | 30 | Rear end | X-intersection | Daylight | 150.7579 | -33.76833 | 0 | 0 |
| 2017 | 1126260 | Moderate Injury | 31 | Left rear | T-junction | Daylight | 150.7159 | -33.74234 | 0 |  |
| 2016 | 1128920 | Serious Injury | 21 | Right through | T-junction | Darkness | 150.7711 | -33.78322 | 0 | 2 |
| 2017 | 1129017 | Minor/Other Injury | 30 | Rear end | X-intersection | Daylight | 150.7735 | -33.77007 | 0 | - 1 |
| 2017 | 1133315 | Non-casualty (towaway) | 30 | Rear end | T-junction | Daylight | 150.7757 | -33.75651 | 0 | 0 |
| 2016 | 1136962 | Serious Injury | 74 | On road-out of cont. | Divided road | Daylight | 150.7126 | -33.75694 | 0 | - 1 |
| 2017 | 1137134 | Moderate Injury | 21 | Right through | T-junction | Darkness | 150.7793 | -33.77141 | 0 | 1 |
| 2017 | 1137999 | Minor/Other Injury | 30 | Rear end | T-junction | Daylight | 150.7795 | -33.77158 | 0 | 1 |
| 2017 | 1139282 | Non-casualty (towaway) | 39 | Other same direction | X-intersection | Daylight | 150.7735 | -33.76996 | 0 | 0 |
| 2017 | 1139813 | Moderate Injury | 21 | Right through | T-junction | Darkness | 150.7712 | -33.7832 | 0 |  |
| 2017 | 1141035 | Serious Injury | 81 | Off left/rt bnd=>obj | T-junction | Daylight | 150.7756 | -33.75657 | 0 |  |
| 2017 | 1141119 | Non-casualty (towaway) | 85 | Off rt/lft bnd=>obj | X-intersection | Darkness | 150.7122 | -33.75687 | 0 | 0 |
| 2017 | 1142029 | Minor/Other Injury | 30 | Rear end | 2-way undivided | Daylight | 150.7672 | -33.74789 | 0 |  |
| 2017 | 1143501 | Moderate Injury | 34 | Lane change right | X-intersection | Darkness | 150.7735 | $-33.77007$ | 0 | 2 |
| 2017 | 1144604 | Non-casualty (towaway) | 30 | Rear end | Divided road | Daylight | 150.7756 | -33.75717 | 0 | 0 |
| 2017 | 1145066 | Serious Injury | 10 | Cross traffic | X-intersection | Daylight | 150.7735 | -33.76996 | 0 | - 1 |
| 2017 | 1145582 | Moderate Injury | 13 | Right near | T-junction | Darkness | 150.7679 | -33.74761 | 0 | 2 |
| 2017 | 1146146 | Serious Injury | 21 | Right through | T-junction | Dusk | 150.7711 | -33.78322 | 0 | 3 |
| 2017 | 1146770 | Minor/Other Injury | 30 | Rear end | T-junction | Daylight | 150.7757 | -33.75663 | 0 | 1 |
| 2017 | 1147046 | Non-casualty (towaway) | 13 | Right near | T-junction | Daylight | 150.7711 | -33.78317 | 0 | 0 |
| 2017 | 1148370 | Serious Injury | 21 | Right through | T-junction | Darkness | 150.7711 | -33.78322 | 0 | 1 |
| 2017 | 1149099 | Minor/Other Injury | 39 | Other same direction | T-junction | Daylight | 150.7679 | -33.74761 | 0 | - 1 |
| 2017 | 1151754 | Non-casualty (towaway) | 30 | Rear end | T-junction | Darkness | 150.7159 | -33.7423 | 0 | 0 |
| 2017 | 1151802 | Non-casualty (towaway) | 30 | Rear end | 2-way undivided | Daylight | 150.7674 | -33.74781 | 0 | 0 |
| 2017 | 1152405 | Serious Injury | 21 | Right through | T-junction | Dawn | 150.7708 | -33.78524 | 0 | - 1 |
| 2017 | 1152789 | Moderate Injury | 88 | Out of cont on bend | X-intersection | Daylight | 150.8144 | -33.7792 | 0 | 1 |
| 2017 | 1153985 | Non-casualty (towaway) | 21 | Right through | T-junction | Darkness | 150.7159 | -33.74234 | 0 | 0 |
| 2017 | 1154352 | Non-casualty (towaway) | 34 | Lane change right | Divided road | Darkness | 150.7116 | -33.75676 | 0 | 0 |
| 2017 | 1155545 | Non-casualty (towaway) | 29 | Other opposing | X-intersection | Daylight | 150.8144 | -33.7792 | 0 | 0 |
| 2017 | 1156470 | Moderate Injury | 20 | Head on | Divided road | Daylight | 150.774 | -33.77007 | 0 | 1 |
| 2017 | 1156699 | Fatal | 75 | Off end of road | T-junction | Daylight | 150.7756 | -33.75661 | - 1 | 0 |
| 2017 | 1157044 | Serious Injury | 10 | Cross traffic | X-intersection | Darkness | 150.7735 | -33.77007 | 0 | 2 |
| 2017 | 1159726 | Non-casualty (towaway) | 73 | Off rd rght => obj | Divided road | Daylight | 150.7121 | -33.75717 | 0 | 0 |
| 2017 | 1159754 | Minor/Other Injury | 30 | Rear end | X-intersection | Daylight | 150.7122 | -33.75691 | - 0 | - 1 |

Appendix C
SIDRA Modelling Outputs

## MOVEMENT SUMMARY

日 Site: TCS 2986 [101 - Richmond Road / Dunheved Road - AM Peak 2018 Base]
0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 129 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID |  | Deman Total veh/h | $\begin{gathered} \text { =lows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Richmond Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | T1 | 926 | 10.3 | 0.303 | 6.4 | LOS A | 9.9 | 79.7 | 0.38 | 0.33 | 0.38 | 58.9 |
| 7 | R2 | 302 | 3.8 | 0.793 | 68.1 | LOS E | 13.7 | 98.9 | 0.99 | 0.84 | 1.09 | 29.6 |
| Appr | ach | 1228 | 8.7 | 0.793 | 21.5 | LOS B | 13.7 | 98.9 | 0.53 | 0.46 | 0.55 | 44.2 |
| East: Dunheved Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 445 | 1.9 | 0.484 | 14.1 | LOS A | 14.7 | 104.5 | 0.61 | 0.79 | 0.61 | 53.3 |
| 4 | R2 | 425 | 9.4 | 0.476 | 57.7 | LOS E | 12.1 | 94.9 | 0.95 | 0.81 | 0.95 | 24.7 |
| Appr |  | 871 | 5.6 | 0.484 | 35.4 | LOS C | 14.7 | 104.5 | 0.78 | 0.80 | 0.78 | 37.1 |
| North: Richmond Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 319 | 11.2 | 0.235 | 8.6 | LOS A | 3.7 | 30.4 | 0.25 | 0.65 | 0.25 | 49.6 |
| 2 | T1 | 1360 | 5.0 | 0.609 | 13.4 | LOS A | 19.7 | 148.6 | 0.51 | 0.46 | 0.51 | 50.1 |
| Appr |  | 1679 | 6.2 | 0.609 | 12.5 | LOS A | 19.7 | 148.6 | 0.46 | 0.50 | 0.46 | 50.0 |
| All Ve | icles | 3778 | 6.9 | 0.793 | 20.7 | LOS B | 19.7 | 148.6 | 0.55 | 0.55 | 0.56 | 44.0 |

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


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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## MOVEMENT SUMMARY

日 Site: TCS 442 [102 - Great Western Highway / Parker Street - AM Peak 2018 Base]
0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 143 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID |  | Demand Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Parker Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 362 | 2.9 | 0.270 | 15.5 | LOS B | 10.3 | 74.2 | 0.48 | 0.73 | 0.48 | 39.7 |
| 8 | T1 | 796 | 7.8 | 0.793 | 60.0 | LOS E | 27.0 | 206.7 | 1.00 | 0.89 | 1.05 | 19.2 |
| 7 | R2 | 109 | 6.7 | 0.262 | 61.3 | LOS E | 6.6 | 48.7 | 0.91 | 0.77 | 0.91 | 24.0 |
| Appr | ach | 1267 | 6.3 | 0.793 | 47.4 | LOS D | 27.0 | 206.7 | 0.84 | 0.83 | 0.87 | 23.3 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 199 | 5.3 | 0.310 | 36.2 | LOS C | 10.4 | 76.4 | 0.72 | 0.74 | 0.72 | 32.1 |
| 5 | T1 | 849 | 2.4 | 0.764 | 50.3 | LOS D | 26.6 | 191.1 | 0.97 | 0.86 | 0.99 | 29.9 |
| 4 | R2 | 418 | 8.6 | 0.964 | 72.1 | LOS F | 28.8 | 230.1 | 1.00 | 1.05 | 1.40 | 23.5 |
| Appr | ach | 1466 | 4.5 | 0.964 | 54.6 | LOS D | 28.8 | 230.1 | 0.95 | 0.90 | 1.07 | 28.0 |
| North: Parker Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 872 | 4.2 | 0.330 | 6.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 0.00 | 57.3 |
| 2 | T1 | 842 | 6.1 | 0.777 | 58.5 | LOS E | 28.6 | 216.2 | 1.00 | 0.87 | 1.03 | 19.6 |
| 1 | R2 | 298 | 6.0 | 0.648 | 65.6 | LOS E | 19.3 | 142.2 | 0.99 | 0.83 | 0.99 | 21.4 |
| Appr |  | 2012 | 5.3 | 0.777 | 37.1 | LOS C | 28.6 | 216.2 | 0.56 | 0.74 | 0.58 | 31.5 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 188 | 6.1 | 0.106 | 5.7 | LOSA | 0.0 | 0.0 | 0.00 | 0.53 | 0.00 | 51.7 |
| 11 | T1 | 493 | 4.3 | 0.902 | 78.4 | LOS F | 20.2 | 149.2 | 1.00 | 1.04 | 1.31 | 23.4 |
| 10 | R2 | 159 | 4.0 | 0.535 | 65.0 | LOS E | 10.3 | 74.4 | 0.96 | 0.81 | 0.96 | 18.4 |
| Approach |  | 840 | 4.6 | 0.902 | 59.6 | LOS E | 20.2 | 149.2 | 0.77 | 0.88 | 0.95 | 25.1 |
| All Ve | icles | 5585 | 5.2 | 0.964 | 47.4 | LOS D | 28.8 | 230.1 | 0.76 | 0.82 | 0.83 | 27.6 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Average Back of Queue |  |  | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 113 | 65.9 | LOS F | 0.4 | 0.4 | 0.96 | 0.96 |
| P2 | East Full Crossing | 64 | 65.8 | LOS F | 0.3 | 0.3 | 0.96 | 0.96 |
| P1 | North Full Crossing | 101 | 65.9 | LOS F | 0.4 | 0.4 | 0.96 | 0.96 |
| P4 | West Full Crossing | 87 | 65.9 | LOS F | 0.3 | 0.3 | 0.96 | 0.96 |
| All P | estrians | 365 | 65.9 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

```
Site: TCS 2385 [103-Great Western Highway / Werrington Road / Reserve Road - AM Peak
2018 Base]
0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Phase Times)
```

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Deman Total veh/h | $\begin{gathered} \text { lows } \\ \text { HV } \\ \% \\ \hline \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Reserve Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 36 | 0.0 | 0.129 | 33.4 | LOS C | 3.6 | 25.6 | 0.67 | 0.68 | 0.67 | 27.7 |
| 8 | T1 | 25 | 4.2 | 0.129 | 30.2 | LOS C | 3.6 | 25.6 | 0.67 | 0.68 | 0.67 | 22.5 |
| 7 | R2 | 22 | 4.8 | 0.129 | 33.4 | LOS C | 3.6 | 25.6 | 0.67 | 0.68 | 0.67 | 33.3 |
| Appr |  | 83 | 2.5 | 0.129 | 32.4 | LOS C | 3.6 | 25.6 | 0.67 | 0.68 | 0.67 | 27.6 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 35 | 3.0 | 0.533 | 49.5 | LOS D | 25.8 | 186.2 | 0.89 | 0.77 | 0.89 | 30.3 |
| 5 | T1 | 1327 | 3.2 | 0.533 | 42.3 | LOS C | 25.8 | 186.2 | 0.88 | 0.76 | 0.88 | 37.6 |
| 4 | R2 | 191 | 7.2 | 0.559 | 68.6 | LOS E | 12.3 | 96.0 | 0.99 | 0.81 | 0.99 | 24.7 |
| Appr |  | 1553 | 3.7 | 0.559 | 45.7 | LOS D | 25.8 | 186.2 | 0.90 | 0.77 | 0.90 | 35.2 |
| North: Werrington Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 256 | 6.2 | 0.264 | 17.1 | LOS B | 8.0 | 59.4 | 0.55 | 0.67 | 0.55 | 40.2 |
| 2 | T1 | 11 | 0.0 | 0.882 | 54.1 | LOS D | 34.2 | 261.4 | 0.97 | 0.99 | 1.14 | 16.7 |
| 1 | R2 | 459 | 6.0 | 0.882 | 57.4 | LOS E | 34.2 | 261.4 | 0.97 | 0.99 | 1.14 | 21.7 |
| Appr |  | 725 | 6.0 | 0.882 | 43.1 | LOS D | 34.2 | 261.4 | 0.82 | 0.88 | 0.93 | 26.7 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 212 | 8.0 | 0.449 | 48.3 | LOS D | 20.0 | 150.0 | 0.86 | 0.79 | 0.86 | 26.0 |
| 11 | T1 | 919 | 4.5 | 0.449 | 41.1 | LOS C | 20.7 | 151.9 | 0.86 | 0.74 | 0.86 | 37.9 |
| 10 | R2 | 63 | 3.3 | 0.176 | 64.6 | LOS E | 3.8 | 27.4 | 0.92 | 0.75 | 0.92 | 18.6 |
| Approach |  | 1194 | 5.0 | 0.449 | 43.6 | LOS D | 20.7 | 151.9 | 0.86 | 0.75 | 0.86 | 34.5 |
| All Vehicles |  | 3555 | 4.6 | 0.882 | 44.2 | LOS D | 34.2 | 261.4 | 0.86 | 0.78 | 0.89 | 33.0 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{aligned} & \text { Demand } \\ & \text { Flow } \\ & \text { ped } / \mathrm{h} \end{aligned}$ | Average Delay $\qquad$ sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 4 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 9 | 64.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 15 | 64.1 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／审审 Network：［104 \＆108－AM Mamre Road－AM Peak 2018 Base］

0800－0900
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 140 seconds（Network Site User－Given Phase Times）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demanc <br> Total veh／h | Flows HV \％ | Arrival Total veh／h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg． Satn v／c | Average Delay sec | Level of Service |  | ack of ue Distance | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag <br> Speed km／h |
| South：Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 155 | 6.8 | 155 | 6.8 | 0.105 | 11.1 | LOS A | 3.0 | 22.3 | 0.34 | 0.64 | 0.34 | 44.3 |
| 8 T1 | 422 | 2.0 | 422 | 2.0 | 0.849 | 49.6 | LOS D | 34.4 | 282.0 | 0.91 | 0.82 | 0.93 | 25.9 |
| $7 \quad \mathrm{R} 2$ | 447 | 14.4 | 447 | 14.4 | 0.849 | 62.3 | LOS E | 34.4 | 282.0 | 1.00 | 0.92 | 1.09 | 15.2 |
| Approach | 1024 | 8.1 | 1024 | 8.1 | 0.849 | 49.3 | LOS D | 34.4 | 282.0 | 0.86 | 0.84 | 0.91 | 23.0 |
| East：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 354 | 19.9 | 354 | 19.9 | 0.308 | 9.3 | LOSA | 5.4 | 48.3 | 0.30 | 0.64 | 0.30 | 50.0 |
| $5 \quad \mathrm{~T} 1$ | 904 | 3.1 | 904 | 3.1 | 0.739 | 54.9 | LOS D | 22.4 | 163.0 | 0.99 | 0.86 | 1.02 | 27.6 |
| 4 R2 | 171 | 1.9 | 171 | 1.9 | 0.640 | 72.6 | LOS F | 11.6 | 82.2 | 1.00 | 0.82 | 1.00 | 24.9 |
| Approach | 1428 | 7.1 | 1428 | 7.1 | 0.739 | 45.7 | LOS D | 22.4 | 163.0 | 0.82 | 0.80 | 0.84 | 30.7 |
| North：Queen Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 45 | 0.0 | 45 | 0.0 | 0.478 | 58.8 | LOS E | 8.2 | 59.8 | 0.95 | 0.84 | 1.24 | 17.1 |
| 2 T1 | 163 | 7.1 | 163 | 7.1 | 0.478 | 56.7 | LOS E | 8.6 | 62.1 | 0.96 | 0.82 | 1.13 | 24.1 |
| 1 R2 | 71 | 1.5 | 71 | 1.5 | 0.478 | 62.1 | LOSE | 8.6 | 62.1 | 0.96 | 0.78 | 0.96 | 21.2 |
| Approach | 279 | 4.5 | 279 | 4.5 | 0.478 | 58.4 | LOS E | 8.6 | 62.1 | 0.96 | 0.81 | 1.10 | 22.3 |
| West：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 104 | 4.0 | 104 | 4.0 | 0.697 | 57.1 | LOS E | 19.1 | 141.8 | 0.97 | 0.84 | 0.97 | 22.9 |
| 11 T1 | 825 | 5.5 | 825 | 5.5 | 0.697 | 51.5 | LOS D | 19.4 | 146.1 | 0.97 | 0.83 | 0.97 | 12.9 |
| 10 R2 | 189 | 8.3 | 189 | 8.3 | 0.778 | 72.3 | LOS F | 13.3 | 104.3 | 1.00 | 0.89 | 1.13 | 18.9 |
| Approach | 1119 | 5.8 | 1119 | 5.8 | 0.778 | 55.6 | LOS D | 19.4 | 146.1 | 0.97 | 0.84 | 1.00 | 15.6 |
| All Vehicles | 3851 | 6.8 | 3851 | 6.8 | 0.849 | 50.5 | LOS D | 34.4 | 282.0 | 0.89 | 0.82 | 0.92 | 24.2 |

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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \end{aligned}$ | Description | $\begin{gathered} \text { Demand } \\ \text { Flow } \\ \text { ped/h } \\ \hline \end{gathered}$ | Average Delay sec | Level of Service | $\begin{aligned} & \text { Average Back } \\ & \text { Pedestrian } \\ & \text { ped } \end{aligned}$ | of Queue Distance $\qquad$ m | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 3 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 16 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 8 | 64.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 17 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| All Pedestrians |  | 44 | 64.2 | LOS F |  |  | 0.96 | 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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Base.sip8

## MOVEMENT SUMMARY

B Site: TCS 1236 [108-Great Western Highway / Glossop

审审 Network: [104 \& 108 - AM Peak 2018 Base] Street - AM Peak 2018 Base]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | lows <br> HV \% | Arrival <br> Total veh/h | Flows <br> HV \% | Deg. Satn v/c | Average Delay <br> sec | Level of Service | 95\% BQueVehicles <br> veh | of stance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed km/h |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 908 | 5.2 | 908 | 5.2 | 0.180 | 6.4 | LOS A | 7.1 | 53.3 | 0.34 | 0.29 | 0.34 | 49.8 |
| 4 R2 | 537 | 13.5 | 537 | 13.5 | 0.583 | 59.6 | LOS E | 16.5 | 140.1 | 0.96 | 0.83 | 0.96 | 28.6 |
| Approach | 1445 |  | 1445 | 8.3 | 0.583 | 26.2 | LOS B | 16.5 | 140.1 | 0.57 | 0.49 | 0.57 | 36.1 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 352 | 20.1 | 352 | 20.1 | 0.508 | 35.6 | LOS C | 17.1 | 152.0 | 0.77 | 0.81 | 0.77 | 35.3 |
| 1 R2 | 520 | 10.5 | 520 | 10.5 | 0.802 | 69.0 | LOS E | 18.1 | 146.9 | 1.00 | 0.90 | 1.12 | 16.0 |
| Approach | 872 | 14.4 | 872 | 14.4 | 0.802 | 55.5 | LOS D | 18.1 | 152.0 | 0.91 | 0.86 | 0.98 | 23.8 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L2 | 376 | 14.3 | 376 | 14.3 | 0.352 | 31.9 | LOS C | 18.9 | 160.2 | 0.75 | 0.79 | 0.75 | 37.9 |
| 11 T1 | 942 | 5.9 | 942 | 5.9 | 0.352 | 30.6 | LOS C | 24.2 | 180.8 | 0.85 | 0.74 | 0.85 | 40.4 |
| Approach | 1318 | 8.3 | 1318 | 8.3 | 0.352 | 31.0 | LOS C | 24.2 | 180.8 | 0.82 | 0.76 | 0.82 | 39.7 |
| All Vehicles | 3635 | 9.8 | 3635 | 9.8 | 0.802 | 35.0 | LOS C | 24.2 | 180.8 | 0.74 | 0.68 | 0.76 | 34.3 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P2 | East Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 2 | 64.1 | LOS F |  |  | 0.96 | 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.

## MOVEMENT SUMMARY

Site: TCS 1234 [105 - Great Western Highway / Carlisle Avenue - AM Peak 2018 Base]
0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time $=142$ seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \mathrm{Mov} \\ & \mathrm{ID} \end{aligned}$ |  | $\begin{aligned} & \text { Demanc } \\ & \text { Total } \\ & \text { veh/h } \\ & \hline \end{aligned}$ | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. <br> Satn <br> v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 44 | 38.1 | 0.117 | 38.4 | LOS C | 2.3 | 25.9 | 0.84 | 0.71 | 0.84 | 33.4 |
| 8 | T1 | 547 | 6.5 | 0.559 | 59.6 | LOS E | 17.1 | 126.4 | 0.97 | 0.81 | 0.97 | 28.4 |
| 7 | R2 | 146 | 11.5 | 0.567 | 73.5 | LOS F | 9.8 | 78.2 | 1.00 | 0.79 | 1.00 | 25.4 |
| Appr | ach | 738 | 9.4 | 0.567 | 61.0 | LOS E | 17.1 | 126.4 | 0.97 | 0.80 | 0.97 | 28.0 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 78 | 9.5 | 0.402 | 40.9 | LOS C | 11.8 | 91.1 | 0.81 | 0.73 | 0.82 | 37.8 |
| 5 | T1 | 647 | 6.7 | 0.402 | 37.8 | LOS C | 12.9 | 97.8 | 0.82 | 0.71 | 0.82 | 43.0 |
| 4 | R2 | 276 | 6.1 | 0.701 | 76.1 | LOS F | 9.7 | 71.5 | 1.00 | 0.83 | 1.07 | 28.2 |
| Appr |  | 1001 | 6.7 | 0.701 | 48.6 | LOS D | 12.9 | 97.8 | 0.87 | 0.74 | 0.89 | 37.1 |
| North: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 257 | 5.7 | 0.179 | 30.6 | LOS C | 10.4 | 76.8 | 0.68 | 0.75 | 0.68 | 41.1 |
| 2 | T1 | 389 | 6.8 | 0.364 | 42.1 | LOS C | 20.9 | 158.9 | 0.85 | 0.72 | 0.85 | 34.3 |
| 1 | R2 | 375 | 5.1 | 0.278 | 36.7 | LOS C | 7.9 | 58.4 | 0.90 | 0.77 | 0.90 | 38.4 |
| Appro |  | 1021 | 5.9 | 0.364 | 37.2 | LOS C | 20.9 | 158.9 | 0.82 | 0.74 | 0.82 | 37.5 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 580 | 2.9 | 0.406 | 21.5 | LOS B | 16.4 | 118.3 | 0.69 | 0.79 | 0.72 | 47.4 |
| 11 | T1 | 921 | 7.0 | 0.406 | 37.5 | LOS C | 23.1 | 174.8 | 0.82 | 0.71 | 0.82 | 43.3 |
| 10 | R2 | 148 | 8.5 | 0.428 | 70.8 | LOS F | 9.6 | 77.2 | 0.98 | 0.79 | 0.98 | 25.9 |
| Approach |  | 1649 | 5.7 | 0.428 | 34.8 | LOS C | 23.1 | 174.8 | 0.79 | 0.75 | 0.80 | 42.5 |
| All Vehicles |  | 4409 | 6.6 | 0.701 | 42.9 | LOS D | 23.1 | 174.8 | 0.85 | 0.75 | 0.85 | 37.2 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{aligned} & \text { Demand } \\ & \text { Flow } \\ & \text { ped/h } \end{aligned}$ | Average Delay sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.1 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

Site: TCS 3118 [106-Mamre Road / M4 Western Motorway Off-ramp/On-ramp (South) - AM Peak 2018 Base]
0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows | Arriva Total veh/h | $\begin{gathered} =l o w s \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ck of istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1199 | 5.9 | 1199 | 5.9 | 0.212 | 4.1 | LOS A | 9.2 | 70.4 | 0.31 | 0.28 | 0.31 | 49.6 |
| 7 R2 | 453 | 8.6 | 453 | 8.6 | 0.600 | 47.6 | LOS D | 21.8 | 166.8 | 0.96 | 0.83 | 0.96 | 25.4 |
| Approach | 1652 | 6.6 | 1652 | 6.6 | 0.600 | 16.0 | LOS B | 21.8 | 166.8 | 0.49 | 0.43 | 0.49 | 33.8 |
| East: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 109 | 11.5 | 109 | 11.5 | 0.130 | 8.1 | LOS A | 1.2 | 10.0 | 0.28 | 0.62 | 0.28 | 50.6 |
| 4 R2 | 253 | 13.8 | 253 | 13.8 | 0.497 | 53.0 | LOS D | 6.4 | 53.0 | 0.96 | 0.79 | 0.96 | 22.2 |
| Approach | 362 | 13.1 | 362 | 13.1 | 0.497 | 39.4 | LOS C | 6.4 | 53.0 | 0.76 | 0.74 | 0.76 | 28.9 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 299 | 9.5 | 299 | 9.5 | 0.180 | 7.4 | LOS A | 2.4 | 19.0 | 0.17 | 0.56 | 0.17 | 37.4 |
| 2 T 1 | 1147 | 7.9 | 1147 | 7.9 | 0.480 | 15.2 | LOS B | 15.0 | 114.3 | 0.53 | 0.47 | 0.53 | 40.5 |
| Approach | 1446 |  | 1446 | 8.2 | 0.480 | 13.5 | LOS A | 15.0 | 114.3 | 0.46 | 0.49 | 0.46 | 39.6 |
| All Vehicles | 3460 |  | 3460 | 8.0 | 0.600 | 17.5 | LOS B | 21.8 | 166.8 | 0.51 | 0.49 | 0.51 | 35.5 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

Site: TCS 3117 [107 - Mamre Road / M4 Western Motorway Off-ramp/On-ramp (North) - AM Peak 2018 Base]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h |  | Arrival <br> Total veh/h | $\begin{aligned} & \text { =lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% B Que <br> Vehicles veh | ck of e istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed <br> km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 241 | 6.6 | 241 | 6.6 | 0.126 | 9.6 | LOS A | 4.6 | 36.6 | 0.44 | 0.65 | 0.44 | 36.1 |
| 8 T1 | 1211 | 7.4 | 1211 | 7.4 | 0.364 | 18.6 | LOS B | 20.3 | 155.7 | 0.69 | 0.61 | 0.69 | 36.8 |
| Approach | 1452 | 7.3 | 1452 | 7.3 | 0.364 | 17.1 | LOS B | 20.3 | 155.7 | 0.65 | 0.62 | 0.65 | 36.6 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 868 | 8.1 | 868 | 8.1 | 0.540 | 9.2 | LOS A | 14.8 | 114.5 | 0.52 | 0.46 | 0.52 | 39.3 |
| 1 R2 | 195 | 14.6 | 195 | 14.6 | 1.061 | 141.6 | LOS F | 18.6 | 158.9 | 1.00 | 1.35 | 2.13 | 13.4 |
| Approach | 1063 | 9.3 | 1063 | 9.3 | 1.061 | 33.4 | LOS C | 18.6 | 158.9 | 0.60 | 0.62 | 0.81 | 22.7 |
| West: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 602 | 3.7 | 602 | 3.7 | 0.653 | 10.4 | LOS A | 15.0 | 109.0 | 0.58 | 0.76 | 0.58 | 48.3 |
| 10 R2 | 578 | 8.4 | 578 | 8.4 | 0.768 | 52.8 | LOS D | 15.5 | 119.9 | 1.00 | 0.89 | 1.10 | 22.1 |
| Approach | 1180 | 6.0 | 1180 | 6.0 | 0.768 | 31.1 | LOS C | 15.5 | 119.9 | 0.79 | 0.83 | 0.83 | 33.1 |
| All Vehicles | 3695 |  | 3695 | 7.4 | 1.061 | 26.3 | LOS B | 20.3 | 158.9 | 0.68 | 0.69 | 0.75 | 31.3 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 3 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 4 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

日 Site: TCS 2986 [101 - Richmond Road / Dunheved Road - PM Peak 2018 Base]
1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 124 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID |  | Deman Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Richmond Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | T1 | 1628 | 3.1 | 0.424 | 6.7 | LOS A | 18.5 | 134.3 | 0.42 | 0.38 | 0.42 | 58.5 |
| 7 | R2 | 529 | 1.2 | 0.820 | 60.6 | LOS E | 22.6 | 161.2 | 0.98 | 0.86 | 1.05 | 31.7 |
| Appr |  | 2158 | 2.6 | 0.820 | 19.9 | LOS B | 22.6 | 161.2 | 0.56 | 0.50 | 0.57 | 45.6 |
| East: Dunheved Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 324 | 2.3 | 0.284 | 8.8 | LOS A | 4.4 | 31.5 | 0.29 | 0.68 | 0.29 | 57.6 |
| 4 | R2 | 602 | 2.4 | 0.627 | 57.0 | LOS E | 17.6 | 127.1 | 0.97 | 0.82 | 0.97 | 25.0 |
| Approach |  | 926 | 2.4 | 0.627 | 40.1 | LOS C | 17.6 | 127.1 | 0.73 | 0.77 | 0.73 | 33.7 |
| North: Richmond Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 388 | 2.7 | 0.177 | 9.9 | LOS A | 6.0 | 43.1 | 0.32 | 0.68 | 0.32 | 51.0 |
| 2 | T1 | 1165 | 3.7 | 0.309 | 18.5 | LOS B | 19.9 | 145.2 | 0.63 | 0.55 | 0.63 | 45.2 |
| Appr |  | 1554 | 3.5 | 0.309 | 16.4 | LOS B | 19.9 | 145.2 | 0.55 | 0.58 | 0.55 | 46.5 |
| All Ve | icles | 4638 | 2.9 | 0.820 | 22.8 | LOS B | 22.6 | 161.2 | 0.59 | 0.58 | 0.60 | 42.6 |

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


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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## MOVEMENT SUMMARY

日 Site: TCS 442 [102 - Great Western Highway / Parker Street - PM Peak 2018 Base]
1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Deman Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. <br> Satn <br> v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Parker Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 181 | 2.9 | 0.138 | 11.1 | LOS A | 3.0 | 21.9 | 0.34 | 0.67 | 0.34 | 44.2 |
| 8 | T1 | 824 | 5.4 | 0.881 | 60.6 | LOS E | 27.4 | 203.4 | 1.00 | 1.00 | 1.20 | 19.1 |
| 7 | R2 | 95 | 2.2 | 0.257 | 54.6 | LOS D | 5.0 | 36.4 | 0.90 | 0.77 | 0.90 | 25.7 |
| Appr |  | 1100 | 4.7 | 0.881 | 52.0 | LOS D | 27.4 | 203.4 | 0.88 | 0.92 | 1.04 | 21.9 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 173 | 2.4 | 0.223 | 44.4 | LOS D | 9.6 | 68.6 | 0.83 | 0.75 | 0.83 | 29.2 |
| 5 | T1 | 839 | 3.6 | 0.549 | 46.8 | LOS D | 21.8 | 159.3 | 0.95 | 0.80 | 0.95 | 31.0 |
| 4 | R2 | 520 | 3.4 | 0.736 | 55.0 | LOS D | 29.4 | 213.3 | 1.00 | 0.86 | 1.00 | 27.6 |
| Appr |  | 1532 | 3.4 | 0.736 | 49.3 | LOS D | 29.4 | 213.3 | 0.95 | 0.81 | 0.95 | 29.6 |
| North: Parker Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 477 | 2.2 | 0.203 | 6.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 0.00 | 58.0 |
| 2 | T1 | 881 | 4.2 | 0.846 | 55.8 | LOS D | 27.7 | 203.7 | 1.00 | 0.95 | 1.12 | 20.2 |
| 1 | R2 | 229 | 3.2 | 0.563 | 57.7 | LOS E | 12.9 | 93.5 | 0.97 | 0.82 | 0.97 | 23.3 |
| Appr |  | 1587 | 3.4 | 0.846 | 41.3 | LOS C | 27.7 | 203.7 | 0.69 | 0.82 | 0.76 | 28.6 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 505 | 3.5 | 0.234 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.53 | 0.00 | 51.7 |
| 11 | T1 | 699 | 1.1 | 0.795 | 53.0 | LOS D | 22.7 | 160.8 | 0.99 | 0.90 | 1.08 | 29.2 |
| 10 | R2 | 261 | 0.8 | 0.580 | 53.8 | LOS D | 14.4 | 102.3 | 0.96 | 0.82 | 0.96 | 20.9 |
| Approach |  | 1465 | 1.9 | 0.795 | 36.8 | LOS C | 22.7 | 160.8 | 0.64 | 0.76 | 0.68 | 31.8 |
| All Vehicles |  | 5684 | 3.3 | 0.881 | 44.4 | LOS D | 29.4 | 213.3 | 0.79 | 0.82 | 0.85 | 28.5 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay $\qquad$ sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 7 | 56.7 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 13 | 56.7 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P1 | North Full Crossing | 5 | 56.7 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 5 | 56.7 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 31 | 56.7 | LOS E |  |  | 0.95 | 0.95 |

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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels 1 P3796.001M St Marys Inland Container Terminal EIS_2018 Base.sip8

## MOVEMENT SUMMARY

## Site: TCS 2385 [103 - Great Western Highway / Werrington Road / Reserve Road - PM Peak 2018 Base]

1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 141 seconds (Site User-Given Phase Times)

## Movement Performance - Vehicles

| Mov | Turn | Demand | ows | Deg. | Average | Level of | 95\% Back | of Queue | Prop. | Effective | Aver. | Ave |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ID |  | Total veh/h | $\begin{array}{r} \text { HV } \\ \% \end{array}$ | Satn v/c | Delay sec | Service | Vehicles veh | Distance | Queued | Stop Rate | Cycles | Speed km/h |
| South | Rese | Road |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 35 | 3.0 | 0.183 | 35.3 | LOS C | 4.9 | 34.8 | 0.70 | 0.68 | 0.70 | 26.8 |
| 8 | T1 | 33 | 0.0 | 0.183 | 30.7 | LOS C | 4.9 | 34.8 | 0.70 | 0.68 | 0.70 | 25.6 |
| 7 | R2 | 42 | 0.0 | 0.183 | 35.2 | LOS C | 4.9 | 34.8 | 0.70 | 0.68 | 0.70 | 33.3 |
| Appr |  | 109 | 1.0 | 0.183 | 33.9 | LOS C | 4.9 | 34.8 | 0.70 | 0.68 | 0.70 | 29.2 |
| East | reat | tern Hig |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 41 | 2.6 | 0.625 | 55.0 | LOS D | 28.4 | 205.1 | 0.94 | 0.82 | 0.94 | 28.2 |
| 5 | T1 | 1342 | 3.0 | 0.625 | 47.7 | LOS D | 28.4 | 205.1 | 0.93 | 0.81 | 0.93 | 35.2 |
| 4 | R2 | 342 | 5.5 | 0.618 | 61.0 | LOS E | 21.2 | 156.3 | 0.96 | 0.84 | 0.96 | 28.0 |
| Appr |  | 1725 | 3.5 | 0.625 | 50.5 | LOS D | 28.4 | 205.1 | 0.94 | 0.81 | 0.94 | 33.4 |
| North | Verri | n Road |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 205 | 3.1 | 0.098 | 15.5 | LOS B | 5.1 | 37.9 | 0.45 | 0.69 | 0.45 | 47.7 |
| 2 | T1 | 20 | 0.0 | 0.963 | 52.9 | LOS D | 38.8 | 284.9 | 0.99 | 1.00 | 1.23 | 18.2 |
| 1 | R2 | 473 | 4.2 | 0.963 | 57.3 | LOS E | 38.8 | 284.9 | 0.99 | 1.00 | 1.23 | 24.0 |
| Appr |  | 698 | 3.8 | 0.963 | 44.9 | LOS D | 38.8 | 284.9 | 0.83 | 0.91 | 1.00 | 28.8 |
| West | Great | stern Hig |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 253 | 3.3 | 0.426 | 51.7 | LOS D | 23.1 | 170.7 | 0.88 | 0.79 | 0.88 | 26.8 |
| 11 | T1 | 1015 | 3.1 | 0.426 | 44.6 | LOS D | 23.9 | 172.1 | 0.88 | 0.75 | 0.88 | 36.3 |
| 10 | R2 | 76 | 2.8 | 0.102 | 54.0 | LOS D | 4.1 | 30.0 | 0.84 | 0.74 | 0.84 | 21.2 |
| Appr |  | 1343 | 3.1 | 0.426 | 46.5 | LOS D | 23.9 | 172.1 | 0.88 | 0.76 | 0.88 | 33.7 |
| All V | icles | 3876 | 3.3 | 0.963 | 47.6 | LOS D | 38.8 | 284.9 | 0.89 | 0.81 | 0.92 | 32.6 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 5 | 64.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 7 | 64.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 14 | 64.6 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／安审 Network：［104 \＆108－PM Mamre Road－PM Peak 2018 Base］

1630－1730
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 140 seconds（Network Site User－Given Phase Times）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh／h | ows <br> HV \％ | Arrival <br> Total veh／h | lows <br> HV \％ | Deg． Satn v／c | Average Delay sec | Level of Service | 95\％ Qu Vehicles veh | k of stance m | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag <br> e <br> Speed km／h |
| South：Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 159 | 4.6 | 159 | 4.6 | 0.113 | 9.3 | LOS A | 2.5 | 18.7 | 0.29 | 0.63 | 0.29 | 46.1 |
| 8 T1 | 231 | 5.0 | 231 | 5.0 | 0.834 | 60.9 | LOS E | 21.2 | 185.4 | 0.96 | 0.81 | 0.98 | 23.5 |
| 7 R2 | 269 | 17.2 | 269 | 17.2 | 0.834 | 72.4 | LOS F | 21.2 | 185.4 | 1.00 | 0.91 | 1.14 | 13.5 |
| Approach | 659 | 9.9 | 659 | 9.9 | 0.834 | 53.2 | LOS D | 21.2 | 185.4 | 0.82 | 0.81 | 0.88 | 22.0 |
| East：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 632 | 5.7 | 632 | 5.7 | 0.340 | 12.4 | LOS A | 14.4 | 111.0 | 0.42 | 0.69 | 0.42 | 47.9 |
| $5 \quad$ T1 | 1351 | 2.1 | 1351 | 2.1 | 0.468 | 41.0 | LOS C | 26.8 | 192.1 | 0.80 | 0.68 | 0.80 | 32.0 |
| 4 R2 | 139 | 2.3 | 139 | 2.3 | 0.239 | 59.6 | LOS E | 7.6 | 54.3 | 0.85 | 0.76 | 0.85 | 27.3 |
| Approach | 2121 | 3.2 | 2121 | 3.2 | 0.468 | 33.7 | LOS C | 26.8 | 192.1 | 0.69 | 0.69 | 0.69 | 35.2 |
| North：Queen Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 60 | 1.8 | 60 | 1.8 | 0.802 | 66.2 | LOS E | 20.8 | 147.7 | 1.00 | 0.96 | 1.33 | 16.0 |
| 2 T1 | 439 | 1.9 | 439 | 1.9 | 0.802 | 62.3 | LOS E | 20.8 | 147.7 | 1.00 | 0.95 | 1.23 | 23.1 |
| 1 R2 | 106 | 0.0 | 106 | 0.0 | 0.802 | 65.1 | LOS E | 20.5 | 145.0 | 1.00 | 0.92 | 1.10 | 20.7 |
| Approach | 605 | 1.6 | 605 | 1.6 | 0.802 | 63.2 | LOS E | 20.8 | 147.7 | 1.00 | 0.94 | 1.22 | 22.1 |
| West：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 31 | 0.0 | 31 | 0.0 | 0.480 | 48.5 | LOS D | 14.6 | 106.1 | 0.87 | 0.75 | 0.87 | 25.2 |
| 11 T1 | 756 | 3.5 | 756 | 3.5 | 0.480 | 42.9 | LOS D | 14.6 | 106.9 | 0.87 | 0.74 | 0.87 | 14.9 |
| 10 R2 | 193 | 3.3 | 193 | 3.3 | 0.692 | 66.9 | LOS E | 12.8 | 94.6 | 1.00 | 0.84 | 1.03 | 19.9 |
| Approach | 979 | 3.3 | 979 | 3.3 | 0.692 | 47.8 | LOS D | 14.6 | 106.9 | 0.90 | 0.76 | 0.90 | 16.9 |
| All Vehicles | 4364 |  | 4364 | 4.0 | 0.834 | 43.9 | LOS D | 26.8 | 192.1 | 0.80 | 0.76 | 0.84 | 27.4 |

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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 7 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 14 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 12 | 64.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 34 | 64.2 | LOS F |  |  | 0.96 | 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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Base.sip8

## MOVEMENT SUMMARY

B Site: TCS 1236 [108-Great Western Highway / Glossop Street - PM Peak 2018 Base]

1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows Arriva <br> HV Total \% veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ack of ue Distance | Prop. Queued | Effective Stop Rate | $\begin{aligned} & \text { Aver. } \\ & \text { No. } \\ & \text { Cycles } \end{aligned}$ | Averag <br> Speed <br> km/h |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 1432 | 2.81432 | 2.8 | 0.463 | 8.3 | LOS A | 17.8 | 129.1 | 0.43 | 0.38 | 0.43 | 47.4 |
| 4 R2 | 558 | 8.7558 | 8.7 | 0.831 | 70.6 | LOS F | 19.9 | 155.7 | 1.00 | 0.92 | 1.15 | 26.1 |
| Approach | 1989 | 4.41989 | 4.4 | 0.831 | 25.8 | LOS B | 19.9 | 155.7 | 0.59 | 0.53 | 0.63 | 35.6 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 456 | 6.5456 | 6.5 | 0.293 | 31.6 | LOS C | 19.3 | 146.3 | 0.69 | 0.77 | 0.69 | 37.2 |
| 1 R2 | 689 | 4.0689 | 4.0 | 0.484 | 58.2 | LOS E | 20.5 | 153.6 | 0.94 | 0.82 | 0.94 | 18.1 |
| Approach | 1145 | 5.01145 | 5.0 | 0.484 | 47.6 | LOS D | 20.5 | 153.6 | 0.84 | 0.80 | 0.84 | 26.0 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L2 | 255 | 19.0255 | 19.0 | 0.431 | 24.7 | LOS B | 9.9 | 86.7 | 0.49 | 0.66 | 0.49 | 41.6 |
| 11 T1 | 831 | 3.0831 | 3.0 | 0.431 | 20.3 | LOS B | 12.7 | 92.6 | 0.53 | 0.49 | 0.53 | 45.3 |
| Approach | 1085 | 6.81085 | 6.8 | 0.431 | 21.3 | LOS B | 12.7 | 92.6 | 0.52 | 0.53 | 0.52 | 44.5 |
| All Vehicles | 4220 | 5.24220 | 5.2 | 0.831 | 30.5 | LOS C | 20.5 | 155.7 | 0.64 | 0.60 | 0.66 | 35.2 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | Queue Distance m | Prop. Queued | Effective Stop Rate |
| P2 | East Full Crossing | 2 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 3 | 64.1 | LOS F |  |  | 0.96 | 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.

## MOVEMENT SUMMARY

日 Site: TCS 1234 [105-Great Western Highway / Carlisle Avenue - PM Peak 2018 Base]
1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time $=143$ seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Turn | Deman <br> Total veh/h | $\begin{aligned} & \text { =lows } \\ & \text { HV } \\ & \text { \% } \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 86 | 9.8 | 0.164 | 33.3 | LOS C | 3.6 | 31.3 | 0.80 | 0.74 | 0.80 | 37.7 |
| 8 | T1 | 597 | 3.4 | 0.714 | 61.8 | LOS E | 19.6 | 140.4 | 1.00 | 0.84 | 1.01 | 27.8 |
| 7 | R2 | 107 | 3.9 | 0.486 | 73.8 | LOS F | 7.2 | 53.3 | 0.99 | 0.78 | 0.99 | 25.8 |
| Appr |  | 791 | 4.1 | 0.714 | 60.3 | LOS E | 19.6 | 140.4 | 0.98 | 0.82 | 0.98 | 28.3 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 135 | 3.9 | 0.461 | 48.4 | LOS D | 27.5 | 197.9 | 0.87 | 0.78 | 0.90 | 35.1 |
| 5 | T1 | 1332 | 2.4 | 0.461 | 42.5 | LOS C | 28.4 | 203.9 | 0.87 | 0.75 | 0.87 | 40.7 |
| 4 | R2 | 492 | 2.1 | 0.544 | 70.2 | LOS E | 16.0 | 115.1 | 0.99 | 0.81 | 0.99 | 29.5 |
| Appr | ch | 1958 | 2.4 | 0.544 | 49.8 | LOS D | 28.4 | 203.9 | 0.90 | 0.77 | 0.91 | 36.8 |
| North: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 289 | 2.2 | 0.180 | 27.5 | LOS B | 11.0 | 80.1 | 0.65 | 0.74 | 0.65 | 43.1 |
| 2 | T1 | 596 | 5.8 | 0.509 | 41.9 | LOS C | 33.0 | 249.9 | 0.87 | 0.76 | 0.87 | 34.4 |
| 1 | R2 | 631 | 2.8 | 0.416 | 35.9 | LOS C | 13.4 | 96.1 | 0.91 | 0.80 | 0.91 | 39.0 |
| Appr |  | 1516 | 3.9 | 0.509 | 36.7 | LOS C | 33.0 | 249.9 | 0.85 | 0.77 | 0.85 | 38.0 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 424 | 1.7 | 0.549 | 25.3 | LOS B | 13.0 | 92.4 | 0.77 | 0.83 | 0.83 | 45.2 |
| 11 | T1 | 637 | 4.3 | 0.549 | 44.0 | LOS D | 17.6 | 129.9 | 0.89 | 0.77 | 0.89 | 40.1 |
| 10 | R2 | 103 | 11.2 | 0.491 | 71.7 | LOS F | 6.9 | 57.0 | 0.98 | 0.79 | 0.98 | 25.6 |
| Approach |  | 1164 | 4.0 | 0.549 | 39.6 | LOS C | 17.6 | 129.9 | 0.85 | 0.80 | 0.88 | 40.1 |
| All Vehicles |  | 5428 | 3.4 | 0.714 | 45.5 | LOS D | 33.0 | 249.9 | 0.89 | 0.78 | 0.89 | 36.3 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{aligned} & \text { Demand } \\ & \text { Flow } \\ & \text { ped/h } \end{aligned}$ | Average Delay sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.6 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

Site: TCS 3118 [106-Mamre Road / M4 Western Motorway Off-ramp/On-ramp (South) - PM Peak 2018 Base]
1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h |  | Arrival <br> Total veh/h | ows <br> HV <br> \% | Deg. Satn v/c | Average Delay sec | Level of Service |  | of of istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed <br> km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1021 | 5.5 | 1021 | 5.5 | 0.317 | 5.5 | LOS A | 10.2 | 77.3 | 0.36 | 0.33 | 0.36 | 46.9 |
| 7 R2 | 420 | 4.3 | 420 | 4.3 | 0.951 | 80.0 | LOS F | 30.7 | 230.9 | 1.00 | 1.04 | 1.41 | 19.9 |
| Approach | 1441 | 5.1 | 1441 | 5.1 | 0.951 | 27.2 | LOS B | 30.7 | 230.9 | 0.55 | 0.53 | 0.67 | 27.7 |
| East: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 283 | 4.1 | 283 | 4.1 | 0.317 | 9.7 | LOS A | 4.8 | 34.9 | 0.37 | 0.67 | 0.37 | 49.4 |
| 4 R2 | 358 | 5.9 | 358 | 5.9 | 0.635 | 57.2 | LOS E | 10.2 | 76.1 | 0.98 | 0.82 | 0.99 | 21.2 |
| Approach | 641 | 5.1 | 641 | 5.1 | 0.635 | 36.2 | LOS C | 10.2 | 76.1 | 0.71 | 0.75 | 0.72 | 31.1 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 751 | 2.1 | 751 | 2.1 | 0.377 | 12.7 | LOS A | 20.6 | 149.5 | 0.53 | 0.72 | 0.53 | 34.6 |
| $2 \quad \mathrm{~T} 1$ | 1362 |  | 1362 | 4.4 | 0.528 | 20.1 | LOS B | 25.2 | 185.6 | 0.60 | 0.53 | 0.60 | 36.7 |
| Approach | 2113 | 3.6 | 2113 | 3.6 | 0.528 | 17.5 | LOS B | 25.2 | 185.6 | 0.58 | 0.60 | 0.58 | 35.7 |
| All Vehicles | 4195 |  | 4195 | 4.3 | 0.951 | 23.7 | LOS B | 30.7 | 230.9 | 0.59 | 0.60 | 0.63 | 32.2 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

Site: TCS 3117 [107 - Mamre Road / M4 Western Motorway Off-ramp/On-ramp (North) - PM Peak 2018 Base]
1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time $=120$ seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Ows | Arriva Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | of of istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 114 | 8.3 | 114 | 8.3 | 0.073 | 9.0 | LOS A | 2.1 | 17.5 | 0.38 | 0.60 | 0.38 | 36.6 |
| 8 T1 | 1265 | 5.3 | 1265 | 5.3 | 0.454 | 24.6 | LOS B | 27.6 | 205.3 | 0.81 | 0.72 | 0.81 | 32.8 |
| Approach | 1379 | 5.6 | 1379 | 5.6 | 0.454 | 23.3 | LOS B | 27.6 | 205.3 | 0.78 | 0.71 | 0.78 | 33.2 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 1573 | 3.1 | 1573 | 3.1 | 0.699 | 7.3 | LOS A | 30.7 | 224.9 | 0.51 | 0.47 | 0.51 | 42.2 |
| R2 | 254 | 5.8 | 254 | 5.8 | 0.762 | 59.2 | LOS E | 14.9 | 114.8 | 1.00 | 0.88 | 1.09 | 22.5 |
| Approach | 1826 | 3.5 | 1826 | 3.5 | 0.762 | 14.5 | LOS B | 30.7 | 224.9 | 0.57 | 0.53 | 0.59 | 33.4 |
| West: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 377 | 5.3 | 377 | 5.3 | 0.458 | 12.0 | LOS A | 8.7 | 65.1 | 0.49 | 0.72 | 0.49 | 47.0 |
| 10 R2 | 540 | 4.9 | 540 | 4.9 | 0.959 | 88.1 | LOS F | 20.5 | 151.8 | 1.00 | 1.09 | 1.53 | 15.5 |
| Approach | 917 | 5.1 |  | 5.1 | 0.959 | 56.9 | LOS E | 20.5 | 151.8 | 0.79 | 0.93 | 1.10 | 23.7 |
| All Vehicles | 4122 |  | 4122 | 4.5 | 0.959 | 26.9 | LOS B | 30.7 | 224.9 | 0.69 | 0.68 | 0.77 | 29.7 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

$\nabla$ Site: [109 - Glossop Street / Harris Street - AM Peak 2019 Base]
0800-0900
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{\|l\|l\|} \hline \text { Mov Turn } \\ \text { ID } \end{array}$ | Deman <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| L2 | 65 | 6.2 | 0.365 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.06 | 0.00 | 56.6 |
| 2 T1 | 1232 | 9.0 | 0.365 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 59.3 |
| Approach | 1297 | 8.9 | 0.365 | 0.3 | NA | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 59.0 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1415 | 11.0 | 0.398 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.9 |
| Approach | 1415 | 11.0 | 0.398 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.9 |
| West: Harris Street |  |  |  |  |  |  |  |  |  |  |  |
| 10 L2 | 28 | 14.3 | 0.051 | 9.1 | LOS A | 0.2 | 1.4 | 0.55 | 0.74 | 0.55 | 41.6 |
| Approach | 28 | 14.3 | 0.051 | 9.1 | LOS A | 0.2 | 1.4 | 0.55 | 0.74 | 0.55 | 41.6 |
| All Vehicles | 2740 | 10.0 | 0.398 | 0.2 | NA | 0.2 | 1.4 | 0.01 | 0.02 | 0.01 | 59.1 |

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

## MOVEMENT SUMMARY

$\nabla$ Site: [110 - Forrester Road / Harris Street - AM Peak 2019 Base]
0800-0900
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Deman Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | T1 | 70 | 8.6 | 0.039 | 0.0 | LOS A | 0.0 | 0.3 | 0.04 | 0.00 | 0.04 | 33.4 |
| 3 | R2 | 5 | 20.0 | 0.039 | 0.4 | LOS A | 0.0 | 0.3 | 0.04 | 0.00 | 0.04 | 38.8 |
| Appro |  | 75 | 9.3 | 0.039 | 0.1 | NA | 0.0 | 0.3 | 0.04 | 0.00 | 0.04 | 33.7 |
| East: Harris Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 6 | 0.0 | 0.040 | 8.3 | LOS A | 0.1 | 1.1 | 0.22 | 0.60 | 0.22 | 38.7 |
| 6 | R2 | 36 | 16.7 | 0.040 | 5.5 | LOS A | 0.1 | 1.1 | 0.22 | 0.60 | 0.22 | 41.1 |
| Appro |  | 42 | 14.3 | 0.040 | 5.9 | LOS A | 0.1 | 1.1 | 0.22 | 0.60 | 0.22 | 40.9 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 47 | 14.9 | 0.064 | 3.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.64 | 0.00 | 38.1 |
| 8 | T1 | 64 | 7.8 | 0.064 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.64 | 0.00 | 35.0 |
| Appro |  | 111 | 10.8 | 0.064 | 4.8 | NA | 0.0 | 0.0 | 0.00 | 0.64 | 0.00 | 36.8 |
| All Ve | icles | 228 | 11.0 | 0.064 | 3.4 | NA | 0.1 | 1.1 | 0.05 | 0.42 | 0.05 | 36.9 |

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

## MOVEMENT SUMMARY

Site: TCS 3129 [111 - Forrester Road / Glossop Street / Access Road - AM Peak 2019 Base]
0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \mathrm{Mov} \\ & \mathrm{ID} \end{aligned}$ | Turn | $\begin{aligned} & \text { Demanc } \\ & \text { Total } \\ & \text { veh/h } \\ & \hline \end{aligned}$ | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 2 | 0.0 | 0.117 | 46.7 | LOS D | 3.2 | 23.7 | 0.73 | 0.61 | 1.26 | 24.1 |
| 2 | T1 | 75 | 6.7 | 0.117 | 32.8 | LOS C | 3.2 | 23.7 | 0.73 | 0.61 | 1.26 | 36.8 |
| 3 | R2 | 42 | 26.2 | 0.177 | 40.9 | LOS C | 1.7 | 17.9 | 0.90 | 0.70 | 0.90 | 32.7 |
| Appr | ach | 119 | 13.4 | 0.177 | 35.9 | LOS C | 3.2 | 23.7 | 0.79 | 0.64 | 1.13 | 35.1 |
| East: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 43 | 20.9 | 0.508 | 34.0 | LOS C | 11.6 | 95.6 | 0.80 | 0.85 | 1.22 | 35.9 |
| 5 | T1 | 7 | 0.0 | 0.508 | 46.2 | LOS D | 11.6 | 95.6 | 0.80 | 0.85 | 1.22 | 25.9 |
| 6 | R2 | 652 | 13.7 | 0.508 | 30.7 | LOS C | 11.6 | 95.6 | 0.80 | 0.83 | 1.00 | 39.0 |
| Appr | ach | 702 | 14.0 | 0.508 | 31.0 | LOS C | 11.6 | 95.6 | 0.80 | 0.83 | 1.01 | 38.7 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 829 | 9.5 | 0.843 | 21.4 | LOS B | 21.6 | 170.5 | 0.89 | 0.92 | 1.01 | 43.2 |
| 8 | T1 | 131 | 4.6 | 0.362 | 37.0 | LOS C | 5.2 | 38.1 | 0.92 | 0.75 | 0.92 | 35.2 |
| Appr | ach | 960 | 8.9 | 0.843 | 23.5 | LOS B | 21.6 | 170.5 | 0.90 | 0.89 | 1.00 | 41.9 |
| West: Access Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 2 | 0.0 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 19.2 |
| 11 | T1 | 3 | 33.3 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.5 |
| 12 | R2 | 1 | 0.0 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.3 |
| Approach |  | 6 | 16.7 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.7 |
| All Ve | icles | 1787 | 11.2 | 0.843 | 27.4 | LOS B | 21.6 | 170.5 | 0.85 | 0.85 | 1.01 | 40.0 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 1 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P2 | East Full Crossing | 20 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P4 | West Full Crossing | 6 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| All P | estrians | 27 | 39.2 | LOS D |  |  | 0.93 | 0.93 |

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

## MOVEMENT SUMMARY

$\Rightarrow$ Site: [112 - Forrester Road / Christie Street / Boronia Road - AM Peak 2019 Base]
0800-0900
Site Category: (None)
Roundabout

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov |  | Deman Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 151 | 18.5 | 0.607 | 14.0 | LOS A | 6.0 | 49.7 | 0.97 | 1.08 | 1.24 | 48.4 |
| 2 | T1 | 477 | 12.4 | 0.607 | 14.7 | LOS B | 6.0 | 49.7 | 0.97 | 1.09 | 1.25 | 48.2 |
| 3 | R2 | 21 | 4.8 | 0.607 | 19.8 | LOS B | 5.8 | 47.4 | 0.96 | 1.10 | 1.26 | 45.6 |
| 3 u | U | 32 | 18.8 | 0.607 | 23.7 | LOS B | 5.8 | 47.4 | 0.96 | 1.10 | 1.26 | 49.3 |
| Appr |  | 681 | 13.8 | 0.607 | 15.1 | LOS B | 6.0 | 49.7 | 0.97 | 1.09 | 1.25 | 48.2 |
| East: Boronia Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 6 | 16.7 | 0.212 | 10.4 | LOS A | 1.0 | 7.2 | 0.83 | 0.92 | 0.83 | 45.0 |
| 5 | T1 | 23 | 0.0 | 0.212 | 9.1 | LOSA | 1.0 | 7.2 | 0.83 | 0.92 | 0.83 | 46.6 |
| 6 | R2 | 41 | 2.4 | 0.212 | 14.5 | LOS B | 1.0 | 7.2 | 0.83 | 0.92 | 0.83 | 45.5 |
| 6 u | U | 1 | 0.0 | 0.212 | 16.3 | LOS B | 1.0 | 7.2 | 0.83 | 0.92 | 0.83 | 44.3 |
| Appr |  | 71 | 2.8 | 0.212 | 12.5 | LOS A | 1.0 | 7.2 | 0.83 | 0.92 | 0.83 | 45.8 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 21 | 0.0 | 0.742 | 10.4 | LOS A | 10.3 | 77.2 | 0.94 | 0.94 | 1.18 | 46.0 |
| 8 | T1 | 756 | 5.7 | 0.742 | 10.9 | LOSA | 10.3 | 77.2 | 0.94 | 0.94 | 1.19 | 51.3 |
| 9 | R2 | 569 | 6.5 | 0.742 | 17.4 | LOS B | 10.0 | 77.4 | 0.95 | 1.00 | 1.23 | 47.5 |
| 9 u | U | 4 | 25.0 | 0.742 | 20.5 | LOS B | 10.0 | 77.4 | 0.95 | 1.00 | 1.23 | 43.8 |
| Appr |  | 1350 | 6.0 | 0.742 | 13.7 | LOS A | 10.3 | 77.4 | 0.94 | 0.97 | 1.21 | 49.5 |
| West: Christie Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 613 | 7.5 | 0.823 | 16.4 | LOS B | 11.1 | 86.0 | 1.00 | 1.26 | 1.63 | 45.9 |
| 11 | T1 | 20 | 0.0 | 0.534 | 10.7 | LOS A | 3.9 | 29.4 | 0.85 | 1.01 | 1.03 | 45.5 |
| 12 | R2 | 288 | 5.6 | 0.534 | 16.5 | LOS B | 3.9 | 29.4 | 0.85 | 1.01 | 1.03 | 49.0 |
| 12u | U | 1 | 0.0 | 0.534 | 18.3 | LOS B | 3.9 | 29.4 | 0.85 | 1.01 | 1.03 | 50.2 |
| Approach |  | 922 | 6.7 | 0.823 | 16.3 | LOS B | 11.1 | 86.0 | 0.95 | 1.18 | 1.43 | 46.9 |
| All Vehicles |  | 3024 | 7.9 | 0.823 | 14.8 | LOS B | 11.1 | 86.0 | 0.95 | 1.06 | 1.28 | 48.3 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

$\theta$ Site: [113 - Christie Street / Dunheved Road / Werrington Road - AM Peak 2019 Base]
0800-0900
Site Category: (None)
Roundabout

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Deman <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \hline \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Werrington Road 0 d |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 267 | 6.7 | 0.397 | 9.4 | LOS A | 2.8 | 21.6 | 0.78 | 0.82 | 0.78 | 55.5 |
| 3 | R2 | 331 | 9.4 | 0.467 | 15.8 | LOS B | 3.7 | 29.4 | 0.82 | 0.88 | 0.86 | 52.4 |
| 3 u | U | 1 | 0.0 | 0.467 | 17.6 | LOS B | 3.7 | 29.4 | 0.82 | 0.88 | 0.86 | 56.1 |
| Appro |  | 599 | 8.2 | 0.467 | 12.9 | LOS A | 3.7 | 29.4 | 0.80 | 0.85 | 0.83 | 53.6 |
| East: Christie Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 297 | 13.1 | 0.349 | 6.6 | LOS A | 2.4 | 20.1 | 0.67 | 0.69 | 0.67 | 53.7 |
| 5 | T1 | 440 | 8.0 | 0.402 | 5.5 | LOS A | 3.1 | 24.2 | 0.67 | 0.58 | 0.67 | 55.0 |
| 6 u | U | 2 | 50.0 | 0.402 | 14.9 | LOS B | 3.1 | 24.2 | 0.67 | 0.58 | 0.67 | 54.5 |
| Appro |  | 739 | 10.1 | 0.402 | 6.0 | LOS A | 3.1 | 24.2 | 0.67 | 0.62 | 0.67 | 54.4 |
| West: Dunheved Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | T1 | 713 | 4.8 | 0.546 | 6.6 | LOS A | 5.1 | 37.9 | 0.75 | 0.61 | 0.75 | 55.9 |
| 12 | R2 | 346 | 2.3 | 0.342 | 12.7 | LOS A | 2.5 | 18.0 | 0.66 | 0.74 | 0.66 | 54.7 |
| 12u | U | 1 | 0.0 | 0.342 | 15.2 | LOS B | 2.5 | 18.0 | 0.66 | 0.74 | 0.66 | 55.1 |
| Approach |  | 1060 | 4.0 | 0.546 | 8.6 | LOS A | 5.1 | 37.9 | 0.72 | 0.65 | 0.72 | 55.5 |
| All Vehicles |  | 2398 | 6.9 | 0.546 | 8.9 | LOS A | 5.1 | 37.9 | 0.73 | 0.69 | 0.73 | 54.6 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

$\nabla$ Site: [109 - Glossop Street / Harris Street - PM Peak 2019 Base]
1630-1730
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov Turn } \\ & \text { ID } \end{aligned}$ | Deman Total veh/h | $\begin{gathered} \text { lows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| L2 | 27 | 0.0 | 0.373 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 0.00 | 57.5 |
| 2 T1 | 1334 | 5.5 | 0.373 | 0.0 | LOSA | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 59.6 |
| Approach | 1361 | 5.4 | 0.373 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 59.6 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1755 | 3.6 | 0.464 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.9 |
| Approach | 1755 | 3.6 | 0.464 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.9 |
| West: Harris Street |  |  |  |  |  |  |  |  |  |  |  |
| 10 L2 | 61 | 1.6 | 0.102 | 8.9 | LOS A | 0.3 | 2.5 | 0.58 | 0.80 | 0.58 | 42.5 |
| Approach | 61 | 1.6 | 0.102 | 8.9 | LOS A | 0.3 | 2.5 | 0.58 | 0.80 | 0.58 | 42.5 |
| All Vehicles | 3177 | 4.3 | 0.464 | 0.2 | NA | 0.3 | 2.5 | 0.01 | 0.02 | 0.01 | 59.0 |

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

## MOVEMENT SUMMARY

$\nabla$ Site: [110 - Forrester Road / Harris Street - PM Peak 2019 Base]
1630-1730
Site Category: (None)
Giveway / Yield (Two-Way)


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

## MOVEMENT SUMMARY

日 Site: TCS 3129 [111 - Forrester Road / Glossop Street / Access Road - PM Peak 2019 Base]
1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 89 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Turn | Deman <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 1 | 0.0 | 0.213 | 48.6 | LOS D | 5.7 | 39.8 | 0.77 | 0.64 | 1.31 | 23.7 |
| 2 | T1 | 137 | 0.0 | 0.213 | 34.6 | LOS C | 5.7 | 39.8 | 0.77 | 0.64 | 1.31 | 36.3 |
| 3 | R2 | 144 | 3.5 | 0.524 | 44.1 | LOS D | 6.0 | 44.0 | 0.96 | 0.86 | 1.21 | 32.4 |
| Appr | ach | 282 | 1.8 | 0.524 | 39.5 | LOS C | 6.0 | 44.0 | 0.87 | 0.76 | 1.26 | 34.2 |
| East: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 33 | 36.4 | 0.651 | 37.1 | LOS C | 16.4 | 127.5 | 0.87 | 0.87 | 1.32 | 34.8 |
| 5 | T1 | 1 | 0.0 | 0.651 | 49.0 | LOS D | 16.4 | 127.5 | 0.87 | 0.87 | 1.32 | 25.1 |
| 6 | R2 | 902 | 4.9 | 0.651 | 32.9 | LOS C | 16.8 | 124.9 | 0.87 | 0.85 | 1.08 | 38.4 |
| Appr | ach | 936 | 6.0 | 0.651 | 33.1 | LOS C | 16.8 | 127.5 | 0.87 | 0.85 | 1.09 | 38.2 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 835 | 4.7 | 0.757 | 14.7 | LOS B | 15.0 | 110.6 | 0.83 | 0.85 | 0.84 | 47.0 |
| 8 | T1 | 78 | 0.0 | 0.199 | 35.9 | LOS C | 3.0 | 20.7 | 0.90 | 0.71 | 0.90 | 35.6 |
| Appr | ach | 913 | 4.3 | 0.757 | 16.5 | LOS B | 15.0 | 110.6 | 0.83 | 0.84 | 0.85 | 45.8 |
| West: Access Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 2 | 0.0 | 0.044 | 41.3 | LOS C | 0.3 | 2.5 | 0.94 | 0.62 | 0.94 | 19.8 |
| 11 | T1 | 4 | 50.0 | 0.044 | 41.3 | LOS C | 0.3 | 2.5 | 0.94 | 0.62 | 0.94 | 18.7 |
| 12 | R2 | 1 | 0.0 | 0.044 | 41.3 | LOS C | 0.3 | 2.5 | 0.94 | 0.62 | 0.94 | 18.8 |
| Appr | ach | 7 | 28.6 | 0.044 | 41.3 | LOS C | 0.3 | 2.5 | 0.94 | 0.62 | 0.94 | 19.0 |
| All Ve | icles | 2138 | 4.8 | 0.757 | 26.9 | LOS B | 16.8 | 127.5 | 0.86 | 0.83 | 1.01 | 40.4 |

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

## Movement Performance - Pedestrians

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Average Back of Queue |  |  | Prop. Queued | Effective Stop Rate |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| P1 | South Full Crossing | 1 | 38.7 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P2 | East Full Crossing | 13 | 38.7 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P4 | West Full Crossing | 13 | 38.7 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| All Pe | estrians | 27 | 38.7 | LOS D |  |  | 0.93 | 0.93 |

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

## MOVEMENT SUMMARY

Site: [112 - Forrester Road / Christie Street / Boronia Road - PM Peak 2019 Base]
1630-1730
Site Category: (None)
Roundabout

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \mathrm{Mov} \\ & \mathrm{ID} \end{aligned}$ |  | Deman Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 136 | 1.5 | 0.821 | 25.5 | LOS B | 14.0 | 102.4 | 1.00 | 1.34 | 1.86 | 42.2 |
| 2 | T1 | 733 | 4.1 | 0.821 | 27.6 | LOS B | 14.0 | 102.4 | 1.00 | 1.35 | 1.88 | 40.8 |
| 3 | R2 | 39 | 0.0 | 0.821 | 34.6 | LOS C | 12.3 | 90.2 | 1.00 | 1.35 | 1.90 | 37.8 |
| 3 u | U | 43 | 2.3 | 0.821 | 37.1 | LOS C | 12.3 | 90.2 | 1.00 | 1.35 | 1.90 | 41.8 |
| Appr |  | 951 | 3.5 | 0.821 | 28.1 | LOS B | 14.0 | 102.4 | 1.00 | 1.35 | 1.88 | 41.0 |
| East: Boronia Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 38 | 0.0 | 0.305 | 8.9 | LOS A | 1.5 | 10.7 | 0.83 | 0.92 | 0.86 | 46.3 |
| 5 | T1 | 32 | 3.1 | 0.305 | 8.9 | LOS A | 1.5 | 10.7 | 0.83 | 0.92 | 0.86 | 47.6 |
| 6 | R2 | 43 | 0.0 | 0.305 | 13.9 | LOS A | 1.5 | 10.7 | 0.83 | 0.92 | 0.86 | 46.7 |
| 6 u | U | 1 | 0.0 | 0.305 | 15.9 | LOS B | 1.5 | 10.7 | 0.83 | 0.92 | 0.86 | 45.4 |
| Appr |  | 114 | 0.9 | 0.305 | 10.9 | LOS A | 1.5 | 10.7 | 0.83 | 0.92 | 0.86 | 46.8 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 14 | 7.1 | 0.719 | 9.2 | LOS A | 9.1 | 65.7 | 0.85 | 0.78 | 0.97 | 47.2 |
| 8 | T1 | 641 | 2.8 | 0.719 | 9.1 | LOS A | 9.1 | 65.7 | 0.85 | 0.78 | 0.97 | 53.0 |
| 9 | R2 | 686 | 5.7 | 0.790 | 16.7 | LOS B | 12.4 | 92.3 | 0.94 | 0.89 | 1.16 | 47.7 |
| 9 u | U | 24 | 0.0 | 0.790 | 18.7 | LOS B | 12.4 | 92.3 | 0.94 | 0.89 | 1.16 | 47.9 |
| Appr |  | 1365 | 4.2 | 0.790 | 13.1 | LOS A | 12.4 | 92.3 | 0.89 | 0.84 | 1.07 | 50.0 |
| West: Christie Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 623 | 3.2 | 0.892 | 22.4 | LOS B | 13.6 | 98.3 | 1.00 | 1.40 | 2.08 | 42.4 |
| 11 | T1 | 13 | 0.0 | 0.374 | 11.4 | LOS A | 2.1 | 15.1 | 0.83 | 0.97 | 0.91 | 45.1 |
| 12 | R2 | 133 | 4.5 | 0.374 | 17.1 | LOS B | 2.1 | 15.1 | 0.83 | 0.97 | 0.91 | 48.7 |
| 12u | U | 4 | 0.0 | 0.374 | 19.1 | LOS B | 2.1 | 15.1 | 0.83 | 0.97 | 0.91 | 49.9 |
| Approach |  | 773 | 3.4 | 0.892 | 21.3 | LOS B | 13.6 | 98.3 | 0.97 | 1.32 | 1.85 | 43.6 |
| All Vehicles |  | 3203 | 3.7 | 0.892 | 19.5 | LOS B | 14.0 | 102.4 | 0.94 | 1.11 | 1.49 | 45.3 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

$\theta$ Site: [113 - Christie Street / Dunheved Road / Werrington Road - PM Peak 2019 Base]
1630-1730
Site Category: (None)
Roundabout

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Turn | Demand <br> Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \hline \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Werrington Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 604 | 2.0 | 0.580 | 10.4 | LOS A | 6.8 | 48.6 | 0.98 | 0.91 | 1.13 | 55.5 |
| 3 | R2 | 253 | 2.8 | 0.337 | 15.3 | LOS B | 2.6 | 18.8 | 0.87 | 0.86 | 0.87 | 52.9 |
| 3 u | U | 1 | 0.0 | 0.337 | 17.7 | LOS B | 2.6 | 18.8 | 0.87 | 0.86 | 0.87 | 56.4 |
| Appr | ach | 858 | 2.2 | 0.580 | 11.8 | LOS A | 6.8 | 48.6 | 0.95 | 0.90 | 1.05 | 54.6 |
| East: Christie Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 435 | 2.8 | 0.425 | 5.7 | LOS A | 3.3 | 23.8 | 0.64 | 0.63 | 0.64 | 56.2 |
| 5 | T1 | 684 | 3.4 | 0.545 | 5.1 | LOS A | 5.0 | 36.3 | 0.69 | 0.54 | 0.69 | 55.7 |
| 6 u | U | 3 | 0.0 | 0.545 | 13.2 | LOS A | 5.0 | 36.3 | 0.69 | 0.54 | 0.69 | 56.5 |
| Appr | ach | 1122 | 3.1 | 0.545 | 5.4 | LOS A | 5.0 | 36.3 | 0.67 | 0.58 | 0.67 | 55.9 |
| West: Dunheved Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | T1 | 502 | 4.4 | 0.650 | 10.0 | LOS A | 7.0 | 51.2 | 0.83 | 0.81 | 0.94 | 55.2 |
| 12 | R2 | 262 | 3.1 | 0.422 | 14.4 | LOS A | 2.9 | 21.1 | 0.69 | 0.79 | 0.69 | 53.9 |
| 12u | U | 1 | 0.0 | 0.422 | 16.7 | LOS B | 2.9 | 21.1 | 0.69 | 0.79 | 0.69 | 54.4 |
| Appr | ach | 765 | 3.9 | 0.650 | 11.5 | LOS A | 7.0 | 51.2 | 0.78 | 0.80 | 0.85 | 54.7 |
| All Ve | icles | 2745 | 3.1 | 0.650 | 9.1 | LOS A | 7.0 | 51.2 | 0.79 | 0.74 | 0.84 | 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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

日 Site: TCS 2986 [101 - Richmond Road / Dunheved Road - AM Peak 2030 Base]
0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 129 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID |  | Deman Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Richmond Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | T1 | 1104 | 10.3 | 0.361 | 6.7 | LOS A | 12.5 | 100.4 | 0.40 | 0.36 | 0.40 | 58.3 |
| 7 | R2 | 360 | 3.8 | 0.945 | 80.6 | LOS F | 19.1 | 137.8 | 0.99 | 0.94 | 1.31 | 26.9 |
| Appr |  | 1464 | 8.7 | 0.945 | 24.9 | LOS B | 19.1 | 137.8 | 0.54 | 0.50 | 0.62 | 41.9 |
| East: Dunheved Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 468 | 1.8 | 0.564 | 33.4 | LOS C | 23.6 | 167.5 | 0.91 | 0.91 | 1.00 | 41.7 |
| 4 | R2 | 447 | 9.2 | 0.512 | 58.0 | LOS E | 13.2 | 102.8 | 0.95 | 0.81 | 0.95 | 24.7 |
| Appr | ach | 916 | 5.4 | 0.564 | 45.4 | LOS D | 23.6 | 167.5 | 0.93 | 0.86 | 0.98 | 33.1 |
| North: Richmond Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 423 | 11.2 | 0.316 | 9.2 | LOS A | 6.0 | 49.6 | 0.30 | 0.67 | 0.30 | 48.9 |
| 2 | T1 | 1805 | 5.0 | 0.894 | 23.4 | LOS B | 51.9 | 391.6 | 0.73 | 0.73 | 0.80 | 41.3 |
| Appr |  | 2228 | 6.2 | 0.894 | 20.7 | LOS B | 51.9 | 391.6 | 0.65 | 0.72 | 0.70 | 42.6 |
| All Ve | icles | 4608 | 6.8 | 0.945 | 27.0 | LOS B | 51.9 | 391.6 | 0.67 | 0.68 | 0.73 | 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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 58.6 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 58.6 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 58.6 | LOS E |  |  | 0.95 | 0.95 |

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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Organisation: BITZIOS CONSULTING | Processed: Friday, 25 January 2019 9:52:23 AM
Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M St Marys Inland Container Terminal EIS_2030 Base.sip8

## MOVEMENT SUMMARY

日 Site: TCS 442 [102 - Great Western Highway / Parker Street - AM Peak 2030 Base]
0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time $=144$ seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Deman Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Parker Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 446 | 2.8 | 0.354 | 21.9 | LOS B | 17.8 | 128.0 | 0.64 | 0.78 | 0.65 | 34.8 |
| 8 | T1 | 981 | 7.8 | 0.999 | 104.4 | LOS F | 47.0 | 360.2 | 1.00 | 1.22 | 1.47 | 12.5 |
| 7 | R2 | 136 | 7.0 | 0.327 | 62.5 | LOS E | 8.3 | 61.9 | 0.92 | 0.78 | 0.92 | 23.7 |
| Appr | ach | 1563 | 6.3 | 0.999 | 77.2 | LOS F | 47.0 | 360.2 | 0.89 | 1.05 | 1.19 | 16.6 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 215 | 5.4 | 0.328 | 35.6 | LOS C | 11.1 | 82.0 | 0.72 | 0.75 | 0.72 | 32.4 |
| 5 | T1 | 914 | 2.3 | 0.808 | 53.0 | LOS D | 30.0 | 215.6 | 0.99 | 0.91 | 1.04 | 29.1 |
| 4 | R2 | 448 | 8.5 | 1.040 | 113.9 | LOS F | 39.0 | 311.2 | 1.00 | 1.17 | 1.67 | 14.9 |
| Appr |  | 1577 | 4.5 | 1.040 | 68.0 | LOS E | 39.0 | 311.2 | 0.95 | 0.96 | 1.17 | 23.2 |
| North: Parker Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 1159 | 4.2 | 0.439 | 6.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 0.00 | 57.2 |
| 2 | T1 | 1121 | 6.2 | 1.101 | 170.6 | LOS F | 73.4 | 554.4 | 1.00 | 1.51 | 1.86 | 8.0 |
| 1 | R2 | 396 | 5.9 | 0.910 | 81.0 | LOS F | 30.5 | 224.3 | 1.00 | 0.95 | 1.24 | 18.6 |
| Appro |  | 2676 | 5.3 | 1.101 | 86.4 | LOS F | 73.4 | 554.4 | 0.57 | 1.02 | 0.96 | 18.2 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 221 | 6.2 | 0.125 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.53 | 0.00 | 51.7 |
| 11 | T1 | 577 | 4.2 | 1.045 | 138.6 | LOS F | 33.2 | 245.1 | 1.00 | 1.33 | 1.75 | 15.7 |
| 10 | R2 | 186 | 4.0 | 0.632 | 66.7 | LOS E | 12.4 | 89.6 | 0.98 | 0.82 | 0.98 | 18.1 |
| Approach |  | 984 | 4.6 | 1.045 | 95.1 | LOS F | 33.2 | 245.1 | 0.77 | 1.05 | 1.21 | 18.5 |
| All Vehicles |  | 6800 | 5.2 | 1.101 | 81.3 | LOS F | 73.4 | 554.4 | 0.76 | 1.02 | 1.10 | 19.1 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 113 | 66.4 | LOS F | 0.4 | 0.4 | 0.96 | 0.96 |
| P2 | East Full Crossing | 64 | 66.3 | LOS F | 0.3 | 0.3 | 0.96 | 0.96 |
| P1 | North Full Crossing | 101 | 66.4 | LOS F | 0.4 | 0.4 | 0.96 | 0.96 |
| P4 | West Full Crossing | 87 | 66.4 | LOS F | 0.3 | 0.3 | 0.96 | 0.96 |
| All Pedestrians |  | 365 | 66.4 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

```
Site: TCS 2385 [103-Great Western Highway / Werrington Road / Reserve Road - AM Peak 2030 Base]
0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 142 seconds (Site User-Given Phase Times)
```

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Demand <br> Total veh/h | $\begin{gathered} \text { lows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed $\mathrm{km} / \mathrm{h}$ |
| South: Reserve Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 36 | 0.0 | 0.139 | 35.1 | LOS C | 3.7 | 26.6 | 0.69 | 0.69 | 0.69 | 26.9 |
| 8 | T1 | 25 | 4.2 | 0.139 | 32.0 | LOS C | 3.7 | 26.6 | 0.69 | 0.69 | 0.69 | 21.9 |
| 7 | R2 | 22 | 4.8 | 0.139 | 35.1 | LOS C | 3.7 | 26.6 | 0.69 | 0.69 | 0.69 | 32.5 |
| Appr |  | 83 | 2.5 | 0.139 | 34.2 | LOS C | 3.7 | 26.6 | 0.69 | 0.69 | 0.69 | 26.9 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 40 | 2.6 | 0.653 | 52.5 | LOS D | 33.2 | 239.8 | 0.93 | 0.82 | 0.93 | 29.1 |
| 5 | T1 | 1552 | 3.2 | 0.653 | 45.0 | LOS D | 33.2 | 239.8 | 0.92 | 0.80 | 0.92 | 36.3 |
| 4 | R2 | 222 | 7.1 | 0.661 | 70.7 | LOS F | 14.8 | 115.5 | 1.00 | 0.82 | 1.00 | 24.3 |
| Appr | ch | 1814 | 3.7 | 0.661 | 48.3 | LOS D | 33.2 | 239.8 | 0.93 | 0.81 | 0.93 | 34.2 |
| North: Werrington Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 340 | 6.2 | 0.347 | 17.7 | LOS B | 11.2 | 84.1 | 0.57 | 0.69 | 0.57 | 39.8 |
| 2 | T1 | 14 | 0.0 | 1.207 | 258.8 | LOS F | 99.3 | 760.2 | 1.00 | 1.73 | 2.33 | 5.0 |
| 1 | R2 | 609 | 6.0 | 1.207 | 262.1 | LOS F | 99.3 | 760.2 | 1.00 | 1.73 | 2.33 | 7.1 |
| Appr |  | 963 | 6.0 | 1.207 | 175.8 | LOS F | 99.3 | 760.2 | 0.85 | 1.37 | 1.71 | 10.7 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 212 | 8.0 | 0.456 | 49.5 | LOS D | 20.4 | 153.5 | 0.86 | 0.79 | 0.86 | 25.7 |
| 11 | T1 | 919 | 4.5 | 0.456 | 42.2 | LOS C | 21.2 | 155.3 | 0.86 | 0.75 | 0.86 | 37.4 |
| 10 | R2 | 63 | 3.3 | 0.178 | 65.7 | LOS E | 3.9 | 27.9 | 0.93 | 0.75 | 0.93 | 18.4 |
| Approach |  | 1194 | 5.0 | 0.456 | 44.8 | LOS D | 21.2 | 155.3 | 0.86 | 0.75 | 0.86 | 34.1 |
| All Vehicles |  | 4054 | 4.6 | 1.207 | 77.3 | LOS F | 99.3 | 760.2 | 0.89 | 0.92 | 1.09 | 23.3 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 4 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 9 | 65.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 15 | 65.1 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／审审 Network：［104 \＆108－AM Mamre Road－AM Peak 2030 Base］

0800－0900
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 140 seconds（Network User－Given Cycle Time）


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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \end{aligned}$ | Description | $\begin{gathered} \text { Demand } \\ \text { Flow } \\ \text { ped/h } \\ \hline \end{gathered}$ | Average Delay sec | Level of Service | $\begin{aligned} & \text { Average Back } \\ & \text { Pedestrian } \\ & \text { ped } \end{aligned}$ | of Queue Distance $\qquad$ m | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 3 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 16 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 8 | 64.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 17 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| All Pedestrians |  | 44 | 64.2 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M St Marys Inland Container Terminal EIS_2030 Base.sip8

## MOVEMENT SUMMARY

B Site: TCS 1236 [108 - Great Western Highway / Glossop
审审 Network: [104 \& 108 - AM Street - AM Peak 2030 Base]

Peak 2030 Base]
0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows | Arriva Total veh/h | $\begin{array}{r} \text { =lows } \\ \text { HV } \\ \% \end{array}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | of of e istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed <br> km/h |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 1139 | 5.0 | 1139 | 5.0 | 0.296 | 17.4 | LOS B | 15.1 | 112.3 | 0.57 | 0.49 | 0.57 | 38.5 |
| 4 R2 | 593 | 13.7 | 593 | 13.7 | 0.615 | 57.4 | LOS E | 18.2 | 154.1 | 0.95 | 0.83 | 0.95 | 29.1 |
| Approach | 1732 | 8.0 | 1732 | 8.0 | 0.615 | 31.1 | LOS C | 18.2 | 154.1 | 0.70 | 0.61 | 0.70 | 33.4 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 509 | 20.0 | 509 | 20.0 | 0.513 | 20.3 | LOS B | 18.5 | 164.5 | 0.58 | 0.77 | 0.58 | 42.3 |
| 1 R2 | 755 | 10.6 | 755 | 10.6 | 0.617 | 44.7 | LOS D | 21.0 | 170.4 | 0.88 | 0.84 | 0.88 | 21.6 |
| Approach | 1264 | 14.4 | 1264 | 14.4 | 0.617 | 34.9 | LOS C | 21.0 | 170.4 | 0.76 | 0.81 | 0.76 | 30.5 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 389 | 14.3 | 389 | 14.3 | 0.623 | 50.8 | LOS D | 24.4 | 207.0 | 0.91 | 0.84 | 0.91 | 31.4 |
| 11 T1 | 991 | 6.0 | 991 | 6.0 | 0.623 | 49.4 | LOS D | 29.9 | 222.9 | 0.99 | 0.86 | 0.99 | 33.7 |
| Approach | 1380 | 8.3 | 1380 | 8.3 | 0.623 | 49.8 | LOS D | 29.9 | 222.9 | 0.97 | 0.85 | 0.97 | 33.1 |
| All Vehicles | 4376 |  | 4376 | 9.9 | 0.623 | 38.1 | LOS C | 29.9 | 222.9 | 0.80 | 0.74 | 0.80 | 32.5 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P2 | East Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 2 | 64.1 | LOS F |  |  | 0.96 | 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.

## MOVEMENT SUMMARY

Site: TCS 1234 [105-Great Western Highway / Carlisle Avenue - AM Peak 2030 Base]
0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time $=142$ seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Turn | Deman Total veh/h | $\begin{aligned} & \text { lows } \\ & \mathrm{HV} \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back <br> Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 53 | 38.0 | 0.141 | 38.7 | LOS C | 2.8 | 31.2 | 0.84 | 0.72 | 0.84 | 33.3 |
| 8 | T1 | 657 | 6.7 | 0.671 | 60.8 | LOS E | 21.0 | 155.2 | 0.99 | 0.83 | 0.99 | 28.1 |
| 7 | R2 | 175 | 11.4 | 0.678 | 74.8 | LOS F | 12.0 | 95.5 | 1.00 | 0.81 | 1.03 | 25.1 |
| Appr | ach | 884 | 9.5 | 0.678 | 62.2 | LOS E | 21.0 | 155.2 | 0.99 | 0.82 | 0.99 | 27.7 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 87 | 8.4 | 0.455 | 42.4 | LOS C | 13.8 | 106.4 | 0.83 | 0.75 | 0.85 | 37.2 |
| 5 | T1 | 735 | 6.6 | 0.455 | 38.8 | LOS C | 14.9 | 112.9 | 0.84 | 0.73 | 0.84 | 42.5 |
| 4 | R2 | 314 | 6.0 | 0.796 | 79.6 | LOS F | 11.4 | 84.6 | 1.00 | 0.88 | 1.18 | 27.4 |
| Appr | ach | 1136 | 6.6 | 0.796 | 50.3 | LOS D | 14.9 | 112.9 | 0.88 | 0.77 | 0.93 | 36.4 |
| North: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 314 | 5.7 | 0.218 | 31.0 | LOS C | 12.9 | 95.4 | 0.70 | 0.76 | 0.70 | 40.9 |
| 2 | T1 | 475 | 6.7 | 0.443 | 43.3 | LOS D | 26.2 | 198.5 | 0.87 | 0.75 | 0.87 | 33.9 |
| 1 | R2 | 457 | 4.8 | 0.338 | 37.1 | LOS C | 9.8 | 71.9 | 0.91 | 0.78 | 0.91 | 38.2 |
| Appr |  | 1245 | 5.7 | 0.443 | 37.9 | LOS C | 26.2 | 198.5 | 0.84 | 0.76 | 0.84 | 37.2 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 580 | 2.9 | 0.406 | 21.5 | LOS B | 16.4 | 118.3 | 0.69 | 0.79 | 0.72 | 47.4 |
| 11 | T1 | 921 | 7.0 | 0.406 | 37.5 | LOS C | 23.1 | 174.8 | 0.82 | 0.71 | 0.82 | 43.3 |
| 10 | R2 | 148 | 8.5 | 0.428 | 70.8 | LOS F | 9.6 | 77.2 | 0.98 | 0.79 | 0.98 | 25.9 |
| Approach |  | 1649 | 5.7 | 0.428 | 34.8 | LOS C | 23.1 | 174.8 | 0.79 | 0.75 | 0.80 | 42.5 |
| All Vehicles |  | 4915 | 6.6 | 0.796 | 44.1 | LOS D | 26.2 | 198.5 | 0.86 | 0.77 | 0.88 | 36.6 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{aligned} & \text { Demand } \\ & \text { Flow } \\ & \text { ped/h } \end{aligned}$ | Average Delay sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.1 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

Site: TCS 3118 [106-Mamre Road / M4 Western Motorway Off-ramp/On-ramp (South) - AM Peak 2030 Base]
0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows | Arriva Total veh/h | $\begin{gathered} =l o w s \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ck of istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1343 | 6.0 | 1343 | 6.0 | 0.265 | 4.3 | LOS A | 11.3 | 86.0 | 0.33 | 0.30 | 0.33 | 49.2 |
| 7 R2 | 507 | 8.7 | 507 | 8.7 | 0.673 | 48.4 | LOS D | 24.9 | 190.9 | 0.98 | 0.85 | 0.98 | 25.3 |
| Approach | 1851 | 6.8 | 1851 | 6.8 | 0.673 | 16.4 | LOS B | 24.9 | 190.9 | 0.51 | 0.45 | 0.51 | 33.6 |
| East: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 109 | 11.5 | 109 | 11.5 | 0.141 | 10.9 | LOS A | 1.8 | 14.9 | 0.39 | 0.65 | 0.39 | 48.4 |
| 4 R2 | 253 | 13.8 | 253 | 13.8 | 0.566 | 54.0 | LOS D | 6.7 | 55.0 | 0.97 | 0.80 | 0.97 | 22.0 |
| Approach | 362 | 13.1 | 362 | 13.1 | 0.566 | 40.9 | LOS C | 6.7 | 55.0 | 0.80 | 0.76 | 0.80 | 28.3 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 416 | 9.6 | 416 | 9.6 | 0.254 | 8.8 | LOS A | 6.3 | 50.6 | 0.32 | 0.62 | 0.32 | 36.6 |
| 2 T 1 | 1448 | 8.6 | 1448 | 8.6 | 0.668 | 20.9 | LOS B | 28.2 | 216.1 | 0.71 | 0.63 | 0.71 | 36.2 |
| Approach | 1864 |  | 1864 | 8.9 | 0.668 | 18.1 | LOS B | 28.2 | 216.1 | 0.62 | 0.63 | 0.62 | 36.3 |
| All Vehicles | 4077 |  | 4077 | 8.3 | 0.673 | 19.4 | LOS B | 28.2 | 216.1 | 0.58 | 0.56 | 0.58 | 34.2 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

Site: TCS 3117 [107 - Mamre Road / M4 Western Motorway Off-ramp/On-ramp (North) - AM Peak 2030 Base]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h |  | Arrival <br> Total veh/h | lows <br> HV $\%$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ck of e istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 265 | 6.7 | 265 | 6.7 | 0.171 | 10.2 | LOSA | 5.4 | 43.1 | 0.46 | 0.67 | 0.46 | 35.8 |
| 8 T1 | 1331 | 7.4 | 1331 | 7.4 | 0.605 | 33.3 | LOS C | 29.4 | 224.8 | 0.88 | 0.78 | 0.88 | 28.3 |
| Approach | 1596 | 7.3 | 1596 | 7.3 | 0.605 | 29.4 | LOS C | 29.4 | 224.8 | 0.81 | 0.76 | 0.81 | 29.7 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 1264 | 9.2 | 1264 | 9.2 | 0.824 | 14.1 | LOS A | 34.1 | 266.1 | 0.70 | 0.66 | 0.72 | 33.1 |
| 1 R2 | 245 | 14.6 | 245 | 14.6 | 0.608 | 41.8 | LOS C | 11.5 | 98.1 | 0.91 | 0.83 | 0.91 | 26.1 |
| Approach | 1509 | 10.0 | 1509 | 10.0 | 0.824 | 18.6 | LOS B | 34.1 | 266.1 | 0.74 | 0.69 | 0.75 | 30.3 |
| West: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L2 | 626 | 3.7 | 626 | 3.7 | 0.583 | 10.9 | LOS A | 13.5 | 97.9 | 0.52 | 0.73 | 0.52 | 47.9 |
| 10 R2 | 600 | 8.2 | 600 | 8.2 | 0.839 | 58.0 | LOS E | 18.2 | 140.3 | 1.00 | 0.95 | 1.21 | 20.8 |
| Approach | 1226 | 5.9 | 1226 | 5.9 | 0.839 | 33.9 | LOS C | 18.2 | 140.3 | 0.76 | 0.84 | 0.86 | 31.9 |
| All Vehicles | 4332 |  | 4332 | 7.8 | 0.839 | 26.9 | LOS B | 34.1 | 266.1 | 0.77 | 0.76 | 0.81 | 30.6 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 3 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 4 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

$\nabla$ Site: [109 - Glossop Street / Harris Street - AM Peak 2030 Base]
0800-0900
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{ll} \hline \text { Mov Turn } \\ \text { ID } \end{array}$ | Demand Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| 1 L2 | 82 | 6.1 | 0.463 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.06 | 0.00 | 56.6 |
| 2 T1 | 1564 | 9.0 | 0.463 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 59.2 |
| Approach | 1646 | 8.9 | 0.463 | 0.3 | NA | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 59.0 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1814 | 11.0 | 0.510 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| Approach | 1814 | 11.0 | 0.510 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| West: Harris Street |  |  |  |  |  |  |  |  |  |  |  |
| 10 L2 | 92 | 14.1 | 0.223 | 12.6 | LOS A | 0.8 | 6.5 | 0.71 | 0.88 | 0.76 | 39.3 |
| Approach | 92 | 14.1 | 0.223 | 12.6 | LOS A | 0.8 | 6.5 | 0.71 | 0.88 | 0.76 | 39.3 |
| All Vehicles | 3552 | 10.1 | 0.510 | 0.5 | NA | 0.8 | 6.5 | 0.02 | 0.04 | 0.02 | 58.2 |

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

## MOVEMENT SUMMARY

$\nabla$ Site: [110 - Forrester Road / Harris Street - AM Peak 2030 Base]
0800-0900
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID |  | Deman Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | $\begin{aligned} & \text { Deg. } \\ & \text { Satn } \\ & \text { v/c } \end{aligned}$ | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | T1 | 70 | 8.6 | 0.039 | 0.0 | LOS A | 0.0 | 0.3 | 0.04 | 0.00 | 0.04 | 33.4 |
| 3 | R2 | 5 | 20.0 | 0.039 | 0.5 | LOS A | 0.0 | 0.3 | 0.04 | 0.00 | 0.04 | 38.8 |
| Appr |  | 75 | 9.3 | 0.039 | 0.1 | NA | 0.0 | 0.3 | 0.04 | 0.00 | 0.04 | 33.7 |
| East: Harris Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 19 | 0.0 | 0.130 | 8.4 | LOS A | 0.5 | 3.7 | 0.24 | 0.61 | 0.24 | 38.6 |
| 6 | R2 | 115 | 16.5 | 0.130 | 5.7 | LOS A | 0.5 | 3.7 | 0.24 | 0.61 | 0.24 | 41.1 |
| Appr |  | 134 | 14.2 | 0.130 | 6.1 | LOS A | 0.5 | 3.7 | 0.24 | 0.61 | 0.24 | 40.9 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 53 | 15.1 | 0.072 | 3.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.64 | 0.00 | 38.1 |
| 8 | T1 | 71 | 7.0 | 0.072 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.64 | 0.00 | 35.0 |
| Appro |  | 124 | 10.5 | 0.072 | 4.8 | NA | 0.0 | 0.0 | 0.00 | 0.64 | 0.00 | 36.8 |
| All Ve | icles | 333 | 11.7 | 0.130 | 4.2 | NA | 0.5 | 3.7 | 0.11 | 0.48 | 0.11 | 38.1 |

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

## MOVEMENT SUMMARY

Site: TCS 3129 [111 - Forrester Road / Glossop Street / Access Road - AM Peak 2030 Base]
0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Turn | Demand Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 2 | 0.0 | 0.129 | 47.1 | LOS D | 3.6 | 26.3 | 0.73 | 0.62 | 1.26 | 24.0 |
| 2 | T1 | 83 | 6.0 | 0.129 | 33.2 | LOS C | 3.6 | 26.3 | 0.73 | 0.62 | 1.26 | 36.7 |
| 3 | R2 | 46 | 26.1 | 0.195 | 41.0 | LOS C | 1.9 | 19.8 | 0.90 | 0.70 | 0.90 | 32.7 |
| Appr | ach | 131 | 13.0 | 0.195 | 36.1 | LOS C | 3.6 | 26.3 | 0.79 | 0.65 | 1.14 | 35.0 |
| East: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 51 | 19.6 | 0.610 | 35.4 | LOS C | 14.6 | 119.9 | 0.85 | 0.87 | 1.27 | 35.4 |
| 5 | T1 | 8 | 0.0 | 0.610 | 47.7 | LOS D | 14.6 | 119.9 | 0.85 | 0.87 | 1.27 | 25.4 |
| 6 | R2 | 785 | 13.6 | 0.610 | 32.0 | LOS C | 14.7 | 119.9 | 0.85 | 0.85 | 1.04 | 38.5 |
| Appr | ach | 844 | 13.9 | 0.610 | 32.3 | LOS C | 14.7 | 119.9 | 0.85 | 0.85 | 1.06 | 38.2 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 1378 | 9.5 | 1.401 | 400.5 | LOS F | 217.2 | 1716.3 | 1.00 | 2.17 | 4.03 | 7.7 |
| 8 | T1 | 218 | 4.6 | 0.602 | 38.9 | LOS C | 9.1 | 66.9 | 0.97 | 0.81 | 0.97 | 34.6 |
| Appr | ach | 1596 | 8.8 | 1.401 | 351.1 | LOS F | 217.2 | 1716.3 | 1.00 | 1.98 | 3.62 | 8.6 |
| West: Access Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 2 | 0.0 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 19.2 |
| 11 | T1 | 3 | 33.3 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.5 |
| 12 | R2 | 1 | 0.0 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.3 |
| Appr | ach | 6 | 16.7 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.7 |
| All Ve | icles | 2577 | 10.7 | 1.401 | 230.0 | LOS F | 217.2 | 1716.3 | 0.94 | 1.54 | 2.65 | 12.1 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 1 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P2 | East Full Crossing | 20 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P4 | West Full Crossing | 6 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| All Pedestrians |  | 27 | 39.2 | LOS D |  |  | 0.93 | 0.93 |

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

## MOVEMENT SUMMARY

```
Site: TCS 3129 [111 - Forrester Road / Glossop Street / Access Road - AM Peak 2030
Base_Upgrades]
0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time \(=90\) seconds (Site User-Given Phase Times)
```

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Demand <br> Total veh/h |  | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 2 | 0.0 | 0.129 | 47.1 | LOS D | 3.6 | 26.3 | 0.73 | 0.62 | 1.26 | 24.0 |
| 2 | T1 | 83 | 6.0 | 0.129 | 33.2 | LOS C | 3.6 | 26.3 | 0.73 | 0.62 | 1.26 | 36.7 |
| 3 | R2 | 46 | 26.1 | 0.169 | 36.1 | LOS C | 1.7 | 18.4 | 0.86 | 0.72 | 0.86 | 34.2 |
| Appr |  | 131 | 13.0 | 0.169 | 34.4 | LOS C | 3.6 | 26.3 | 0.78 | 0.65 | 1.12 | 35.6 |
| East: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 51 | 19.6 | 0.610 | 35.4 | LOS C | 14.6 | 119.9 | 0.85 | 0.87 | 1.27 | 35.4 |
| 5 | T1 | 8 | 0.0 | 0.610 | 48.5 | LOS D | 14.6 | 119.9 | 0.85 | 0.87 | 1.27 | 25.4 |
| 6 | R2 | 785 | 13.6 | 0.610 | 32.0 | LOS C | 14.7 | 119.9 | 0.85 | 0.85 | 1.04 | 38.6 |
| Appr |  | 844 | 13.9 | 0.610 | 32.4 | LOS C | 14.7 | 119.9 | 0.85 | 0.85 | 1.06 | 38.2 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 1378 | 9.5 | 0.879 | 13.8 | LOS A | 26.9 | 212.2 | 0.60 | 0.82 | 0.69 | 48.0 |
| 8 | T1 | 218 | 4.6 | 0.602 | 38.9 | LOS C | 9.1 | 66.9 | 0.97 | 0.81 | 0.97 | 34.6 |
| Appr | ach | 1596 | 8.8 | 0.879 | 17.2 | LOS B | 26.9 | 212.2 | 0.65 | 0.82 | 0.73 | 45.6 |
| West: Access Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 2 | 0.0 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 19.1 |
| 11 | T1 | 3 | 33.3 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.4 |
| 12 | R2 | 1 | 0.0 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.2 |
| Appr |  | 6 | 16.7 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.6 |
| All V | icles | 2577 | 10.7 | 0.879 | 23.1 | LOS B | 26.9 | 212.2 | 0.72 | 0.82 | 0.86 | 42.3 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{gathered} \text { Demand } \\ \text { Flow } \\ \text { ped } / \mathrm{h} \end{gathered}$ | Average Delay $\qquad$ sec | Level of Service | Average Bac Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 1 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P2 | East Full Crossing | 20 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P4 | West Full Crossing | 6 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| All Pedestrians |  | 27 | 39.2 | LOS D |  |  | 0.93 | 0.93 |

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

## MOVEMENT SUMMARY

$\Rightarrow$ Site: [112 - Forrester Road / Christie Street / Boronia Road - AM Peak 2030 Base]
0800-0900
Site Category: (None)
Roundabout

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Deman <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 201 | 18.9 | 0.834 | 26.4 | LOS B | 13.0 | 107.2 | 1.00 | 1.36 | 1.86 | 41.7 |
| 2 | T1 | 630 | 12.2 | 0.834 | 27.5 | LOS B | 13.0 | 107.2 | 1.00 | 1.36 | 1.88 | 40.8 |
| 3 | R2 | 27 | 3.7 | 0.834 | 32.8 | LOS C | 12.3 | 100.3 | 1.00 | 1.36 | 1.89 | 38.5 |
| 3 u | U | 41 | 17.1 | 0.834 | 36.7 | LOS C | 12.3 | 100.3 | 1.00 | 1.36 | 1.89 | 42.2 |
| Appr |  | 899 | 13.7 | 0.834 | 27.8 | LOS B | 13.0 | 107.2 | 1.00 | 1.36 | 1.87 | 41.0 |
| East: Boronia Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 6 | 16.7 | 0.259 | 13.4 | LOS A | 1.3 | 9.1 | 0.87 | 0.94 | 0.87 | 43.3 |
| 5 | T1 | 23 | 0.0 | 0.259 | 11.9 | LOS A | 1.3 | 9.1 | 0.87 | 0.94 | 0.87 | 44.8 |
| 6 | R2 | 41 | 2.4 | 0.259 | 17.3 | LOS B | 1.3 | 9.1 | 0.87 | 0.94 | 0.87 | 43.6 |
| 6 u | U | 1 | 0.0 | 0.259 | 19.1 | LOS B | 1.3 | 9.1 | 0.87 | 0.94 | 0.87 | 42.3 |
| Appr |  | 71 | 2.8 | 0.259 | 15.3 | LOS B | 1.3 | 9.1 | 0.87 | 0.94 | 0.87 | 43.9 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 24 | 0.0 | 1.128 | 142.2 | LOS F | 85.2 | 638.8 | 1.00 | 3.66 | 7.17 | 14.6 |
| 8 | T1 | 882 | 5.8 | 1.128 | 142.8 | LOS F | 85.2 | 638.8 | 1.00 | 3.64 | 7.16 | 17.1 |
| 9 | R2 | 663 | 6.5 | 1.128 | 151.2 | LOS F | 74.4 | 574.7 | 1.00 | 3.49 | 6.92 | 16.7 |
| 9 u | U | 4 | 25.0 | 1.128 | 154.4 | LOS F | 74.4 | 574.7 | 1.00 | 3.49 | 6.92 | 15.1 |
| Appr |  | 1573 | 6.0 | 1.128 | 146.4 | LOS F | 85.2 | 638.8 | 1.00 | 3.58 | 7.06 | 16.9 |
| West: Christie Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 1028 | 7.5 | 1.612 | 563.6 | LOS F | 259.6 | 2003.6 | 1.00 | 8.75 | 21.26 | 5.3 |
| 11 | T1 | 34 | 0.0 | 1.072 | 104.8 | LOS F | 39.7 | 296.8 | 1.00 | 2.66 | 5.66 | 19.6 |
| 12 | R2 | 483 | 5.6 | 1.072 | 110.9 | LOS F | 39.7 | 296.8 | 1.00 | 2.66 | 5.66 | 22.2 |
| 12u | U | 1 | 0.0 | 1.072 | 112.5 | LOS F | 39.7 | 296.8 | 1.00 | 2.66 | 5.66 | 22.4 |
| Approach |  | 1546 | 6.7 | 1.612 | 411.8 | LOS F | 259.6 | 2003.6 | 1.00 | 6.71 | 16.04 | 7.4 |
| All Vehicles |  | 4089 | 7.9 | 1.612 | 218.4 | LOS F | 259.6 | 2003.6 | 1.00 | 4.23 | 9.20 | 12.5 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

B Site: [112 - Forrester Road / Christie Street / Boronia Road - AM Peak 2030 Base_Upgrades] 0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time $=140$ seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Turn | Demanc Total veh/h |  | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average <br> Speed <br> km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 201 | 18.9 | 0.174 | 10.7 | LOS A | 3.6 | 30.1 | 0.34 | 0.65 | 0.34 | 50.0 |
| 2 | T1 | 630 | 12.2 | 1.019 | 108.6 | LOS F | 25.0 | 203.5 | 1.00 | 1.17 | 1.54 | 20.0 |
| 3 | R2 | 27 | 3.7 | 0.354 | 80.7 | LOS F | 1.9 | 13.9 | 1.00 | 0.72 | 1.00 | 22.6 |
| Appr |  | 858 | 13.5 | 1.019 | 84.8 | LOS F | 25.0 | 203.5 | 0.84 | 1.03 | 1.24 | 23.7 |
| East: Boronia Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 6 | 16.7 | 0.011 | 19.4 | LOS B | 0.2 | 1.4 | 0.50 | 0.59 | 0.50 | 40.3 |
| 5 | T1 | 23 | 0.0 | 0.406 | 66.0 | LOS E | 4.3 | 30.2 | 0.98 | 0.76 | 0.98 | 25.3 |
| 6 | R2 | 41 | 2.4 | 0.406 | 70.5 | LOS F | 4.3 | 30.2 | 0.98 | 0.76 | 0.98 | 23.0 |
| Appr |  | 70 | 2.9 | 0.406 | 64.7 | LOS E | 4.3 | 30.2 | 0.94 | 0.75 | 0.94 | 24.8 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 24 | 0.0 | 0.039 | 37.3 | LOS C | 1.1 | 7.7 | 0.70 | 0.66 | 0.70 | 31.6 |
| 8 | T1 | 882 | 5.8 | 0.662 | 46.3 | LOS D | 20.8 | 156.1 | 0.92 | 0.79 | 0.92 | 32.5 |
| 9 | R2 | 663 | 6.5 | 1.046 | 142.7 | LOS F | 35.7 | 275.7 | 1.00 | 1.17 | 1.76 | 16.3 |
| Appr |  | 1569 | 6.0 | 1.046 | 86.9 | LOS F | 35.7 | 275.7 | 0.95 | 0.95 | 1.27 | 22.9 |
| West: Christie Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 1028 | 7.5 | 0.962 | 54.1 | LOS D | 82.2 | 632.5 | 0.97 | 1.09 | 1.35 | 30.1 |
| 11 | T1 | 34 | 0.0 | 0.962 | 49.7 | LOS D | 82.2 | 632.5 | 0.97 | 1.09 | 1.35 | 28.4 |
| 12 | R2 | 483 | 5.6 | 0.708 | 43.9 | LOS D | 27.5 | 206.8 | 0.90 | 0.86 | 0.90 | 34.6 |
| Approach |  | 1545 | 6.7 | 0.962 | 50.8 | LOS D | 82.2 | 632.5 | 0.95 | 1.02 | 1.21 | 31.4 |
| All Ve | icles | 4042 | 7.8 | 1.046 | 72.3 | LOS F | 82.2 | 632.5 | 0.93 | 0.99 | 1.24 | 25.9 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{gathered} \text { Demand } \\ \text { Flow } \\ \text { ped/h } \end{gathered}$ | Average Delay sec | Level of Service | Average Bac Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P2 | East Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P3 | North Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P4 | West Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| All Pedestrians |  | 100 | 64.2 | LOS F |  |  | 0.96 | 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.

## MOVEMENT SUMMARY

$\theta$ Site: [113 - Christie Street / Dunheved Road / Werrington Road - AM Peak 2030 Base]
0800-0900
Site Category: (None)
Roundabout

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \mathrm{Mov} \\ & \mathrm{ID} \end{aligned}$ |  | $\begin{aligned} & \text { Demanc } \\ & \text { Total } \\ & \text { veh/h } \\ & \hline \end{aligned}$ | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. <br> Satn <br> v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Werrington Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 429 | 6.5 | 1.330 | 336.6 | LOS F | 82.2 | 639.9 | 1.00 | 3.55 | 8.70 | 8.3 |
| 3 | R2 | 533 | 9.4 | 1.498 | 484.7 | LOS F | 128.0 | 1028.2 | 1.00 | 4.56 | 11.39 | 7.0 |
| 3 u | U | 2 | 0.0 | 1.498 | 486.2 | LOS F | 128.0 | 1028.2 | 1.00 | 4.56 | 11.39 | 7.1 |
| Appr | ach | 964 | 8.1 | 1.498 | 418.8 | LOS F | 128.0 | 1028.2 | 1.00 | 4.11 | 10.19 | 7.5 |
| East: Christie Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 568 | 13.2 | 0.760 | 14.9 | LOS B | 10.5 | 87.5 | 0.99 | 1.12 | 1.41 | 47.9 |
| 5 | T1 | 841 | 8.0 | 0.850 | 15.6 | LOS B | 16.9 | 131.4 | 1.00 | 1.15 | 1.58 | 48.4 |
| $6 u$ | U | 4 | 50.0 | 0.850 | 25.7 | LOS B | 16.9 | 131.4 | 1.00 | 1.15 | 1.58 | 48.7 |
| Appr |  | 1413 | 10.2 | 0.850 | 15.3 | LOS B | 16.9 | 131.4 | 1.00 | 1.14 | 1.51 | 48.2 |
| West: Dunheved Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | T1 | 923 | 4.9 | 0.750 | 9.6 | LOS A | 11.1 | 82.2 | 0.94 | 0.85 | 1.12 | 54.8 |
| 12 | R2 | 447 | 2.2 | 0.470 | 13.2 | LOS A | 3.8 | 27.3 | 0.77 | 0.78 | 0.77 | 54.3 |
| 12u | U | 1 | 0.0 | 0.470 | 15.6 | LOS B | 3.8 | 27.3 | 0.77 | 0.78 | 0.77 | 54.6 |
| Approach |  | 1371 | 4.0 | 0.750 | 10.7 | LOS A | 11.1 | 82.2 | 0.89 | 0.83 | 1.01 | 54.6 |
| All Vehicles |  | 3748 | 7.4 | 1.498 | 117.4 | LOS F | 128.0 | 1028.2 | 0.96 | 1.79 | 3.56 | 20.1 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

```
日 Site: [113-Christie Street / Dunheved Road / Werrington Road - AM Peak 2030
Base_Upgrades]
0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
```

Movement Performance - Vehicles


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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay $\qquad$ sec | Level of Service | Average Bac Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 20 | 54.2 | LOS E | 0.1 | 0.1 | 0.95 | 0.95 |
| P4 | West Full Crossing | 20 | 54.2 | LOS E | 0.1 | 0.1 | 0.95 | 0.95 |
| All Pedestrians |  | 40 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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.

[^0]
## MOVEMENT SUMMARY

日 Site: TCS 2986 [101 - Richmond Road / Dunheved Road - PM Peak 2030 Base]
1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 124 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Deman <br> Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \hline \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Richmond Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | T1 | 2132 | 3.1 | 0.586 | 7.8 | LOS A | 30.9 | 225.1 | 0.49 | 0.45 | 0.49 | 56.9 |
| 7 | R2 | 694 | 1.2 | 1.075 | 121.6 | LOS F | 50.1 | 356.8 | 0.98 | 1.08 | 1.61 | 20.5 |
| Appr |  | 2825 | 2.6 | 1.075 | 35.7 | LOS C | 50.1 | 356.8 | 0.61 | 0.61 | 0.76 | 35.6 |
| East: Dunheved Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 383 | 2.2 | 0.349 | 9.8 | LOS A | 6.9 | 49.4 | 0.37 | 0.70 | 0.37 | 56.7 |
| 4 | R2 | 714 | 2.5 | 1.008 | 108.8 | LOS F | 39.0 | 282.0 | 1.00 | 1.07 | 1.64 | 16.1 |
| Approach |  | 1097 | 2.4 | 1.008 | 74.2 | LOS F | 39.0 | 282.0 | 0.78 | 0.94 | 1.20 | 23.9 |
| North: Richmond Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 445 | 2.6 | 0.206 | 11.5 | LOS A | 8.5 | 61.6 | 0.39 | 0.70 | 0.39 | 49.3 |
| 2 | T1 | 1338 | 3.7 | 0.365 | 19.1 | LOS B | 24.4 | 177.9 | 0.65 | 0.57 | 0.65 | 44.7 |
| Appr |  | 1783 | 3.4 | 0.365 | 17.2 | LOS B | 24.4 | 177.9 | 0.58 | 0.60 | 0.58 | 45.8 |
| All Ve | icles | 5705 | 2.8 | 1.075 | 37.3 | LOS C | 50.1 | 356.8 | 0.64 | 0.67 | 0.79 | 34.3 |

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


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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## MOVEMENT SUMMARY

目 Site: TCS 442 [102 - Great Western Highway / Parker Street - PM Peak 2030 Base]
1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 133 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Turn | Deman <br> Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Parker Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 258 | 2.9 | 0.199 | 13.2 | LOS A | 5.7 | 41.1 | 0.41 | 0.70 | 0.41 | 41.9 |
| 8 | T1 | 1173 | 5.4 | 1.044 | 125.3 | LOS F | 61.1 | 453.7 | 1.00 | 1.39 | 1.68 | 10.6 |
| 7 | R2 | 134 | 1.6 | 0.383 | 60.2 | LOS E | 7.8 | 56.0 | 0.94 | 0.79 | 0.94 | 24.3 |
| Appr |  | 1564 | 4.6 | 1.044 | 101.3 | LOS F | 61.1 | 453.7 | 0.90 | 1.22 | 1.40 | 13.2 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 196 | 2.7 | 0.269 | 48.1 | LOS D | 11.7 | 84.0 | 0.85 | 0.77 | 0.85 | 27.9 |
| 5 | T1 | 951 | 3.7 | 0.663 | 52.3 | LOS D | 27.2 | 199.1 | 0.98 | 0.83 | 0.98 | 29.3 |
| 4 | R2 | 588 | 3.4 | 0.886 | 67.2 | LOS E | 39.7 | 287.5 | 1.00 | 0.92 | 1.13 | 24.6 |
| Appr | ch | 1735 | 3.5 | 0.886 | 56.9 | LOS E | 39.7 | 287.5 | 0.97 | 0.86 | 1.02 | 27.5 |
| North: Parker Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 559 | 2.3 | 0.238 | 6.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.57 | 0.00 | 58.0 |
| 2 | T1 | 1032 | 4.1 | 0.854 | 54.6 | LOS D | 35.5 | 261.4 | 0.99 | 0.95 | 1.10 | 20.5 |
| 1 | R2 | 268 | 3.1 | 0.700 | 63.8 | LOS E | 16.7 | 120.6 | 1.00 | 0.84 | 1.01 | 21.9 |
| Appr |  | 1859 | 3.4 | 0.854 | 41.5 | LOS C | 35.5 | 261.4 | 0.70 | 0.82 | 0.76 | 28.5 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 561 | 3.6 | 0.260 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.53 | 0.00 | 51.7 |
| 11 | T1 | 776 | 0.9 | 1.044 | 129.3 | LOS F | 41.8 | 295.8 | 1.00 | 1.37 | 1.75 | 16.6 |
| 10 | R2 | 289 | 0.7 | 0.826 | 64.8 | LOS E | 18.8 | 133.3 | 0.99 | 0.90 | 1.13 | 18.5 |
| Approach |  | 1626 | 1.8 | 1.044 | 75.2 | LOS F | 41.8 | 295.8 | 0.65 | 1.00 | 1.04 | 21.2 |
| All V | icles | 6784 | 3.3 | 1.044 | 67.3 | LOS E | 61.1 | 453.7 | 0.80 | 0.96 | 1.04 | 21.9 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay $\qquad$ sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 7 | 60.7 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 13 | 60.7 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 5 | 60.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 5 | 60.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 31 | 60.7 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

```
Site: TCS 2385 [103 - Great Western Highway / Werrington Road / Reserve Road - PM Peak 2030 Base]
1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 146 seconds (Site User-Given Phase Times)
```


## Movement Performance - Vehicles

| Mov ID | Turn | Demand Flows |  | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back of Queue |  | Prop. Queued | Effective Stop Rate | Aver. No. Average Cycles Speed km/h |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Total veh/h | HV |  |  |  | Vehicles veh | Distance <br> m |  |  |  |  |
| South: Reserve Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 35 | 3.0 | 0.176 | 34.2 | LOS C | 4.9 | 34.8 | 0.68 | 0.67 | 0.68 | 27.3 |
| 8 | T1 | 33 | 0.0 | 0.176 | 29.6 | LOS C | 4.9 | 34.8 | 0.68 | 0.67 | 0.68 | 26.0 |
| 7 | R2 | 42 | 0.0 | 0.176 | 34.2 | LOS C | 4.9 | 34.8 | 0.68 | 0.67 | 0.68 | 33.8 |
| Appr |  | 109 | 1.0 | 0.176 | 32.8 | LOS C | 4.9 | 34.8 | 0.68 | 0.67 | 0.68 | 29.7 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 44 | 2.4 | 0.711 | 59.0 | LOS E | 33.5 | 241.4 | 0.97 | 0.85 | 0.97 | 26.9 |
| 5 | T1 | 1444 | 2.9 | 0.711 | 51.5 | LOS D | 33.5 | 241.4 | 0.96 | 0.83 | 0.96 | 33.7 |
| 4 | R2 | 368 | 5.4 | 0.760 | 65.5 | LOS E | 24.4 | 179.9 | 0.98 | 0.85 | 1.01 | 26.8 |
| Appr |  | 1857 | 3.4 | 0.760 | 54.4 | LOS D | 33.5 | 241.4 | 0.97 | 0.84 | 0.97 | 32.0 |
| North: Werrington Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 228 | 2.8 | 0.106 | 15.2 | LOS B | 5.8 | 42.2 | 0.44 | 0.69 | 0.44 | 48.0 |
| 2 | T1 | 22 | 0.0 | 1.044 | 96.9 | LOS F | 56.5 | 414.4 | 1.00 | 1.14 | 1.51 | 11.9 |
| 1 | R2 | 526 | 4.2 | 1.044 | 101.2 | LOS F | 56.5 | 414.4 | 1.00 | 1.14 | 1.51 | 16.2 |
| Appr |  | 777 | 3.7 | 1.044 | 75.8 | LOS F | 56.5 | 414.4 | 0.83 | 1.01 | 1.19 | 20.9 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 258 | 3.3 | 0.451 | 54.6 | LOS D | 24.9 | 183.7 | 0.89 | 0.80 | 0.89 | 25.9 |
| 11 | T1 | 1036 | 3.0 | 0.451 | 47.5 | LOS D | 25.7 | 185.3 | 0.89 | 0.76 | 0.89 | 35.1 |
| 10 | R2 | 78 | 2.7 | 0.108 | 56.6 | LOS E | 4.4 | 32.2 | 0.85 | 0.75 | 0.85 | 20.5 |
| Appr |  | 1372 | 3.1 | 0.451 | 49.3 | LOS D | 25.7 | 185.3 | 0.89 | 0.77 | 0.89 | 32.6 |
| All V | icles | 4115 | 3.3 | 1.044 | 56.2 | LOS D | 56.5 | 414.4 | 0.91 | 0.84 | 0.98 | 29.5 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of | Average Bac Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 5 | 67.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 7 | 67.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 67.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pe | estrians | 14 | 67.1 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／安审 Network：［104 \＆108－PM Mamre Road－PM Peak 2030 Base］

1630－1730
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 140 seconds（Network Site User－Given Phase Times）


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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \end{aligned}$ | Description | Demand Flow ped $/ h$ | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 7 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 14 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 12 | 64.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 34 | 64.2 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

B Site: TCS 1236 [108-Great Western Highway / Glossop Street - PM Peak 2030 Base]

1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Fows HV \% | Arrival F <br> Total veh/h | Flows <br> HV $\%$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ack of ue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag Speed km/h |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 1488 | 2.8 | 1488 | 2.8 | 0.481 | 8.4 | LOS A | 18.9 | 137.0 | 0.43 | 0.39 | 0.43 | 47.3 |
| 4 R2 | 580 | 8.7 | 580 | 8.7 | 0.896 | 79.1 | LOS F | 22.5 | 176.2 | 1.00 | 0.98 | 1.28 | 24.5 |
| Approach | 2068 |  | 2068 | 4.5 | 0.896 | 28.2 | LOS B | 22.5 | 176.2 | 0.59 | 0.56 | 0.67 | 34.3 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 569 | 6.5 | 569 | 6.5 | 0.366 | 32.6 | LOS C | 25.1 | 190.2 | 0.71 | 0.79 | 0.71 | 36.8 |
| 1 R2 | 861 | 3.9 | 861 | 3.9 | 0.687 | 59.7 | LOS E | 26.4 | 197.1 | 0.97 | 0.84 | 0.97 | 17.8 |
| Approach | 1431 |  | 1431 | 4.9 | 0.687 | 48.9 | LOS D | 26.4 | 197.1 | 0.87 | 0.82 | 0.87 | 25.6 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 292 | 19.1 | 291 | 19.1 | 0.491 | 24.6 | LOS B | 11.5 | 100.7 | 0.50 | 0.67 | 0.50 | 41.6 |
| 11 T1 | 948 | 3.0 | 947 | 3.0 | 0.491 | 19.0 | LOS B | 14.2 | 103.0 | 0.52 | 0.48 | 0.52 | 46.0 |
| Approach | 1240 |  | $1237{ }^{\text {N1 }}$ | 6.8 | 0.491 | 20.4 | LOS B | 14.2 | 103.0 | 0.51 | 0.52 | 0.51 | 45.0 |
| All Vehicles | 4739 | 5.2 | $4736{ }^{\text {N1 }}$ | 5.2 | 0.896 | 32.4 | LOS C | 26.4 | 197.1 | 0.66 | 0.63 | 0.69 | 34.3 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
N 1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P2 | East Full Crossing | 2 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 3 | 64.1 | LOS F |  |  | 0.96 | 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.

## MOVEMENT SUMMARY

日 Site: TCS 1234 [105-Great Western Highway / Carlisle Avenue - PM Peak 2030 Base]
1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time $=143$ seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Turn | Deman Total veh/h | $\begin{gathered} \text { =lows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back <br> Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 96 | 9.9 | 0.185 | 33.5 | LOS C | 4.1 | 35.5 | 0.81 | 0.75 | 0.81 | 37.6 |
| 8 | T1 | 659 | 3.4 | 0.787 | 64.5 | LOS E | 22.5 | 160.8 | 1.00 | 0.88 | 1.06 | 27.2 |
| 7 | R2 | 118 | 3.6 | 0.532 | 74.1 | LOS F | 8.0 | 58.6 | 1.00 | 0.79 | 1.00 | 25.7 |
| Appr | ach | 873 | 4.1 | 0.787 | 62.4 | LOS E | 22.5 | 160.8 | 0.98 | 0.86 | 1.03 | 27.7 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 135 | 3.9 | 0.462 | 48.4 | LOS D | 27.6 | 198.5 | 0.87 | 0.78 | 0.90 | 35.1 |
| 5 | T1 | 1335 | 2.4 | 0.462 | 42.5 | LOS C | 28.4 | 204.4 | 0.87 | 0.75 | 0.88 | 40.7 |
| 4 | R2 | 493 | 2.1 | 0.545 | 70.2 | LOS E | 16.1 | 115.4 | 0.99 | 0.81 | 0.99 | 29.5 |
| Appr | ach | 1962 | 2.4 | 0.545 | 49.9 | LOS D | 28.4 | 204.4 | 0.90 | 0.77 | 0.91 | 36.8 |
| North: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 315 | 2.0 | 0.196 | 27.6 | LOS B | 12.1 | 87.5 | 0.65 | 0.75 | 0.65 | 43.0 |
| 2 | T1 | 649 | 6.0 | 0.555 | 42.7 | LOS D | 36.7 | 277.8 | 0.89 | 0.78 | 0.89 | 34.1 |
| 1 | R2 | 687 | 2.9 | 0.453 | 36.2 | LOS C | 14.7 | 105.8 | 0.92 | 0.80 | 0.92 | 38.9 |
| Appr |  | 1652 | 4.0 | 0.555 | 37.1 | LOS C | 36.7 | 277.8 | 0.86 | 0.78 | 0.86 | 37.8 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 455 | 1.6 | 0.590 | 26.9 | LOS B | 15.2 | 108.2 | 0.79 | 0.85 | 0.87 | 44.3 |
| 11 | T1 | 684 | 4.3 | 0.590 | 44.7 | LOS D | 19.1 | 141.7 | 0.90 | 0.79 | 0.91 | 39.8 |
| 10 | R2 | 109 | 10.6 | 0.518 | 72.0 | LOS F | 7.3 | 60.2 | 0.98 | 0.79 | 0.98 | 25.5 |
| Approach |  | 1248 | 3.9 | 0.590 | 40.6 | LOS C | 19.1 | 141.7 | 0.87 | 0.81 | 0.90 | 39.7 |
| All Vehicles |  | 5735 | 3.4 | 0.787 | 46.1 | LOS D | 36.7 | 277.8 | 0.89 | 0.79 | 0.91 | 36.0 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{aligned} & \text { Demand } \\ & \text { Flow } \\ & \text { ped/h } \end{aligned}$ | Average Delay sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.6 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

Site: TCS 3118 [106-Mamre Road / M4 Western Motorway Off-ramp/On-ramp (South) - PM Peak 2030 Base]
1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | ows Arriva <br> HV Total \% veh/h | ows <br> HV <br> \% | Deg. Satn v/c | Average Delay sec | Level of Service |  | ck of e istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed <br> km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1425 | 5.51425 | 5.5 | 0.630 | 7.5 | LOS A | 21.1 | 160.1 | 0.51 | 0.48 | 0.51 | 43.3 |
| 7 R2 | 558 | 4.3558 | 4.3 | 1.213 | 258.6 | LOS F | 78.6 | 592.3 | 1.00 | 1.57 | 2.57 | 8.8 |
| Approach | 1983 | 5.11983 | 5.1 | 1.213 | 78.2 | LOS F | 78.6 | 592.3 | 0.65 | 0.78 | 1.09 | 14.7 |
| East: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 283 | 4.1283 | 4.1 | 0.325 | 11.3 | LOS A | 5.7 | 41.2 | 0.43 | 0.69 | 0.43 | 48.1 |
| 4 R2 | 358 | 5.9358 | 5.9 | 0.998 | 112.9 | LOS F | 16.1 | 120.8 | 1.00 | 1.18 | 1.80 | 13.0 |
| Approach | 641 | 5.1641 | 5.1 | 0.998 | 68.0 | LOS E | 16.1 | 120.8 | 0.75 | 0.96 | 1.19 | 21.9 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 860 | 2.1860 | 2.1 | 0.435 | 15.3 | LOS B | 25.0 | 181.6 | 0.58 | 0.78 | 0.65 | 33.4 |
| $2 \quad \mathrm{~T} 1$ | 1483 | 4.61483 | 4.6 | 0.607 | 22.2 | LOS B | 33.9 | 250.3 | 0.69 | 0.61 | 0.69 | 35.3 |
| Approach | 2343 | 3.72343 | 3.7 | 0.607 | 19.7 | LOS B | 33.9 | 250.3 | 0.65 | 0.68 | 0.68 | 34.4 |
| All Vehicles | 4967 | 4.54967 | 4.5 | 1.213 | 49.3 | LOS D | 78.6 | 592.3 | 0.66 | 0.76 | 0.91 | 22.4 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

Site: TCS 3117 [107 - Mamre Road / M4 Western Motorway Off-ramp/On-ramp (North) - PM Peak 2030 Base]
1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h |  | Arrival <br> Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% B Que <br> Vehicles veh | of istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed <br> km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 146 | 7.9 | 146 | 7.9 | 0.103 | 8.6 | LOS A | 1.9 | 16.3 | 0.30 | 0.58 | 0.30 | 36.9 |
| 8 T1 | 1637 | 5.3 | 1637 | 5.3 | 0.713 | 32.3 | LOS C | 39.2 | 292.3 | 0.88 | 0.79 | 0.88 | 28.7 |
| Approach | 1783 | 5.5 | 1783 | 5.5 | 0.713 | 30.3 | LOS C | 39.2 | 292.3 | 0.84 | 0.78 | 0.84 | 29.4 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 1748 | 3.3 | 1748 | 3.3 | 0.919 | 22.3 | LOS B | 71.2 | 521.6 | 0.80 | 0.81 | 0.87 | 26.3 |
| 1 R2 | 267 | 5.5 | 267 | 5.5 | 0.705 | 54.5 | LOS D | 14.9 | 114.3 | 0.98 | 0.85 | 1.01 | 23.4 |
| Approach | 2016 | 3.6 | 2016 | 3.6 | 0.919 | 26.5 | LOS B | 71.2 | 521.6 | 0.83 | 0.81 | 0.89 | 25.4 |
| West: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 415 | 5.3 | 415 | 5.3 | 0.476 | 15.9 | LOS B | 12.0 | 89.7 | 0.59 | 0.75 | 0.59 | 44.1 |
| 10 R2 | 595 | 5.0 | 595 | 5.0 | 0.920 | 75.8 | LOS F | 23.4 | 174.1 | 1.00 | 1.03 | 1.39 | 17.3 |
| Approach | 1009 | 5.1 | 1009 | 5.1 | 0.920 | 51.2 | LOS D | 23.4 | 174.1 | 0.83 | 0.92 | 1.06 | 25.2 |
| All Vehicles | 4808 |  | 4808 | 4.6 | 0.920 | 33.1 | LOS C | 71.2 | 521.6 | 0.83 | 0.82 | 0.91 | 26.8 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

$\nabla$ Site: [109 - Glossop Street / Harris Street - PM Peak 2030 Base]
1630-1730
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{\|l\|l\|} \hline \text { Mov } \\ \text { ID } \end{array}$ | Deman <br> Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| L2 | 35 | 0.0 | 0.488 | 5.6 | LOSA | 0.0 | 0.0 | 0.00 | 0.02 | 0.00 | 57.4 |
| 2 T1 | 1749 | 5.5 | 0.488 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 59.6 |
| Approach | 1784 | 5.4 | 0.488 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 59.5 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 2054 | 3.6 | 0.543 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| Approach | 2054 | 3.6 | 0.543 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| West: Harris Street |  |  |  |  |  |  |  |  |  |  |  |
| 10 L2 | 75 | 1.3 | 0.181 | 12.2 | LOS A | 0.6 | 4.3 | 0.73 | 0.87 | 0.73 | 40.2 |
| Approach | 75 | 1.3 | 0.181 | 12.2 | LOS A | 0.6 | 4.3 | 0.73 | 0.87 | 0.73 | 40.2 |
| All Vehicles | 3913 | 4.4 | 0.543 | 0.3 | NA | 0.6 | 4.3 | 0.01 | 0.02 | 0.01 | 58.8 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

$\nabla$ Site: [110 - Forrester Road / Harris Street - PM Peak 2030 Base]
1630-1730
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Turn | Deman <br> Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. <br> Satn <br> v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | T1 | 68 | 4.4 | 0.040 | 0.1 | LOS A | 0.1 | 0.5 | 0.07 | 0.00 | 0.07 | 38.7 |
| 3 | R2 | 12 | 0.0 | 0.040 | 0.3 | LOS A | 0.1 | 0.5 | 0.07 | 0.00 | 0.07 | 39.2 |
| Appr | ach | 80 | 3.8 | 0.040 | 0.1 | NA | 0.1 | 0.5 | 0.07 | 0.00 | 0.07 | 38.8 |
| East: Harris Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 9 | 0.0 | 0.166 | 8.4 | LOS A | 0.6 | 4.2 | 0.25 | 0.59 | 0.25 | 38.9 |
| 6 | R2 | 177 | 1.1 | 0.166 | 5.3 | LOS A | 0.6 | 4.2 | 0.25 | 0.59 | 0.25 | 45.4 |
| Appr | ach | 186 | 1.1 | 0.166 | 5.5 | LOS A | 0.6 | 4.2 | 0.25 | 0.59 | 0.25 | 45.2 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 25 | 8.0 | 0.054 | 4.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.71 | 0.00 | 45.6 |
| 8 | T1 | 73 | 5.5 | 0.054 | 6.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.71 | 0.00 | 41.0 |
| Appr | ach | 98 | 6.1 | 0.054 | 6.1 | NA | 0.0 | 0.0 | 0.00 | 0.71 | 0.00 | 42.7 |
| All V | hicles | 364 | 3.0 | 0.166 | 4.5 | NA | 0.6 | 4.2 | 0.14 | 0.49 | 0.14 | 43.6 |

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

## MOVEMENT SUMMARY

日 Site: TCS 3129 [111 - Forrester Road / Glossop Street / Access Road - PM Peak 2030 Base]
1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time $=89$ seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \mathrm{Mov} \\ & \mathrm{ID} \end{aligned}$ |  | $\begin{aligned} & \text { Demanc } \\ & \text { Total } \\ & \text { veh/h } \\ & \hline \end{aligned}$ | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. <br> Satn <br> v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 1 | 0.0 | 0.213 | 48.6 | LOS D | 5.7 | 39.8 | 0.77 | 0.64 | 1.31 | 23.7 |
| 2 | T1 | 137 | 0.0 | 0.213 | 34.6 | LOS C | 5.7 | 39.8 | 0.77 | 0.64 | 1.31 | 36.3 |
| 3 | R2 | 144 | 3.5 | 0.524 | 44.1 | LOS D | 6.0 | 44.0 | 0.96 | 0.86 | 1.21 | 32.4 |
| Appr | ach | 282 | 1.8 | 0.524 | 39.5 | LOS C | 6.0 | 44.0 | 0.87 | 0.76 | 1.26 | 34.2 |
| East: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 54 | 37.0 | 1.062 | 104.6 | LOS F | 55.1 | 428.3 | 1.00 | 1.20 | 2.06 | 18.0 |
| 5 | T1 | 2 | 0.0 | 1.062 | 116.5 | LOS F | 55.1 | 428.3 | 1.00 | 1.20 | 2.06 | 10.9 |
| 6 | R2 | 1470 | 4.9 | 1.062 | 114.2 | LOS F | 67.3 | 500.9 | 1.00 | 1.29 | 2.06 | 19.1 |
| Appr |  | 1526 | 6.0 | 1.062 | 113.9 | LOS F | 67.3 | 500.9 | 1.00 | 1.29 | 2.06 | 19.0 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 1185 | 4.7 | 1.075 | 116.6 | LOS F | 89.2 | 658.9 | 1.00 | 1.35 | 2.06 | 19.1 |
| 8 | T1 | 111 | 0.0 | 0.283 | 36.6 | LOS C | 4.3 | 30.0 | 0.91 | 0.73 | 0.91 | 35.4 |
| Appro |  | 1296 | 4.3 | 1.075 | 109.7 | LOS F | 89.2 | 658.9 | 0.99 | 1.30 | 1.96 | 19.9 |
| West: Access Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 2 | 0.0 | 0.044 | 41.3 | LOS C | 0.3 | 2.5 | 0.94 | 0.62 | 0.94 | 19.8 |
| 11 | T1 | 4 | 50.0 | 0.044 | 41.3 | LOS C | 0.3 | 2.5 | 0.94 | 0.62 | 0.94 | 18.7 |
| 12 | R2 | 1 | 0.0 | 0.044 | 41.3 | LOS C | 0.3 | 2.5 | 0.94 | 0.62 | 0.94 | 18.8 |
| Approach |  | 7 | 28.6 | 0.044 | 41.3 | LOS C | 0.3 | 2.5 | 0.94 | 0.62 | 0.94 | 19.0 |
| All Ve | icles | 3111 | 5.0 | 1.075 | 105.2 | LOS F | 89.2 | 658.9 | 0.99 | 1.24 | 1.94 | 20.2 |

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

## Movement Performance - Pedestrians

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Average Back of Queue |  |  | Prop. Queued | Effective Stop Rate |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| P1 | South Full Crossing | 1 | 38.7 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P2 | East Full Crossing | 13 | 38.7 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P4 | West Full Crossing | 13 | 38.7 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| All P | estrians | 27 | 38.7 | LOS D |  |  | 0.93 | 0.93 |

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

## MOVEMENT SUMMARY

```
    Site: TCS 3129 [111 - Forrester Road / Glossop Street / Access Road - PM Peak 2030
Base_Upgrades]
1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 103 seconds (Site User-Given Phase Times)
```


## Movement Performance - Vehicles

| $\begin{aligned} & \text { Mo } \\ & \hline \text { ID } \end{aligned}$ | Turn | Demand | Flows | Deg. | Average | Level of | 95\% Back | of Queue | Prop. | Effective | Aver. No. | Average |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ | Satn | Delay sec | Service | Vehicles veh | Distance <br> m | Queued | Stop Rate | Cycles | $\begin{gathered} \text { Speed } \\ \mathrm{km} / \mathrm{h} \end{gathered}$ |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 1 | 0.0 | 0.247 | 60.6 | LOS E | 7.3 | 51.4 | 0.82 | 0.68 | 1.42 | 20.6 |
| 2 | T1 | 137 | 0.0 | 0.247 | 46.7 | LOS D | 7.3 | 51.4 | 0.82 | 0.68 | 1.42 | 32.4 |
| 3 | R2 | 144 | 3.5 | 0.441 | 43.0 | LOS D | 6.5 | 48.1 | 0.93 | 0.78 | 0.93 | 32.7 |
| Approach |  | 282 | 1.8 | 0.441 | 44.8 | LOS D | 7.3 | 51.4 | 0.88 | 0.74 | 1.17 | 32.5 |
| East: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 54 | 37.0 | 0.878 | 48.2 | LOS D | 39.9 | 310.2 | 0.97 | 0.99 | 1.50 | 31.5 |
| 5 | T1 | 2 | 0.0 | 0.878 | 61.0 | LOSE | 39.9 | 310.2 | 0.97 | 0.99 | 1.50 | 21.9 |
| 6 | R2 | 1470 | 4.9 | 0.878 | 44.2 | LOS D | 40.4 | 300.9 | 0.97 | 0.98 | 1.29 | 34.4 |
| Approach |  | 1526 | 6.0 | 0.878 | 44.4 | LOS D | 40.4 | 310.2 | 0.97 | 0.98 | 1.30 | 34.2 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 1185 | 4.7 | 0.708 | 9.1 | LOS A | 16.2 | 120.0 | 0.44 | 0.75 | 0.52 | 51.4 |
| 8 | T1 | 111 | 0.0 | 0.328 | 44.4 | LOS D | 5.1 | 35.6 | 0.94 | 0.75 | 0.94 | 32.9 |
| Approach |  | 1296 | 4.3 | 0.708 | 12.1 | LOS A | 16.2 | 120.0 | 0.48 | 0.75 | 0.55 | 49.1 |
| West: Access Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 2 | 0.0 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 18.2 |
| 11 | T1 | 4 | 50.0 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 17.3 |
| 12 | R2 | 1 | 0.0 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 17.4 |
| Approach |  | 7 | 28.6 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 17.6 |
| All Vehicles |  | 3111 | 5.0 | 0.878 | 31.0 | LOS C | 40.4 | 310.2 | 0.76 | 0.86 | 0.98 | 38.9 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{gathered} \text { Demand } \\ \text { Flow } \\ \text { ped/h } \end{gathered}$ | Average Delay sec $\qquad$ | Level of Service | Average Bac Pedestrian $\qquad$ | of Queue Distance $\qquad$ m | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 1 | 45.7 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 |
| P2 | East Full Crossing | 13 | 45.7 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 |
| P4 | West Full Crossing | 13 | 45.7 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 |
| All Pedestrians |  | 27 | 45.7 | LOS E |  |  | 0.94 | 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.

## MOVEMENT SUMMARY

Site: [112 - Forrester Road / Christie Street / Boronia Road - PM Peak 2030 Base]
1630-1730
Site Category: (None)
Roundabout

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Deman <br> Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 211 | 1.4 | 1.431 | 411.3 | LOS F | 177.2 | 1299.2 | 1.00 | 6.00 | 13.22 | 7.8 |
| 2 | T1 | 1141 | 4.1 | 1.431 | 413.0 | LOS F | 177.2 | 1299.2 | 1.00 | 5.66 | 12.70 | 7.2 |
| 3 | R2 | 61 | 0.0 | 1.431 | 419.7 | LOS F | 140.5 | 1033.0 | 1.00 | 5.27 | 12.08 | 6.8 |
| 3 u | U | 67 | 3.0 | 1.431 | 422.2 | LOS F | 140.5 | 1033.0 | 1.00 | 5.27 | 12.08 | 7.9 |
| Appro | ach | 1480 | 3.5 | 1.431 | 413.5 | LOS F | 177.2 | 1299.2 | 1.00 | 5.68 | 12.72 | 7.3 |
| East: Boronia Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 38 | 0.0 | 0.383 | 12.3 | LOS A | 2.0 | 14.3 | 0.88 | 0.97 | 0.99 | 44.1 |
| 5 | T1 | 32 | 3.1 | 0.383 | 12.4 | LOS A | 2.0 | 14.3 | 0.88 | 0.97 | 0.99 | 45.3 |
| 6 | R2 | 43 | 0.0 | 0.383 | 17.4 | LOS B | 2.0 | 14.3 | 0.88 | 0.97 | 0.99 | 44.2 |
| 6 u | U | 1 | 0.0 | 0.383 | 19.3 | LOS B | 2.0 | 14.3 | 0.88 | 0.97 | 0.99 | 42.9 |
| Appro |  | 114 | 0.9 | 0.383 | 14.3 | LOS A | 2.0 | 14.3 | 0.88 | 0.97 | 0.99 | 44.5 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 16 | 6.3 | 0.951 | 32.8 | LOS C | 28.2 | 203.2 | 1.00 | 1.49 | 2.28 | 33.9 |
| 8 | T1 | 723 | 2.8 | 0.951 | 32.7 | LOS C | 28.2 | 203.2 | 1.00 | 1.49 | 2.28 | 38.7 |
| 9 | R2 | 775 | 5.8 | 1.050 | 85.7 | LOS F | 56.3 | 418.7 | 1.00 | 2.39 | 4.21 | 24.5 |
| 9 u | U | 27 | 0.0 | 1.050 | 87.5 | LOS F | 56.3 | 418.7 | 1.00 | 2.39 | 4.21 | 23.3 |
| Appro |  | 1541 | 4.3 | 1.050 | 60.3 | LOS E | 56.3 | 418.7 | 1.00 | 1.96 | 3.28 | 29.6 |
| West: Christie Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 1055 | 3.2 | 1.629 | 577.8 | LOS F | 269.1 | 1951.3 | 1.00 | 9.05 | 22.94 | 5.2 |
| 11 | T1 | 22 | 0.0 | 0.680 | 18.6 | LOS B | 5.0 | 35.8 | 0.92 | 1.12 | 1.36 | 41.0 |
| 12 | R2 | 225 | 4.4 | 0.680 | 24.4 | LOS B | 5.0 | 35.8 | 0.92 | 1.12 | 1.36 | 44.6 |
| 12u | U | 7 | 0.0 | 0.680 | 26.3 | LOS B | 5.0 | 35.8 | 0.92 | 1.12 | 1.36 | 45.6 |
| Approach |  | 1309 | 3.4 | 1.629 | 470.3 | LOS F | 269.1 | 1951.3 | 0.98 | 7.51 | 18.76 | 6.4 |
| All Vehicles |  | 4444 | 3.7 | 1.629 | 297.5 | LOS F | 269.1 | 1951.3 | 0.99 | 4.81 | 10.92 | 9.6 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

日 Site: [112 - Forrester Road / Christie Street / Boronia Road - PM Peak 2030 Base_Upgrades] 1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time $=140$ seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.


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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{gathered} \text { Demand } \\ \text { Flow } \\ \text { ped/h } \end{gathered}$ | Average Delay sec | Level of Service | Average Bac Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P2 | East Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P3 | North Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P4 | West Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| All Pedestrians |  | 100 | 64.2 | LOS F |  |  | 0.96 | 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.

## MOVEMENT SUMMARY

$\theta$ Site: [113 - Christie Street / Dunheved Road / Werrington Road - PM Peak 2030 Base]
1630-1730
Site Category: (None)
Roundabout

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Deman <br> Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \hline \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Werrington Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 1020 | 2.0 | 1.727 | 678.4 | LOS F | 294.2 | 2104.4 | 1.00 | 6.70 | 15.93 | 4.4 |
| 3 | R2 | 427 | 2.8 | 1.022 | 113.0 | LOS F | 33.0 | 236.8 | 1.00 | 2.02 | 3.92 | 22.5 |
| 3 u | U | 2 | 0.0 | 1.022 | 115.4 | LOS F | 33.0 | 236.8 | 1.00 | 2.02 | 3.92 | 23.1 |
| Appr | ach | 1449 | 2.2 | 1.727 | 511.0 | LOS F | 294.2 | 2104.4 | 1.00 | 5.31 | 12.37 | 6.0 |
| East: Christie Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 690 | 2.8 | 0.783 | 12.8 | LOS A | 12.3 | 88.4 | 1.00 | 1.03 | 1.35 | 51.1 |
| 5 | T1 | 1085 | 3.3 | 1.099 | 110.0 | LOS F | 90.7 | 655.6 | 1.00 | 3.27 | 5.86 | 20.4 |
| 6 u | U | 5 | 0.0 | 1.099 | 118.0 | LOS F | 90.7 | 655.6 | 1.00 | 3.27 | 5.86 | 22.1 |
| Approach |  | 1780 | 3.1 | 1.099 | 72.4 | LOS F | 90.7 | 655.6 | 1.00 | 2.40 | 4.11 | 27.1 |
| West: Dunheved Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | T1 | 722 | 4.4 | 1.203 | 207.4 | LOS F | 97.3 | 711.6 | 1.00 | 3.67 | 8.21 | 12.8 |
| 12 | R2 | 376 | 2.9 | 0.767 | 27.2 | LOS B | 9.3 | 68.1 | 0.99 | 1.18 | 1.50 | 44.9 |
| 12u | U | 1 | 0.0 | 0.767 | 29.3 | LOS C | 9.3 | 68.1 | 0.99 | 1.18 | 1.50 | 44.1 |
| Appr |  | 1099 | 3.9 | 1.203 | 145.6 | LOS F | 97.3 | 711.6 | 1.00 | 2.82 | 5.91 | 17.1 |
| All Ve | icles | 4328 | 3.0 | 1.727 | 237.8 | LOS F | 294.2 | 2104.4 | 1.00 | 3.48 | 7.33 | 11.7 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

[^1]
## MOVEMENT SUMMARY

```
    Site: [113 - Christie Street / Dunheved Road / Werrington Road - PM Peak 2030
Base_Upgrades]
1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
```


## Movement Performance - Vehicles

| Mov | Turn | Demand | Fows | Deg. | Average | Level of | 95\% Back | of Queue | Prop | Effective | Aver. No. | Average |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ID |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ | Satn v/c | Delay sec | Service | Vehicles veh | Distance <br> m | Queued | Stop Rate | Cycles | $\begin{gathered} \text { Speed } \\ \mathrm{km} / \mathrm{h} \end{gathered}$ |
| South | Werri | n Road |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 1020 | 2.0 | 0.613 | 33.9 | LOS C | 22.7 | 162.1 | 0.82 | 0.84 | 0.82 | 39.4 |
| 3 | R2 | 427 | 2.8 | 0.546 | 52.8 | LOS D | 11.3 | 81.0 | 0.95 | 0.82 | 0.95 | 33.1 |
| Appr | ach | 1447 | 2.2 | 0.613 | 39.5 | LOS C | 22.7 | 162.1 | 0.86 | 0.83 | 0.86 | 37.1 |
| East | Christi | reet |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 690 | 2.8 | 0.509 | 8.4 | LOS A | 10.9 | 78.6 | 0.37 | 0.68 | 0.37 | 54.0 |
| 5 | T1 | 1085 | 3.3 | 0.609 | 26.0 | LOS B | 23.6 | 170.7 | 0.81 | 0.72 | 0.81 | 43.0 |
| Appr |  | 1775 | 3.1 | 0.609 | 19.1 | LOS B | 23.6 | 170.7 | 0.64 | 0.70 | 0.64 | 47.0 |
| Wes | Dunhe | Road |  |  |  |  |  |  |  |  |  |  |
| 11 | T1 | 722 | 4.4 | 0.541 | 10.8 | LOS A | 20.4 | 149.3 | 0.53 | 0.57 | 0.53 | 52.9 |
| 12 | R2 | 376 | 2.9 | 0.554 | 55.4 | LOS D | 10.2 | 74.3 | 0.96 | 0.81 | 0.96 | 31.2 |
| Appr |  | 1098 | 3.9 | 0.554 | 26.1 | LOS B | 20.4 | 149.3 | 0.68 | 0.66 | 0.68 | 42.7 |
| All | icles | 4320 | 3.0 | 0.613 | 27.7 | LOS B | 23.6 | 170.7 | 0.72 | 0.73 | 0.72 | 42.2 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 20 | 54.2 | LOS E | 0.1 | 0.1 | 0.95 | 0.95 |
| P4 | West Full Crossing | 20 | 54.2 | LOS E | 0.1 | 0.1 | 0.95 | 0.95 |
| All Pedestrians |  | 40 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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.

[^2]
## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／
审审 Network：［104 \＆108－AM Mamre Road－AM Peak 2030 With Development］ Peak 2030 With Development］

0800－0900
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 141 seconds（Network User－Given Cycle Time）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demanc <br> Total veh／h | Flows HV \％ | Arrival Total veh／h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg． Satn v／c | Average Delay sec | Level of Service |  | ack of ue Distance m | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag <br> Speed km／h |
| South：Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 163 | 6.5 | 163 | 6.5 | 0.121 | 16.2 | LOS B | 4.4 | 33.1 | 0.45 | 0.67 | 0.45 | 39.8 |
| 8 T1 | 447 | 1.9 | 447 | 1.9 | 0.908 | 49.9 | LOS D | 41.2 | 355.2 | 0.91 | 0.82 | 0.93 | 25.8 |
| $7 \quad \mathrm{R} 2$ | 488 | 16.8 | 488 | 16.8 | 0.908 | 71.1 | LOS F | 41.2 | 355.2 | 1.00 | 0.98 | 1.19 | 13.7 |
| Approach | 1099 | 9.2 | 1099 | 9.2 | 0.908 | 54.3 | LOS D | 41.2 | 355.2 | 0.88 | 0.87 | 0.98 | 21.7 |
| East：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 482 | 22.3 | 482 | 22.3 | 0.433 | 10.8 | LOS A | 9.6 | 90.6 | 0.38 | 0.67 | 0.38 | 48.8 |
| $5 \quad \mathrm{~T} 1$ | 1199 | 3.2 | 1199 | 3.2 | 0.916 | 69.1 | LOS E | 39.1 | 284.9 | 0.99 | 1.02 | 1.21 | 24.2 |
| 4 R2 | 226 | 1.9 | 226 | 1.9 | 0.899 | 72.1 | LOS F | 16.6 | 118.0 | 1.00 | 0.91 | 1.18 | 24.9 |
| Approach | 1907 | 7.9 | 1907 | 7.9 | 0.916 | 54.7 | LOS D | 39.1 | 284.9 | 0.84 | 0.92 | 1.00 | 28.1 |
| North：Queen Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 52 | 0.0 | 52 | 0.0 | 0.852 | 77.4 | LOS F | 11.5 | 83.7 | 1.00 | 1.06 | 1.58 | 14.4 |
| 2 T1 | 185 | 6.8 | 185 | 6.8 | 0.852 | 75.0 | LOS F | 11.5 | 83.7 | 1.00 | 1.04 | 1.46 | 20.9 |
| 1 R2 | 80 | 1.3 | 80 | 1.3 | 0.852 | 79.9 | LOS F | 11.5 | 83.0 | 1.00 | 1.00 | 1.28 | 18.4 |
| Approach | 317 | 4.3 | 317 | 4.3 | 0.852 | 76.6 | LOS F | 11.5 | 83.7 | 1.00 | 1.03 | 1.43 | 19.3 |
| West：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 107 | 3.9 | 107 | 3.9 | 0.604 | 51.1 | LOS D | 18.6 | 138.3 | 0.91 | 0.81 | 0.91 | 24.2 |
| 11 T1 | 854 | 5.4 | 854 | 5.4 | 0.604 | 45.5 | LOS D | 18.9 | 142.3 | 0.91 | 0.79 | 0.91 | 14.2 |
| 10 R2 | 196 | 8.1 | 196 | 8.1 | 0.849 | 78.7 | LOS F | 14.6 | 114.1 | 1.00 | 0.93 | 1.24 | 17.8 |
| Approach | 1157 | 5.7 | 1157 | 5.7 | 0.849 | 51.6 | LOS D | 18.9 | 142.3 | 0.93 | 0.82 | 0.97 | 16.5 |
| All Vehicles | 4480 |  | 4480 | 7.4 | 0.916 | 55.4 | LOS D | 41.2 | 355.2 | 0.88 | 0.89 | 1.01 | 23.5 |

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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped／h | Average Delay $\qquad$ sec | Level of Service | $\begin{gathered} \text { Average Back } \\ \text { Pedestrian } \\ \text { ped } \end{gathered}$ | of Queue Distance $\qquad$ | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 3 | 64.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 16 | 64.7 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 8 | 64.7 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 17 | 64.7 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| All Pedestrians |  | 44 | 64.7 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M St Marys Inland Container Terminal EIS_2030 With Development.sip8

## MOVEMENT SUMMARY

B Site: TCS 1236 [108-Great Western Highway / Glossop审审 Network: [104 \& 108-AM Street - AM Peak 2030 With Development] Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 141 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | $\begin{aligned} & \text { Flows } \\ & \text { HV } \\ & \% \end{aligned}$ | Arrive <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | Vehicles veh | ack of ue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag Speed km/h |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 1139 | 5.0 | 1139 | 5.0 | 0.302 | 18.4 | LOS B | 15.6 | 115.9 | 0.58 | 0.51 | 0.58 | 37.8 |
| 4 R2 | 595 | 14.0 | 595 | 14.0 | 0.657 | 59.1 | LOS E | 18.5 | 157.7 | 0.96 | 0.83 | 0.96 | 28.7 |
| Approach | 1734 | 8.1 | 1734 | 8.1 | 0.657 | 32.4 | LOS C | 18.5 | 157.7 | 0.71 | 0.62 | 0.71 | 32.8 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 512 | 20.4 | 512 | 20.4 | 0.516 | 20.2 | LOS B | 18.6 | 167.1 | 0.58 | 0.77 | 0.58 | 42.3 |
| R2 | 768 | 12.2 | 768 | 12.2 | 0.650 | 44.1 | LOS D | 21.4 | 180.1 | 0.87 | 0.84 | 0.87 | 21.8 |
| Approach | 1280 | 15.5 | 1280 | 15.5 | 0.650 | 34.5 | LOS C | 21.4 | 180.1 | 0.76 | 0.81 | 0.76 | 30.6 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 403 | 17.2 | 403 | 17.2 | 0.643 | 51.2 | LOS D | 23.8 | 216.7 | 0.91 | 0.84 | 0.91 | 31.1 |
| 11 T1 | 991 | 6.0 | 991 | 6.0 | 0.643 | 49.7 | LOS D | 30.8 | 230.0 | 0.99 | 0.86 | 0.99 | 33.7 |
| Approach | 1394 |  | 1394 | 9.2 | 0.643 | 50.1 | LOS D | 30.8 | 230.0 | 0.96 | 0.85 | 0.96 | 33.0 |
| All Vehicles | 4407 | 10.6 | 4407 | 10.6 | 0.657 | 38.6 | LOS C | 30.8 | 230.0 | 0.80 | 0.75 | 0.80 | 32.3 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P2 | East Full Crossing | 1 | 64.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 2 | 64.6 | LOS F |  |  | 0.96 | 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.

## MOVEMENT SUMMARY

## Site: TCS 1234 [105-Great Western Highway / Carlisle Avenue - AM Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 142 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov Turn } \\ & \text { ID } \end{aligned}$ | Deman <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 53 | 38.0 | 0.141 | 38.7 | LOS C | 2.8 | 31.2 | 0.84 | 0.72 | 0.84 | 33.3 |
| 8 T1 | 657 | 6.7 | 0.671 | 60.8 | LOS E | 21.0 | 155.2 | 0.99 | 0.83 | 0.99 | 28.1 |
| 7 R2 | 175 | 11.4 | 0.678 | 74.8 | LOS F | 12.0 | 95.5 | 1.00 | 0.81 | 1.03 | 25.1 |
| Approach | 884 | 9.5 | 0.678 | 62.2 | LOS E | 21.0 | 155.2 | 0.99 | 0.82 | 0.99 | 27.7 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 87 | 8.4 | 0.458 | 42.5 | LOS D | 13.9 | 107.4 | 0.83 | 0.75 | 0.85 | 37.2 |
| $5 \quad$ T1 | 737 | 6.9 | 0.458 | 38.8 | LOS C | 15.0 | 114.1 | 0.84 | 0.73 | 0.84 | 42.5 |
| 4 R2 | 314 | 6.0 | 0.796 | 79.6 | LOS F | 11.4 | 84.6 | 1.00 | 0.88 | 1.18 | 27.4 |
| Approach | 1138 | 6.8 | 0.796 | 50.4 | LOS D | 15.0 | 114.1 | 0.88 | 0.77 | 0.93 | 36.4 |
| North: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 314 | 5.7 | 0.218 | 31.0 | LOS C | 12.9 | 95.4 | 0.70 | 0.76 | 0.70 | 40.9 |
| 2 T1 | 475 | 6.7 | 0.443 | 43.3 | LOS D | 26.2 | 198.5 | 0.87 | 0.75 | 0.87 | 33.9 |
| 1 R2 | 457 | 4.8 | 0.338 | 37.1 | LOS C | 9.8 | 71.9 | 0.91 | 0.78 | 0.91 | 38.2 |
| Approach | 1245 | 5.7 | 0.443 | 37.9 | LOS C | 26.2 | 198.5 | 0.84 | 0.76 | 0.84 | 37.2 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 580 | 2.9 | 0.407 | 21.6 | LOS B | 16.4 | 118.5 | 0.69 | 0.80 | 0.73 | 47.3 |
| 11 T1 | 923 | 7.2 | 0.407 | 37.5 | LOS C | 23.1 | 176.1 | 0.82 | 0.71 | 0.82 | 43.3 |
| 10 R2 | 148 | 8.5 | 0.428 | 70.8 | LOS F | 9.6 | 77.2 | 0.98 | 0.79 | 0.98 | 25.9 |
| Approach | 1652 | 5.8 | 0.428 | 34.9 | LOS C | 23.1 | 176.1 | 0.79 | 0.75 | 0.80 | 42.4 |
| All Vehicles | 4919 | 6.7 | 0.796 | 44.2 | LOS D | 26.2 | 198.5 | 0.86 | 0.77 | 0.88 | 36.6 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{aligned} & \text { Demand } \\ & \text { Flow } \\ & \text { ped/h } \end{aligned}$ | Average Delay $\qquad$ sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.1 | LOS F |  |  | 0.96 | 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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Project: P:\P3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M St Marys Inland Container Terminal EIS_2030 With Development.sip8

## MOVEMENT SUMMARY

Site: TCS 3118 [106-Mamre Road / M4 Western Motorway Off-ramp/On-ramp (South) - AM Peak 2030 With Development]

审审 Network: [106 \& 107-AM Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows Arriva <br> HV Total \% veh/h | $\begin{aligned} & =l o w s \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ck of istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1345 | 6.21345 | 6.2 | 0.280 | 4.4 | LOS A | 11.6 | 88.6 | 0.34 | 0.30 | 0.34 | 49.0 |
| 7 R2 | 507 | 8.7507 | 8.7 | 0.673 | 48.4 | LOS D | 24.9 | 190.9 | 0.98 | 0.85 | 0.98 | 25.3 |
| Approach | 1853 | 6.91853 | 6.9 | 0.673 | 16.4 | LOS B | 24.9 | 190.9 | 0.51 | 0.45 | 0.51 | 33.6 |
| East: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 109 | 11.5109 | 11.5 | 0.141 | 10.9 | LOS A | 1.8 | 14.9 | 0.39 | 0.65 | 0.39 | 48.4 |
| 4 R2 | 264 | 17.5264 | 17.5 | 0.664 | 56.3 | LOS D | 7.3 | 65.5 | 0.99 | 0.84 | 1.07 | 21.4 |
| Approach | 374 | 15.8374 | 15.8 | 0.664 | 43.0 | LOS D | 7.3 | 65.5 | 0.81 | 0.79 | 0.87 | 27.5 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 416 | 9.6416 | 9.6 | 0.254 | 8.8 | LOS A | 6.3 | 50.6 | 0.32 | 0.62 | 0.32 | 36.6 |
| 2 T 1 | 1451 | 8.81451 | 8.8 | 0.671 | 21.0 | LOS B | 28.4 | 218.3 | 0.71 | 0.63 | 0.71 | 36.1 |
| Approach | 1866 | 9.01866 | 9.0 | 0.671 | 18.2 | LOS B | 28.4 | 218.3 | 0.62 | 0.63 | 0.62 | 36.2 |
| All Vehicles | 4093 | 8.64093 | 8.6 | 0.673 | 19.7 | LOS B | 28.4 | 218.3 | 0.59 | 0.56 | 0.59 | 34.0 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

Site: TCS 3117 [107- Mamre Road / M4 Western Motorway Off-ramp/On-ramp (North) - AM Peak 2030 With Development]

审审 Network: [106 \& 107-AM Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows | Arrival Total veh/h | $\begin{aligned} & \text { =lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ack of ue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed <br> km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 265 | 6.7 | 265 | 6.7 | 0.176 | 10.9 | LOS A | 5.7 | 45.9 | 0.48 | 0.67 | 0.48 | 35.5 |
| 8 T1 | 1344 | 8.3 | 1344 | 8.3 | 0.638 | 34.4 | LOS C | 30.4 | 238.0 | 0.90 | 0.79 | 0.90 | 27.8 |
| Approach | 1609 | 8.0 | 1609 | 8.0 | 0.638 | 30.5 | LOS C | 30.4 | 238.0 | 0.83 | 0.77 | 0.83 | 29.2 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 1266 | 9.3 | 1266 | 9.3 | 0.830 | 14.6 | LOS B | 35.0 | 274.3 | 0.71 | 0.67 | 0.73 | 32.6 |
| 1 R2 | 257 | 18.4 | 257 | 18.4 | 0.653 | 41.9 | LOS C | 12.2 | 113.1 | 0.92 | 0.83 | 0.92 | 26.1 |
| Approach | 1523 | 10.9 | 1523 | 10.9 | 0.830 | 19.2 | LOS B | 35.0 | 274.3 | 0.75 | 0.70 | 0.77 | 30.0 |
| West: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L2 | 626 | 3.7 | 626 | 3.7 | 0.577 | 11.1 | LOS A | 13.6 | 99.0 | 0.53 | 0.73 | 0.53 | 47.6 |
| 10 R2 | 600 | 8.2 | 600 | 8.2 | 0.843 | 58.4 | LOS E | 18.4 | 141.6 | 1.00 | 0.95 | 1.22 | 20.7 |
| Approach | 1226 | 5.9 | 1226 | 5.9 | 0.843 | 34.3 | LOS C | 18.4 | 141.6 | 0.76 | 0.84 | 0.86 | 31.7 |
| All Vehicles | 4359 |  | 4359 | 8.4 | 0.843 | 27.6 | LOS B | 35.0 | 274.3 | 0.78 | 0.77 | 0.82 | 30.2 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 3 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 4 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

$\nabla$ Site: [109-Glossop Street / Harris Street - AM Peak 2030 With Dev Option 1]
0800-0900
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{\|l\|l\|} \hline \text { Mov Turn } \\ \text { ID } \end{array}$ | Deman <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| L2 | 82 | 6.1 | 0.473 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.06 | 0.00 | 56.6 |
| 2 T1 | 1579 | 9.9 | 0.473 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 59.2 |
| Approach | 1661 | 9.7 | 0.473 | 0.3 | NA | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 59.0 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1829 | 11.7 | 0.520 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| Approach | 1829 | 11.7 | 0.520 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| West: Harris Street |  |  |  |  |  |  |  |  |  |  |  |
| 10 L2 | 92 | 14.1 | 0.231 | 13.1 | LOS A | 0.8 | 6.8 | 0.73 | 0.89 | 0.79 | 39.0 |
| Approach | 92 | 14.1 | 0.231 | 13.1 | LOS A | 0.8 | 6.8 | 0.73 | 0.89 | 0.79 | 39.0 |
| All Vehicles | 3582 | 10.8 | 0.520 | 0.5 | NA | 0.8 | 6.8 | 0.02 | 0.04 | 0.02 | 58.2 |

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

## MOVEMENT SUMMARY

目 Site: TCS 3129 [111 - Forrester Road / Glossop Street / Access Road - AM Peak 2030 With Dev Option 1_Upgrades]

0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time $=90$ seconds (Site User-Given Phase Times)

## Movement Performance - Vehicles

| Mov |  | Demand <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 2 | 0.0 | 0.129 | 47.1 | LOS D | 3.6 | 26.3 | 0.73 | 0.62 | 1.26 | 24.0 |
| 2 | T1 | 83 | 6.0 | 0.129 | 33.2 | LOS C | 3.6 | 26.3 | 0.73 | 0.62 | 1.26 | 36.7 |
| 3 | R2 | 46 | 26.1 | 0.169 | 36.1 | LOS C | 1.7 | 18.4 | 0.86 | 0.72 | 0.86 | 34.2 |
| Appr |  | 131 | 13.0 | 0.169 | 34.4 | LOS C | 3.6 | 26.3 | 0.78 | 0.65 | 1.12 | 35.6 |
| East: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 51 | 19.6 | 0.635 | 35.8 | Los C | 15.2 | 128.3 | 0.86 | 0.88 | 1.28 | 35.3 |
| 5 | T1 | 8 | 0.0 | 0.635 | 48.9 | LOS D | 15.2 | 128.3 | 0.86 | 0.88 | 1.28 | 25.3 |
| 6 | R2 | 800 | 15.3 | 0.635 | 32.4 | LOS C | 15.2 | 128.3 | 0.86 | 0.85 | 1.06 | 38.3 |
| Appr | ach | 859 | 15.4 | 0.635 | 32.7 | LOS C | 15.2 | 128.4 | 0.86 | 0.86 | 1.07 | 38.0 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 1393 | 10.5 | 0.899 | 18.0 | LOS B | 34.2 | 276.5 | 0.64 | 0.86 | 0.77 | 45.5 |
| 8 | T1 | 218 | 4.6 | 0.602 | 38.9 | LOS C | 9.1 | 66.9 | 0.97 | 0.81 | 0.97 | 34.6 |
| Appr | ach | 1611 | 9.7 | 0.899 | 20.8 | LOS B | 34.2 | 276.5 | 0.69 | 0.85 | 0.80 | 43.7 |
| West: Access Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 2 | 0.0 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 19.1 |
| 11 | T1 | 3 | 33.3 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.4 |
| 12 | R2 | 1 | 0.0 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.2 |
| Appr | ach | 6 | 16.7 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.6 |
| All V | icles | 2607 | 11.7 | 0.899 | 25.5 | LOS B | 34.2 | 276.5 | 0.75 | 0.84 | 0.91 | 41.1 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{gathered} \text { Demand } \\ \text { Flow } \\ \text { ped/h } \\ \hline \end{gathered}$ | Average Delay $\qquad$ sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ m | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 1 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P2 | East Full Crossing | 20 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P4 | West Full Crossing | 6 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| All Pe | estrians | 27 | 39.2 | LOS D |  |  | 0.93 | 0.93 |

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

## MOVEMENT SUMMARY

日 Site: [112 - Forrester Road / Christie Street / Boronia Road - AM Peak 2030 With Dev Option 1_Upgrades]
0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Deman Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 216 | 24.5 | 0.201 | 10.9 | LOS A | 4.0 | 37.8 | 0.35 | 0.65 | 0.35 | 49.6 |
| 2 | T1 | 630 | 12.2 | 1.019 | 108.6 | LOS F | 25.0 | 203.5 | 1.00 | 1.17 | 1.54 | 20.0 |
| 3 | R2 | 27 | 3.7 | 0.354 | 80.7 | LOS F | 1.9 | 13.9 | 1.00 | 0.72 | 1.00 | 22.6 |
| Appr |  | 873 | 15.0 | 1.019 | 83.5 | LOS F | 25.0 | 203.5 | 0.84 | 1.03 | 1.23 | 24.0 |
| East: Boronia Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 6 | 16.7 | 0.011 | 20.9 | LOS B | 0.2 | 1.5 | 0.53 | 0.60 | 0.53 | 39.6 |
| 5 | T1 | 23 | 0.0 | 0.406 | 66.0 | LOS E | 4.3 | 30.2 | 0.98 | 0.76 | 0.98 | 25.3 |
| 6 | R2 | 41 | 2.4 | 0.406 | 70.5 | LOS F | 4.3 | 30.2 | 0.98 | 0.76 | 0.98 | 23.0 |
| Appr |  | 70 | 2.9 | 0.406 | 64.8 | LOS E | 4.3 | 30.2 | 0.94 | 0.75 | 0.94 | 24.8 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 24 | 0.0 | 0.039 | 37.3 | LOS C | 1.1 | 7.7 | 0.70 | 0.66 | 0.70 | 31.6 |
| 8 | T1 | 882 | 5.8 | 0.662 | 46.3 | LOS D | 20.8 | 156.1 | 0.92 | 0.79 | 0.92 | 32.5 |
| 9 | R2 | 663 | 6.5 | 1.046 | 142.7 | LOS F | 35.7 | 275.7 | 1.00 | 1.17 | 1.76 | 16.3 |
| Appr |  | 1569 | 6.0 | 1.046 | 86.9 | LOS F | 35.7 | 275.7 | 0.95 | 0.95 | 1.27 | 22.9 |
| West: Christie Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 1028 | 7.5 | 0.962 | 54.1 | LOS D | 82.2 | 632.5 | 0.97 | 1.09 | 1.35 | 30.1 |
| 11 | T1 | 34 | 0.0 | 0.962 | 49.7 | LOS D | 82.2 | 632.5 | 0.97 | 1.09 | 1.35 | 28.4 |
| 12 | R2 | 498 | 8.4 | 0.762 | 45.1 | LOS D | 29.3 | 235.6 | 0.93 | 0.87 | 0.93 | 34.1 |
| Approach |  | 1560 | 7.6 | 0.962 | 51.1 | LOS D | 82.2 | 632.5 | 0.96 | 1.02 | 1.21 | 31.3 |
| All V | icles | 4072 | 8.5 | 1.046 | 72.1 | LOS F | 82.2 | 632.5 | 0.93 | 0.99 | 1.23 | 25.9 |

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

Movement Performance - Pedestrians

| Mov ID | Description | Demand | Average | Level of Average Back of Queue |  |  | Prop. Queued | Effective Stop Rate |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Flow ped/h | Delay sec | Service | Pedestrian ped | Distance m |  |  |
| P1 | South Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P2 | East Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P3 | North Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P4 | West Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| All Pedestrians |  | 100 | 64.2 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M 2030 With Development Option 1.sip8

## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／ Mamre Road－PM Peak 2030 With Development］

审审 Network：［104 \＆108－PM Peak 2030 With Development］

1630－1730
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 140 seconds（Network Site User－Given Phase Times）


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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 7 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 14 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 12 | 64.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 34 | 64.2 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M St Marys Inland Container Terminal EIS_2030 With Development.sip8

## MOVEMENT SUMMARY

目 Site：TCS 1236 ［108－Great Western Highway／Glossop Street－PM Peak 2030 With Development］

审审 Network：［104 \＆ 108 －PM Peak 2030 With Development］

1630－1730
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 140 seconds（Network Site User－Given Phase Times）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh／h | Flows | Arrival F Total veh／h | Fows <br> HV \％ | Deg． Satn v／c | Average Delay sec | Level of Service | 95\％B Que <br> Vehicles veh | ck of <br> Distance | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag <br> Speed km／h |
| East：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 1488 | 2.8 | 1488 | 2.8 | 0.481 | 8.4 | LOS A | 18.9 | 137.0 | 0.43 | 0.39 | 0.43 | 47.3 |
| 4 R2 | 582 | 9.0 | 582 | 9.0 | 0.904 | 80.8 | LOS F | 23.7 | 186.8 | 1.00 | 0.99 | 1.30 | 24.2 |
| Approach | 2071 | 4.6 | 2071 | 4.6 | 0.904 | 28.8 | LOS C | 23.7 | 186.8 | 0.59 | 0.56 | 0.68 | 34.0 |
| North：Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 572 | 6.8 | 572 | 6.8 | 0.369 | 32.7 | LOS C | 25.2 | 192.8 | 0.71 | 0.79 | 0.71 | 36.8 |
| 1 R2 | 875 | 5.4 | 875 | 5.4 | 0.749 | 60.1 | LOS E | 27.0 | 209.0 | 0.97 | 0.84 | 0.97 | 17.7 |
| Approach | 1446 |  | 1446 | 6.0 | 0.749 | 49.3 | LOS D | 27.0 | 209.0 | 0.87 | 0.82 | 0.87 | 25.5 |
| West：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 305 | 22.8 | 297 | 22.1 | 0.494 | 25.0 | LOS B | 11.1 | 103.8 | 0.50 | 0.68 | 0.50 | 41.3 |
| 11 T1 | 948 | 3.0 | 931 | 2.9 | 0.494 | 18.6 | LOS B | 14.0 | 101.6 | 0.51 | 0.47 | 0.51 | 46.3 |
| Approach | 1254 |  | $1228{ }^{\text {N1 }}$ | 7.5 | 0.494 | 20.1 | LOS B | 14.0 | 103.8 | 0.51 | 0.52 | 0.51 | 45.1 |
| All Vehicles | 4771 |  | $4745^{\mathrm{N} 1}$ | 5.9 | 0.904 | 32.8 | LOS C | 27.0 | 209.0 | 0.66 | 0.63 | 0.69 | 34.1 |

Site Level of Service（LOS）Method：Delay（RTA NSW）．Site LOS Method is specified in the Network Data dialog（Network tab）． Vehicle movement LOS values are based on average delay per movement．
Intersection and Approach LOS values are based on average delay for all vehicle movements．
SIDRA Standard Delay Model is used．Control Delay includes Geometric Delay．
Gap－Acceptance Capacity：SIDRA Standard（Akçelik M3D）．
HV（\％）values are calculated for All Movement Classes of All Heavy Vehicle Model Designation．
N 1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes．

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance $\qquad$ | Prop． Queued | Effective Stop Rate |
| P2 | East Full Crossing | 2 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 3 | 64.1 | LOS F |  |  | 0.96 | 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．

## MOVEMENT SUMMARY

目 Site: TCS 1234 [105-Great Western Highway / Carlisle Avenue - PM Peak 2030 With Development]

1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 143 seconds (Site User-Given Phase Times)

## Movement Performance - Vehicles

| Mov | Turn | Deman | lows | Deg. | Average | Level of | 95\% Back | of Queue | Prop. | Effective | Aver. No. | Average |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ID |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ | Satn v/c | Delay sec | Service | Vehicles veh | Distance <br> m | Queued | Stop Rate | Cycles | Speed km/h |
| South | Carlis | Avenue |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 96 | 9.9 | 0.185 | 33.5 | LOS C | 4.1 | 35.5 | 0.81 | 0.75 | 0.81 | 37.6 |
| 8 | T1 | 659 | 3.4 | 0.787 | 64.5 | LOS E | 22.5 | 160.8 | 1.00 | 0.88 | 1.06 | 27.2 |
| 7 | R2 | 118 | 3.6 | 0.532 | 74.1 | LOS F | 8.0 | 58.6 | 1.00 | 0.79 | 1.00 | 25.7 |
| Appr |  | 873 | 4.1 | 0.787 | 62.4 | LOS E | 22.5 | 160.8 | 0.98 | 0.86 | 1.03 | 27.7 |
| East: | reat | tern Hig |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 135 | 3.9 | 0.464 | 48.5 | LOS D | 27.7 | 199.8 | 0.87 | 0.78 | 0.90 | 35.1 |
| 5 | T1 | 1337 | 2.5 | 0.464 | 42.5 | LOS D | 28.5 | 205.9 | 0.87 | 0.75 | 0.88 | 40.7 |
| 4 | R2 | 493 | 2.1 | 0.545 | 70.2 | LOS E | 16.1 | 115.4 | 0.99 | 0.81 | 0.99 | 29.5 |
| Appr |  | 1964 | 2.5 | 0.545 | 49.9 | LOS D | 28.5 | 205.9 | 0.90 | 0.77 | 0.91 | 36.8 |
| North | arlis | venue |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 315 | 2.0 | 0.196 | 27.6 | LOS B | 12.1 | 87.5 | 0.65 | 0.75 | 0.65 | 43.0 |
| 2 | T1 | 649 | 6.0 | 0.555 | 42.7 | LOS D | 36.7 | 277.8 | 0.89 | 0.78 | 0.89 | 34.1 |
| 1 | R2 | 687 | 2.9 | 0.453 | 36.2 | LOS C | 14.7 | 105.8 | 0.92 | 0.80 | 0.92 | 38.9 |
| Appr |  | 1652 | 4.0 | 0.555 | 37.1 | LOS C | 36.7 | 277.8 | 0.86 | 0.78 | 0.86 | 37.8 |
| West | reat | stern Hig | vay |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 455 | 1.6 | 0.594 | 27.2 | LOS B | 15.4 | 109.8 | 0.79 | 0.85 | 0.88 | 44.2 |
| 11 | T1 | 686 | 4.6 | 0.594 | 44.7 | LOS D | 19.2 | 143.2 | 0.91 | 0.79 | 0.91 | 39.8 |
| 10 | R2 | 109 | 10.6 | 0.518 | 72.0 | LOS F | 7.3 | 60.2 | 0.98 | 0.79 | 0.98 | 25.5 |
| Appr |  | 1251 | 4.0 | 0.594 | 40.7 | LOS C | 19.2 | 143.2 | 0.87 | 0.81 | 0.91 | 39.6 |
| All V | icles | 5739 | 3.5 | 0.787 | 46.1 | LOS D | 36.7 | 277.8 | 0.89 | 0.80 | 0.91 | 36.0 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.6 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M St Marys Inland Container Terminal EIS_2030 With Development.sip8

## MOVEMENT SUMMARY

Site: TCS 3118 [106-Mamre Road / M4 Western Motorway Off-ramp/On-ramp (South) - PM Peak 2030 With Development]

审审 Network: [106 \& 107 - PM Peak 2030 With Development]

1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Hows | Arriva Total veh/h | ows <br> HV <br> \% | Deg. Satn v/c | Average Delay sec | Level of Service |  | of <br> stance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1427 | 5.6 | 1427 | 5.6 | 0.676 | 8.5 | LOS A | 23.4 | 177.6 | 0.56 | 0.52 | 0.56 | 41.8 |
| 7 R2 | 558 | 4.3 | 558 | 4.3 | 1.213 | 258.6 | LOS F | 78.6 | 592.3 | 1.00 | 1.57 | 2.57 | 8.8 |
| Approach | 1985 | 5.2 | 1985 | 5.2 | 1.213 | 78.8 | LOS F | 78.6 | 592.3 | 0.69 | 0.82 | 1.13 | 14.6 |
| East: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 283 | 4.1 | 283 | 4.1 | 0.321 | 11.7 | LOS A | 5.8 | 42.3 | 0.44 | 0.69 | 0.44 | 47.9 |
| 4 R2 | 369 | 8.8 | 369 | 8.8 | 1.090 | 171.3 | LOS F | 21.3 | 171.6 | 1.00 | 1.36 | 2.20 | 9.0 |
| Approach | 653 | 6.8 | 653 | 6.8 | 1.090 | 102.0 | LOS F | 21.3 | 171.6 | 0.76 | 1.07 | 1.44 | 16.3 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 860 | 2.1 | 860 | 2.1 | 0.439 | 15.3 | LOS B | 25.4 | 184.5 | 0.59 | 0.78 | 0.65 | 33.4 |
| 2 T 1 | 1485 | 4.7 | 1485 | 4.7 | 0.623 | 23.0 | LOS B | 35.0 | 259.3 | 0.70 | 0.63 | 0.71 | 34.8 |
| Approach | 2345 | 3.8 | 2345 | 3.8 | 0.623 | 20.2 | LOS B | 35.0 | 259.3 | 0.66 | 0.68 | 0.69 | 34.2 |
| All Vehicles | 4983 | 4.8 | 4983 | 4.8 | 1.213 | 54.3 | LOS D | 78.6 | 592.3 | 0.68 | 0.79 | 0.96 | 21.1 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

Site: TCS 3117 [107 - Mamre Road / M4 Western Motorway Off-ramp/On-ramp (North) - PM Peak 2030 With Development]

审审 Network: [106 \& 107 - PM Peak 2030 With Development]

1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Ows | Arrival F <br> Total veh/h | ows <br> HV <br> \% | Deg. Satn v/c | Average Delay sec | Level of Service |  | of of istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 146 | 7.9 | 146 | 7.9 | 0.105 | 9.1 | LOS A | 2.1 | 17.7 | 0.32 | 0.59 | 0.32 | 36.6 |
| 8 T1 | 1651 | 6.1 | 1647 | 6.1 | 0.741 | 33.5 | LOS C | 40.2 | 304.9 | 0.90 | 0.81 | 0.90 | 28.2 |
| Approach | 1797 | 6.3 | $1793{ }^{\text {N1 }}$ | 6.3 | 0.741 | 31.5 | LOS C | 40.2 | 304.9 | 0.85 | 0.79 | 0.85 | 28.9 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 1751 | 3.4 | 1751 | 3.4 | 0.934 | 25.9 | LOS B | 77.6 | 569.7 | 0.83 | 0.85 | 0.92 | 24.1 |
| R2 | 279 | 9.4 | 279 | 9.4 | 0.749 | 55.7 | LOS D | 16.0 | 134.2 | 0.99 | 0.88 | 1.06 | 23.1 |
| Approach | 2029 | 4.2 | 2029 | 4.2 | 0.934 | 30.0 | LOS C | 77.6 | 569.7 | 0.85 | 0.85 | 0.94 | 23.8 |
| West: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 415 | 5.3 | 415 | 5.3 | 0.469 | 16.2 | LOS B | 12.0 | 89.8 | 0.59 | 0.75 | 0.59 | 43.9 |
| 10 R2 | 595 | 5.0 | 595 | 5.0 | 0.945 | 83.3 | LOS F | 25.0 | 185.8 | 1.00 | 1.07 | 1.47 | 16.2 |
| Approach | 1009 |  | 1009 | 5.1 | 0.945 | 55.7 | LOS D | 25.0 | 185.8 | 0.83 | 0.94 | 1.11 | 24.0 |
| All Vehicles | 4836 |  | $4832{ }^{\mathrm{N} 1}$ | 5.2 | 0.945 | 35.9 | LOS C | 77.6 | 569.7 | 0.85 | 0.85 | 0.94 | 25.7 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec $\qquad$ | Level of Service | Average Bac Pedestrian ped | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／ Mamre Road－AM Peak 2030 With Development＋20\％］

审审 Network：［104 \＆108－AM Peak 2030 With Development＋ 20\％］
0800－0900
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time $=140$ seconds（Network User－Given Cycle Time）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh／h |  | Arrival Total veh／h | $\begin{aligned} & \text { =lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg． <br> Satn <br> v／c | Average Delay sec | Level of Service |  | ack of ue Distance m | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag <br> Speed <br> km／h |
| South：Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 163 | 6.5 | 163 | 6.5 | 0.120 | 16.3 | LOS B | 4.4 | 33.0 | 0.46 | 0.67 | 0.46 | 39.8 |
| 8 T1 | 447 | 1.9 | 447 | 1.9 | 0.907 | 49.2 | LOS D | 40.8 | 356.7 | 0.91 | 0.82 | 0.93 | 26.0 |
| 7 R2 | 492 | 17.3 | 492 | 17.3 | 0.907 | 70.6 | LOS F | 40.8 | 356.7 | 1.00 | 0.98 | 1.19 | 13.8 |
| Approach | 1102 | 9.5 | 1102 | 9.5 | 0.907 | 53.9 | LOS D | 40.8 | 356.7 | 0.88 | 0.87 | 0.98 | 21.8 |
| East：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 485 | 22.8 | 485 | 22.8 | 0.439 | 10.8 | LOS A | 9.5 | 90.8 | 0.38 | 0.67 | 0.38 | 48.8 |
| $5 \quad \mathrm{~T} 1$ | 1199 | 3.2 | 1199 | 3.2 | 0.930 | 72.6 | LOS F | 39.9 | 290.7 | 0.99 | 1.05 | 1.24 | 23.5 |
| R2 | 226 | 1.9 | 226 | 1.9 | 0.892 | 69.7 | LOS E | 16.3 | 116.1 | 1.00 | 0.91 | 1.18 | 25.4 |
| Approach | 1911 | 8.0 | 1911 | 8.0 | 0.930 | 56.6 | LOS E | 39.9 | 290.7 | 0.84 | 0.94 | 1.02 | 27.7 |
| North：Queen Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 52 | 0.0 | 52 | 0.0 | 0.846 | 76.4 | LOS F | 11.4 | 82.7 | 1.00 | 1.05 | 1.57 | 14.5 |
| 2 T1 | 185 | 6.8 | 185 | 6.8 | 0.846 | 74.0 | LOS F | 11.4 | 82.7 | 1.00 | 1.03 | 1.45 | 21.0 |
| 1 R2 | 80 | 1.3 | 80 | 1.3 | 0.846 | 78.9 | LOS F | 11.3 | 82.1 | 1.00 | 0.99 | 1.27 | 18.5 |
| Approach | 317 | 4.3 | 317 | 4.3 | 0.846 | 75.6 | LOS F | 11.4 | 82.7 | 1.00 | 1.03 | 1.42 | 19.4 |
| West：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 107 | 3.9 | 107 | 3.9 | 0.615 | 51.5 | LOS D | 18.7 | 138.4 | 0.92 | 0.81 | 0.92 | 24.1 |
| 11 T1 | 854 | 5.4 | 854 | 5.4 | 0.615 | 45.9 | LOS D | 18.9 | 142.4 | 0.92 | 0.80 | 0.92 | 14.1 |
| 10 R2 | 196 | 8.1 | 196 | 8.1 | 0.843 | 77.5 | LOS F | 14.4 | 112.7 | 1.00 | 0.93 | 1.23 | 18.0 |
| Approach | 1157 | 5.7 | 1157 | 5.7 | 0.843 | 51.8 | LOS D | 18.9 | 142.4 | 0.93 | 0.82 | 0.97 | 16.4 |
| All Vehicles | 4486 |  | 4486 | 7.5 | 0.930 | 56.0 | LOS D | 40.8 | 356.7 | 0.88 | 0.90 | 1.02 | 23.3 |

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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 3 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 16 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 8 | 64.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 17 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| All Pedestrians |  | 44 | 64.2 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels 1 P3796.001M St Marys Inland Container Terminal EIS_2030 With Development.sip8

## MOVEMENT SUMMARY

日 Site：TCS 1236 ［108－Great Western Highway／Glossop Street－AM Peak 2030 With Development＋20\％］

审审 Network：［104 \＆108－AM Peak 2030 With Development＋

0800－0900
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time $=140$ seconds（Network User－Given Cycle Time）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh／h | Flows <br> HV <br> \％ | Arrival <br> Total veh／h |  | Deg． Satn v／c | Average Delay sec | Level of Service | 95\％ Que Vehicles veh | k of stance m | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag <br> e <br> Speed km／h |
| East：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 1139 | 5.0 | 1139 | 5.0 | 0.304 | 18.6 | LOS B | 15.6 | 115.9 | 0.59 | 0.51 | 0.59 | 37.7 |
| 4 R2 | 596 | 14.1 | 596 | 14.1 | 0.651 | 58.5 | LOS E | 18.5 | 158.8 | 0.96 | 0.83 | 0.96 | 28.8 |
| Approach | 1735 |  | 1735 | 8.1 | 0.651 | 32.3 | LOS C | 18.5 | 158.8 | 0.71 | 0.62 | 0.71 | 32.8 |
| North：Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 513 | 20.5 | 513 | 20.5 | 0.515 | 19.8 | LOS B | 18.4 | 165.2 | 0.58 | 0.76 | 0.58 | 42.5 |
| 1 R2 | 772 | 12.6 | 772 | 12.6 | 0.655 | 43.6 | LOS D | 21.3 | 180.8 | 0.87 | 0.84 | 0.87 | 22.0 |
| Approach | 1284 | 15.7 | 1284 | 15.7 | 0.655 | 34.1 | LOS C | 21.3 | 180.8 | 0.75 | 0.81 | 0.75 | 30.8 |
| West：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L2 | 406 | 17.9 | 406 | 17.9 | 0.659 | 51.6 | LOS D | 23.7 | 218.8 | 0.91 | 0.84 | 0.91 | 31.0 |
| 11 T1 | 991 | 6.0 | 991 | 6.0 | 0.659 | 49.8 | LOS D | 30.9 | 230.5 | 0.99 | 0.86 | 0.99 | 33.7 |
| Approach | 1397 | 9.4 | 1397 | 9.4 | 0.659 | 50.3 | LOS D | 30.9 | 230.5 | 0.97 | 0.85 | 0.97 | 32.9 |
| All Vehicles | 4416 | 10.8 | 4416 | 10.8 | 0.659 | 38.5 | LOS C | 30.9 | 230.5 | 0.81 | 0.75 | 0.81 | 32.4 |

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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | of Queue Distance m | Prop． Queued | Effective Stop Rate |
| P2 | East Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 2 | 64.1 | LOS F |  |  | 0.96 | 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．

[^3]
## MOVEMENT SUMMARY

目 Site: TCS 1234 [105-Great Western Highway / Carlisle Avenue - AM Peak 2030 With Development + 20\%]

0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 142 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Deman <br> Total veh/h | $\begin{gathered} \text { =lows } \\ \text { HV } \\ \text { \% } \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed $\mathrm{km} / \mathrm{h}$ |
| South: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 53 | 38.0 | 0.141 | 38.7 | LOS C | 2.8 | 31.2 | 0.84 | 0.72 | 0.84 | 33.3 |
| 8 | T1 | 657 | 6.7 | 0.671 | 60.8 | LOS E | 21.0 | 155.2 | 0.99 | 0.83 | 0.99 | 28.1 |
| 7 | R2 | 175 | 11.4 | 0.678 | 74.8 | LOS F | 12.0 | 95.5 | 1.00 | 0.81 | 1.03 | 25.1 |
| Appr |  | 884 | 9.5 | 0.678 | 62.2 | LOS E | 21.0 | 155.2 | 0.99 | 0.82 | 0.99 | 27.7 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 87 | 8.4 | 0.459 | 42.5 | LOS D | 13.9 | 107.9 | 0.84 | 0.75 | 0.85 | 37.2 |
| 5 | T1 | 738 | 7.0 | 0.459 | 38.9 | LOS C | 15.0 | 114.6 | 0.84 | 0.73 | 0.84 | 42.5 |
| 4 | R2 | 314 | 6.0 | 0.796 | 79.6 | LOS F | 11.4 | 84.6 | 1.00 | 0.88 | 1.18 | 27.4 |
| Appr | ch | 1139 | 6.8 | 0.796 | 50.4 | LOS D | 15.0 | 114.6 | 0.88 | 0.77 | 0.93 | 36.4 |
| North: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 314 | 5.7 | 0.218 | 31.0 | LOS C | 12.9 | 95.4 | 0.70 | 0.76 | 0.70 | 40.9 |
| 2 | T1 | 475 | 6.7 | 0.443 | 43.3 | LOS D | 26.2 | 198.5 | 0.87 | 0.75 | 0.87 | 33.9 |
| 1 | R2 | 457 | 4.8 | 0.338 | 37.1 | LOS C | 9.8 | 71.9 | 0.91 | 0.78 | 0.91 | 38.2 |
| Appr |  | 1245 | 5.7 | 0.443 | 37.9 | LOS C | 26.2 | 198.5 | 0.84 | 0.76 | 0.84 | 37.2 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 580 | 2.9 | 0.408 | 21.7 | LOS B | 16.4 | 118.7 | 0.69 | 0.80 | 0.73 | 47.3 |
| 11 | T1 | 924 | 7.3 | 0.408 | 37.5 | LOS C | 23.1 | 176.8 | 0.82 | 0.71 | 0.82 | 43.3 |
| 10 | R2 | 148 | 8.5 | 0.428 | 70.8 | LOS F | 9.6 | 77.2 | 0.98 | 0.79 | 0.98 | 25.9 |
| Approach |  | 1653 | 5.9 | 0.428 | 35.0 | LOS C | 23.1 | 176.8 | 0.79 | 0.75 | 0.80 | 42.4 |
| All Vehicles |  | 4921 | 6.7 | 0.796 | 44.2 | LOS D | 26.2 | 198.5 | 0.86 | 0.77 | 0.88 | 36.6 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.1 | LOS F |  |  | 0.96 | 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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Organisation: BITZIOS CONSULTING | Processed: Friday, 25 January 2019 10:37:04 AM
Project: P:\P3796 St Marys Inland Container Terminal EISITechnical WorklModelsIP3796.001M St Marys Inland Container Terminal EIS_2030 With Development.sip8

## MOVEMENT SUMMARY

日 Site：TCS 3118 ［106－Mamre Road／M4 Western Motorway Off－ramp／On－ramp（South）－AM Peak 2030 With Development

审审 Network：［106 \＆107－AM Peak 2030 With Development＋ 20\％］ ＋20\％］

0800－0900
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 110 seconds（Network Site User－Given Phase Times）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh／h | Flows | Arrival <br> Total veh／h | $\begin{aligned} & =\text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg． <br> Satn <br> v／c | Average Delay sec | Level of Service | 95\％B Que <br> Vehicles veh | ack of ue Distance m | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag <br> Speed <br> km／h |
| South：Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1346 | 6.3 | 1346 | 6.3 | 0.287 | 4.4 | LOS A | 11.7 | 89.8 | 0.34 | 0.30 | 0.34 | 49.0 |
| 7 R2 | 507 | 8.7 | 507 | 8.7 | 0.673 | 48.4 | LOS D | 24.9 | 190.9 | 0.98 | 0.85 | 0.98 | 25.3 |
| Approach | 1854 | 6.9 | 1854 | 6.9 | 0.673 | 16.4 | LOS B | 24.9 | 190.9 | 0.51 | 0.45 | 0.51 | 33.6 |
| East：M4 Western Motorway Off－ramp／On－ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 109 | 11.5 | 109 | 11.5 | 0.141 | 10.9 | LOSA | 1.8 | 14.9 | 0.39 | 0.65 | 0.39 | 48.4 |
| 4 R2 | 266 | 18.2 | 266 | 18.2 | 0.693 | 57.3 | LOS E | 7.5 | 68.1 | 1.00 | 0.86 | 1.10 | 21.2 |
| Approach | 376 | 16.2 | 376 | 16.2 | 0.693 | 43.7 | LOS D | 7.5 | 68.1 | 0.82 | 0.80 | 0.89 | 27.3 |
| North：Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 416 | 9.6 | 416 | 9.6 | 0.254 | 8.8 | LOSA | 6.3 | 50.6 | 0.32 | 0.62 | 0.32 | 36.6 |
| 2 T1 | 1452 | 8.8 | 1452 | 8.8 | 0.672 | 21.0 | LOS B | 28.5 | 219.2 | 0.71 | 0.64 | 0.71 | 36.1 |
| Approach | 1867 | 9.0 | 1867 | 9.0 | 0.672 | 18.2 | LOS B | 28.5 | 219.2 | 0.62 | 0.63 | 0.62 | 36.2 |
| All Vehicles | 4097 | 8.7 | 4097 | 8.7 | 0.693 | 19.8 | LOS B | 28.5 | 219.2 | 0.59 | 0.57 | 0.60 | 34.0 |

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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

日 Site：TCS 3117 ［107－Mamre Road／M4 Western Motorway Off－ramp／On－ramp（North）－AM Peak 2030 With Development

审审 Network：［106 \＆107－AM Peak 2030 With Development＋ 20\％］ ＋20\％］ ．
0800－0900
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 110 seconds（Network User－Given Cycle Time）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demanc <br> Total veh／h |  | Arrival <br> Total veh／h | $\begin{aligned} & \text { Flows } \\ & \mathrm{HV} \\ & \% \end{aligned}$ | Deg． Satn v／c | Average Delay sec | Level of Service |  | ack of ue Distance m | Prop． Queued | Effective Stop Rate |  | Averag <br> Speed <br> km／h |
| South：Mamre Road vec ven mome |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 265 | 6.7 | 265 | 6.7 | 0.178 | 10.9 | LOS A | 5.8 | 46.0 | 0.49 | 0.68 | 0.49 | 35.5 |
| 8 T1 | 1347 | 8.5 | 1347 | 8.5 | 0.661 | 35.4 | LOS C | 31.0 | 243.7 | 0.92 | 0.80 | 0.92 | 27.4 |
| Approach | 1613 | 8.2 | 1613 | 8.2 | 0.661 | 31.4 | LOS C | 31.0 | 243.7 | 0.85 | 0.78 | 0.85 | 28.8 |
| North：Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 1267 | 9.4 | 1267 | 9.4 | 0.833 | 14.9 | LOS B | 35.5 | 278.3 | 0.71 | 0.68 | 0.74 | 32.3 |
| 1 R2 | 259 | 19.1 | 259 | 19.1 | 0.646 | 41.0 | LOS C | 12.2 | 114.5 | 0.91 | 0.83 | 0.91 | 26.3 |
| Approach | 1526 | 11.0 | 1526 | 11.0 | 0.833 | 19.3 | LOS B | 35.5 | 278.3 | 0.75 | 0.71 | 0.77 | 29.9 |
| West：M4 Western Motorway Off－ramp／On－ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L2 | 626 | 3.7 | 626 | 3.7 | 0.572 | 11.1 | LOS A | 13.5 | 97.9 | 0.52 | 0.73 | 0.52 | 47.7 |
| 10 R2 | 600 | 8.2 | 600 | 8.2 | 0.845 | 58.6 | LOS E | 18.5 | 142.2 | 1.00 | 0.95 | 1.22 | 20.7 |
| Approach | 1226 | 5.9 | 1226 | 5.9 | 0.845 | 34.4 | LOS C | 18.5 | 142.2 | 0.76 | 0.84 | 0.86 | 31.7 |
| All Vehicles | 4365 | 8.6 | 4365 | 8.6 | 0.845 | 28.0 | LOS B | 35.5 | 278.3 | 0.79 | 0.77 | 0.82 | 30.1 |

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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | Queue Distance m | Prop． Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 3 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 4 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／ Mamre Road－PM Peak 2030 With Development＋20\％］

它审 Network：［104 \＆ 108 －PM Peak 2030 With Development＋ 20\％］
1630－1730
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time $=140$ seconds（Network Site User－Given Phase Times）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh／h |  | Arriva Total veh／h | $\begin{aligned} & \text { =lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg． Satn v／c | Average Delay sec | Level of Service |  | ack of ue Distance | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag <br> Speed <br> km／h |
| South：Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 185 | 4.5 | 185 | 4.5 | 0.135 | 10.2 | LOS A | 3.4 | 24.9 | 0.33 | 0.65 | 0.33 | 45.1 |
| 8 T1 | 269 | 5.1 | 269 | 5.1 | 1.111 | 82.1 | LOS F | 46.8 | 440.4 | 0.97 | 0.90 | 1.15 | 19.8 |
| 7 R2 | 332 | 21.3 | 332 | 21.3 | 1.111 | 186.6 | LOS F | 46.8 | 440.4 | 1.00 | 1.35 | 1.99 | 5.9 |
| Approach | 786 | 11.8 | 786 | 11.8 | 1.111 | 109.3 | LOS F | 46.8 | 440.4 | 0.83 | 1.03 | 1.31 | 13.3 |
| East：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 714 | 8.0 | 714 | 8.0 | 0.405 | 14.3 | LOS A | 17.0 | 138.4 | 0.44 | 0.70 | 0.44 | 46.6 |
| $5 \quad \mathrm{~T} 1$ | 1500 | 2.2 | 1500 | 2.2 | 0.528 | 36.2 | LOS C | 29.2 | 209.5 | 0.74 | 0.64 | 0.74 | 33.8 |
| R2 | 153 | 2.1 | 153 | 2.1 | 0.262 | 59.8 | LOS E | 8.9 | 63.5 | 0.91 | 0.77 | 0.91 | 27.2 |
| Approach | 2366 | 3.9 | 2366 | 3.9 | 0.528 | 31.1 | LOS C | 29.2 | 209.5 | 0.66 | 0.66 | 0.66 | 36.4 |
| North：Queen Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 68 | 1.5 | 68 | 1.5 | 0.921 | 82.1 | LOS F | 27.8 | 197.5 | 1.00 | 1.12 | 1.54 | 13.9 |
| 2 T1 | 504 | 1.9 | 504 | 1.9 | 0.921 | 78.1 | LOS F | 27.8 | 197.5 | 1.00 | 1.10 | 1.44 | 20.5 |
| 1 R2 | 122 | 0.0 | 122 | 0.0 | 0.921 | 80.6 | LOS F | 27.2 | 192.4 | 1.00 | 1.08 | 1.31 | 18.4 |
| Approach | 695 | 1.5 | 695 | 1.5 | 0.921 | 79.0 | LOS F | 27.8 | 197.5 | 1.00 | 1.10 | 1.43 | 19.6 |
| West：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 32 | 0.0 | 32 | 0.0 | 0.543 | 49.5 | LOS D | 16.8 | 122.7 | 0.89 | 0.77 | 0.89 | 25.0 |
| 11 T1 | 857 | 3.4 | 857 | 3.4 | 0.543 | 43.9 | LOS D | 16.9 | 123.5 | 0.89 | 0.77 | 0.89 | 14.7 |
| 10 R2 | 198 | 3.2 | 198 | 3.2 | 0.710 | 67.5 | LOS E | 13.2 | 97.8 | 1.00 | 0.85 | 1.05 | 19.8 |
| Approach | 1086 | 3.3 | 1086 | 3.3 | 0.710 | 48.4 | LOS D | 16.9 | 123.5 | 0.91 | 0.78 | 0.92 | 16.5 |
| All Vehicles | 4934 | 4.7 | 4934 | 4.7 | 1.111 | 54.1 | LOS D | 46.8 | 440.4 | 0.79 | 0.81 | 0.93 | 24.3 |

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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | $\begin{gathered} \text { Demand } \\ \text { Flow } \\ \text { ped/h } \end{gathered}$ | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue <br> Distance m | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 7 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 14 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 12 | 64.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 34 | 64.2 | LOS F |  |  | 0.96 | 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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With Development.sip8

## MOVEMENT SUMMARY

B Site: TCS 1236 [108-Great Western Highway / Glossop Street - PM Peak 2030 With Development + 20\%]

审审 Network: [104 \& 108-PM Peak 2030 With Development + 20\%]
1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time $=140$ seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | $\begin{aligned} & \text { Flows } \\ & \text { HV } \\ & \% \end{aligned}$ | Arrival F <br> Total veh/h | $\begin{gathered} =l o w s \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% B <br> Vehicles veh | ack of ue Distance $\qquad$ | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed <br> km/h |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 1488 | 2.8 | 1488 | 2.8 | 0.481 | 8.4 | LOS A | 18.9 | 137.0 | 0.43 | 0.39 | 0.43 | 47.3 |
| 4 R2 | 583 | 9.2 | 583 | 9.2 | 0.911 | 82.3 | LOS F | 24.1 | 190.7 | 1.00 | 1.00 | 1.32 | 23.9 |
| Approach | 2072 |  | 2072 | 4.6 | 0.911 | 29.2 | LOS C | 24.1 | 190.7 | 0.59 | 0.56 | 0.68 | 33.8 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 573 | 7.0 | 573 | 7.0 | 0.371 | 32.7 | LOS C | 25.3 | 194.2 | 0.72 | 0.79 | 0.72 | 36.7 |
| R2 | 878 | 5.8 | 878 | 5.8 | 0.763 | 60.5 | LOS E | 27.3 | 213.0 | 0.97 | 0.84 | 0.99 | 17.6 |
| Approach | 1451 | 6.2 | 1451 | 6.2 | 0.763 | 49.5 | LOS D | 27.3 | 213.0 | 0.87 | 0.82 | 0.88 | 25.4 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L2 | 308 | 23.5 | 298 | 22.6 | 0.493 | 25.0 | LOS B | 11.0 | 104.3 | 0.50 | 0.68 | 0.50 | 41.2 |
| 11 T1 | 948 | 3.0 | 926 | 2.9 | 0.493 | 18.4 | LOS B | 13.9 | 100.8 | 0.51 | 0.46 | 0.51 | 46.4 |
| Approach | 1257 | 8.0 | $1224{ }^{\mathrm{N} 1}$ | 7.7 | 0.493 | 20.0 | LOS B | 13.9 | 104.3 | 0.51 | 0.52 | 0.51 | 45.1 |
| All Vehicles | 4779 |  | $4746^{\mathrm{N} 1}$ | 6.1 | 0.911 | 33.1 | LOS C | 27.3 | 213.0 | 0.66 | 0.63 | 0.70 | 34.0 |

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

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P2 | East Full Crossing | 2 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 3 | 64.1 | LOS F |  |  | 0.96 | 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.

## MOVEMENT SUMMARY

目 Site: TCS 1234 [105-Great Western Highway / Carlisle Avenue - PM Peak 2030 With Development + 20\%]

1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 143 seconds (Site User-Given Phase Times)

## Movement Performance - Vehicles

| Mov | Turn | Demand | lows | Deg. | Average | Level of | 95\% Back | of Queue | Prop. | Effective | Aver. | Aver |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ID |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ | Satn v/c | Delay sec | Service | Vehicles veh | Distance | Queued | Stop Rate | Cycles | Speed km/h |
| South | Carlis | Avenue |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 96 | 9.9 | 0.185 | 33.5 | LOS C | 4.1 | 35.5 | 0.81 | 0.75 | 0.81 | 37.6 |
| 8 | T1 | 659 | 3.4 | 0.787 | 64.5 | LOS E | 22.5 | 160.8 | 1.00 | 0.88 | 1.06 | 27.2 |
| 7 | R2 | 118 | 3.6 | 0.532 | 74.1 | LOS F | 8.0 | 58.6 | 1.00 | 0.79 | 1.00 | 25.7 |
| Appr |  | 873 | 4.1 | 0.787 | 62.4 | LOS E | 22.5 | 160.8 | 0.98 | 0.86 | 1.03 | 27.7 |
| East | reat | tern Hig |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 135 | 3.9 | 0.465 | 48.5 | LOS D | 27.7 | 200.4 | 0.87 | 0.78 | 0.90 | 35.1 |
| 5 | T1 | 1338 | 2.6 | 0.465 | 42.5 | LOS D | 28.6 | 206.5 | 0.87 | 0.75 | 0.88 | 40.7 |
| 4 | R2 | 493 | 2.1 | 0.545 | 70.2 | LOS E | 16.1 | 115.4 | 0.99 | 0.81 | 0.99 | 29.5 |
| Appr |  | 1965 | 2.6 | 0.545 | 49.9 | LOS D | 28.6 | 206.5 | 0.90 | 0.77 | 0.91 | 36.8 |
| North | Carlis | venue |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 315 | 2.0 | 0.196 | 27.6 | LOS B | 12.1 | 87.5 | 0.65 | 0.75 | 0.65 | 43.0 |
| 2 | T1 | 649 | 6.0 | 0.555 | 42.7 | LOS D | 36.7 | 277.8 | 0.89 | 0.78 | 0.89 | 34.1 |
| 1 | R2 | 687 | 2.9 | 0.453 | 36.2 | LOS C | 14.7 | 105.8 | 0.92 | 0.80 | 0.92 | 38.9 |
| Appr |  | 1652 | 4.0 | 0.555 | 37.1 | LOS C | 36.7 | 277.8 | 0.86 | 0.78 | 0.86 | 37.8 |
| West | Great | stern Hig | vay |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 455 | 1.6 | 0.595 | 27.3 | LOS B | 15.5 | 110.6 | 0.79 | 0.85 | 0.88 | 44.1 |
| 11 | T1 | 687 | 4.7 | 0.595 | 44.7 | LOS D | 19.2 | 143.9 | 0.91 | 0.79 | 0.91 | 39.8 |
| 10 | R2 | 109 | 10.6 | 0.518 | 72.0 | LOS F | 7.3 | 60.2 | 0.98 | 0.79 | 0.98 | 25.5 |
| Appr |  | 1252 | 4.1 | 0.595 | 40.8 | LOS C | 19.2 | 143.9 | 0.87 | 0.81 | 0.91 | 39.6 |
| All V | icles | 5741 | 3.5 | 0.787 | 46.1 | LOS D | 36.7 | 277.8 | 0.89 | 0.80 | 0.91 | 36.0 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.6 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M St Marys Inland Container Terminal EIS_2030 With Development.sip8

## MOVEMENT SUMMARY

日 Site：TCS 3118 ［106－Mamre Road／M4 Western Motorway Off－ramp／On－ramp（South）－PM Peak 2030 With Development

审审 Network：［106 \＆ 107 －PM Peak 2030 With Development＋ ＋20\％］

1630－1730
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time $=120$ seconds（Network Site User－Given Phase Times）


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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

日 Site：TCS 3117 ［107－Mamre Road／M4 Western Motorway Off－ramp／On－ramp（North）－PM Peak 2030 With Development

审审 Network：［106 \＆ 107 －PM Peak 2030 With Development＋ 20\％］ ＋20\％］ ］
1630－1730
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 120 seconds（Network User－Given Cycle Time）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh／h |  | Arrival F <br> Total veh／h | $\begin{aligned} & \text { Flows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg Satn v／c | Average Delay sec | Level of Service | Vehicles veh | ack of ue Distance | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag <br> Speed km／h |
| South：Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 146 | 7.9 | 145 | 7.9 | 0.104 | 9.1 | LOS A | 2.1 | 17.6 | 0.32 | 0.59 | 0.32 | 36.6 |
| 8 T1 | 1654 | 6.3 | 1641 | 6.3 | 0.740 | 33.5 | LOS C | 39.9 | 304.1 | 0.89 | 0.80 | 0.89 | 28.2 |
| Approach | 1800 | 6.4 | $1786{ }^{\text {N1 }}$ | 6.4 | 0.740 | 31.5 | LOS C | 39.9 | 304.1 | 0.85 | 0.79 | 0.85 | 28.9 |
| North：Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 1752 | 3.4 | 1752 | 3.4 | 0.937 | 26.8 | LOS B | 79.1 | 582.0 | 0.83 | 0.86 | 0.93 | 23.6 |
| 1 R2 | 281 | 10.1 | 281 | 10.1 | 0.762 | 56.4 | LOS D | 16.3 | 138.7 | 1.00 | 0.89 | 1.08 | 23.0 |
| Approach | 2033 | 4.4 | 2033 | 4.4 | 0.937 | 30.9 | LOS C | 79.1 | 582.0 | 0.86 | 0.86 | 0.95 | 23.4 |
| West：M4 Western Motorway Off－ramp／On－ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L2 | 415 | 5.3 | 415 | 5.3 | 0.469 | 16.2 | LOS B | 12.0 | 89.8 | 0.59 | 0.75 | 0.59 | 43.9 |
| 10 R2 | 595 | 5.0 | 595 | 5.0 | 0.950 | 84.8 | LOS F | 25.3 | 188.1 | 1.00 | 1.08 | 1.49 | 16.0 |
| Approach | 1009 | 5.1 | 1009 | 5.1 | 0.950 | 56.6 | LOS E | 25.3 | 188.1 | 0.83 | 0.94 | 1.12 | 23.8 |
| All Vehicles | 4842 |  | $4828{ }^{\mathrm{N} 1}$ | 5.3 | 0.950 | 36.5 | LOS C | 79.1 | 582.0 | 0.85 | 0.85 | 0.95 | 25.5 |

Site Level of Service（LOS）Method：Delay（RTA NSW）．Site LOS Method is specified in the Network Data dialog（Network tab）． Vehicle movement LOS values are based on average delay per movement．
Intersection and Approach LOS values are based on average delay for all vehicle movements．
SIDRA Standard Delay Model is used．Control Delay includes Geometric Delay．
Gap－Acceptance Capacity：SIDRA Standard（Akçelik M3D）．
HV（\％）values are calculated for All Movement Classes of All Heavy Vehicle Model Designation．
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes．

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue <br> Distance m | Prop． Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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．

[^4]
## MOVEMENT SUMMARY

$\nabla$ Site: [109-Glossop Street / Harris Street - PM Peak 2030 With Dev Option 1]
1630-1730
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{\|l\|l\|} \hline \text { Mov Turn } \\ \text { ID } \end{array}$ | Deman <br> Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. <br> Satn V/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| L2 | 35 | 0.0 | 0.498 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 0.00 | 57.4 |
| 2 T1 | 1764 | 6.3 | 0.498 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 59.6 |
| Approach | 1799 | 6.2 | 0.498 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 59.5 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 2069 | 4.3 | 0.553 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| Approach | 2069 | 4.3 | 0.553 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| West: Harris Street |  |  |  |  |  |  |  |  |  |  |  |
| 10 L2 | 75 | 1.3 | 0.188 | 12.7 | LOS A | 0.6 | 4.4 | 0.74 | 0.88 | 0.76 | 39.9 |
| Approach | 75 | 1.3 | 0.188 | 12.7 | LOS A | 0.6 | 4.4 | 0.74 | 0.88 | 0.76 | 39.9 |
| All Vehicles | 3943 | 5.1 | 0.553 | 0.3 | NA | 0.6 | 4.4 | 0.01 | 0.02 | 0.01 | 58.8 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

目 Site: TCS 3129 [111 - Forrester Road / Glossop Street / Access Road - PM Peak 2030 With Dev Option 1_Upgrades]

1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 103 seconds (Site User-Given Phase Times)

## Movement Performance - Vehicles

| Mov | Turn | Deman | Flows | Deg. | Average | Level of | 95\% Back | of Queue | Prop. | Effective | Aver. | Aver |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ID |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ | Satn v/c | Delay sec | Service | Vehicles veh | Distance | Queued | Stop Rate | Cycles | Speed km/h |
| South | Forre | Road |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 1 | 0.0 | 0.247 | 60.6 | LOS E | 7.3 | 51.4 | 0.82 | 0.68 | 1.42 | 20.6 |
| 2 | T1 | 137 | 0.0 | 0.247 | 46.7 | LOS D | 7.3 | 51.4 | 0.82 | 0.68 | 1.42 | 32.4 |
| 3 | R2 | 144 | 3.5 | 0.441 | 43.0 | LOS D | 6.5 | 48.1 | 0.93 | 0.78 | 0.93 | 32.7 |
| Appr |  | 282 | 1.8 | 0.441 | 44.8 | LOS D | 7.3 | 51.4 | 0.88 | 0.74 | 1.17 | 32.5 |
| East: | lossop | treet |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 54 | 37.0 | 0.899 | 52.6 | LOS D | 43.0 | 341.0 | 0.99 | 1.02 | 1.56 | 30.4 |
| 5 | T1 | 2 | 0.0 | 0.899 | 65.4 | LOS E | 43.0 | 341.0 | 0.99 | 1.02 | 1.56 | 20.9 |
| 6 | R2 | 1485 | 5.9 | 0.899 | 48.6 | LOS D | 43.5 | 331.2 | 0.99 | 1.00 | 1.36 | 33.0 |
| Appr |  | 1541 | 6.9 | 0.899 | 48.8 | LOS D | 43.5 | 341.0 | 0.99 | 1.00 | 1.37 | 32.9 |
| North | Forre | Road |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 1200 | 5.9 | 0.727 | 9.3 | LOS A | 17.6 | 133.9 | 0.46 | 0.76 | 0.54 | 51.2 |
| 8 | T1 | 111 | 0.0 | 0.328 | 44.4 | LOS D | 5.1 | 35.6 | 0.94 | 0.75 | 0.94 | 32.9 |
| Appr |  | 1311 | 5.4 | 0.727 | 12.2 | LOS A | 17.6 | 133.9 | 0.50 | 0.76 | 0.57 | 48.9 |
| West | Acces | oad |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 2 | 0.0 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 18.2 |
| 11 | T1 | 4 | 50.0 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 17.3 |
| 12 | R2 | 1 | 0.0 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 17.4 |
| Appr |  | 7 | 28.6 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 17.6 |
| All V | icles | 3141 | 5.9 | 0.899 | 33.2 | LOS C | 43.5 | 341.0 | 0.78 | 0.88 | 1.02 | 38.0 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{gathered} \text { Demand } \\ \text { Flow } \\ \text { ped/h } \end{gathered}$ | Average Delay sec $\qquad$ | Level of Service | Average Bac Pedestrian $\qquad$ | of Queue Distance $\qquad$ m | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 1 | 45.7 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 |
| P2 | East Full Crossing | 13 | 45.7 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 |
| P4 | West Full Crossing | 13 | 45.7 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 |
| All Pedestrians |  | 27 | 45.7 | LOS E |  |  | 0.94 | 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.

## MOVEMENT SUMMARY

日 Site: [112 - Forrester Road / Christie Street / Boronia Road - PM Peak 2030 With Dev Option 1_Upgrades]

1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Deman Total veh/h | $\begin{aligned} & \text { Flows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
|  | L2 | 226 | 8.0 | 0.195 | 11.6 | LOS A | 4.5 | 37.4 | 0.37 | 0.66 | 0.37 | 49.6 |
| 2 | T1 | 1141 | 4.1 | 1.125 | 160.7 | LOS F | 57.7 | 427.8 | 0.99 | 1.45 | 1.79 | 14.9 |
| 3 | R2 | 61 | 0.0 | 0.425 | 74.4 | LOS F | 4.1 | 28.9 | 0.99 | 0.76 | 0.99 | 23.7 |
| Appr |  | 1428 | 4.6 | 1.125 | 133.4 | LOS F | 57.7 | 427.8 | 0.89 | 1.30 | 1.53 | 17.3 |
| East: Boronia Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 38 | 0.0 | 0.044 | 10.6 | LOS A | 0.7 | 5.1 | 0.35 | 0.59 | 0.35 | 46.0 |
| 5 | T1 | 32 | 3.1 | 0.456 | 66.3 | LOS E | 5.0 | 35.5 | 0.99 | 0.77 | 0.99 | 25.3 |
| 6 | R2 | 43 | 0.0 | 0.456 | 70.8 | LOS F | 5.0 | 35.5 | 0.99 | 0.77 | 0.99 | 23.1 |
| Appr |  | 113 | 0.9 | 0.456 | 49.3 | LOS D | 5.0 | 35.5 | 0.77 | 0.71 | 0.77 | 28.9 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 16 | 6.3 | 0.022 | 29.0 | LOS C | 0.6 | 4.6 | 0.61 | 0.64 | 0.61 | 34.9 |
| 8 | T1 | 729 | 2.7 | 0.434 | 36.5 | LOS C | 14.8 | 106.7 | 0.80 | 0.68 | 0.80 | 36.0 |
| 9 | R2 | 775 | 5.8 | 1.112 | 189.0 | LOS F | 48.7 | 363.5 | 1.00 | 1.28 | 2.00 | 13.1 |
| Appr |  | 1520 | 4.3 | 1.112 | 114.2 | LOS F | 48.7 | 363.5 | 0.90 | 0.99 | 1.41 | 19.0 |
| West: Christie Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 1055 | 3.2 | 1.043 | 96.2 | LOS F | 99.5 | 720.8 | 1.00 | 1.17 | 1.55 | 19.1 |
| 11 | T1 | 22 | 0.0 | 1.043 | 91.9 | LOS F | 99.5 | 720.8 | 1.00 | 1.17 | 1.55 | 18.0 |
| 12 | R2 | 240 | 10.4 | 0.506 | 50.0 | LOS D | 13.6 | 114.1 | 0.88 | 0.82 | 0.88 | 32.6 |
| Approach |  | 1317 | 4.5 | 1.043 | 87.7 | LOS F | 99.5 | 720.8 | 0.98 | 1.11 | 1.43 | 20.8 |
| All V | icles | 4378 | 4.4 | 1.125 | 110.8 | LOS F | 99.5 | 720.8 | 0.92 | 1.12 | 1.44 | 19.0 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Average Back of Queue Service Pedestrian Distance |  |  | Prop. Queued | Effective Stop Rate |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| P1 | South Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P2 | East Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P3 | North Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P4 | West Full Crossing | 25 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| All P | estrians | 100 | 64.2 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M 2030 With Development Option 1.sip8

## MOVEMENT SUMMARY

```
Site: TCS 2385 [103-Great Western Highway / Werrington Road / Reserve Road - AM Peak 2030 With Dev Option 2]
0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 142 seconds (Site User-Given Phase Times)
```

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Turn | Demano Total veh/h | $\begin{gathered} \text { =lows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Reserve Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 36 | 0.0 | 0.146 | 36.6 | LOS C | 3.8 | 27.2 | 0.71 | 0.69 | 0.71 | 26.3 |
| 8 | T1 | 25 | 4.2 | 0.146 | 33.5 | LOS C | 3.8 | 27.2 | 0.71 | 0.69 | 0.71 | 21.5 |
| 7 | R2 | 22 | 4.8 | 0.146 | 36.6 | LOS C | 3.8 | 27.2 | 0.71 | 0.69 | 0.71 | 31.8 |
| Appr |  | 83 | 2.5 | 0.146 | 35.6 | LOS C | 3.8 | 27.2 | 0.71 | 0.69 | 0.71 | 26.3 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 40 | 2.6 | 0.657 | 52.6 | LOS D | 33.5 | 241.5 | 0.93 | 0.82 | 0.93 | 29.1 |
| 5 | T1 | 1552 | 3.2 | 0.657 | 45.0 | LOS D | 33.5 | 241.5 | 0.92 | 0.80 | 0.92 | 36.3 |
| 4 | R2 | 238 | 13.3 | 0.774 | 74.4 | LOS F | 16.6 | 148.7 | 1.00 | 0.86 | 1.09 | 23.5 |
| Appr | ach | 1829 | 4.5 | 0.774 | 49.0 | LOS D | 33.5 | 241.5 | 0.93 | 0.81 | 0.94 | 33.9 |
| North: Werrington Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 356 | 10.4 | 0.387 | 18.2 | LOS B | 12.1 | 100.2 | 0.59 | 0.70 | 0.59 | 38.8 |
| 2 | T1 | 14 | 0.0 | 1.208 | 260.2 | LOS F | 99.5 | 762.1 | 1.00 | 1.74 | 2.34 | 5.0 |
| 1 | R2 | 609 | 6.0 | 1.208 | 263.5 | LOS F | 99.5 | 762.1 | 1.00 | 1.74 | 2.34 | 7.1 |
| Appr |  | 979 | 7.5 | 1.208 | 174.3 | LOS F | 99.5 | 762.1 | 0.85 | 1.36 | 1.70 | 10.8 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 212 | 8.0 | 0.456 | 49.5 | LOS D | 20.4 | 153.5 | 0.86 | 0.79 | 0.86 | 25.7 |
| 11 | T1 | 919 | 4.5 | 0.456 | 42.2 | LOS C | 21.2 | 155.3 | 0.86 | 0.75 | 0.86 | 37.4 |
| 10 | R2 | 63 | 3.3 | 0.178 | 65.7 | LOS E | 3.9 | 27.9 | 0.93 | 0.75 | 0.93 | 18.4 |
| Approach |  | 1194 | 5.0 | 0.456 | 44.8 | LOS D | 21.2 | 155.3 | 0.86 | 0.75 | 0.86 | 34.1 |
| All Ve | icles | 4085 | 5.3 | 1.208 | 77.5 | LOS F | 99.5 | 762.1 | 0.89 | 0.92 | 1.10 | 23.2 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 4 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 9 | 65.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 15 | 65.1 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M 2030 With Development Option 2.sip8

## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／
审审 Network：［104 \＆108－AM Mamre Road－AM Peak 2030 With Dev Option 2］ Peak 2030 With Dev Option 2］

0800－0900
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 140 seconds（Network User－Given Cycle Time）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh／h |  | Arrival Total veh／h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg． Satn v／c | Average Delay sec | Level of Service |  | ack of ue Distance m | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag Speed km／h |
| South：Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| L2 | 177 | 13.7 | 177 | 13.7 | 0.144 | 16.6 | LOS B | 4.9 | 43.3 | 0.46 | 0.67 | 0.46 | 39.4 |
| T1 | 447 | 1.9 | 447 | 1.9 | 0.926 | 52.7 | LOS D | 43.1 | 351.2 | 0.92 | 0.84 | 0.97 | 25.2 |
| R2 | 475 | 14.4 | 475 | 14.4 | 0.926 | 75.7 | LOS F | 43.1 | 351.2 | 1.00 | 1.00 | 1.23 | 13.1 |
| Approach | 1099 | 9.2 | 1099 | 9.2 | 0.926 | 56.8 | LOS E | 43.1 | 351.2 | 0.88 | 0.88 | 1.00 | 21.2 |
| East：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 468 | 20.0 | 468 | 20.0 | 0.420 | 11.9 | LOS A | 10.4 | 93.8 | 0.42 | 0.69 | 0.42 | 48.1 |
| 5 T1 | 1201 | 3.4 | 1201 | 3.4 | 0.928 | 72.0 | LOS F | 39.5 | 289.3 | 0.99 | 1.05 | 1.24 | 23.6 |
| 4 R2 | 226 | 1.9 | 226 | 1.9 | 0.811 | 64.6 | LOS E | 15.3 | 109.0 | 1.00 | 0.87 | 1.08 | 26.3 |
| Approach | 1896 | 7.3 | 1896 | 7.3 | 0.928 | 56.3 | LOS D | 39.5 | 289.3 | 0.85 | 0.94 | 1.02 | 27.7 |
| North：Queen Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 52 | 0.0 | 52 | 0.0 | 0.846 | 76.0 | LOS F | 11.4 | 82.7 | 1.00 | 1.05 | 1.56 | 14.6 |
| 2 T1 | 185 | 6.8 | 185 | 6.8 | 0.846 | 73.7 | LOS F | 11.4 | 82.7 | 1.00 | 1.03 | 1.44 | 21.1 |
| 1 R2 | 80 | 1.3 | 80 | 1.3 | 0.846 | 78.9 | LOS F | 11.3 | 82.1 | 1.00 | 0.99 | 1.27 | 18.5 |
| Approach | 317 | 4.3 | 317 | 4.3 | 0.846 | 75.4 | LOS F | 11.4 | 82.7 | 1.00 | 1.02 | 1.42 | 19.5 |
| West：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 107 | 3.9 | 107 | 3.9 | 0.615 | 51.5 | LOS D | 18.7 | 138.4 | 0.92 | 0.81 | 0.92 | 24.1 |
| 11 T1 | 854 | 5.4 | 854 | 5.4 | 0.615 | 45.9 | LOS D | 18.9 | 142.4 | 0.92 | 0.80 | 0.92 | 14.1 |
| 10 R2 | 209 | 14.1 | 209 | 14.1 | 0.894 | 83.8 | LOS F | 16.4 | 146.8 | 1.00 | 0.99 | 1.34 | 17.0 |
| Approach | 1171 | 6.8 | 1171 | 6.8 | 0.894 | 53.2 | LOS D | 18.9 | 146.8 | 0.93 | 0.83 | 0.99 | 16.2 |
| All Vehicles | 4482 |  | 4482 | 7.4 | 0.928 | 56.9 | LOS E | 43.1 | 351.2 | 0.89 | 0.90 | 1.04 | 23.1 |

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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | of Queue Distance m | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 3 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 16 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 8 | 64.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 17 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| All Pedestrians |  | 44 | 64.2 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

B Site: TCS 1236 [108-Great Western Highway / Glossop
审官 Network: [104 \& 108 - AM Street - AM Peak 2030 With Dev Option 2] Peak 2030 With Dev Option 2]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows <br> HV \% | Arrival <br> Total veh/h | lows <br> HV \% | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% B Que Vehicles veh | k of <br> stance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> e <br> Speed km/h |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 1141 | 5.2 | 1141 | 5.2 | 0.297 | 17.4 | LOS B | 15.2 | 113.1 | 0.57 | 0.49 | 0.57 | 38.5 |
| 4 R2 | 593 | 13.7 | 593 | 13.7 | 0.615 | 57.4 | LOS E | 18.2 | 154.1 | 0.95 | 0.83 | 0.95 | 29.1 |
| Approach | 1734 |  | 1734 | 8.1 | 0.615 | 31.1 | LOS C | 18.2 | 154.1 | 0.70 | 0.61 | 0.70 | 33.4 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 509 | 20.0 | 509 | 20.0 | 0.513 | 20.3 | LOS B | 18.5 | 164.5 | 0.58 | 0.77 | 0.58 | 42.3 |
| 1 R2 | 755 | 10.6 | 755 | 10.6 | 0.617 | 44.7 | LOS D | 21.0 | 170.4 | 0.88 | 0.84 | 0.88 | 21.6 |
| Approach | 1264 | 14.4 | 1264 | 14.4 | 0.617 | 34.9 | LOS C | 21.0 | 170.4 | 0.76 | 0.81 | 0.76 | 30.5 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L2 | 389 | 14.3 | 389 | 14.3 | 0.625 | 50.8 | LOS D | 24.6 | 208.6 | 0.92 | 0.84 | 0.92 | 31.4 |
| 11 T1 | 993 | 6.2 | 993 | 6.2 | 0.625 | 49.3 | LOS D | 29.9 | 224.0 | 0.99 | 0.86 | 0.99 | 33.8 |
| Approach | 1382 | 8.5 | 1382 | 8.5 | 0.625 | 49.7 | LOS D | 29.9 | 224.0 | 0.97 | 0.85 | 0.97 | 33.1 |
| All Vehicles | 4380 | 10.0 | 4380 | 10.0 | 0.625 | 38.1 | LOS C | 29.9 | 224.0 | 0.80 | 0.74 | 0.80 | 32.5 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P2 | East Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 2 | 64.1 | LOS F |  |  | 0.96 | 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.

## MOVEMENT SUMMARY

## Site: TCS 1234 [105-Great Western Highway / Carlisle Avenue - AM Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 142 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov Turn } \\ & \text { ID } \end{aligned}$ | Deman <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 53 | 38.0 | 0.141 | 38.7 | LOS C | 2.8 | 31.2 | 0.84 | 0.72 | 0.84 | 33.3 |
| 8 T1 | 657 | 6.7 | 0.671 | 60.8 | LOS E | 21.0 | 155.2 | 0.99 | 0.83 | 0.99 | 28.1 |
| 7 R2 | 175 | 11.4 | 0.678 | 74.8 | LOS F | 12.0 | 95.5 | 1.00 | 0.81 | 1.03 | 25.1 |
| Approach | 884 | 9.5 | 0.678 | 62.2 | LOS E | 21.0 | 155.2 | 0.99 | 0.82 | 0.99 | 27.7 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 87 | 8.4 | 0.458 | 42.5 | LOS D | 13.9 | 107.4 | 0.83 | 0.75 | 0.85 | 37.2 |
| $5 \quad$ T1 | 737 | 6.9 | 0.458 | 38.8 | LOS C | 15.0 | 114.1 | 0.84 | 0.73 | 0.84 | 42.5 |
| 4 R2 | 314 | 6.0 | 0.796 | 79.6 | LOS F | 11.4 | 84.6 | 1.00 | 0.88 | 1.18 | 27.4 |
| Approach | 1138 | 6.8 | 0.796 | 50.4 | LOS D | 15.0 | 114.1 | 0.88 | 0.77 | 0.93 | 36.4 |
| North: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 314 | 5.7 | 0.218 | 31.0 | LOS C | 12.9 | 95.4 | 0.70 | 0.76 | 0.70 | 40.9 |
| 2 T1 | 475 | 6.7 | 0.443 | 43.3 | LOS D | 26.2 | 198.5 | 0.87 | 0.75 | 0.87 | 33.9 |
| 1 R2 | 457 | 4.8 | 0.338 | 37.1 | LOS C | 9.8 | 71.9 | 0.91 | 0.78 | 0.91 | 38.2 |
| Approach | 1245 | 5.7 | 0.443 | 37.9 | LOS C | 26.2 | 198.5 | 0.84 | 0.76 | 0.84 | 37.2 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 580 | 2.9 | 0.407 | 21.6 | LOS B | 16.4 | 118.5 | 0.69 | 0.80 | 0.73 | 47.3 |
| 11 T1 | 923 | 7.2 | 0.407 | 37.5 | LOS C | 23.1 | 176.1 | 0.82 | 0.71 | 0.82 | 43.3 |
| 10 R2 | 148 | 8.5 | 0.428 | 70.8 | LOS F | 9.6 | 77.2 | 0.98 | 0.79 | 0.98 | 25.9 |
| Approach | 1652 | 5.8 | 0.428 | 34.9 | LOS C | 23.1 | 176.1 | 0.79 | 0.75 | 0.80 | 42.4 |
| All Vehicles | 4919 | 6.7 | 0.796 | 44.2 | LOS D | 26.2 | 198.5 | 0.86 | 0.77 | 0.88 | 36.6 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{aligned} & \text { Demand } \\ & \text { Flow } \\ & \text { ped/h } \end{aligned}$ | Average Delay $\qquad$ sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.1 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

Site: TCS 3118 [106-Mamre Road / M4 Western Motorway Off-ramp/On-ramp (South) - AM Peak 2030 With Development]

审审 Network: [106 \& 107-AM Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows Arriva <br> HV Total \% veh/h | $\begin{aligned} & =l o w s \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ck of istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1345 | 6.21345 | 6.2 | 0.280 | 4.4 | LOS A | 11.6 | 88.6 | 0.34 | 0.30 | 0.34 | 49.0 |
| 7 R2 | 507 | 8.7507 | 8.7 | 0.673 | 48.4 | LOS D | 24.9 | 190.9 | 0.98 | 0.85 | 0.98 | 25.3 |
| Approach | 1853 | 6.91853 | 6.9 | 0.673 | 16.4 | LOS B | 24.9 | 190.9 | 0.51 | 0.45 | 0.51 | 33.6 |
| East: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 109 | 11.5109 | 11.5 | 0.141 | 10.9 | LOS A | 1.8 | 14.9 | 0.39 | 0.65 | 0.39 | 48.4 |
| 4 R2 | 264 | 17.5264 | 17.5 | 0.664 | 56.3 | LOS D | 7.3 | 65.5 | 0.99 | 0.84 | 1.07 | 21.4 |
| Approach | 374 | 15.8374 | 15.8 | 0.664 | 43.0 | LOS D | 7.3 | 65.5 | 0.81 | 0.79 | 0.87 | 27.5 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 416 | 9.6416 | 9.6 | 0.254 | 8.8 | LOS A | 6.3 | 50.6 | 0.32 | 0.62 | 0.32 | 36.6 |
| 2 T 1 | 1451 | 8.81451 | 8.8 | 0.671 | 21.0 | LOS B | 28.4 | 218.3 | 0.71 | 0.63 | 0.71 | 36.1 |
| Approach | 1866 | 9.01866 | 9.0 | 0.671 | 18.2 | LOS B | 28.4 | 218.3 | 0.62 | 0.63 | 0.62 | 36.2 |
| All Vehicles | 4093 | 8.64093 | 8.6 | 0.673 | 19.7 | LOS B | 28.4 | 218.3 | 0.59 | 0.56 | 0.59 | 34.0 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

Site: TCS 3117 [107- Mamre Road / M4 Western Motorway Off-ramp/On-ramp (North) - AM Peak 2030 With Development]

审审 Network: [106 \& 107-AM Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows | Arrival Total veh/h | $\begin{aligned} & \text { =lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ack of ue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed <br> km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 265 | 6.7 | 265 | 6.7 | 0.176 | 10.9 | LOS A | 5.7 | 45.9 | 0.48 | 0.67 | 0.48 | 35.5 |
| 8 T1 | 1344 | 8.3 | 1344 | 8.3 | 0.638 | 34.4 | LOS C | 30.4 | 238.0 | 0.90 | 0.79 | 0.90 | 27.8 |
| Approach | 1609 | 8.0 | 1609 | 8.0 | 0.638 | 30.5 | LOS C | 30.4 | 238.0 | 0.83 | 0.77 | 0.83 | 29.2 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 1266 | 9.3 | 1266 | 9.3 | 0.830 | 14.6 | LOS B | 35.0 | 274.3 | 0.71 | 0.67 | 0.73 | 32.6 |
| 1 R2 | 257 | 18.4 | 257 | 18.4 | 0.653 | 41.9 | LOS C | 12.2 | 113.1 | 0.92 | 0.83 | 0.92 | 26.1 |
| Approach | 1523 | 10.9 | 1523 | 10.9 | 0.830 | 19.2 | LOS B | 35.0 | 274.3 | 0.75 | 0.70 | 0.77 | 30.0 |
| West: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L2 | 626 | 3.7 | 626 | 3.7 | 0.577 | 11.1 | LOS A | 13.6 | 99.0 | 0.53 | 0.73 | 0.53 | 47.6 |
| 10 R2 | 600 | 8.2 | 600 | 8.2 | 0.843 | 58.4 | LOS E | 18.4 | 141.6 | 1.00 | 0.95 | 1.22 | 20.7 |
| Approach | 1226 | 5.9 | 1226 | 5.9 | 0.843 | 34.3 | LOS C | 18.4 | 141.6 | 0.76 | 0.84 | 0.86 | 31.7 |
| All Vehicles | 4359 |  | 4359 | 8.4 | 0.843 | 27.6 | LOS B | 35.0 | 274.3 | 0.78 | 0.77 | 0.82 | 30.2 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 3 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 4 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

```
Site: [113 - Christie Street / Dunheved Road / Werrington Road - AM Peak 2030 With Dev
Option 2_Upgrades]
0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
```


## Movement Performance - Vehicles



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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay $\qquad$ sec | Level of Service | Average Bac Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 20 | 54.2 | LOS E | 0.1 | 0.1 | 0.95 | 0.95 |
| P4 | West Full Crossing | 20 | 54.2 | LOS E | 0.1 | 0.1 | 0.95 | 0.95 |
| All Pedestrians |  | 40 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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.

[^5]
## MOVEMENT SUMMARY

## Site: TCS 2385 [103 - Great Western Highway / Werrington Road / Reserve Road - PM Peak 2030 With Dev Option 2]

1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 146 seconds (Site User-Given Phase Times)

## Movement Performance - Vehicles

|  | Turn | Demanc | ows | Deg. | Average | Level of | 95\% Back | of Queue | Prop. | Effective | Aver. No. | Average |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ID |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ | Satn | Delay sec | Service | Vehicles veh | Distance m | Queued | Stop Rate | Cycles | $\begin{gathered} \text { Speed } \\ \mathrm{km} / \mathrm{h} \end{gathered}$ |
| Sout | Rese | Road |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 35 | 3.0 | 0.181 | 34.9 | LOS C | 5.0 | 35.3 | 0.69 | 0.68 | 0.69 | 27.0 |
| 8 | T1 | 33 | 0.0 | 0.181 | 30.4 | LOS C | 5.0 | 35.3 | 0.69 | 0.68 | 0.69 | 25.7 |
| 7 | R2 | 42 | 0.0 | 0.181 | 34.9 | LOS C | 5.0 | 35.3 | 0.69 | 0.68 | 0.69 | 33.5 |
| Appr | ach | 109 | 1.0 | 0.181 | 33.6 | LOS C | 5.0 | 35.3 | 0.69 | 0.68 | 0.69 | 29.3 |
| East | reat | ern Hig |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 44 | 2.4 | 0.714 | 59.1 | LOS E | 33.7 | 242.6 | 0.97 | 0.85 | 0.97 | 26.9 |
| 5 | T1 | 1444 | 2.9 | 0.714 | 51.5 | LOS D | 33.7 | 242.6 | 0.96 | 0.83 | 0.96 | 33.7 |
| 4 | R2 | 384 | 9.3 | 0.958 | 93.7 | LOS F | 32.4 | 262.4 | 1.00 | 0.98 | 1.38 | 21.2 |
| Appr |  | 1873 | 4.2 | 0.958 | 60.3 | LOS E | 33.7 | 262.4 | 0.97 | 0.86 | 1.05 | 30.0 |
| North: | Werrin | n Road |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 244 | 9.1 | 0.124 | 15.4 | LOS B | 6.2 | 53.0 | 0.44 | 0.69 | 0.44 | 46.3 |
| 2 | T1 | 22 | 0.0 | 1.024 | 83.2 | LOS F | 53.1 | 389.6 | 1.00 | 1.10 | 1.43 | 13.3 |
| 1 | R2 | 526 | 4.2 | 1.024 | 87.6 | LOS F | 53.1 | 389.6 | 1.00 | 1.10 | 1.43 | 18.0 |
| Appr |  | 793 | 5.6 | 1.024 | 65.2 | LOS E | 53.1 | 389.6 | 0.83 | 0.97 | 1.12 | 23.0 |
| Wes | Great | stern Hig |  |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 258 | 3.3 | 0.451 | 54.6 | LOS D | 24.9 | 183.7 | 0.89 | 0.80 | 0.89 | 25.9 |
| 11 | T1 | 1036 | 3.0 | 0.451 | 47.5 | LOS D | 25.7 | 185.3 | 0.89 | 0.76 | 0.89 | 35.1 |
| 10 | R2 | 78 | 2.7 | 0.108 | 56.6 | LOS E | 4.4 | 32.2 | 0.85 | 0.75 | 0.85 | 20.5 |
| Appr |  | 1372 | 3.1 | 0.451 | 49.3 | LOS D | 25.7 | 185.3 | 0.89 | 0.77 | 0.89 | 32.6 |
| All V | icles | 4146 | 4.0 | 1.024 | 56.9 | LOS E | 53.1 | 389.6 | 0.91 | 0.85 | 1.00 | 29.3 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{aligned} & \text { Demand } \\ & \text { Flow } \\ & \text { ped } / \mathrm{h} \end{aligned}$ | Average Delay $\qquad$ sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 5 | 67.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 7 | 67.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 67.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 14 | 67.1 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／
审审 Network：［104 \＆108－PM Mamre Road－PM Peak 2030 With Dev Option 2］ Peak 2030 With Dev Option 2］

1630－1730
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 140 seconds（Network Site User－Given Phase Times）


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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped／h | Average Delay $\qquad$ sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 7 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 14 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 12 | 64.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 34 | 64.2 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

B Site: TCS 1236 [108-Great Western Highway / Glossop Street - PM Peak 2030 With Dev Option 2] Peak 2030 With Dev Option 2]

1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows Arriva <br> HV Total \% veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ack of ue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed <br> km/h |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 1491 | 3.01491 | 3.0 | 0.483 | 8.4 | LOS A | 18.9 | 137.9 | 0.43 | 0.39 | 0.43 | 47.3 |
| 4 R2 | 580 | 8.7580 | 8.7 | 0.896 | 79.1 | LOS F | 22.5 | 176.3 | 1.00 | 0.98 | 1.28 | 24.5 |
| Approach | 2071 | 4.62071 | 4.6 | 0.896 | 28.2 | LOS B | 22.5 | 176.3 | 0.59 | 0.56 | 0.67 | 34.3 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 569 | 6.5569 | 6.5 | 0.366 | 32.6 | LOS C | 25.1 | 190.2 | 0.71 | 0.79 | 0.71 | 36.8 |
| 1 R2 | 861 | 3.9861 | 3.9 | 0.687 | 59.7 | LOS E | 26.4 | 197.1 | 0.97 | 0.84 | 0.97 | 17.8 |
| Approach | 1431 | 4.91431 | 4.9 | 0.687 | 48.9 | LOS D | 26.4 | 197.1 | 0.87 | 0.82 | 0.87 | 25.6 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 292 | 19.1292 | 19.1 | 0.494 | 24.6 | LOS B | 11.6 | 101.2 | 0.50 | 0.67 | 0.50 | 41.7 |
| 11 T1 | 951 | 3.2951 | 3.2 | 0.494 | 19.2 | LOS B | 14.3 | 104.5 | 0.52 | 0.48 | 0.52 | 45.9 |
| Approach | 1242 | 6.91242 | 6.9 | 0.494 | 20.4 | LOS B | 14.3 | 104.5 | 0.52 | 0.53 | 0.52 | 44.9 |
| All Vehicles | 4743 | 5.34743 | 5.3 | 0.896 | 32.4 | LOS C | 26.4 | 197.1 | 0.66 | 0.63 | 0.69 | 34.3 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | Queue Distance m | Prop. Queued | Effective Stop Rate |
| P2 | East Full Crossing | 2 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 3 | 64.1 | LOS F |  |  | 0.96 | 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.

## MOVEMENT SUMMARY

目 Site: TCS 1234 [105-Great Western Highway / Carlisle Avenue - PM Peak 2030 With Development]

1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 143 seconds (Site User-Given Phase Times)

## Movement Performance - Vehicles

| Mov | Turn | Deman | lows | Deg. | Average | Level of | 95\% Back | of Queue | Prop. | Effective | Aver. No. | Average |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ID |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ | Satn v/c | Delay sec | Service | Vehicles veh | Distance <br> m | Queued | Stop Rate | Cycles | Speed km/h |
| South | Carlis | Avenue |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 96 | 9.9 | 0.185 | 33.5 | LOS C | 4.1 | 35.5 | 0.81 | 0.75 | 0.81 | 37.6 |
| 8 | T1 | 659 | 3.4 | 0.787 | 64.5 | LOS E | 22.5 | 160.8 | 1.00 | 0.88 | 1.06 | 27.2 |
| 7 | R2 | 118 | 3.6 | 0.532 | 74.1 | LOS F | 8.0 | 58.6 | 1.00 | 0.79 | 1.00 | 25.7 |
| Appr |  | 873 | 4.1 | 0.787 | 62.4 | LOS E | 22.5 | 160.8 | 0.98 | 0.86 | 1.03 | 27.7 |
| East: | reat | tern Hig |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 135 | 3.9 | 0.464 | 48.5 | LOS D | 27.7 | 199.8 | 0.87 | 0.78 | 0.90 | 35.1 |
| 5 | T1 | 1337 | 2.5 | 0.464 | 42.5 | LOS D | 28.5 | 205.9 | 0.87 | 0.75 | 0.88 | 40.7 |
| 4 | R2 | 493 | 2.1 | 0.545 | 70.2 | LOS E | 16.1 | 115.4 | 0.99 | 0.81 | 0.99 | 29.5 |
| Appr |  | 1964 | 2.5 | 0.545 | 49.9 | LOS D | 28.5 | 205.9 | 0.90 | 0.77 | 0.91 | 36.8 |
| North | arlis | venue |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 315 | 2.0 | 0.196 | 27.6 | LOS B | 12.1 | 87.5 | 0.65 | 0.75 | 0.65 | 43.0 |
| 2 | T1 | 649 | 6.0 | 0.555 | 42.7 | LOS D | 36.7 | 277.8 | 0.89 | 0.78 | 0.89 | 34.1 |
| 1 | R2 | 687 | 2.9 | 0.453 | 36.2 | LOS C | 14.7 | 105.8 | 0.92 | 0.80 | 0.92 | 38.9 |
| Appr |  | 1652 | 4.0 | 0.555 | 37.1 | LOS C | 36.7 | 277.8 | 0.86 | 0.78 | 0.86 | 37.8 |
| West | reat | stern Hig | vay |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 455 | 1.6 | 0.594 | 27.2 | LOS B | 15.4 | 109.8 | 0.79 | 0.85 | 0.88 | 44.2 |
| 11 | T1 | 686 | 4.6 | 0.594 | 44.7 | LOS D | 19.2 | 143.2 | 0.91 | 0.79 | 0.91 | 39.8 |
| 10 | R2 | 109 | 10.6 | 0.518 | 72.0 | LOS F | 7.3 | 60.2 | 0.98 | 0.79 | 0.98 | 25.5 |
| Appr |  | 1251 | 4.0 | 0.594 | 40.7 | LOS C | 19.2 | 143.2 | 0.87 | 0.81 | 0.91 | 39.6 |
| All V | icles | 5739 | 3.5 | 0.787 | 46.1 | LOS D | 36.7 | 277.8 | 0.89 | 0.80 | 0.91 | 36.0 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.6 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

Site: TCS 3118 [106-Mamre Road / M4 Western Motorway Off-ramp/On-ramp (South) - PM Peak 2030 With Development]

审审 Network: [106 \& 107 - PM Peak 2030 With Development]

1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Hows | Arriva Total veh/h | ows <br> HV <br> \% | Deg. Satn v/c | Average Delay sec | Level of Service |  | of <br> stance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1427 | 5.6 | 1427 | 5.6 | 0.676 | 8.5 | LOS A | 23.4 | 177.6 | 0.56 | 0.52 | 0.56 | 41.8 |
| 7 R2 | 558 | 4.3 | 558 | 4.3 | 1.213 | 258.6 | LOS F | 78.6 | 592.3 | 1.00 | 1.57 | 2.57 | 8.8 |
| Approach | 1985 | 5.2 | 1985 | 5.2 | 1.213 | 78.8 | LOS F | 78.6 | 592.3 | 0.69 | 0.82 | 1.13 | 14.6 |
| East: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 283 | 4.1 | 283 | 4.1 | 0.321 | 11.7 | LOS A | 5.8 | 42.3 | 0.44 | 0.69 | 0.44 | 47.9 |
| 4 R2 | 369 | 8.8 | 369 | 8.8 | 1.090 | 171.3 | LOS F | 21.3 | 171.6 | 1.00 | 1.36 | 2.20 | 9.0 |
| Approach | 653 | 6.8 | 653 | 6.8 | 1.090 | 102.0 | LOS F | 21.3 | 171.6 | 0.76 | 1.07 | 1.44 | 16.3 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 860 | 2.1 | 860 | 2.1 | 0.439 | 15.3 | LOS B | 25.4 | 184.5 | 0.59 | 0.78 | 0.65 | 33.4 |
| 2 T 1 | 1485 | 4.7 | 1485 | 4.7 | 0.623 | 23.0 | LOS B | 35.0 | 259.3 | 0.70 | 0.63 | 0.71 | 34.8 |
| Approach | 2345 | 3.8 | 2345 | 3.8 | 0.623 | 20.2 | LOS B | 35.0 | 259.3 | 0.66 | 0.68 | 0.69 | 34.2 |
| All Vehicles | 4983 | 4.8 | 4983 | 4.8 | 1.213 | 54.3 | LOS D | 78.6 | 592.3 | 0.68 | 0.79 | 0.96 | 21.1 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

Site: TCS 3117 [107 - Mamre Road / M4 Western Motorway Off-ramp/On-ramp (North) - PM Peak 2030 With Development]

审审 Network: [106 \& 107 - PM Peak 2030 With Development]

1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Ows | Arrival F <br> Total veh/h | ows <br> HV <br> \% | Deg. Satn v/c | Average Delay sec | Level of Service |  | of of istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 146 | 7.9 | 146 | 7.9 | 0.105 | 9.1 | LOS A | 2.1 | 17.7 | 0.32 | 0.59 | 0.32 | 36.6 |
| 8 T1 | 1651 | 6.1 | 1647 | 6.1 | 0.741 | 33.5 | LOS C | 40.2 | 304.9 | 0.90 | 0.81 | 0.90 | 28.2 |
| Approach | 1797 | 6.3 | $1793{ }^{\text {N1 }}$ | 6.3 | 0.741 | 31.5 | LOS C | 40.2 | 304.9 | 0.85 | 0.79 | 0.85 | 28.9 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 1751 | 3.4 | 1751 | 3.4 | 0.934 | 25.9 | LOS B | 77.6 | 569.7 | 0.83 | 0.85 | 0.92 | 24.1 |
| R2 | 279 | 9.4 | 279 | 9.4 | 0.749 | 55.7 | LOS D | 16.0 | 134.2 | 0.99 | 0.88 | 1.06 | 23.1 |
| Approach | 2029 | 4.2 | 2029 | 4.2 | 0.934 | 30.0 | LOS C | 77.6 | 569.7 | 0.85 | 0.85 | 0.94 | 23.8 |
| West: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 415 | 5.3 | 415 | 5.3 | 0.469 | 16.2 | LOS B | 12.0 | 89.8 | 0.59 | 0.75 | 0.59 | 43.9 |
| 10 R2 | 595 | 5.0 | 595 | 5.0 | 0.945 | 83.3 | LOS F | 25.0 | 185.8 | 1.00 | 1.07 | 1.47 | 16.2 |
| Approach | 1009 |  | 1009 | 5.1 | 0.945 | 55.7 | LOS D | 25.0 | 185.8 | 0.83 | 0.94 | 1.11 | 24.0 |
| All Vehicles | 4836 |  | $4832{ }^{\mathrm{N} 1}$ | 5.2 | 0.945 | 35.9 | LOS C | 77.6 | 569.7 | 0.85 | 0.85 | 0.94 | 25.7 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec $\qquad$ | Level of Service | Average Bac Pedestrian ped | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

```
    Site: [113-Christie Street / Dunheved Road / Werrington Road - PM Peak 2030 With Dev
Option 2_Upgrades]
1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
```

Movement Performance - Vehicles

| $\begin{aligned} & \text { Mov Turn } \\ & \text { ID } \end{aligned}$ | Demand <br> Total veh/h | lows HV $\%$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back <br> Vehicles <br> veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| South: Werrington Road |  |  |  |  |  |  |  |  |  |  |  |
| 1 L2 | 1020 | 2.0 | 0.613 | 33.9 | LOS C | 22.7 | 162.1 | 0.82 | 0.84 | 0.82 | 39.4 |
| 3 R 2 | 442 | 6.1 | 0.572 | 52.4 | LOS D | 11.7 | 91.1 | 0.95 | 0.82 | 0.95 | 33.2 |
| Approach | 1462 | 3.2 | 0.613 | 39.5 | LOS C | 22.7 | 162.1 | 0.86 | 0.83 | 0.86 | 37.1 |
| East: Christie Street |  |  |  |  |  |  |  |  |  |  |  |
| 4 L2 | 705 | 4.8 | 0.535 | 8.5 | LOS A | 11.6 | 88.4 | 0.39 | 0.68 | 0.39 | 53.4 |
| $5 \quad$ T1 | 1085 | 3.3 | 0.609 | 26.0 | LOS B | 23.6 | 170.7 | 0.81 | 0.72 | 0.81 | 43.0 |
| Approach | 1790 | 3.9 | 0.609 | 19.1 | LOS B | 23.6 | 170.7 | 0.64 | 0.71 | 0.64 | 46.8 |
| West: Dunheved Road |  |  |  |  |  |  |  |  |  |  |  |
| 11 T1 | 722 | 4.4 | 0.548 | 11.3 | LOS A | 21.0 | 153.4 | 0.55 | 0.58 | 0.55 | 52.5 |
| 12 R 2 | 376 | 2.9 | 0.581 | 56.5 | LOS D | 10.3 | 75.2 | 0.97 | 0.82 | 0.97 | 30.9 |
| Approach | 1098 | 3.9 | 0.581 | 26.8 | LOS B | 21.0 | 153.4 | 0.69 | 0.66 | 0.69 | 42.3 |
| All Vehicles | 4350 | 3.7 | 0.613 | 27.9 | LOS B | 23.6 | 170.7 | 0.73 | 0.74 | 0.73 | 42.0 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay $\qquad$ sec | Level of Service | Average Bac Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 20 | 54.2 | LOS E | 0.1 | 0.1 | 0.95 | 0.95 |
| P4 | West Full Crossing | 20 | 54.2 | LOS E | 0.1 | 0.1 | 0.95 | 0.95 |
| All Pedestrians |  | 40 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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.

[^6]
## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／
审审 Network：［104 \＆108－AM Mamre Road－AM Peak 2030 With Development］ Peak 2030 With Development］

0800－0900
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 141 seconds（Network User－Given Cycle Time）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demanc <br> Total veh／h | Flows HV \％ | Arrival Total veh／h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg． Satn v／c | Average Delay sec | Level of Service |  | ack of ue Distance m | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag <br> Speed km／h |
| South：Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 163 | 6.5 | 163 | 6.5 | 0.121 | 16.2 | LOS B | 4.4 | 33.1 | 0.45 | 0.67 | 0.45 | 39.8 |
| 8 T1 | 447 | 1.9 | 447 | 1.9 | 0.908 | 49.9 | LOS D | 41.2 | 355.2 | 0.91 | 0.82 | 0.93 | 25.8 |
| $7 \quad \mathrm{R} 2$ | 488 | 16.8 | 488 | 16.8 | 0.908 | 71.1 | LOS F | 41.2 | 355.2 | 1.00 | 0.98 | 1.19 | 13.7 |
| Approach | 1099 | 9.2 | 1099 | 9.2 | 0.908 | 54.3 | LOS D | 41.2 | 355.2 | 0.88 | 0.87 | 0.98 | 21.7 |
| East：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 482 | 22.3 | 482 | 22.3 | 0.433 | 10.8 | LOS A | 9.6 | 90.6 | 0.38 | 0.67 | 0.38 | 48.8 |
| $5 \quad \mathrm{~T} 1$ | 1199 | 3.2 | 1199 | 3.2 | 0.916 | 69.1 | LOS E | 39.1 | 284.9 | 0.99 | 1.02 | 1.21 | 24.2 |
| 4 R2 | 226 | 1.9 | 226 | 1.9 | 0.899 | 72.1 | LOS F | 16.6 | 118.0 | 1.00 | 0.91 | 1.18 | 24.9 |
| Approach | 1907 | 7.9 | 1907 | 7.9 | 0.916 | 54.7 | LOS D | 39.1 | 284.9 | 0.84 | 0.92 | 1.00 | 28.1 |
| North：Queen Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 52 | 0.0 | 52 | 0.0 | 0.852 | 77.4 | LOS F | 11.5 | 83.7 | 1.00 | 1.06 | 1.58 | 14.4 |
| 2 T1 | 185 | 6.8 | 185 | 6.8 | 0.852 | 75.0 | LOS F | 11.5 | 83.7 | 1.00 | 1.04 | 1.46 | 20.9 |
| 1 R2 | 80 | 1.3 | 80 | 1.3 | 0.852 | 79.9 | LOS F | 11.5 | 83.0 | 1.00 | 1.00 | 1.28 | 18.4 |
| Approach | 317 | 4.3 | 317 | 4.3 | 0.852 | 76.6 | LOS F | 11.5 | 83.7 | 1.00 | 1.03 | 1.43 | 19.3 |
| West：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 107 | 3.9 | 107 | 3.9 | 0.604 | 51.1 | LOS D | 18.6 | 138.3 | 0.91 | 0.81 | 0.91 | 24.2 |
| 11 T1 | 854 | 5.4 | 854 | 5.4 | 0.604 | 45.5 | LOS D | 18.9 | 142.3 | 0.91 | 0.79 | 0.91 | 14.2 |
| 10 R2 | 196 | 8.1 | 196 | 8.1 | 0.849 | 78.7 | LOS F | 14.6 | 114.1 | 1.00 | 0.93 | 1.24 | 17.8 |
| Approach | 1157 | 5.7 | 1157 | 5.7 | 0.849 | 51.6 | LOS D | 18.9 | 142.3 | 0.93 | 0.82 | 0.97 | 16.5 |
| All Vehicles | 4480 |  | 4480 | 7.4 | 0.916 | 55.4 | LOS D | 41.2 | 355.2 | 0.88 | 0.89 | 1.01 | 23.5 |

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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped／h | Average Delay $\qquad$ sec | Level of Service | $\begin{gathered} \text { Average Back } \\ \text { Pedestrian } \\ \text { ped } \end{gathered}$ | of Queue Distance $\qquad$ | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 3 | 64.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 16 | 64.7 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 8 | 64.7 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 17 | 64.7 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| All Pedestrians |  | 44 | 64.7 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M St Marys Inland Container Terminal EIS_2030 With Development.sip8

## MOVEMENT SUMMARY

B Site: TCS 1236 [108-Great Western Highway / Glossop审审 Network: [104 \& 108-AM Street - AM Peak 2030 With Development] Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 141 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | $\begin{aligned} & \text { Flows } \\ & \text { HV } \\ & \% \end{aligned}$ | Arrive <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | Vehicles veh | ack of ue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag Speed km/h |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 1139 | 5.0 | 1139 | 5.0 | 0.302 | 18.4 | LOS B | 15.6 | 115.9 | 0.58 | 0.51 | 0.58 | 37.8 |
| 4 R2 | 595 | 14.0 | 595 | 14.0 | 0.657 | 59.1 | LOS E | 18.5 | 157.7 | 0.96 | 0.83 | 0.96 | 28.7 |
| Approach | 1734 | 8.1 | 1734 | 8.1 | 0.657 | 32.4 | LOS C | 18.5 | 157.7 | 0.71 | 0.62 | 0.71 | 32.8 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 512 | 20.4 | 512 | 20.4 | 0.516 | 20.2 | LOS B | 18.6 | 167.1 | 0.58 | 0.77 | 0.58 | 42.3 |
| R2 | 768 | 12.2 | 768 | 12.2 | 0.650 | 44.1 | LOS D | 21.4 | 180.1 | 0.87 | 0.84 | 0.87 | 21.8 |
| Approach | 1280 | 15.5 | 1280 | 15.5 | 0.650 | 34.5 | LOS C | 21.4 | 180.1 | 0.76 | 0.81 | 0.76 | 30.6 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 403 | 17.2 | 403 | 17.2 | 0.643 | 51.2 | LOS D | 23.8 | 216.7 | 0.91 | 0.84 | 0.91 | 31.1 |
| 11 T1 | 991 | 6.0 | 991 | 6.0 | 0.643 | 49.7 | LOS D | 30.8 | 230.0 | 0.99 | 0.86 | 0.99 | 33.7 |
| Approach | 1394 |  | 1394 | 9.2 | 0.643 | 50.1 | LOS D | 30.8 | 230.0 | 0.96 | 0.85 | 0.96 | 33.0 |
| All Vehicles | 4407 | 10.6 | 4407 | 10.6 | 0.657 | 38.6 | LOS C | 30.8 | 230.0 | 0.80 | 0.75 | 0.80 | 32.3 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P2 | East Full Crossing | 1 | 64.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 2 | 64.6 | LOS F |  |  | 0.96 | 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.

## MOVEMENT SUMMARY

## Site: TCS 1234 [105-Great Western Highway / Carlisle Avenue - AM Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 142 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov Turn } \\ & \text { ID } \end{aligned}$ | Deman <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 53 | 38.0 | 0.141 | 38.7 | LOS C | 2.8 | 31.2 | 0.84 | 0.72 | 0.84 | 33.3 |
| 8 T1 | 657 | 6.7 | 0.671 | 60.8 | LOS E | 21.0 | 155.2 | 0.99 | 0.83 | 0.99 | 28.1 |
| 7 R2 | 175 | 11.4 | 0.678 | 74.8 | LOS F | 12.0 | 95.5 | 1.00 | 0.81 | 1.03 | 25.1 |
| Approach | 884 | 9.5 | 0.678 | 62.2 | LOS E | 21.0 | 155.2 | 0.99 | 0.82 | 0.99 | 27.7 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 87 | 8.4 | 0.458 | 42.5 | LOS D | 13.9 | 107.4 | 0.83 | 0.75 | 0.85 | 37.2 |
| $5 \quad$ T1 | 737 | 6.9 | 0.458 | 38.8 | LOS C | 15.0 | 114.1 | 0.84 | 0.73 | 0.84 | 42.5 |
| 4 R2 | 314 | 6.0 | 0.796 | 79.6 | LOS F | 11.4 | 84.6 | 1.00 | 0.88 | 1.18 | 27.4 |
| Approach | 1138 | 6.8 | 0.796 | 50.4 | LOS D | 15.0 | 114.1 | 0.88 | 0.77 | 0.93 | 36.4 |
| North: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 314 | 5.7 | 0.218 | 31.0 | LOS C | 12.9 | 95.4 | 0.70 | 0.76 | 0.70 | 40.9 |
| 2 T1 | 475 | 6.7 | 0.443 | 43.3 | LOS D | 26.2 | 198.5 | 0.87 | 0.75 | 0.87 | 33.9 |
| 1 R2 | 457 | 4.8 | 0.338 | 37.1 | LOS C | 9.8 | 71.9 | 0.91 | 0.78 | 0.91 | 38.2 |
| Approach | 1245 | 5.7 | 0.443 | 37.9 | LOS C | 26.2 | 198.5 | 0.84 | 0.76 | 0.84 | 37.2 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 580 | 2.9 | 0.407 | 21.6 | LOS B | 16.4 | 118.5 | 0.69 | 0.80 | 0.73 | 47.3 |
| 11 T1 | 923 | 7.2 | 0.407 | 37.5 | LOS C | 23.1 | 176.1 | 0.82 | 0.71 | 0.82 | 43.3 |
| 10 R2 | 148 | 8.5 | 0.428 | 70.8 | LOS F | 9.6 | 77.2 | 0.98 | 0.79 | 0.98 | 25.9 |
| Approach | 1652 | 5.8 | 0.428 | 34.9 | LOS C | 23.1 | 176.1 | 0.79 | 0.75 | 0.80 | 42.4 |
| All Vehicles | 4919 | 6.7 | 0.796 | 44.2 | LOS D | 26.2 | 198.5 | 0.86 | 0.77 | 0.88 | 36.6 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{aligned} & \text { Demand } \\ & \text { Flow } \\ & \text { ped/h } \end{aligned}$ | Average Delay $\qquad$ sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.1 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

Site: TCS 3118 [106-Mamre Road / M4 Western Motorway Off-ramp/On-ramp (South) - AM Peak 2030 With Development]

审审 Network: [106 \& 107-AM Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows Arriva <br> HV Total \% veh/h | $\begin{aligned} & =l o w s \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ck of istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1345 | 6.21345 | 6.2 | 0.280 | 4.4 | LOS A | 11.6 | 88.6 | 0.34 | 0.30 | 0.34 | 49.0 |
| 7 R2 | 507 | 8.7507 | 8.7 | 0.673 | 48.4 | LOS D | 24.9 | 190.9 | 0.98 | 0.85 | 0.98 | 25.3 |
| Approach | 1853 | 6.91853 | 6.9 | 0.673 | 16.4 | LOS B | 24.9 | 190.9 | 0.51 | 0.45 | 0.51 | 33.6 |
| East: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 109 | 11.5109 | 11.5 | 0.141 | 10.9 | LOS A | 1.8 | 14.9 | 0.39 | 0.65 | 0.39 | 48.4 |
| 4 R2 | 264 | 17.5264 | 17.5 | 0.664 | 56.3 | LOS D | 7.3 | 65.5 | 0.99 | 0.84 | 1.07 | 21.4 |
| Approach | 374 | 15.8374 | 15.8 | 0.664 | 43.0 | LOS D | 7.3 | 65.5 | 0.81 | 0.79 | 0.87 | 27.5 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 416 | 9.6416 | 9.6 | 0.254 | 8.8 | LOS A | 6.3 | 50.6 | 0.32 | 0.62 | 0.32 | 36.6 |
| 2 T 1 | 1451 | 8.81451 | 8.8 | 0.671 | 21.0 | LOS B | 28.4 | 218.3 | 0.71 | 0.63 | 0.71 | 36.1 |
| Approach | 1866 | 9.01866 | 9.0 | 0.671 | 18.2 | LOS B | 28.4 | 218.3 | 0.62 | 0.63 | 0.62 | 36.2 |
| All Vehicles | 4093 | 8.64093 | 8.6 | 0.673 | 19.7 | LOS B | 28.4 | 218.3 | 0.59 | 0.56 | 0.59 | 34.0 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

Site: TCS 3117 [107- Mamre Road / M4 Western Motorway Off-ramp/On-ramp (North) - AM Peak 2030 With Development]

审审 Network: [106 \& 107-AM Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows | Arrival Total veh/h | $\begin{aligned} & \text { =lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ack of ue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed <br> km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 265 | 6.7 | 265 | 6.7 | 0.176 | 10.9 | LOS A | 5.7 | 45.9 | 0.48 | 0.67 | 0.48 | 35.5 |
| 8 T1 | 1344 | 8.3 | 1344 | 8.3 | 0.638 | 34.4 | LOS C | 30.4 | 238.0 | 0.90 | 0.79 | 0.90 | 27.8 |
| Approach | 1609 | 8.0 | 1609 | 8.0 | 0.638 | 30.5 | LOS C | 30.4 | 238.0 | 0.83 | 0.77 | 0.83 | 29.2 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 1266 | 9.3 | 1266 | 9.3 | 0.830 | 14.6 | LOS B | 35.0 | 274.3 | 0.71 | 0.67 | 0.73 | 32.6 |
| 1 R2 | 257 | 18.4 | 257 | 18.4 | 0.653 | 41.9 | LOS C | 12.2 | 113.1 | 0.92 | 0.83 | 0.92 | 26.1 |
| Approach | 1523 | 10.9 | 1523 | 10.9 | 0.830 | 19.2 | LOS B | 35.0 | 274.3 | 0.75 | 0.70 | 0.77 | 30.0 |
| West: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L2 | 626 | 3.7 | 626 | 3.7 | 0.577 | 11.1 | LOS A | 13.6 | 99.0 | 0.53 | 0.73 | 0.53 | 47.6 |
| 10 R2 | 600 | 8.2 | 600 | 8.2 | 0.843 | 58.4 | LOS E | 18.4 | 141.6 | 1.00 | 0.95 | 1.22 | 20.7 |
| Approach | 1226 | 5.9 | 1226 | 5.9 | 0.843 | 34.3 | LOS C | 18.4 | 141.6 | 0.76 | 0.84 | 0.86 | 31.7 |
| All Vehicles | 4359 |  | 4359 | 8.4 | 0.843 | 27.6 | LOS B | 35.0 | 274.3 | 0.78 | 0.77 | 0.82 | 30.2 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 3 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 4 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

$\nabla$ Site: [109-Glossop Street / Harris Street - AM Peak 2030 With Dev Option 3]
0800-0900
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{ll} \text { Mov } & \text { Turn } \\ \text { ID } \end{array}$ | Deman <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| L2 | 97 | 20.6 | 0.474 | 5.8 | LOS A | 0.0 | 0.0 | 0.00 | 0.07 | 0.00 | 55.5 |
| 2 T1 | 1564 | 9.0 | 0.474 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 59.2 |
| Approach | 1661 | 9.7 | 0.474 | 0.4 | NA | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 58.8 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1829 | 11.7 | 0.520 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| Approach | 1829 | 11.7 | 0.520 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| West: Harris Street |  |  |  |  |  |  |  |  |  |  |  |
| 10 L2 | 92 | 14.1 | 0.214 | 12.1 | LOS A | 0.8 | 6.3 | 0.70 | 0.87 | 0.73 | 39.6 |
| Approach | 92 | 14.1 | 0.214 | 12.1 | LOS A | 0.8 | 6.3 | 0.70 | 0.87 | 0.73 | 39.6 |
| All Vehicles | 3582 | 10.8 | 0.520 | 0.5 | NA | 0.8 | 6.3 | 0.02 | 0.04 | 0.02 | 58.2 |

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

## MOVEMENT SUMMARY

$\nabla$ Site: [110 - Forrester Road / Harris Street - AM Peak 2030 With Dev Option 3]
0800-0900
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Deman Total veh/h | Flows HV $\%$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | T1 | 70 | 8.6 | 0.039 | 0.0 | LOS A | 0.0 | 0.3 | 0.04 | 0.00 | 0.04 | 33.4 |
| 3 | R2 | 5 | 20.0 | 0.039 | 0.5 | LOS A | 0.0 | 0.3 | 0.04 | 0.00 | 0.04 | 38.8 |
| Appr |  | 75 | 9.3 | 0.039 | 0.1 | NA | 0.0 | 0.3 | 0.04 | 0.00 | 0.04 | 33.7 |
| East: Harris Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 19 | 0.0 | 0.200 | 8.4 | LOS A | 0.8 | 7.5 | 0.33 | 0.64 | 0.33 | 37.9 |
| 5 | T1 | 15 | 100.0 | 0.200 | 10.8 | LOS A | 0.8 | 7.5 | 0.33 | 0.64 | 0.33 | 27.2 |
| 6 | R2 | 115 | 16.5 | 0.200 | 6.4 | LOS A | 0.8 | 7.5 | 0.33 | 0.64 | 0.33 | 40.6 |
| Appr |  | 149 | 22.8 | 0.200 | 7.1 | LOS A | 0.8 | 7.5 | 0.33 | 0.64 | 0.33 | 38.4 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 53 | 15.1 | 0.072 | 3.5 | LOS A | 0.0 | 0.0 | 0.00 | 0.64 | 0.00 | 38.1 |
| 8 | T1 | 71 | 7.0 | 0.072 | 5.7 | LOS A | 0.0 | 0.0 | 0.00 | 0.64 | 0.00 | 35.0 |
| Appr |  | 124 | 10.5 | 0.072 | 4.8 | NA | 0.0 | 0.0 | 0.00 | 0.64 | 0.00 | 36.8 |
| West: Site Access Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 15 | 100.0 | 0.027 | 1.3 | LOS A | 0.1 | 2.7 | 0.26 | 0.12 | 0.26 | 26.1 |
| Appr |  | 15 | 100.0 | 0.027 | 1.3 | LOS A | 0.1 | 2.7 | 0.26 | 0.12 | 0.26 | 26.1 |
| All V | icles | 363 | 19.0 | 0.200 | 4.6 | NA | 0.8 | 7.5 | 0.15 | 0.48 | 0.15 | 36.3 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

目 Site: TCS 3129 [111 - Forrester Road / Glossop Street / Access Road - AM Peak 2030 With Dev Option 3_Upgrades]

0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time $=90$ seconds (Site User-Given Phase Times)

## Movement Performance - Vehicles

| Mov |  | Demand <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| South: Forrester Road sin |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 2 | 0.0 | 0.129 | 47.1 | LOS D | 3.6 | 26.3 | 0.73 | 0.62 | 1.26 | 24.0 |
| 2 | T1 | 83 | 6.0 | 0.129 | 33.2 | LOS C | 3.6 | 26.3 | 0.73 | 0.62 | 1.26 | 36.7 |
| 3 | R2 | 61 | 44.3 | 0.268 | 37.5 | LOS C | 2.4 | 33.6 | 0.88 | 0.74 | 0.88 | 33.2 |
| Appr | ach | 146 | 21.9 | 0.268 | 35.2 | LOS C | 3.6 | 33.6 | 0.79 | 0.67 | 1.10 | 35.0 |
| East: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 51 | 19.6 | 0.610 | 35.4 | LOS C | 14.6 | 119.9 | 0.85 | 0.87 | 1.27 | 35.4 |
| 5 | T1 | 8 | 0.0 | 0.610 | 48.5 | LOS D | 14.6 | 119.9 | 0.85 | 0.87 | 1.27 | 25.4 |
| 6 | R2 | 785 | 13.6 | 0.610 | 32.0 | LOS C | 14.7 | 119.9 | 0.85 | 0.85 | 1.04 | 38.6 |
| Appr | ach | 844 | 13.9 | 0.610 | 32.4 | LOS C | 14.7 | 119.9 | 0.85 | 0.85 | 1.06 | 38.2 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 1378 | 9.5 | 0.896 | 18.0 | LOS B | 35.2 | 278.0 | 0.67 | 0.87 | 0.80 | 45.6 |
| 8 | T1 | 218 | 4.6 | 0.602 | 38.9 | LOS C | 9.1 | 66.9 | 0.97 | 0.81 | 0.97 | 34.6 |
| Appr | ach | 1596 | 8.8 | 0.896 | 20.8 | LOS B | 35.2 | 278.0 | 0.71 | 0.86 | 0.83 | 43.7 |
| West: Access Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 2 | 0.0 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 19.1 |
| 11 | T1 | 3 | 33.3 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.4 |
| 12 | R2 | 1 | 0.0 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.2 |
| Appr | ach | 6 | 16.7 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.6 |
| All V | icles | 2592 | 11.2 | 0.896 | 25.4 | LOS B | 35.2 | 278.0 | 0.76 | 0.85 | 0.92 | 41.2 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{gathered} \text { Demand } \\ \text { Flow } \\ \text { ped/h } \\ \hline \end{gathered}$ | Average Delay $\qquad$ sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ m | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 1 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P2 | East Full Crossing | 20 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P4 | West Full Crossing | 6 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| All Pe | estrians | 27 | 39.2 | LOS D |  |  | 0.93 | 0.93 |

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

## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／ Mamre Road－PM Peak 2030 With Development］

审审 Network：［104 \＆108－PM Peak 2030 With Development］

1630－1730
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 140 seconds（Network Site User－Given Phase Times）


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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 7 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 14 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 12 | 64.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 34 | 64.2 | LOS F |  |  | 0.96 | 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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## MOVEMENT SUMMARY

目 Site：TCS 1236 ［108－Great Western Highway／Glossop Street－PM Peak 2030 With Development］

审审 Network：［104 \＆ 108 －PM Peak 2030 With Development］

1630－1730
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 140 seconds（Network Site User－Given Phase Times）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh／h | Flows | Arrival F Total veh／h | Fows <br> HV \％ | Deg． Satn v／c | Average Delay sec | Level of Service | 95\％B Que <br> Vehicles veh | ck of <br> Distance | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag <br> Speed km／h |
| East：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 1488 | 2.8 | 1488 | 2.8 | 0.481 | 8.4 | LOS A | 18.9 | 137.0 | 0.43 | 0.39 | 0.43 | 47.3 |
| 4 R2 | 582 | 9.0 | 582 | 9.0 | 0.904 | 80.8 | LOS F | 23.7 | 186.8 | 1.00 | 0.99 | 1.30 | 24.2 |
| Approach | 2071 | 4.6 | 2071 | 4.6 | 0.904 | 28.8 | LOS C | 23.7 | 186.8 | 0.59 | 0.56 | 0.68 | 34.0 |
| North：Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 572 | 6.8 | 572 | 6.8 | 0.369 | 32.7 | LOS C | 25.2 | 192.8 | 0.71 | 0.79 | 0.71 | 36.8 |
| 1 R2 | 875 | 5.4 | 875 | 5.4 | 0.749 | 60.1 | LOS E | 27.0 | 209.0 | 0.97 | 0.84 | 0.97 | 17.7 |
| Approach | 1446 |  | 1446 | 6.0 | 0.749 | 49.3 | LOS D | 27.0 | 209.0 | 0.87 | 0.82 | 0.87 | 25.5 |
| West：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 305 | 22.8 | 297 | 22.1 | 0.494 | 25.0 | LOS B | 11.1 | 103.8 | 0.50 | 0.68 | 0.50 | 41.3 |
| 11 T1 | 948 | 3.0 | 931 | 2.9 | 0.494 | 18.6 | LOS B | 14.0 | 101.6 | 0.51 | 0.47 | 0.51 | 46.3 |
| Approach | 1254 |  | $1228{ }^{\text {N1 }}$ | 7.5 | 0.494 | 20.1 | LOS B | 14.0 | 103.8 | 0.51 | 0.52 | 0.51 | 45.1 |
| All Vehicles | 4771 |  | $4745^{\mathrm{N} 1}$ | 5.9 | 0.904 | 32.8 | LOS C | 27.0 | 209.0 | 0.66 | 0.63 | 0.69 | 34.1 |

Site Level of Service（LOS）Method：Delay（RTA NSW）．Site LOS Method is specified in the Network Data dialog（Network tab）． Vehicle movement LOS values are based on average delay per movement．
Intersection and Approach LOS values are based on average delay for all vehicle movements．
SIDRA Standard Delay Model is used．Control Delay includes Geometric Delay．
Gap－Acceptance Capacity：SIDRA Standard（Akçelik M3D）．
HV（\％）values are calculated for All Movement Classes of All Heavy Vehicle Model Designation．
N 1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes．

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance $\qquad$ | Prop． Queued | Effective Stop Rate |
| P2 | East Full Crossing | 2 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 3 | 64.1 | LOS F |  |  | 0.96 | 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．

## MOVEMENT SUMMARY

目 Site: TCS 1234 [105-Great Western Highway / Carlisle Avenue - PM Peak 2030 With Development]

1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 143 seconds (Site User-Given Phase Times)

## Movement Performance - Vehicles

| Mov | Turn | Deman | lows | Deg. | Average | Level of | 95\% Back | of Queue | Prop. | Effective | Aver. No. | Average |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ID |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ | Satn v/c | Delay sec | Service | Vehicles veh | Distance <br> m | Queued | Stop Rate | Cycles | Speed km/h |
| South | Carlis | Avenue |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 96 | 9.9 | 0.185 | 33.5 | LOS C | 4.1 | 35.5 | 0.81 | 0.75 | 0.81 | 37.6 |
| 8 | T1 | 659 | 3.4 | 0.787 | 64.5 | LOS E | 22.5 | 160.8 | 1.00 | 0.88 | 1.06 | 27.2 |
| 7 | R2 | 118 | 3.6 | 0.532 | 74.1 | LOS F | 8.0 | 58.6 | 1.00 | 0.79 | 1.00 | 25.7 |
| Appr |  | 873 | 4.1 | 0.787 | 62.4 | LOS E | 22.5 | 160.8 | 0.98 | 0.86 | 1.03 | 27.7 |
| East: | reat | tern Hig |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 135 | 3.9 | 0.464 | 48.5 | LOS D | 27.7 | 199.8 | 0.87 | 0.78 | 0.90 | 35.1 |
| 5 | T1 | 1337 | 2.5 | 0.464 | 42.5 | LOS D | 28.5 | 205.9 | 0.87 | 0.75 | 0.88 | 40.7 |
| 4 | R2 | 493 | 2.1 | 0.545 | 70.2 | LOS E | 16.1 | 115.4 | 0.99 | 0.81 | 0.99 | 29.5 |
| Appr |  | 1964 | 2.5 | 0.545 | 49.9 | LOS D | 28.5 | 205.9 | 0.90 | 0.77 | 0.91 | 36.8 |
| North | arlis | venue |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 315 | 2.0 | 0.196 | 27.6 | LOS B | 12.1 | 87.5 | 0.65 | 0.75 | 0.65 | 43.0 |
| 2 | T1 | 649 | 6.0 | 0.555 | 42.7 | LOS D | 36.7 | 277.8 | 0.89 | 0.78 | 0.89 | 34.1 |
| 1 | R2 | 687 | 2.9 | 0.453 | 36.2 | LOS C | 14.7 | 105.8 | 0.92 | 0.80 | 0.92 | 38.9 |
| Appr |  | 1652 | 4.0 | 0.555 | 37.1 | LOS C | 36.7 | 277.8 | 0.86 | 0.78 | 0.86 | 37.8 |
| West | reat | stern Hig | vay |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 455 | 1.6 | 0.594 | 27.2 | LOS B | 15.4 | 109.8 | 0.79 | 0.85 | 0.88 | 44.2 |
| 11 | T1 | 686 | 4.6 | 0.594 | 44.7 | LOS D | 19.2 | 143.2 | 0.91 | 0.79 | 0.91 | 39.8 |
| 10 | R2 | 109 | 10.6 | 0.518 | 72.0 | LOS F | 7.3 | 60.2 | 0.98 | 0.79 | 0.98 | 25.5 |
| Appr |  | 1251 | 4.0 | 0.594 | 40.7 | LOS C | 19.2 | 143.2 | 0.87 | 0.81 | 0.91 | 39.6 |
| All V | icles | 5739 | 3.5 | 0.787 | 46.1 | LOS D | 36.7 | 277.8 | 0.89 | 0.80 | 0.91 | 36.0 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.6 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M St Marys Inland Container Terminal EIS_2030 With Development.sip8

## MOVEMENT SUMMARY

Site: TCS 3118 [106-Mamre Road / M4 Western Motorway Off-ramp/On-ramp (South) - PM Peak 2030 With Development]

审审 Network: [106 \& 107 - PM Peak 2030 With Development]

1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Hows | Arriva Total veh/h | ows <br> HV <br> \% | Deg. Satn v/c | Average Delay sec | Level of Service |  | of <br> stance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1427 | 5.6 | 1427 | 5.6 | 0.676 | 8.5 | LOS A | 23.4 | 177.6 | 0.56 | 0.52 | 0.56 | 41.8 |
| 7 R2 | 558 | 4.3 | 558 | 4.3 | 1.213 | 258.6 | LOS F | 78.6 | 592.3 | 1.00 | 1.57 | 2.57 | 8.8 |
| Approach | 1985 | 5.2 | 1985 | 5.2 | 1.213 | 78.8 | LOS F | 78.6 | 592.3 | 0.69 | 0.82 | 1.13 | 14.6 |
| East: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 283 | 4.1 | 283 | 4.1 | 0.321 | 11.7 | LOS A | 5.8 | 42.3 | 0.44 | 0.69 | 0.44 | 47.9 |
| 4 R2 | 369 | 8.8 | 369 | 8.8 | 1.090 | 171.3 | LOS F | 21.3 | 171.6 | 1.00 | 1.36 | 2.20 | 9.0 |
| Approach | 653 | 6.8 | 653 | 6.8 | 1.090 | 102.0 | LOS F | 21.3 | 171.6 | 0.76 | 1.07 | 1.44 | 16.3 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 860 | 2.1 | 860 | 2.1 | 0.439 | 15.3 | LOS B | 25.4 | 184.5 | 0.59 | 0.78 | 0.65 | 33.4 |
| 2 T 1 | 1485 | 4.7 | 1485 | 4.7 | 0.623 | 23.0 | LOS B | 35.0 | 259.3 | 0.70 | 0.63 | 0.71 | 34.8 |
| Approach | 2345 | 3.8 | 2345 | 3.8 | 0.623 | 20.2 | LOS B | 35.0 | 259.3 | 0.66 | 0.68 | 0.69 | 34.2 |
| All Vehicles | 4983 | 4.8 | 4983 | 4.8 | 1.213 | 54.3 | LOS D | 78.6 | 592.3 | 0.68 | 0.79 | 0.96 | 21.1 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

Site: TCS 3117 [107 - Mamre Road / M4 Western Motorway Off-ramp/On-ramp (North) - PM Peak 2030 With Development]

审审 Network: [106 \& 107 - PM Peak 2030 With Development]

1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Ows | Arrival F <br> Total veh/h | ows <br> HV <br> \% | Deg. Satn v/c | Average Delay sec | Level of Service |  | of of istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 146 | 7.9 | 146 | 7.9 | 0.105 | 9.1 | LOS A | 2.1 | 17.7 | 0.32 | 0.59 | 0.32 | 36.6 |
| 8 T1 | 1651 | 6.1 | 1647 | 6.1 | 0.741 | 33.5 | LOS C | 40.2 | 304.9 | 0.90 | 0.81 | 0.90 | 28.2 |
| Approach | 1797 | 6.3 | $1793{ }^{\text {N1 }}$ | 6.3 | 0.741 | 31.5 | LOS C | 40.2 | 304.9 | 0.85 | 0.79 | 0.85 | 28.9 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 1751 | 3.4 | 1751 | 3.4 | 0.934 | 25.9 | LOS B | 77.6 | 569.7 | 0.83 | 0.85 | 0.92 | 24.1 |
| R2 | 279 | 9.4 | 279 | 9.4 | 0.749 | 55.7 | LOS D | 16.0 | 134.2 | 0.99 | 0.88 | 1.06 | 23.1 |
| Approach | 2029 | 4.2 | 2029 | 4.2 | 0.934 | 30.0 | LOS C | 77.6 | 569.7 | 0.85 | 0.85 | 0.94 | 23.8 |
| West: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 415 | 5.3 | 415 | 5.3 | 0.469 | 16.2 | LOS B | 12.0 | 89.8 | 0.59 | 0.75 | 0.59 | 43.9 |
| 10 R2 | 595 | 5.0 | 595 | 5.0 | 0.945 | 83.3 | LOS F | 25.0 | 185.8 | 1.00 | 1.07 | 1.47 | 16.2 |
| Approach | 1009 |  | 1009 | 5.1 | 0.945 | 55.7 | LOS D | 25.0 | 185.8 | 0.83 | 0.94 | 1.11 | 24.0 |
| All Vehicles | 4836 |  | $4832{ }^{\mathrm{N} 1}$ | 5.2 | 0.945 | 35.9 | LOS C | 77.6 | 569.7 | 0.85 | 0.85 | 0.94 | 25.7 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec $\qquad$ | Level of Service | Average Bac Pedestrian ped | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

$\nabla$ Site: [109-Glossop Street / Harris Street - PM Peak 2030 With Dev Option 3]
1630-1730
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{ll} \hline \text { Mov Turn } \\ \text { ID } \end{array}$ | Demand Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| 1 L2 | 50 | 30.0 | 0.499 | 6.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 55.2 |
| 2 T1 | 1749 | 5.5 | 0.499 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 0.00 | 59.6 |
| Approach | 1799 | 6.2 | 0.499 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.02 | 0.00 | 59.3 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 2069 | 4.3 | 0.553 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| Approach | 2069 | 4.3 | 0.553 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| West: Harris Street |  |  |  |  |  |  |  |  |  |  |  |
| 10 L2 | 75 | 1.3 | 0.174 | 11.8 | LOS A | 0.6 | 4.1 | 0.72 | 0.87 | 0.72 | 40.5 |
| Approach | 75 | 1.3 | 0.174 | 11.8 | LOS A | 0.6 | 4.1 | 0.72 | 0.87 | 0.72 | 40.5 |
| All Vehicles | 3943 | 5.1 | 0.553 | 0.3 | NA | 0.6 | 4.1 | 0.01 | 0.02 | 0.01 | 58.7 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

$\nabla$ Site: [110 - Forrester Road / Harris Street - PM Peak 2030 With Dev Option 3]
1630-1730
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ |  | Demand Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | T1 | 68 | 4.4 | 0.040 | 0.1 | LOS A | 0.1 | 0.5 | 0.07 | 0.00 | 0.07 | 38.7 |
| 3 | R2 | 12 | 0.0 | 0.040 | 0.3 | LOS A | 0.1 | 0.5 | 0.07 | 0.00 | 0.07 | 39.2 |
| Appro |  | 80 | 3.8 | 0.040 | 0.1 | NA | 0.1 | 0.5 | 0.07 | 0.00 | 0.07 | 38.8 |
| East: Harris Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 9 | 0.0 | 0.242 | 8.4 | LOS A | 1.0 | 8.1 | 0.35 | 0.62 | 0.35 | 38.4 |
| 5 | T1 | 15 | 100.0 | 0.242 | 10.7 | LOS A | 1.0 | 8.1 | 0.35 | 0.62 | 0.35 | 27.3 |
| 6 | R2 | 177 | 1.1 | 0.242 | 5.9 | LOS A | 1.0 | 8.1 | 0.35 | 0.62 | 0.35 | 45.1 |
| Appro |  | 201 | 8.5 | 0.242 | 6.4 | LOS A | 1.0 | 8.1 | 0.35 | 0.62 | 0.35 | 42.8 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 25 | 8.0 | 0.054 | 4.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.71 | 0.00 | 45.6 |
| 8 | T1 | 73 | 5.5 | 0.054 | 6.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.71 | 0.00 | 41.0 |
| Appro |  | 98 | 6.1 | 0.054 | 6.1 | NA | 0.0 | 0.0 | 0.00 | 0.71 | 0.00 | 42.7 |
| West: Site Access Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 15 | 100.0 | 0.026 | 1.2 | LOS A | 0.1 | 2.6 | 0.26 | 0.12 | 0.26 | 27.4 |
| Appro |  | 15 | 100.0 | 0.026 | 1.2 | LOS A | 0.1 | 2.6 | 0.26 | 0.12 | 0.26 | 27.4 |
| All Ve | icles | 394 | 10.4 | 0.242 | 4.8 | NA | 1.0 | 8.1 | 0.20 | 0.50 | 0.20 | 41.1 |

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

## MOVEMENT SUMMARY

目 Site: TCS 3129 [111 - Forrester Road / Glossop Street / Access Road - PM Peak 2030 With Dev Option 3_Upgrades]
1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 103 seconds (Site User-Given Phase Times)

## Movement Performance - Vehicles

| Mov | Turn | Deman | Flows | Deg. | Average | Level of | 95\% Back | of Queue | Prop. | Effective | Aver. | Aver |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ID |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ | Satn v/c | Delay sec | Service | Vehicles veh | Distance <br> m | Queued | Stop Rate | Cycles | Speed km/h |
| South | Forre | Road |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 1 | 0.0 | 0.247 | 60.6 | LOS E | 7.3 | 51.4 | 0.82 | 0.68 | 1.42 | 20.6 |
| 2 | T1 | 137 | 0.0 | 0.247 | 46.7 | LOS D | 7.3 | 51.4 | 0.82 | 0.68 | 1.42 | 32.4 |
| 3 | R2 | 159 | 12.6 | 0.549 | 44.3 | LOS D | 7.4 | 67.2 | 0.96 | 0.80 | 0.96 | 32.1 |
| Appr |  | 297 | 6.7 | 0.549 | 45.5 | LOS D | 7.4 | 67.2 | 0.89 | 0.75 | 1.17 | 32.2 |
| East: | lossop | treet |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 54 | 37.0 | 0.878 | 48.2 | LOS D | 39.9 | 310.2 | 0.97 | 0.99 | 1.50 | 31.5 |
| 5 | T1 | 2 | 0.0 | 0.878 | 61.0 | LOS E | 39.9 | 310.2 | 0.97 | 0.99 | 1.50 | 21.9 |
| 6 | R2 | 1470 | 4.9 | 0.878 | 44.2 | LOS D | 40.4 | 300.9 | 0.97 | 0.98 | 1.29 | 34.4 |
| Appr |  | 1526 | 6.0 | 0.878 | 44.4 | LOS D | 40.4 | 310.2 | 0.97 | 0.98 | 1.30 | 34.2 |
| North | Forre | Road |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 1185 | 4.7 | 0.724 | 10.0 | LOS A | 20.3 | 149.6 | 0.49 | 0.77 | 0.59 | 50.8 |
| 8 | T1 | 111 | 0.0 | 0.328 | 44.4 | LOS D | 5.1 | 35.6 | 0.94 | 0.75 | 0.94 | 32.9 |
| Appr |  | 1296 | 4.3 | 0.724 | 13.0 | LOS A | 20.3 | 149.6 | 0.52 | 0.77 | 0.62 | 48.5 |
| West | Acces | oad |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 2 | 0.0 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 18.2 |
| 11 | T1 | 4 | 50.0 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 17.3 |
| 12 | R2 | 1 | 0.0 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 17.4 |
| Appr |  | 7 | 28.6 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 17.6 |
| All V | icles | 3126 | 5.4 | 0.878 | 31.5 | LOS C | 40.4 | 310.2 | 0.78 | 0.87 | 1.01 | 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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{gathered} \text { Demand } \\ \text { Flow } \\ \text { ped/h } \end{gathered}$ | Average Delay sec $\qquad$ | Level of Service | Average Bac Pedestrian $\qquad$ | of Queue Distance $\qquad$ m | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 1 | 45.7 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 |
| P2 | East Full Crossing | 13 | 45.7 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 |
| P4 | West Full Crossing | 13 | 45.7 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 |
| All Pedestrians |  | 27 | 45.7 | LOS E |  |  | 0.94 | 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.

## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／
审审 Network：［104 \＆108－AM Mamre Road－AM Peak 2030 With Development］ Peak 2030 With Development］

0800－0900
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 141 seconds（Network User－Given Cycle Time）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demanc <br> Total veh／h | Flows HV \％ | Arrival Total veh／h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg． Satn v／c | Average Delay sec | Level of Service |  | ack of ue Distance m | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag <br> Speed km／h |
| South：Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 163 | 6.5 | 163 | 6.5 | 0.121 | 16.2 | LOS B | 4.4 | 33.1 | 0.45 | 0.67 | 0.45 | 39.8 |
| 8 T1 | 447 | 1.9 | 447 | 1.9 | 0.908 | 49.9 | LOS D | 41.2 | 355.2 | 0.91 | 0.82 | 0.93 | 25.8 |
| $7 \quad \mathrm{R} 2$ | 488 | 16.8 | 488 | 16.8 | 0.908 | 71.1 | LOS F | 41.2 | 355.2 | 1.00 | 0.98 | 1.19 | 13.7 |
| Approach | 1099 | 9.2 | 1099 | 9.2 | 0.908 | 54.3 | LOS D | 41.2 | 355.2 | 0.88 | 0.87 | 0.98 | 21.7 |
| East：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 482 | 22.3 | 482 | 22.3 | 0.433 | 10.8 | LOS A | 9.6 | 90.6 | 0.38 | 0.67 | 0.38 | 48.8 |
| $5 \quad \mathrm{~T} 1$ | 1199 | 3.2 | 1199 | 3.2 | 0.916 | 69.1 | LOS E | 39.1 | 284.9 | 0.99 | 1.02 | 1.21 | 24.2 |
| 4 R2 | 226 | 1.9 | 226 | 1.9 | 0.899 | 72.1 | LOS F | 16.6 | 118.0 | 1.00 | 0.91 | 1.18 | 24.9 |
| Approach | 1907 | 7.9 | 1907 | 7.9 | 0.916 | 54.7 | LOS D | 39.1 | 284.9 | 0.84 | 0.92 | 1.00 | 28.1 |
| North：Queen Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 52 | 0.0 | 52 | 0.0 | 0.852 | 77.4 | LOS F | 11.5 | 83.7 | 1.00 | 1.06 | 1.58 | 14.4 |
| 2 T1 | 185 | 6.8 | 185 | 6.8 | 0.852 | 75.0 | LOS F | 11.5 | 83.7 | 1.00 | 1.04 | 1.46 | 20.9 |
| 1 R2 | 80 | 1.3 | 80 | 1.3 | 0.852 | 79.9 | LOS F | 11.5 | 83.0 | 1.00 | 1.00 | 1.28 | 18.4 |
| Approach | 317 | 4.3 | 317 | 4.3 | 0.852 | 76.6 | LOS F | 11.5 | 83.7 | 1.00 | 1.03 | 1.43 | 19.3 |
| West：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 107 | 3.9 | 107 | 3.9 | 0.604 | 51.1 | LOS D | 18.6 | 138.3 | 0.91 | 0.81 | 0.91 | 24.2 |
| 11 T1 | 854 | 5.4 | 854 | 5.4 | 0.604 | 45.5 | LOS D | 18.9 | 142.3 | 0.91 | 0.79 | 0.91 | 14.2 |
| 10 R2 | 196 | 8.1 | 196 | 8.1 | 0.849 | 78.7 | LOS F | 14.6 | 114.1 | 1.00 | 0.93 | 1.24 | 17.8 |
| Approach | 1157 | 5.7 | 1157 | 5.7 | 0.849 | 51.6 | LOS D | 18.9 | 142.3 | 0.93 | 0.82 | 0.97 | 16.5 |
| All Vehicles | 4480 |  | 4480 | 7.4 | 0.916 | 55.4 | LOS D | 41.2 | 355.2 | 0.88 | 0.89 | 1.01 | 23.5 |

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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped／h | Average Delay $\qquad$ sec | Level of Service | $\begin{gathered} \text { Average Back } \\ \text { Pedestrian } \\ \text { ped } \end{gathered}$ | of Queue Distance $\qquad$ | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 3 | 64.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 16 | 64.7 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 8 | 64.7 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 17 | 64.7 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| All Pedestrians |  | 44 | 64.7 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M St Marys Inland Container Terminal EIS_2030 With Development.sip8

## MOVEMENT SUMMARY

B Site: TCS 1236 [108-Great Western Highway / Glossop审审 Network: [104 \& 108-AM Street - AM Peak 2030 With Development] Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 141 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | $\begin{aligned} & \text { Flows } \\ & \text { HV } \\ & \% \end{aligned}$ | Arrive <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | Vehicles veh | ack of ue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag Speed km/h |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 1139 | 5.0 | 1139 | 5.0 | 0.302 | 18.4 | LOS B | 15.6 | 115.9 | 0.58 | 0.51 | 0.58 | 37.8 |
| 4 R2 | 595 | 14.0 | 595 | 14.0 | 0.657 | 59.1 | LOS E | 18.5 | 157.7 | 0.96 | 0.83 | 0.96 | 28.7 |
| Approach | 1734 | 8.1 | 1734 | 8.1 | 0.657 | 32.4 | LOS C | 18.5 | 157.7 | 0.71 | 0.62 | 0.71 | 32.8 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 512 | 20.4 | 512 | 20.4 | 0.516 | 20.2 | LOS B | 18.6 | 167.1 | 0.58 | 0.77 | 0.58 | 42.3 |
| R2 | 768 | 12.2 | 768 | 12.2 | 0.650 | 44.1 | LOS D | 21.4 | 180.1 | 0.87 | 0.84 | 0.87 | 21.8 |
| Approach | 1280 | 15.5 | 1280 | 15.5 | 0.650 | 34.5 | LOS C | 21.4 | 180.1 | 0.76 | 0.81 | 0.76 | 30.6 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 403 | 17.2 | 403 | 17.2 | 0.643 | 51.2 | LOS D | 23.8 | 216.7 | 0.91 | 0.84 | 0.91 | 31.1 |
| 11 T1 | 991 | 6.0 | 991 | 6.0 | 0.643 | 49.7 | LOS D | 30.8 | 230.0 | 0.99 | 0.86 | 0.99 | 33.7 |
| Approach | 1394 |  | 1394 | 9.2 | 0.643 | 50.1 | LOS D | 30.8 | 230.0 | 0.96 | 0.85 | 0.96 | 33.0 |
| All Vehicles | 4407 | 10.6 | 4407 | 10.6 | 0.657 | 38.6 | LOS C | 30.8 | 230.0 | 0.80 | 0.75 | 0.80 | 32.3 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P2 | East Full Crossing | 1 | 64.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 2 | 64.6 | LOS F |  |  | 0.96 | 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.

## MOVEMENT SUMMARY

## Site: TCS 1234 [105-Great Western Highway / Carlisle Avenue - AM Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 142 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov Turn } \\ & \text { ID } \end{aligned}$ | Deman <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 53 | 38.0 | 0.141 | 38.7 | LOS C | 2.8 | 31.2 | 0.84 | 0.72 | 0.84 | 33.3 |
| 8 T1 | 657 | 6.7 | 0.671 | 60.8 | LOS E | 21.0 | 155.2 | 0.99 | 0.83 | 0.99 | 28.1 |
| 7 R2 | 175 | 11.4 | 0.678 | 74.8 | LOS F | 12.0 | 95.5 | 1.00 | 0.81 | 1.03 | 25.1 |
| Approach | 884 | 9.5 | 0.678 | 62.2 | LOS E | 21.0 | 155.2 | 0.99 | 0.82 | 0.99 | 27.7 |
| East: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 87 | 8.4 | 0.458 | 42.5 | LOS D | 13.9 | 107.4 | 0.83 | 0.75 | 0.85 | 37.2 |
| $5 \quad$ T1 | 737 | 6.9 | 0.458 | 38.8 | LOS C | 15.0 | 114.1 | 0.84 | 0.73 | 0.84 | 42.5 |
| 4 R2 | 314 | 6.0 | 0.796 | 79.6 | LOS F | 11.4 | 84.6 | 1.00 | 0.88 | 1.18 | 27.4 |
| Approach | 1138 | 6.8 | 0.796 | 50.4 | LOS D | 15.0 | 114.1 | 0.88 | 0.77 | 0.93 | 36.4 |
| North: Carlisle Avenue |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 314 | 5.7 | 0.218 | 31.0 | LOS C | 12.9 | 95.4 | 0.70 | 0.76 | 0.70 | 40.9 |
| 2 T1 | 475 | 6.7 | 0.443 | 43.3 | LOS D | 26.2 | 198.5 | 0.87 | 0.75 | 0.87 | 33.9 |
| 1 R2 | 457 | 4.8 | 0.338 | 37.1 | LOS C | 9.8 | 71.9 | 0.91 | 0.78 | 0.91 | 38.2 |
| Approach | 1245 | 5.7 | 0.443 | 37.9 | LOS C | 26.2 | 198.5 | 0.84 | 0.76 | 0.84 | 37.2 |
| West: Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 580 | 2.9 | 0.407 | 21.6 | LOS B | 16.4 | 118.5 | 0.69 | 0.80 | 0.73 | 47.3 |
| 11 T1 | 923 | 7.2 | 0.407 | 37.5 | LOS C | 23.1 | 176.1 | 0.82 | 0.71 | 0.82 | 43.3 |
| 10 R2 | 148 | 8.5 | 0.428 | 70.8 | LOS F | 9.6 | 77.2 | 0.98 | 0.79 | 0.98 | 25.9 |
| Approach | 1652 | 5.8 | 0.428 | 34.9 | LOS C | 23.1 | 176.1 | 0.79 | 0.75 | 0.80 | 42.4 |
| All Vehicles | 4919 | 6.7 | 0.796 | 44.2 | LOS D | 26.2 | 198.5 | 0.86 | 0.77 | 0.88 | 36.6 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{aligned} & \text { Demand } \\ & \text { Flow } \\ & \text { ped/h } \end{aligned}$ | Average Delay $\qquad$ sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.1 | LOS F |  |  | 0.96 | 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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Project: P:\P3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M St Marys Inland Container Terminal EIS_2030 With Development.sip8

## MOVEMENT SUMMARY

Site: TCS 3118 [106-Mamre Road / M4 Western Motorway Off-ramp/On-ramp (South) - AM Peak 2030 With Development]

审审 Network: [106 \& 107-AM Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows Arriva <br> HV Total \% veh/h | $\begin{aligned} & =l o w s \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ck of istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1345 | 6.21345 | 6.2 | 0.280 | 4.4 | LOS A | 11.6 | 88.6 | 0.34 | 0.30 | 0.34 | 49.0 |
| 7 R2 | 507 | 8.7507 | 8.7 | 0.673 | 48.4 | LOS D | 24.9 | 190.9 | 0.98 | 0.85 | 0.98 | 25.3 |
| Approach | 1853 | 6.91853 | 6.9 | 0.673 | 16.4 | LOS B | 24.9 | 190.9 | 0.51 | 0.45 | 0.51 | 33.6 |
| East: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 109 | 11.5109 | 11.5 | 0.141 | 10.9 | LOS A | 1.8 | 14.9 | 0.39 | 0.65 | 0.39 | 48.4 |
| 4 R2 | 264 | 17.5264 | 17.5 | 0.664 | 56.3 | LOS D | 7.3 | 65.5 | 0.99 | 0.84 | 1.07 | 21.4 |
| Approach | 374 | 15.8374 | 15.8 | 0.664 | 43.0 | LOS D | 7.3 | 65.5 | 0.81 | 0.79 | 0.87 | 27.5 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 416 | 9.6416 | 9.6 | 0.254 | 8.8 | LOS A | 6.3 | 50.6 | 0.32 | 0.62 | 0.32 | 36.6 |
| 2 T 1 | 1451 | 8.81451 | 8.8 | 0.671 | 21.0 | LOS B | 28.4 | 218.3 | 0.71 | 0.63 | 0.71 | 36.1 |
| Approach | 1866 | 9.01866 | 9.0 | 0.671 | 18.2 | LOS B | 28.4 | 218.3 | 0.62 | 0.63 | 0.62 | 36.2 |
| All Vehicles | 4093 | 8.64093 | 8.6 | 0.673 | 19.7 | LOS B | 28.4 | 218.3 | 0.59 | 0.56 | 0.59 | 34.0 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

Site: TCS 3117 [107- Mamre Road / M4 Western Motorway Off-ramp/On-ramp (North) - AM Peak 2030 With Development]

审审 Network: [106 \& 107-AM Peak 2030 With Development]

0800-0900
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Flows | Arrival Total veh/h | $\begin{aligned} & \text { =lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service |  | ack of ue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed <br> km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 265 | 6.7 | 265 | 6.7 | 0.176 | 10.9 | LOS A | 5.7 | 45.9 | 0.48 | 0.67 | 0.48 | 35.5 |
| 8 T1 | 1344 | 8.3 | 1344 | 8.3 | 0.638 | 34.4 | LOS C | 30.4 | 238.0 | 0.90 | 0.79 | 0.90 | 27.8 |
| Approach | 1609 | 8.0 | 1609 | 8.0 | 0.638 | 30.5 | LOS C | 30.4 | 238.0 | 0.83 | 0.77 | 0.83 | 29.2 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 1266 | 9.3 | 1266 | 9.3 | 0.830 | 14.6 | LOS B | 35.0 | 274.3 | 0.71 | 0.67 | 0.73 | 32.6 |
| 1 R2 | 257 | 18.4 | 257 | 18.4 | 0.653 | 41.9 | LOS C | 12.2 | 113.1 | 0.92 | 0.83 | 0.92 | 26.1 |
| Approach | 1523 | 10.9 | 1523 | 10.9 | 0.830 | 19.2 | LOS B | 35.0 | 274.3 | 0.75 | 0.70 | 0.77 | 30.0 |
| West: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L2 | 626 | 3.7 | 626 | 3.7 | 0.577 | 11.1 | LOS A | 13.6 | 99.0 | 0.53 | 0.73 | 0.53 | 47.6 |
| 10 R2 | 600 | 8.2 | 600 | 8.2 | 0.843 | 58.4 | LOS E | 18.4 | 141.6 | 1.00 | 0.95 | 1.22 | 20.7 |
| Approach | 1226 | 5.9 | 1226 | 5.9 | 0.843 | 34.3 | LOS C | 18.4 | 141.6 | 0.76 | 0.84 | 0.86 | 31.7 |
| All Vehicles | 4359 |  | 4359 | 8.4 | 0.843 | 27.6 | LOS B | 35.0 | 274.3 | 0.78 | 0.77 | 0.82 | 30.2 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | f Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 3 | 49.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 4 | 49.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

$\nabla$ Site: [109-Glossop Street / Harris Street - AM Peak 2030 With Dev Option 4]
0800-0900
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{ll} \hline \text { Mov Turn } \\ \text { ID } \end{array}$ | Demand Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/C | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| 1 L2 | 82 | 6.1 | 0.473 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.06 | 0.00 | 56.6 |
| 2 T1 | 1579 | 9.9 | 0.473 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 59.2 |
| Approach | 1661 | 9.7 | 0.473 | 0.3 | NA | 0.0 | 0.0 | 0.00 | 0.03 | 0.00 | 59.0 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1829 | 11.7 | 0.520 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| Approach | 1829 | 11.7 | 0.520 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| West: Harris Street |  |  |  |  |  |  |  |  |  |  |  |
| 10 L2 | 92 | 14.1 | 0.231 | 13.1 | LOS A | 0.8 | 6.8 | 0.73 | 0.89 | 0.79 | 39.0 |
| Approach | 92 | 14.1 | 0.231 | 13.1 | LOS A | 0.8 | 6.8 | 0.73 | 0.89 | 0.79 | 39.0 |
| All Vehicles | 3582 | 10.8 | 0.520 | 0.5 | NA | 0.8 | 6.8 | 0.02 | 0.04 | 0.02 | 58.2 |

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

## MOVEMENT SUMMARY

$\nabla$ Site: [110 - Forrester Road / Harris Street - AM Peak 2030 With Dev Option 4]
0800-0900
Site Category: (None)
Giveway / Yield (Two-Way)


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

## MOVEMENT SUMMARY

Q Site: TCS 3129 [111 - Forrester Road / Glossop Street / Access Road - AM Peak 2030 With Dev Option 4_Upgrades]

0800-0900
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Phase Times)

## Movement Performance - Vehicles

| Mov ID |  | Demand <br> Total veh/h | $\begin{gathered} \text { Flows } \\ \text { HV } \\ \% \end{gathered}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| South: Forrester Road sin |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 2 | 0.0 | 0.129 | 47.1 | LOS D | 3.6 | 26.3 | 0.73 | 0.62 | 1.26 | 24.0 |
| 2 | T1 | 83 | 6.0 | 0.129 | 33.2 | LOS C | 3.6 | 26.3 | 0.73 | 0.62 | 1.26 | 36.7 |
| 3 | R2 | 61 | 44.3 | 0.268 | 37.5 | LOS C | 2.4 | 33.6 | 0.88 | 0.74 | 0.88 | 33.2 |
| Appr |  | 146 | 21.9 | 0.268 | 35.2 | LOS C | 3.6 | 33.6 | 0.79 | 0.67 | 1.10 | 35.0 |
| East: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 66 | 37.9 | 0.634 | 35.7 | Los C | 14.7 | 129.3 | 0.86 | 0.88 | 1.27 | 35.2 |
| 5 | T1 | 8 | 0.0 | 0.634 | 48.5 | LOS D | 14.7 | 129.3 | 0.86 | 0.88 | 1.27 | 25.5 |
| 6 | R2 | 785 | 13.6 | 0.634 | 32.0 | LOS C | 15.5 | 126.2 | 0.86 | 0.86 | 1.04 | 38.5 |
| Appr | ach | 859 | 15.4 | 0.634 | 32.5 | LOS C | 15.5 | 129.3 | 0.86 | 0.86 | 1.06 | 38.2 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 1378 | 9.5 | 0.896 | 18.0 | LOS B | 35.2 | 278.0 | 0.67 | 0.87 | 0.80 | 45.6 |
| 8 | T1 | 218 | 4.6 | 0.602 | 38.9 | LOS C | 9.1 | 66.9 | 0.97 | 0.81 | 0.97 | 34.6 |
| Appr | ach | 1596 | 8.8 | 0.896 | 20.8 | LOS B | 35.2 | 278.0 | 0.71 | 0.86 | 0.83 | 43.7 |
| West: Access Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 2 | 0.0 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 19.1 |
| 11 | T1 | 3 | 33.3 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.4 |
| 12 | R2 | 1 | 0.0 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.2 |
| Appr | ach | 6 | 16.7 | 0.048 | 44.3 | LOS D | 0.3 | 2.1 | 0.96 | 0.63 | 0.96 | 18.6 |
| All Ve | icles | 2607 | 11.7 | 0.896 | 25.5 | LOS B | 35.2 | 278.0 | 0.76 | 0.85 | 0.92 | 41.1 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | $\begin{gathered} \text { Demand } \\ \text { Flow } \\ \text { ped/h } \end{gathered}$ | Average Delay $\qquad$ sec | Level of Service | Average Back Pedestrian $\qquad$ | of Queue Distance m $\qquad$ | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 1 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P2 | East Full Crossing | 20 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| P4 | West Full Crossing | 6 | 39.2 | LOS D | 0.0 | 0.0 | 0.93 | 0.93 |
| All Pedestrians |  | 27 | 39.2 | LOS D |  |  | 0.93 | 0.93 |

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

## MOVEMENT SUMMARY

日 Site：TCS 497 ［104－Great Western Highway／Queen Street／ Mamre Road－PM Peak 2030 With Development］

审审 Network：［104 \＆108－PM Peak 2030 With Development］

1630－1730
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 140 seconds（Network Site User－Given Phase Times）


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

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance | Prop． Queued | Effective Stop Rate |
| P3 | South Full Crossing | 7 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 14 | 64.2 | LOS F | 0.1 | 0.1 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 12 | 64.2 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 34 | 64.2 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M St Marys Inland Container Terminal EIS_2030 With Development.sip8

## MOVEMENT SUMMARY

目 Site：TCS 1236 ［108－Great Western Highway／Glossop Street－PM Peak 2030 With Development］

审审 Network：［104 \＆ 108 －PM Peak 2030 With Development］

1630－1730
Site Category：（None）
Signals－Fixed Time Coordinated Cycle Time＝ 140 seconds（Network Site User－Given Phase Times）

| Movement Performance－Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh／h | Flows | Arrival F Total veh／h | Fows <br> HV \％ | Deg． Satn v／c | Average Delay sec | Level of Service | 95\％B Que <br> Vehicles veh | ck of <br> Distance | Prop． Queued | Effective Stop Rate | Aver． No． Cycles | Averag <br> Speed km／h |
| East：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 T1 | 1488 | 2.8 | 1488 | 2.8 | 0.481 | 8.4 | LOS A | 18.9 | 137.0 | 0.43 | 0.39 | 0.43 | 47.3 |
| 4 R2 | 582 | 9.0 | 582 | 9.0 | 0.904 | 80.8 | LOS F | 23.7 | 186.8 | 1.00 | 0.99 | 1.30 | 24.2 |
| Approach | 2071 | 4.6 | 2071 | 4.6 | 0.904 | 28.8 | LOS C | 23.7 | 186.8 | 0.59 | 0.56 | 0.68 | 34.0 |
| North：Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 572 | 6.8 | 572 | 6.8 | 0.369 | 32.7 | LOS C | 25.2 | 192.8 | 0.71 | 0.79 | 0.71 | 36.8 |
| 1 R2 | 875 | 5.4 | 875 | 5.4 | 0.749 | 60.1 | LOS E | 27.0 | 209.0 | 0.97 | 0.84 | 0.97 | 17.7 |
| Approach | 1446 |  | 1446 | 6.0 | 0.749 | 49.3 | LOS D | 27.0 | 209.0 | 0.87 | 0.82 | 0.87 | 25.5 |
| West：Great Western Highway |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 305 | 22.8 | 297 | 22.1 | 0.494 | 25.0 | LOS B | 11.1 | 103.8 | 0.50 | 0.68 | 0.50 | 41.3 |
| 11 T1 | 948 | 3.0 | 931 | 2.9 | 0.494 | 18.6 | LOS B | 14.0 | 101.6 | 0.51 | 0.47 | 0.51 | 46.3 |
| Approach | 1254 |  | $1228{ }^{\text {N1 }}$ | 7.5 | 0.494 | 20.1 | LOS B | 14.0 | 103.8 | 0.51 | 0.52 | 0.51 | 45.1 |
| All Vehicles | 4771 |  | $4745^{\mathrm{N} 1}$ | 5.9 | 0.904 | 32.8 | LOS C | 27.0 | 209.0 | 0.66 | 0.63 | 0.69 | 34.1 |

Site Level of Service（LOS）Method：Delay（RTA NSW）．Site LOS Method is specified in the Network Data dialog（Network tab）． Vehicle movement LOS values are based on average delay per movement．
Intersection and Approach LOS values are based on average delay for all vehicle movements．
SIDRA Standard Delay Model is used．Control Delay includes Geometric Delay．
Gap－Acceptance Capacity：SIDRA Standard（Akçelik M3D）．
HV（\％）values are calculated for All Movement Classes of All Heavy Vehicle Model Designation．
N 1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes．

| Movement Performance－Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped／h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance $\qquad$ | Prop． Queued | Effective Stop Rate |
| P2 | East Full Crossing | 2 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 64.1 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 3 | 64.1 | LOS F |  |  | 0.96 | 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．

## MOVEMENT SUMMARY

目 Site: TCS 1234 [105-Great Western Highway / Carlisle Avenue - PM Peak 2030 With Development]

1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 143 seconds (Site User-Given Phase Times)

## Movement Performance - Vehicles

| Mov | Turn | Deman | lows | Deg. | Average | Level of | 95\% Back | of Queue | Prop. | Effective | Aver. No. | Average |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ID |  | Total veh/h | $\begin{gathered} \text { HV } \\ \% \end{gathered}$ | Satn v/c | Delay sec | Service | Vehicles veh | Distance <br> m | Queued | Stop Rate | Cycles | Speed km/h |
| South | Carlis | Avenue |  |  |  |  |  |  |  |  |  |  |
| 9 | L2 | 96 | 9.9 | 0.185 | 33.5 | LOS C | 4.1 | 35.5 | 0.81 | 0.75 | 0.81 | 37.6 |
| 8 | T1 | 659 | 3.4 | 0.787 | 64.5 | LOS E | 22.5 | 160.8 | 1.00 | 0.88 | 1.06 | 27.2 |
| 7 | R2 | 118 | 3.6 | 0.532 | 74.1 | LOS F | 8.0 | 58.6 | 1.00 | 0.79 | 1.00 | 25.7 |
| Appr |  | 873 | 4.1 | 0.787 | 62.4 | LOS E | 22.5 | 160.8 | 0.98 | 0.86 | 1.03 | 27.7 |
| East: | reat | tern Hig |  |  |  |  |  |  |  |  |  |  |
| 6 | L2 | 135 | 3.9 | 0.464 | 48.5 | LOS D | 27.7 | 199.8 | 0.87 | 0.78 | 0.90 | 35.1 |
| 5 | T1 | 1337 | 2.5 | 0.464 | 42.5 | LOS D | 28.5 | 205.9 | 0.87 | 0.75 | 0.88 | 40.7 |
| 4 | R2 | 493 | 2.1 | 0.545 | 70.2 | LOS E | 16.1 | 115.4 | 0.99 | 0.81 | 0.99 | 29.5 |
| Appr |  | 1964 | 2.5 | 0.545 | 49.9 | LOS D | 28.5 | 205.9 | 0.90 | 0.77 | 0.91 | 36.8 |
| North | arlis | venue |  |  |  |  |  |  |  |  |  |  |
| 3 | L2 | 315 | 2.0 | 0.196 | 27.6 | LOS B | 12.1 | 87.5 | 0.65 | 0.75 | 0.65 | 43.0 |
| 2 | T1 | 649 | 6.0 | 0.555 | 42.7 | LOS D | 36.7 | 277.8 | 0.89 | 0.78 | 0.89 | 34.1 |
| 1 | R2 | 687 | 2.9 | 0.453 | 36.2 | LOS C | 14.7 | 105.8 | 0.92 | 0.80 | 0.92 | 38.9 |
| Appr |  | 1652 | 4.0 | 0.555 | 37.1 | LOS C | 36.7 | 277.8 | 0.86 | 0.78 | 0.86 | 37.8 |
| West | reat | stern Hig | vay |  |  |  |  |  |  |  |  |  |
| 12 | L2 | 455 | 1.6 | 0.594 | 27.2 | LOS B | 15.4 | 109.8 | 0.79 | 0.85 | 0.88 | 44.2 |
| 11 | T1 | 686 | 4.6 | 0.594 | 44.7 | LOS D | 19.2 | 143.2 | 0.91 | 0.79 | 0.91 | 39.8 |
| 10 | R2 | 109 | 10.6 | 0.518 | 72.0 | LOS F | 7.3 | 60.2 | 0.98 | 0.79 | 0.98 | 25.5 |
| Appr |  | 1251 | 4.0 | 0.594 | 40.7 | LOS C | 19.2 | 143.2 | 0.87 | 0.81 | 0.91 | 39.6 |
| All V | icles | 5739 | 3.5 | 0.787 | 46.1 | LOS D | 36.7 | 277.8 | 0.89 | 0.80 | 0.91 | 36.0 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Bac Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P2 | East Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P1 | North Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| P4 | West Full Crossing | 1 | 65.6 | LOS F | 0.0 | 0.0 | 0.96 | 0.96 |
| All Pedestrians |  | 4 | 65.6 | LOS F |  |  | 0.96 | 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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Project: P:IP3796 St Marys Inland Container Terminal EISITechnical WorklModels\P3796.001M St Marys Inland Container Terminal EIS_2030 With Development.sip8

## MOVEMENT SUMMARY

Site: TCS 3118 [106-Mamre Road / M4 Western Motorway Off-ramp/On-ramp (South) - PM Peak 2030 With Development]

审审 Network: [106 \& 107 - PM Peak 2030 With Development]

1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Hows | Arriva Total veh/h | ows <br> HV <br> \% | Deg. Satn v/c | Average Delay sec | Level of Service |  | of <br> stance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 1427 | 5.6 | 1427 | 5.6 | 0.676 | 8.5 | LOS A | 23.4 | 177.6 | 0.56 | 0.52 | 0.56 | 41.8 |
| 7 R2 | 558 | 4.3 | 558 | 4.3 | 1.213 | 258.6 | LOS F | 78.6 | 592.3 | 1.00 | 1.57 | 2.57 | 8.8 |
| Approach | 1985 | 5.2 | 1985 | 5.2 | 1.213 | 78.8 | LOS F | 78.6 | 592.3 | 0.69 | 0.82 | 1.13 | 14.6 |
| East: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 L2 | 283 | 4.1 | 283 | 4.1 | 0.321 | 11.7 | LOS A | 5.8 | 42.3 | 0.44 | 0.69 | 0.44 | 47.9 |
| 4 R2 | 369 | 8.8 | 369 | 8.8 | 1.090 | 171.3 | LOS F | 21.3 | 171.6 | 1.00 | 1.36 | 2.20 | 9.0 |
| Approach | 653 | 6.8 | 653 | 6.8 | 1.090 | 102.0 | LOS F | 21.3 | 171.6 | 0.76 | 1.07 | 1.44 | 16.3 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 L2 | 860 | 2.1 | 860 | 2.1 | 0.439 | 15.3 | LOS B | 25.4 | 184.5 | 0.59 | 0.78 | 0.65 | 33.4 |
| 2 T 1 | 1485 | 4.7 | 1485 | 4.7 | 0.623 | 23.0 | LOS B | 35.0 | 259.3 | 0.70 | 0.63 | 0.71 | 34.8 |
| Approach | 2345 | 3.8 | 2345 | 3.8 | 0.623 | 20.2 | LOS B | 35.0 | 259.3 | 0.66 | 0.68 | 0.69 | 34.2 |
| All Vehicles | 4983 | 4.8 | 4983 | 4.8 | 1.213 | 54.3 | LOS D | 78.6 | 592.3 | 0.68 | 0.79 | 0.96 | 21.1 |

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

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | Queue Distance m | Prop. Queued | Effective Stop Rate |
| P3 | South Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P2 | East Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

Site: TCS 3117 [107 - Mamre Road / M4 Western Motorway Off-ramp/On-ramp (North) - PM Peak 2030 With Development]

审审 Network: [106 \& 107 - PM Peak 2030 With Development]

1630-1730
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov Turn ID | Demand <br> Total veh/h | Ows | Arrival F <br> Total veh/h | ows <br> HV <br> \% | Deg. Satn v/c | Average Delay sec | Level of Service |  | of of istance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Averag <br> Speed km/h |
| South: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 L2 | 146 | 7.9 | 146 | 7.9 | 0.105 | 9.1 | LOS A | 2.1 | 17.7 | 0.32 | 0.59 | 0.32 | 36.6 |
| 8 T1 | 1651 | 6.1 | 1647 | 6.1 | 0.741 | 33.5 | LOS C | 40.2 | 304.9 | 0.90 | 0.81 | 0.90 | 28.2 |
| Approach | 1797 | 6.3 | $1793{ }^{\text {N1 }}$ | 6.3 | 0.741 | 31.5 | LOS C | 40.2 | 304.9 | 0.85 | 0.79 | 0.85 | 28.9 |
| North: Mamre Road |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 T1 | 1751 | 3.4 | 1751 | 3.4 | 0.934 | 25.9 | LOS B | 77.6 | 569.7 | 0.83 | 0.85 | 0.92 | 24.1 |
| R2 | 279 | 9.4 | 279 | 9.4 | 0.749 | 55.7 | LOS D | 16.0 | 134.2 | 0.99 | 0.88 | 1.06 | 23.1 |
| Approach | 2029 | 4.2 | 2029 | 4.2 | 0.934 | 30.0 | LOS C | 77.6 | 569.7 | 0.85 | 0.85 | 0.94 | 23.8 |
| West: M4 Western Motorway Off-ramp/On-ramp |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 L 2 | 415 | 5.3 | 415 | 5.3 | 0.469 | 16.2 | LOS B | 12.0 | 89.8 | 0.59 | 0.75 | 0.59 | 43.9 |
| 10 R2 | 595 | 5.0 | 595 | 5.0 | 0.945 | 83.3 | LOS F | 25.0 | 185.8 | 1.00 | 1.07 | 1.47 | 16.2 |
| Approach | 1009 |  | 1009 | 5.1 | 0.945 | 55.7 | LOS D | 25.0 | 185.8 | 0.83 | 0.94 | 1.11 | 24.0 |
| All Vehicles | 4836 |  | $4832{ }^{\mathrm{N} 1}$ | 5.2 | 0.945 | 35.9 | LOS C | 77.6 | 569.7 | 0.85 | 0.85 | 0.94 | 25.7 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mov ID | Description | Demand Flow ped/h | Average Delay sec $\qquad$ | Level of Service | Average Bac Pedestrian ped | of Queue Distance $\qquad$ | Prop. Queued | Effective Stop Rate |
| P1 | North Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| P4 | West Full Crossing | 1 | 54.2 | LOS E | 0.0 | 0.0 | 0.95 | 0.95 |
| All Pedestrians |  | 2 | 54.2 | LOS E |  |  | 0.95 | 0.95 |

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

## MOVEMENT SUMMARY

$\nabla$ Site: [109-Glossop Street / Harris Street - PM Peak 2030 With Dev Option 4]
1630-1730
Site Category: (None)
Giveway / Yield (Two-Way)

| Movement Performance - Vehicles |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{\|l\|l\|} \hline \text { Mov Turn } \\ \text { ID } \end{array}$ | Deman <br> Total veh/h | $\begin{aligned} & \text { lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. <br> Satn V/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| L2 | 35 | 0.0 | 0.498 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 0.00 | 57.4 |
| 2 T1 | 1764 | 6.3 | 0.498 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 59.6 |
| Approach | 1799 | 6.2 | 0.498 | 0.2 | NA | 0.0 | 0.0 | 0.00 | 0.01 | 0.00 | 59.5 |
| North: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |
| 8 T1 | 2069 | 4.3 | 0.553 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| Approach | 2069 | 4.3 | 0.553 | 0.0 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| West: Harris Street |  |  |  |  |  |  |  |  |  |  |  |
| 10 L2 | 75 | 1.3 | 0.188 | 12.7 | LOS A | 0.6 | 4.4 | 0.74 | 0.88 | 0.76 | 39.9 |
| Approach | 75 | 1.3 | 0.188 | 12.7 | LOS A | 0.6 | 4.4 | 0.74 | 0.88 | 0.76 | 39.9 |
| All Vehicles | 3943 | 5.1 | 0.553 | 0.3 | NA | 0.6 | 4.4 | 0.01 | 0.02 | 0.01 | 58.8 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## MOVEMENT SUMMARY

$\nabla$ Site: [110 - Forrester Road / Harris Street - PM Peak 2030 With Dev Option 4]
1630-1730
Site Category: (None)
Giveway / Yield (Two-Way)


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

## MOVEMENT SUMMARY

日 Site: TCS 3129 [111 - Forrester Road / Glossop Street / Access Road - PM Peak 2030 With
Dev Option 4_Upgrades]
1630-1730
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 103 seconds (Site User-Given Phase Times)

## Movement Performance - Vehicles

| Mov ID |  | Deman <br> Total veh/h | $\begin{aligned} & \text { =lows } \\ & \text { HV } \\ & \% \end{aligned}$ | Deg. Satn v/c | Average Delay sec | Level of Service | 95\% Back Vehicles veh | of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| South: Forrester Road sec |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 | L2 | 1 | 0.0 | 0.247 | 60.6 | LOS E | 7.3 | 51.4 | 0.82 | 0.68 | 1.42 | 20.6 |
| 2 | T1 | 137 | 0.0 | 0.247 | 46.7 | LOS D | 7.3 | 51.4 | 0.82 | 0.68 | 1.42 | 32.4 |
| 3 | R2 | 159 | 12.6 | 0.549 | 44.3 | LOS D | 7.4 | 67.2 | 0.96 | 0.80 | 0.96 | 32.1 |
| Appr |  | 297 | 6.7 | 0.549 | 45.5 | LOS D | 7.4 | 67.2 | 0.89 | 0.75 | 1.17 | 32.2 |
| East: Glossop Street |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | L2 | 69 | 50.7 | 0.899 | 53.0 | LOS D | 42.4 | 344.2 | 0.99 | 1.02 | 1.56 | 30.3 |
| 5 | T1 | 2 | 0.0 | 0.899 | 65.5 | LOS E | 42.4 | 344.2 | 0.99 | 1.02 | 1.56 | 20.8 |
| 6 | R2 | 1470 | 4.9 | 0.899 | 48.4 | LOS D | 43.9 | 326.6 | 0.99 | 1.00 | 1.35 | 33.1 |
| Appr |  | 1541 | 6.9 | 0.899 | 48.6 | LOS D | 43.9 | 344.2 | 0.99 | 1.01 | 1.36 | 32.9 |
| North: Forrester Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | L2 | 1185 | 4.7 | 0.724 | 10.0 | LOS A | 20.3 | 149.6 | 0.49 | 0.77 | 0.59 | 50.8 |
| 8 | T1 | 111 | 0.0 | 0.328 | 44.4 | LOS D | 5.1 | 35.6 | 0.94 | 0.75 | 0.94 | 32.9 |
| Appr |  | 1296 | 4.3 | 0.724 | 13.0 | LOS A | 20.3 | 149.6 | 0.52 | 0.77 | 0.62 | 48.5 |
| West: Access Road |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | L2 | 2 | 0.0 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 18.2 |
| 11 | T1 | 4 | 50.0 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 17.3 |
| 12 | R2 | 1 | 0.0 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 17.4 |
| Appr |  | 7 | 28.6 | 0.051 | 49.1 | LOS D | 0.3 | 2.9 | 0.95 | 0.63 | 0.95 | 17.6 |
| All V | icles | 3141 | 5.9 | 0.899 | 33.6 | LOS C | 43.9 | 344.2 | 0.79 | 0.88 | 1.04 | 37.8 |

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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Mov } \\ & \text { ID } \end{aligned}$ | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back Pedestrian ped | of Queue Distance m | Prop. Queued | Effective Stop Rate |
| P1 | South Full Crossing | 1 | 45.7 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 |
| P2 | East Full Crossing | 13 | 45.7 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 |
| P4 | West Full Crossing | 13 | 45.7 | LOS E | 0.0 | 0.0 | 0.94 | 0.94 |
| All Pedestrians |  | 27 | 45.7 | LOS E |  |  | 0.94 | 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.

Appendix D

Draft Construction Traffic Management Plan

## St Marys Freight Hub Draft Construction Traffic Management Plan



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## Document Control Sheet

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## CONTENTS

## Page

1. Introduction .....  1
1.1 BACKGROUND ..... 1
1.2 Scope of This Plan ..... 1
2. Construction Details .....  2
$2.1 \quad$ Work Stages ..... 2
2.1.1 General ..... 2
2.1.2 Stage 1: Construction of Access Roads and Parking, Container Storage and Staff Facilities ..... 2
2.1.3Stage 2: Construction of Empty Container Area, Rail Siding 3 and Additional Clear Standing Rooms3
2.2 Construction Period and Hours of Operation ..... 3
2.3 Truck Volumes, Access Points and Haulage Routes ..... 3
2.3.1 Truck Volumes ..... 3
2.3.2 Access Points ..... 3
2.3.3 Haulage Routes ..... 4
2.4 Plant and Equipment ..... 5
2.5 Construction Personnel ..... 5
2.6 Out of Working Hours Contacts ..... 5
3. Impacts on Existing Conditions and Management Measures ..... 6
3.1 Pedestrians ..... 6
3.1.1 General ..... 6
3.1.2 Access Driveway Crossing Points ..... 6
3.2 CYCLISTS ..... 6
3.3 Trains and Buses ..... 6
3.4 Bus Zone, Taxi Zone, 5-minute and PWD Parking ..... 7
Car Parking ..... 7
Emergency Response ..... 7

Holding Areas

Holding Areas .....  ..... 8 .....  ..... 8
Surrounding Haul Roads - Dilapidation Survey
Surrounding Haul Roads - Dilapidation Survey ..... 8 ..... 8
3.7
3.7
9
4. CTMP ImpLementation Responsibilities
9
4.1 Implementation
9
4.2 Managers
$4.3 \quad$ Truck Drivers ..... 9
4.4 Traffic Controllers ..... 9
4.5 Worker Parking Restrictions ..... 9
5. Traffic Control Plans ..... 9

Figures

Figure 2.1: $\quad$ Staging of Works
Figure 2.2: Truck Ingress and Egress Locations
Figure 2.3: Restricted Access Vehicle Routes
Figure 3.1: Local Cycleways
Figure 3.2: Existing Bus Zone, Taxi Zone, 5-minute and PWD Parking

## 1. INTRODUCTION

### 1.1 BACKGROUND

Bitzios Consulting has been engaged by Pacific National to prepare a draft Construction Traffic Management Plan (CTMP) for the St Marys Freight Hub project. This CTMP has been prepared in response to the revised Environmental Assessment Requirements (SEARs) for this development dated 23 ${ }^{\text {rd }}$ October 2018. The relevant part of the SEARs item is:
'Details of.......including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact (which must include vehicle routes, number of trucks, hours of operation, access arrangements and traffic control measures for all demolition/construction activities).'

This is not a comprehensive CTMP as many of the construction techniques, the location of source materials and construction worker schedules are as yet unknown. However, it is intended that this draft CTMP will provide a 'template' for contractors on this project to prepare their own CTMPs as the basis for their traffic management works for the project.

### 1.2 Scope of This Plan

The scope of this CTMP is to provide a 'high-level' overview of the St Marys Freight Hub project. As best as can be determined at this stage of the project's evolution, it provides:

- number of trucks;
- vehicle routes,
- hours of operation,
- access arrangements; and
- indicative traffic control measures.

It also describes management measures for impacts on pedestrians, cyclists, bus stops, parking and emergency response vehicles.
A more detailed site-specific CTMP is to be completed for each work area by the contractor performing the work in the subject area.

## 2. CONSTRUCTION DETAILS

### 2.1 Work Stages

### 2.1.1 General

The construction of the project is likely to be undertaken in stage. Figure 2.1 outlines the currently-anticipated stages of construction works, with a list activities in each stage provided below.


Source: BG\&E
Figure 2.1: $\quad$ Staging of Works
Each stage of the project is to be broken up into smaller construction stages. The exact work zones will be defined when the smaller construction stages are identified.

### 2.1.2 Stage 1: Construction of Access Roads and Parking, Container Storage and Staff Facilities

Stage 1 is expected to involve the construction of:

- access roads from Forrester Road and Lee Holm Road;
- car and truck parking areas;
- a container area for 372 ground slots;
- reefer pads for 20 ground slots;
- a container repair and wash area;
- staff offices;
- a fuel storage area;
- a transport shed;
- crossovers between rail sidings 1 and 2 and clear standing rooms adjacent to the sidings; and
- a sedimentation basin.


### 2.1.3 Stage 2: Construction of Empty Container Area, Rail Siding 3 and Additional Clear Standing Rooms

This stage is expected to involve the construction of an empty container area for 209 ground slots, rail siding 3 , additional rail crossovers and turnouts and clear standing rooms adjacent to the sidings.

### 2.2 Construction Period and Hours of Operation

The current timeline for the project anticipates construction commencing mid-late 2019 with the site open for operations in 2020.

At this stage the hours of operation have not been confirmed. Given the location of the site and its isolation from residential areas, it is conceivable that $24 / 7$ construction is possible, depending on the construction completion schedule. For this assessment, a more conservative approach has been adopted where the number of truck movement are divided of a conventional 12 -hours per day construction period.

### 2.3 Truck Volumes, Access Points and Haulage Routes

### 2.3.1 Truck Volumes

The majority of the construction-period trucks will be associated with the construction of large engineered pavement concrete pads for the container storage areas, as well as the approach driveways and manoeuvring areas. This will involve the delivery of the following materials to the site:

- quarry materials / road base;
- bituminous product;
- stormwater products;
- building materials; and
- stabilisation agents.

Very little spoil will be removed from the site. All excess materials will be stockpiled on the other side of the railway line as these may be used for future stages of the development.
There will be between 4,100 and 4,500 truck movements during the entire construction period. The maximum number of truck movements per day at peak construction activity is expected to be between 100 and 140 . With a (minimum) 12 -hour construction work day, the number of peak period construction trucks is likely to be in the order of 8-12 deliveries per peak hour, or a total of 20 two-way truck movements per peak hour (this occurs for a period of between five to six months only). This would be expected to comprise primarily of 'dog and trailer' trucks.

At this stage, very little spoil will be removed from the site. All excess materials will be stockpiled on the other side of the railway line as these may be used for future stages.

### 2.3.2 Access Points

Access for construction traffic is proposed via entries off Forrester Road and exits via Lee Holm Road, as shown in Figure 2.2. Both roads are industrial standard roads and have well in excess of the capacity to accommodate the likely maximum 10 movements $\operatorname{IN}$ and 10 movements OUT per hour during peak construction activity.


Sources: BG\&E and Google Street View
Figure 2.2: $\quad$ Truck Ingress and Egress Locations
Furthermore, the entry driveway is over 300 m long and will be able to accommodate over a dozen trucks queueing at a time which is well in excess of expected number of trucks waiting to enter the primary construction area.

A swept path analysis is yet to be undertaken for the largest construction vehicle as this is not known at this point. Swept paths have been run for B-doubles as part of the operational period traffic impact assessment and have been proven to be accommodated for access to and from the site. It is unlikely that an over-sized vehicle would need to access the site but if it should be required a specific TCP for these vehicles would need to be established as part of the permit application process.

### 2.3.3 Haulage Routes

The contractor will need to identify the proposed haulage routes to and from the site which must be approved by the relevant authorities (i.e. Penrith City Council (PCC) and Roads and Maritime Services (Roads and Maritime)). Construction and delivery vehicles should use main and arterial roads where possible, and preferably the declared B-double routes which surround the site. The approved Restricted Access Vehicles (RAV) routes which are the preferred access routes are shown in Figure 2.3.


Source: https://www.rms.nsw.gov.au/business-industry/heavy-vehicles/maps/restricted-access-vehicles-map/map/index.htm/
Figure 2.3: Restricted Access Vehicle Routes

### 2.4 Plant and Equipment

Exact plant and equipment usage and requirements are to be determined at a later date by the contractor.

### 2.5 Construction Personnel

The site is likely to accommodate 30-40 workers on average per day.

### 2.6 Out of Working Hours Contacts

The out of working hours contacts are to be determined.
The Project Manager will be determined at a later date.

## 3. Impacts on Existing Conditions and Management Measures

### 3.1 Pedestrians

### 3.1.1 General

Pedestrian access must be maintained during the works. Existing disability access, where provided, must be ensured, following the requirements set out in the Disability Discrimination Act 1992, and Disability Standards for Accessible Public Transport. Alternative services are to be considered, such as offering connections or pick-up services between destinations or bus stops. Pedestrian Management Plans (PMPs) must be created for any redirection of pedestrian movements from existing paths.

### 3.1.2 Access Driveway Crossing Points

The Forrester Road access is in close proximity to the St Marys Railway Station and a footpath runs across the access crossover. It is highly unlikely that many pedestrians would use this side of Forrester Road as there is a footpath on the eastern side of the road which provides a more direct connection to/from employment areas to the north. 'Footpath Closed' signage should be used in this location for the duration of construction with pedestrian diversions in place near the station stair-landing and to the north of Harris Street. The footpath on the western side of Forrester Street would need to be blocked by water-filled barriers or similar either side of the driveway where the alternative crossing points are provided in the TCP.

No footpaths exist across the Lee Holm Road access and no specific measures are warranted.

### 3.2 CYCLISTS

The surrounding cycling network is shown in Figure 3.1. There are no routes immediately surrounding the site that would be impacted by construction activities and cycling usage of Forrester Road and Lee Holm Road are minimal based on-site observations. No specific requirements are warranted.


Source: https://www.rms.nsw.gov.au/maps/cycleway_finder
Figure 3.1: Local Cycleways

### 3.3 Trains and Buses

St Marys Railway Station is located approximately 500 metres east of the site at the southern end of Forrester Road. It is serviced by the T1 Western Line between Emu Plains and the City via Blacktown, Parramatta and Strathfield. Services run every 15 minutes throughout the day, with higher frequencies during peak periods.

The bus stop at the southern end of Forrester Road (2760178) is serviced by four services between 6:20am and 8:02am Monday to Friday and may experience some disruption from works.

Buses and trains provide an alternative access opportunity for some construction workers although there is expected to be ample space on-site to accommodate construction worker parking.

### 3.4 Bus Zone, Taxi Zone, 5-minute and PWD Parking

Three Taxi Zone parking spaces, $10 \times 5$-minute parking spaces and two Person With a Disability (PWD) parking spaces are located in the cul-de-sac at the southern end of Forrester Road outside St Marys Railway Station. Unrestricted access to the cul-de-sac should be maintained during construction. The existing Bus Zone, Taxi Zone, 5-minute and PWD parking spaces are shown in Figure 3.2.


Adapted from Nearmap
Figure 3.2: Existing Bus Zone, Taxi Zone, 5-minute and PWD Parking

### 3.5 CAR Parking

Impacts to car parking along Forrester Road and Harris Street should be minimised throughout construction. The St Marys Commuter Car Park (Harris Street) and private car park accesses are not to be used by construction personnel during construction. Parking for construction workers will be provided for within the site given the sufficient available area and this should be clearly communicated to all contractors.

### 3.6 Emergency Response

It is imperative that access to emergency vehicles be maintained during construction. Fire, ambulance and police services must be able to get to all project areas if necessary.

The nearest public hospitals are as follows:

- Nepean Hospital - Derby Street, Kingswood NSW 2747, approximately 9.9 km from the site; and
- Blacktown Hospital - 18 Blacktown Road, Blacktown NSW 2148, approximately 18.3 km from the site.

The nearest ambulance station is located at 124 Ellsworth Drive, Tregear NSW 2770, approximately 3.8 km from the site.

The nearest police station is St Marys Police Station, located at 38-42 King Street, St Marys NSW 2760, approximately 2.9 km from the site.

The nearest fire station is St Marys Fire Station, located at 1 Marsden Road, St Marys NSW 2760, approximately 3.3 km from the site.

### 3.7 Holding Areas

There is sufficient holding area on site. There is to be no queuing or vehicle holding outside of the site. Deliveries and arrival of heavy vehicles is to be timed to ensure that queueing does not occur. Construction vehicles are not to park or block on-street parking.

### 3.8 Surrounding Haul Roads - Dilapidation Survey

A dilapidation survey is required for roads affected by the project. The survey must cover:

- all roads where construction occurs; and
- local roads surrounding the project area that will be utilised by construction vehicles for deliveries.

The frequency of the dilapidation survey will need to be agreed with PCC and Roads and Maritime.

## 4. CTMP ImPLEMENTATION RESPONSIBILITIES

### 4.1 IMPLEMENTATION

Traffic management for the project site will need to be in accordance with Roads and Maritime's Traffic Control at Work Sites Manual and modified to site-specific conditions.

### 4.2 Managers

The responsibilities of managers are to:

- ensure that the site-specific CTMP is being correctly and safely implemented;
- correctly accredited personnel are implementing TCPs, Vehicle Management Plans and PMPs;
- ensure that the project is following the project and Council-specific guidelines; and
- notify and collaborate with stakeholders, Council and transport agencies affected by the project.

Additional and more detailed responsibilities must be defined in the site-specific CTMP.

### 4.3 TRUCK DRIVERS

Truck drivers are to:

- always obey road rules;
- follow the haulage routes defined in this CTMP and/or the site-specific CTMP;
- notify site contact/escort of arrival;
- follow instructions from traffic controllers to access the site or perform manoeuvres specified in a TCP;
- follow instructions from site contact/escort, including directions to nominated laydown or holding areas;
- after arriving at the nominated laydown area, exit the vehicle and remain in a pre-defined safe area while unloading of freight is being undertaken;
- once unloading of the freight has been completed, return to the vehicle and exit the site, following instructions from site contact/escort and traffic controllers. The driver is to then follow the designated haulage routes; and
- have read, understand and follow this CTMP, site-specific CTMPs and any other relevant project documentation regarding road safety and traffic management.


### 4.4 Traffic Controllers

Traffic controllers are required to be certified with a Roads and Maritime Traffic Controller (Blue Card). They must ensure that the TCPs are implemented safely and correctly. The responsibilities of traffic controllers are to be clearly shown on the specific TCPs.

### 4.5 Worker Parking Restrictions

Workers are not to park on residential streets around the work area. Workers should use public transport where possible or use onsite parking facilities.

## 5. Traffic Control Plans

Any changes to traffic through or around a work site or temporary hazard will require a Traffic Control Plan (TCP) that has been designed and approved by Roads and Maritime-accredited personnel with the appropriate and current qualification as outlined in Roads and Maritime QA specification G10 Traffic Management Clause 1.5.3.

A Road Safety Audit (RSA) should be undertaken of the existing road conditions and the TCPs prior to their implementation.



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