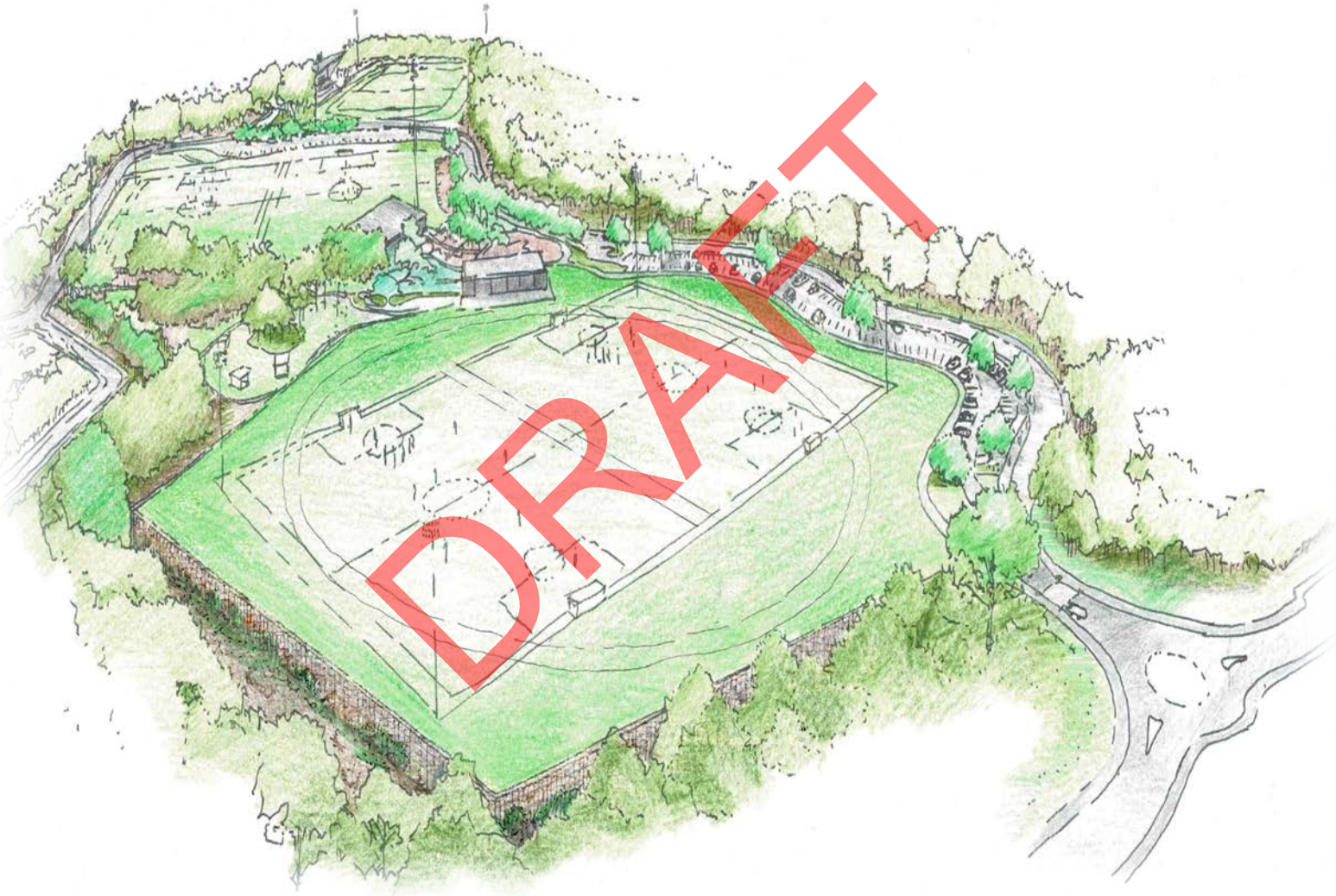
Westleigh Park Traffic Impact and Access Study

Traffic Report

Hornsby Shire Council

8 March 2023



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Document Issue History

Report File Name	Prepared	Reviewed	Issued	Date	Issued to
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P5524.003R Westleigh Park Traffic Impact and Access Study	S. Daizli / T. Islam	A. Ahmed	A. Ahmed	21/02/2023	Mario Pace, Hornsby Shire Council Mpace@hornsby.nsw.gov.au
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EXECUTIVE SUMMARY

Background

Hornsby Shire Council (Council) has prepared a draft masterplan for a new regional park at the location of the former Sydney Water site at 62 Quarter Sessions Road, Westleigh. Westleigh Park (the Park) is proposed to offer a range of active and passive recreation opportunities. A preliminary traffic and transport assessment undertaken in 2019 based on 2019 data identified a need for road network upgrades to cater for the additional traffic generated by the masterplan proposal. Since then, NorthConnex which was open to traffic in October 2020, has changed the traffic conditions within the study area. Council has identified the need to update the traffic assessment to incorporate the influences of the NorthConnex on traffic volumes and patterns within the study area.

Council has engaged Bitzios Consulting to develop a microsimulation model in VISSIM and use the model to inform road and intersection upgrade requirements, assess the impact of the proposed Sefton Road extension and active and public transport facilities and potential improvements.

Westleigh Park Proposal

Council has sought to '*develop a sustainable plan for community use of the site known as Westleigh Park'*. The Park is intended to provide a key facility for the district and include provision for formal sports, passive recreation (picnics, walking, playground), mountain biking and ancillary facilities (roads, carparks, building, shared paths and water-sensitive urban design). The plan includes a total of three sports fields with associated amenities and car parking, as well as the formalisation of mountain biking and walking trails. The Master Plan is shown in Figure ES.1.

Source: General Arrangement Plan, Taylor Thomson Whitting June 2021

Figure ES.1: Westleigh Park Masterplan

Access Options

The Park will be developed over a number of years. While Council is considering various factors to inform the finalisation of the Park development staging, for the purpose of this study it has been assumed that the Park will be developed in two stages:

- **Stage 1:** The sports field on the southern side of the Park will be completed first (by 2027)
- **Stage 2:** The remaining sports fields will be completed (by 2032).

In consultation with Council, the following three Park traffic access options have been developed for the purposes of this assessment:

- **Option 1:** Includes 2027 / 2032 background traffic growth plus Park traffic. The proposed Sefton Road extension is not included in this option. This option includes a proposed upgrade at the Duffy Road / The Esplanade / Chilvers Road intersection. Under this option, all access would be provided via Quarter Sessions Road
- **Option 2:** As per Option 1 but with the proposed Sefton Road extension open to all traffic. Sefton Road is extended through the Sydney Water reservoir site and into the Park and along the southern boundary of the Park to Quarter Sessions Road, with the extension open to general traffic, as shown in Figure ES.2. Under this option, access would be via Quarter Sessions Road and Sefton Road
- **Option 3:** Same as Option 2 but with the proposed Sefton Road extension only accessible for Park traffic.

Source: General Arrangement Plan, Taylor Thomson Whitting June 2021

Figure ES.2: Sefton Road Extension Proposal

Option 1 which does not include the proposed Sefton Road extension will service the 2027 PM and Weekend peak traffic demands. However, in 2032 when the Park is expected to be fully developed, Park traffic will contribute to additional delays especially in the Weekend peak when the Duffy Avenue / Chilvers Road / The Esplanade intersection is predicted to operate very close or at capacity with long queues on the Chilvers Road approach, spilling back onto the Sefton Road east approach to the Chilvers Road intersection as shown in Figure ES.3. Therefore, while the proposed upgrade at the Duffy Avenue / Chilvers Road / The Esplanade will provide acceptable traffic performance until 2027, further upgrades are required between 2027 and 2032.

Figure ES.3: Queues from the Model, 2032 Weekend Peak With Full Development (Option 1)

Option 2 which includes the Sefton Road extension, will substantially improve 2032 PM and Weekend Peak traffic conditions compared to Option 1. In 2032 the projected AADT on the Sefton Road extension is slightly over 1,500 veh/day which is still within the residential road environmental capacity of 2,000 veh/day (*Section 7.3 TfNSW's Guide to Traffic Generating Developments)*.

Option 3 which only allows Park traffic onto the proposed Sefton Road extension, will marginally impact the Duffy Avenue / Chilvers Road / The Esplanade intersection traffic performance however this intersection still provides acceptable traffic performance.

Active and Public Transport

This study has identified improvements further to those already planned as part of the development including extensions of off-road shared paths, additional pedestrian crossings and improved connectivity to the nearby train stations. Bus service re-routing ideas have also been proposed for further consideration with stakeholders.

Conclusions

This assessment suggests that the proposed Sefton Road extension is required to be in place between completion of Stage 1 and completion of Stage 2 of the Park. If the extension is open to through traffic under Option 2, it provides network benefits particularly to the Duffy Avenue / Chilvers Road / The Esplanade intersection and would carry daily traffic volumes within the typical residential road environmental capacity. If it is closed in the middle allowing access for Park traffic only under Option 3, it impacts the local network and the Duffy Avenue / Chilvers Road / The Esplanade intersection only marginally. As Options 2 and 3 have similar benefits, either option is preferred. If Option 3 is preferred, emergency access for Westleigh residents and major event access when required should be considered.

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1. INTRODUCTION

1.1 Background

Hornsby Shire Council (Council) has prepared a draft masterplan for a new regional park at the location of the former Sydney Water site at 62 Quarter Sessions Road, Westleigh. Westleigh Park (the Park) is proposed to offer a range of active and passive recreation opportunities including community-based sport, school and club athletics, cycling and mountain biking, informal exercise and walking, children's playground bushwalking and passive recreation activities. It is stated to cater for the diverse needs of the community.

A preliminary traffic and transport assessment undertaken in 2019 based on 2019 data identified a need for road network upgrades to cater for the additional traffic generated by the masterplan proposal. Since then, NorthConnex which was open to traffic in October 2020, has changed the traffic conditions within the study area. Council has identified the need to update the traffic assessment to incorporate the influences of the NorthConnex on traffic volumes and patterns within the study area.

Council has engaged Bitzios Consulting to develop a traffic microsimulation model in VISSIM and:

- Use the model to assess traffic impacts and to inform road and intersection upgrade requirements
- Assess the proposed Sefton Road extension on traffic volumes and upgrade needs
- Assess active transport and public transport facilities and potential improvements.

1.2 Study Area

The study area is shown in Figure 1.1.

The study area is bound by:

- Corang Road and Sefton Road to the north
- Quarter Sessions Road to the west
- Goodlands Avenue to the south
- Pennant Hills Road and The Esplanade to the east.

Figure 1.1: Study Area

1.3 Study Objective and Process

The objective of the study is to evaluate the impact of the proposed Park on the traffic performance of key roads and intersections adjacent to the Park and to recommend traffic infrastructure upgrades as well as active transport and public transport facility improvements.

1.4 Study Process

The study was undertaken in three (3) stages with the purpose of each stage being:

- **Stage 1 - Existing Traffic and Transport Assessment**: Involving the collection of travel pattern, traffic volume, travel time, public transport and active transport data and assessment of the existing traffic and transport issues. In Stage 1 a VISSIM traffic microsimulation model was also created, calibrated and validated to simulate the existing traffic conditions.
- **Stage 2 - Future Traffic Assessment:** Use the base VISSIM model to assess the future traffic performance 'With' and 'Without' the proposed Park development to identify pinch points and devise and test improvement measures. This stage also included the assessment of the proposed Sefton Road extension and identification of future active and public transport infrastructure to improve accessibility by these modes of transport to and from the Park.
- **Stage 3 - Reporting:** Summarise the study process and outcomes to document the assessment and provide information to assist Council in its preparation of stakeholder engagement materials.

Project team meetings and workshops were held during each stage of the study.

1.5 Report Outline

The remainder of this report is structured as follows:

- **Section 2 – Westleigh Park Proposal:** Outlines Council's proposal for the Westleigh Park Master Plan
- **Section 3 – Existing Traffic and Transport Conditions:** Details the current performance of the traffic network in terms of general traffic, pedestrians, cyclists and public transport
- **Section 4 – Future Year Do Minimum Assessment:** Details the assessment of the traffic network in 2027 and 2032 without Park traffic
- **Section 5 – Westleigh Park Traffic Impact Assessment:** Details the assessment of the traffic network in 2027 and 2032 with the Park and testing alternative park traffic access arrangements
- **Section 6 – Intersection Capacity Verification:** Summarises the development of 2022 and 2032 SIDRA Models and SIDRA results
- **Section 7 – Suitability of Sefton Road to Provide Additional Traffic:** Advises on the geometric suitability of Sefton Road to accommodate additional traffic
- **Section 8 – Public and Active Transport:** Details the assessment of options for access to the park via active transport and public transport and improvements that may be required
- **Section 9 – Westleigh Park Access Management Strategy:** Summarises the impacts of allowing all traffic vs. Park only traffic to use the Sefton Park extension in relation to emergency access for Westleigh residents and major event access
- **Section 10 – Summary and Conclusions:** Summarises the key findings of this study.

2. WESTLEIGH PARK PROPOSAL

2.1 Westleigh Park Master Plan

Council has sought to '*develop a sustainable plan for community use of the site known as Westleigh Park'*. The Park is intended to provide a key facility for the district and include provision for formal sports, passive recreation (picnics, walking, playground), mountain biking and ancillary facilities (roads, carparks, building, shared paths and water-sensitive urban design).

The plan includes a total of three sports fields with associated amenities and car parking, as well as the formalisation of mountain biking and walking trails. The Master Plan is shown in Figure 2.1.

Source: General Arrangement Plan, Taylor Thomson Whitting June 2021

Figure 2.1: Westleigh Park Masterplan

2.2 Development Stages

The Park is proposed to be developed over a number of years. While Council is considering various factors to inform the finalisation of Park development staging, for the purpose of this study it has been assumed that the Park will be developed in two stages:

- **Stage 1:** The sports field on the southern side of the Park will be completed first
- **Stage 2:** The remaining sports fields will be completed.

It is also assumed that Stage 1 would be open by 2027 with Stage 2 completed by 2032.

2.3 Access Strategy

Two separate vehicle accesses to the Park are proposed:

- A northern access point onto Warrigal Drive with a roundabout at Quarter Sessions Road
- A southern access point along the southern boundary of the Park.

2.4 Active and Public Transport Strategy

Access through the site for pedestrians and cyclists is proposed via a 2.5-3.0m wide shared path around its perimeter. Additional pedestrian paths will connect parking areas to facilities and provide access through the central parkland areas between the southern and central fields. The shared path is intended to connect to a broader local network of cycle paths via both on-road and off-road links.

Bus stops are proposed to be constructed within the site, and future bus routes through the Park are intended to be designed in consultation with TfNSW.

3. EXISTING TRAFFIC AND TRANSPORT CONDITIONS

3.1 Overview

Traffic surveys were undertaken on Wednesday 16 March 2022 and Saturday 19 March 2022 to understand the existing traffic demands and congestion issues within the study area. The data was also used in the calibration and validation of the 2022 Base VISSIM microsimulation traffic models.

3.2 Key Roads and Intersections

3.2.1 Road Network and Hierarchy

The road network within the study area comprises a mix of local access streets, collector roads and arterial roads. Collector roads including Duffy Avenue and Quarter Sessions Road are used as connections between the residential areas west and north of the study area and roads to the east and south. Sefton Road and Chilvers Road within the study area are often used as a connection between Hornsby Town Centre and Pennant Hills Road and high volumes of through traffic are on these roads. The roads within the study area and their classification are summarised in Table 3.1. The road hierarchy and key intersections are detailed in Figure 3.1.

Table 3.1: Road Network Summary

Road Name	Jurisdiction	Hierarchy	Cross Section	Speed Limit
Pennant Hills Road	State	Arterial	6-lane divided	70 km/h
Duffy Avenue (East)	Council (Chilvers Rd to Pennant Hills Rd)	Regional	2-lane undivided	50 km/h
Duffy Avenue (West)	Council (Chilvers Rd to Quarter Sessions Rd)	Collector	2-lane undivided	50 km/h
Chilvers Road	Council	Regional	2-lane undivided	50 km/h
Sefton Road (East)	Council (Chilvers Rd to Milson Pde)	Regional	2-lane undivided	60 km/h
Sefton Road (West)	Council (Chilvers Rd to end)	Local	2-lane undivided	50 km/h
The Esplanade	Council	Regional	2-lane undivided	50 km/h
Quarter Sessions Road	Council	Collector	2-lane undivided	50 km/h
Corang Road	Council	Local	2-lane undivided	50 km/h
Gun Blossom Drive	Council	Local	2-lane undivided	50 km/h
Coral Heath Avenue	Council	Local	2-lane undivided	50 km/h
Bottle Brush Road	Council	Local	2-lane undivided	50 km/h
Nicholson Avenue	Council	Local	2-lane undivided	50 km/h
Dobson Street	Council	Local	2-lane undivided	50 km/h
Giblett Avenue	Council	Local	2-lane undivided	50 km/h
Roach Avenue	Council	Local	2-lane undivided	50 km/h
Kentwell Avenue	Council	Local	2-lane undivided	50 km/h
Barrett Avenue	Council	Local	2-lane undivided	50 km/h
Oakleigh Avenue	Council	Local	2-lane undivided	50 km/h
Goodlands Avenue	Council	Local	2-lane undivided	50 km/h
Sinclair Avenue	Council	Local	2-lane undivided	50 km/h
Kooringal Avenue	Council	Local	2-lane undivided	50 km/h

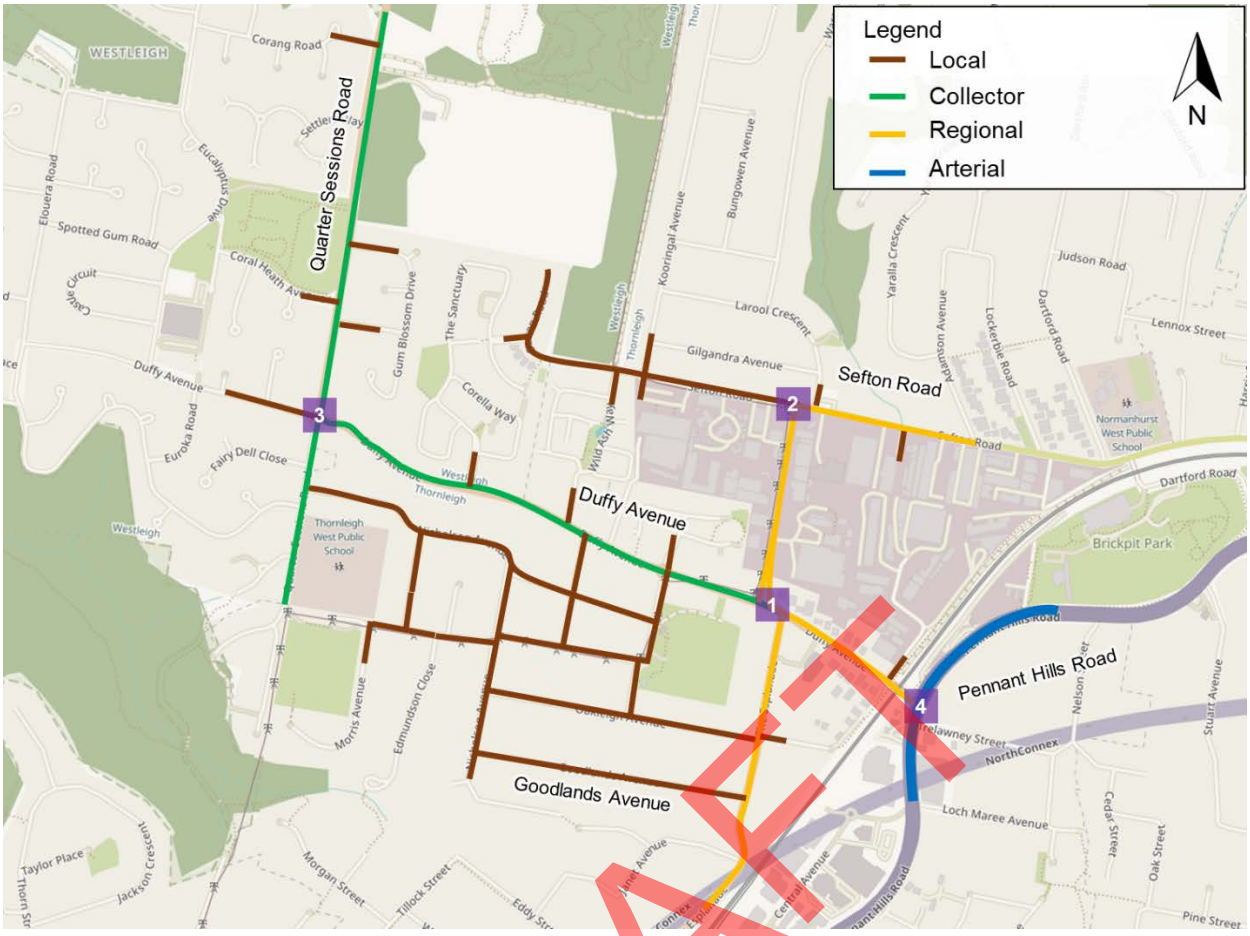


Figure 3.1: Road Hierarchy and Key Intersections

3.2.2 Key Intersections

Four intersections were identified within the study area as 'key intersections' that would be directly impacted by the proposed Park. They were:

- Duffy Avenue / Chilvers Road / The Esplanade
- Chilvers Road / Sefton Road
- Duffy Avenue / Quarter Sessions Road
- Pennant Hills Road / Duffy Avenue
- Sefton Road / Kooringal Avenue.

Table 3.2 provides a description of the layout of the key intersections.

Table 3.2: Key Intersection Descriptions

Intersection	Description	Intersection Layout
Duffy Avenue / Chilvers Road / The Esplanade	▪ The intersection is an at-grade four-way signalised intersection. ▪ The northern approach has two through lanes and a right turn pocket. ▪ The eastern and southern approaches have one through lane and right turn pockets. ▪ The western approach has one through lane, a right turn pocket and a left turn pocket. ▪ Queues were noted in the AM peak along The Esplanade northbound and westbound in Duffy Avenue.	
Chilvers Road / Sefton Road	▪ The intersection is a T-intersection where the southern and eastern legs have right of way, and the western approach must give way. ▪ The eastern approach has one through lane and a left turn pocket. ▪ The southern and western approaches have one approach lane only. ▪ The intersection is adjacent to the Larool Crescent intersection, where all turning movements are permitted.	
Duffy Avenue / Quarter Sessions Road	▪ The intersection is a four-way roundabout with a single lane on each approach	
Pennant Hills Road / Duffy Avenue	▪ The intersection is a T-intersection. ▪ Pennant Hills Road is median-separated and has three lanes in each direction, with a right turn pocket on the northern approach. ▪ The Duffy Avenue approach has two approach lanes; a right turn lane and a left turn lane.	

Intersection	Description	Intersection Layout
Sefton Road /Kooringal Avenue	▪ The intersection is a three-way roundabout with a single lane on each approach	

3.3 Speed Environment

Generally, the roads within the study area are subject to a speed limit of 50 km/h. Sefton Road east of Larool Crescent is 60km/h, Pennant Hills Road is 70 km/h, and there are 40km/h school zones along parts of Quarter Sessions Road, Duffy Avenue, Giblett Avenue and Dobson Street which are active between 8:00 am and 9:30 am and between 2:30 pm and 4:00 pm on school days. The speed limits within the study area are shown in Figure 3.2.

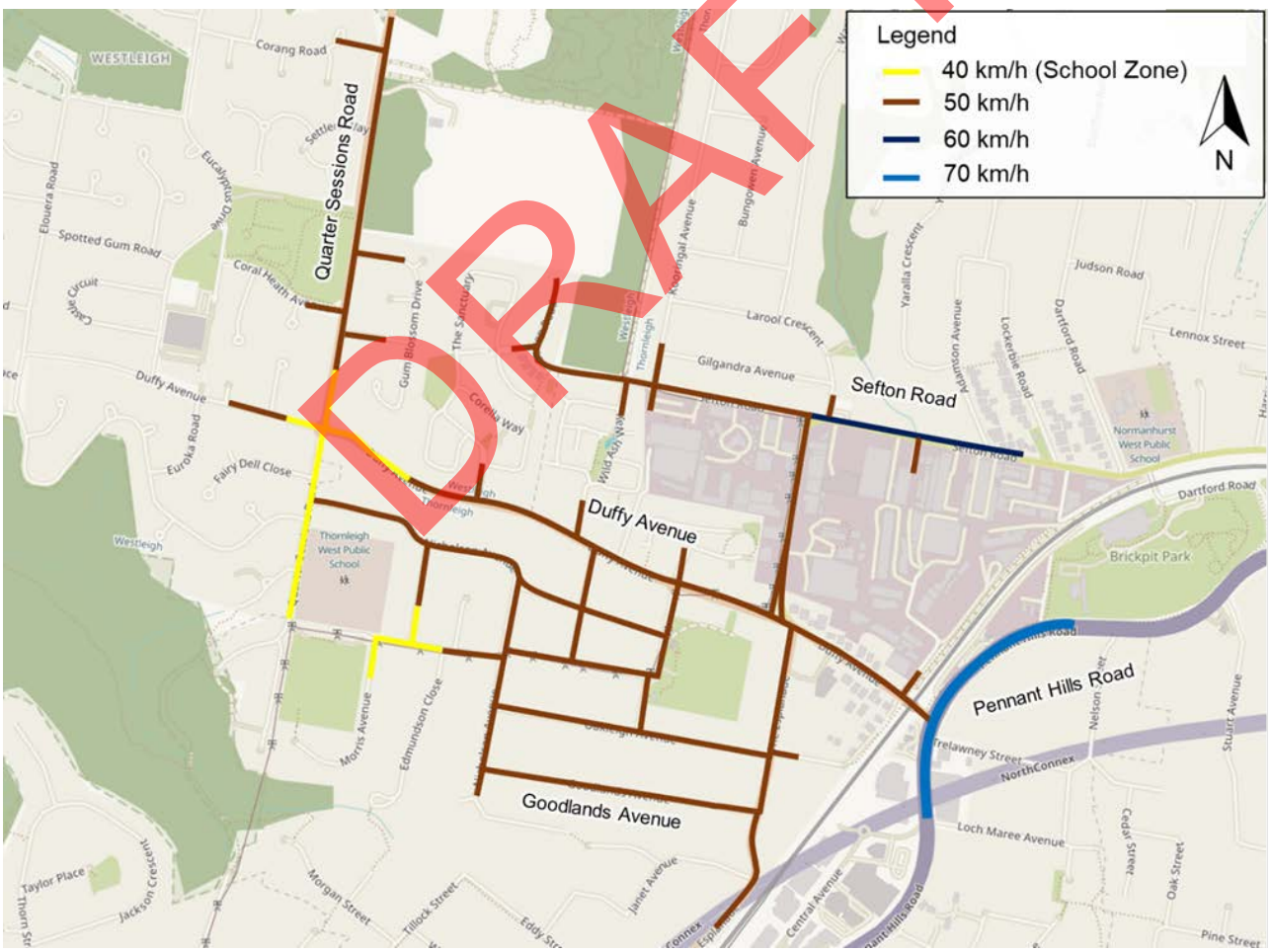


Figure 3.2: Speed Limits Within the Study Area

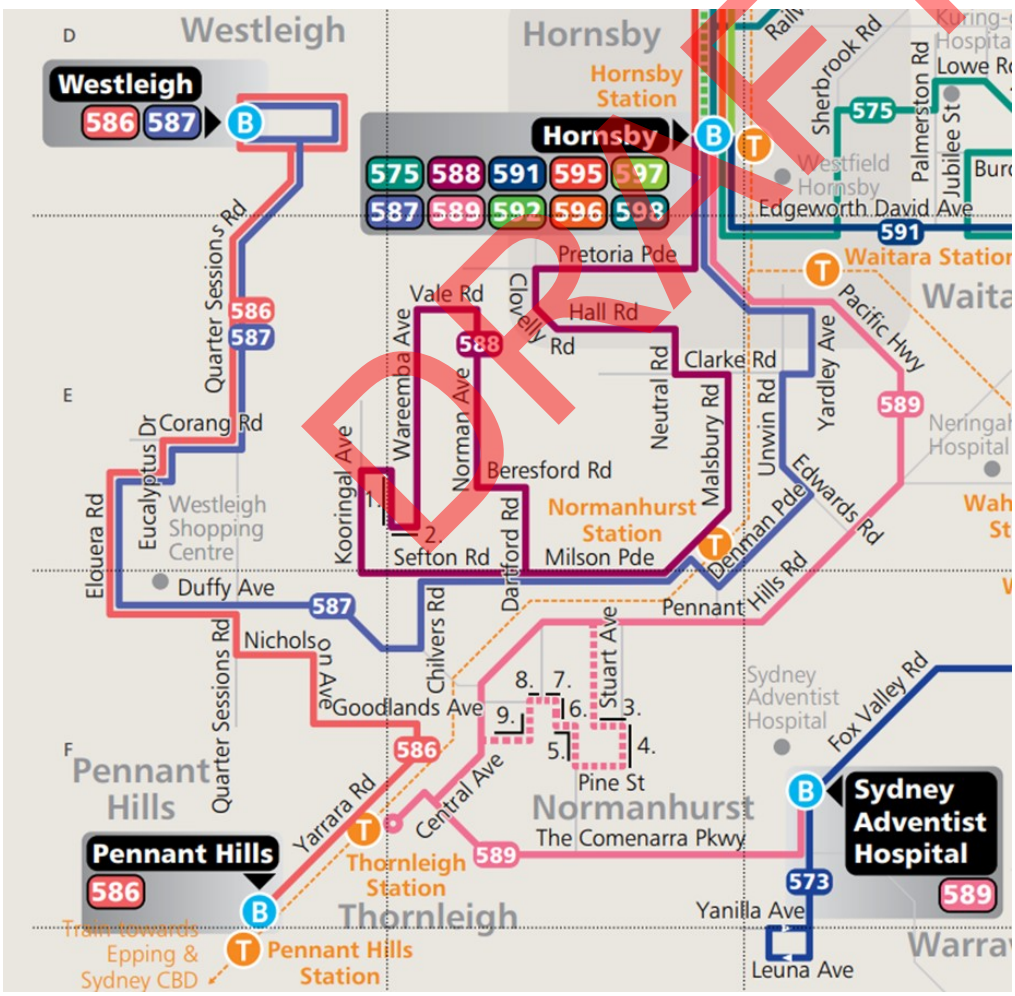
3.4 Public Transport Networks and Services

3.4.1 Bus Services

Westleigh is serviced by the upper north shore bus network, which is operated by Transdev. There are currently three (3) bus routes servicing the study area which are all local routes which link residential areas in Westleigh to nearby train stations at Hornsby, Normanhurst, Thornleigh and Pennant Hills. Services operate at a moderate frequency during the AM and PM peak periods, and at a reduced frequency during weekends. Bus timetables for routes 586, 587 and 588 are summarised in Table 3.3 and the bus operator map is shown in Figure 3.3.

Table 3.3: Bus Route Summary

Route No.	Route Description	Direction	Weekday Peak Frequency	Saturday Frequency
586	Westleigh to Pennant Hills	Both Directions	25-35 mins	Does not operate
587	Hornsby to Westleigh (Loop Service)	Both Directions	20-35 mins	60 mins
588	Hornsby to Normanhurst West (Loop Service)	Both Directions	15-40 mins	60 mins



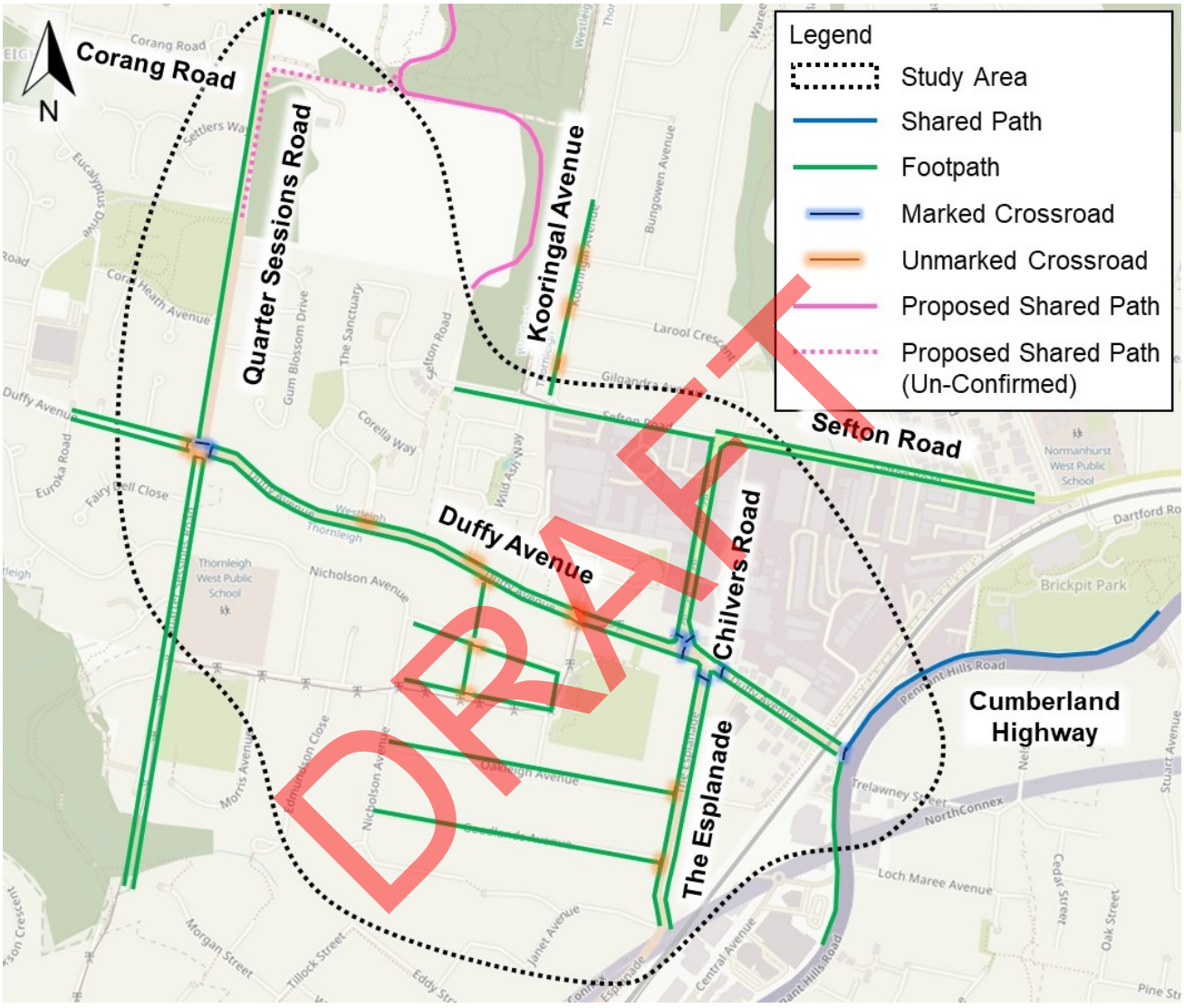
Source: TfNSW

Figure 3.3: Local Bus Operator Map

3.5 Active Transport Facilities

3.5.1 Walking

Apart from Quarter Sessions Road which has footpaths on its western only side north of Duffy Avenue, all collector roads and all arterial roads within the study area have footpaths on both sides. Local access roads generally have footpaths on only one side of the road, and some have no footpaths. The existing footpath network is shown in Figure 3.4.



Basemap: OpenStreetMap

Figure 3.4: Local Footpath Network

3.5.2 Cycling

Hornsby Council's bike map designates Quarter Session Road, The Esplanade, Chilvers Road and Sefton Road as on-road bicycle routes. No provisions for cyclists are located on any of the routes except that marked bicycle lanes are provided on limited sections of The Esplanade and Duffy Avenue. As such, all cycle routes within the study area are classified as being 'on-road' in mixed-traffic conditions as shown in Figure 3.5.

Basemap: OpenStreetMap

Figure 3.5: Local Cycle Routes

3.6 Traffic Volumes and Patterns

3.6.1 Traffic Surveys

A variety of traffic surveys were conducted in March 2022 for input into the study. The surveys are summarised in Table 3.4.

Table 3.4: Traffic Data Summary

Data Type	Source and Location	Survey Dates	Purpose
Intersection Turn Counts	Undertaken by Austraffic for 16 intersections	Wednesday 16 March 2022 ***and*** Saturday 19 Marth 2022	Traffic demand development and VISSIM model calibration
Travel Time Data	Undertaken by Austraffic for 2 routes		VISSIM model validation
Origin-Destination Data (OD)	Undertaken by Austraffic for 7 OD Locations		Traffic demand development and VISSIM model calibration
SCATS Intersection Diagnostic Monitor Data and LX file	Provided by TfNSW for the two signalised intersections within the study area		VISSIM model development

3.6.2 Intersection Turn Count Surveys

Austraffic undertook classified intersection turn counts for 16 intersections within the study area. The surveys were undertaken on:

- Wednesday 16 March 2022, 8:00am to 9:00am and 5:00pm to 6:00pm
- Saturday 19 Match between 11:00am to 12:00pm.

The counts were classified into light vehicles and heavy vehicles and were recorded in 15-minute intervals. The surveyed intersections are listed in Table 3.5 and shown in Figure 3.6.

Table 3.5: Intersection Turning Count Surveys

No.	Intersection	Control Type	No.	Intersection	Control Type
1	Quarter Sessions Road / Corang Road	Give Way	9	Duffy Avenue / Sinclair Avenue / Huntingdale Way	Roundabout
2	Quarter Sessions Road / Gun Blossom Drive	Give Way	10	Duffy Avenue / The Esplanade / Chilvers Road	Signalised
3	Quarter Sessions Road / Coral Heath Avenue	Give Way	11	Duffy Avenue / Pennant Hills Road	Signalised
4	Quarter Sessions Road / Bottle Brush Road	Give Way	12	The Esplanade / Hall Avenue / Oakleigh Ave	Give Way
5	Quarter Sessions Road / Duffy Avenue	Roundabout	13	The Esplanade / Goodlands Avenue	Give Way
6	Quarter Sessions Road / Nicholson Avenue	Give Way	14	Sefton Road / Chilvers Road	Give Way
7	Duffy Avenue / The Sanctuary	Give Way	15	Sefton Road / Larool Crescent	Give Way
8	Duffy Avenue / The Sanctuary	Give Way	16	Sefton Road / Kooringal Avenue	Roundabout

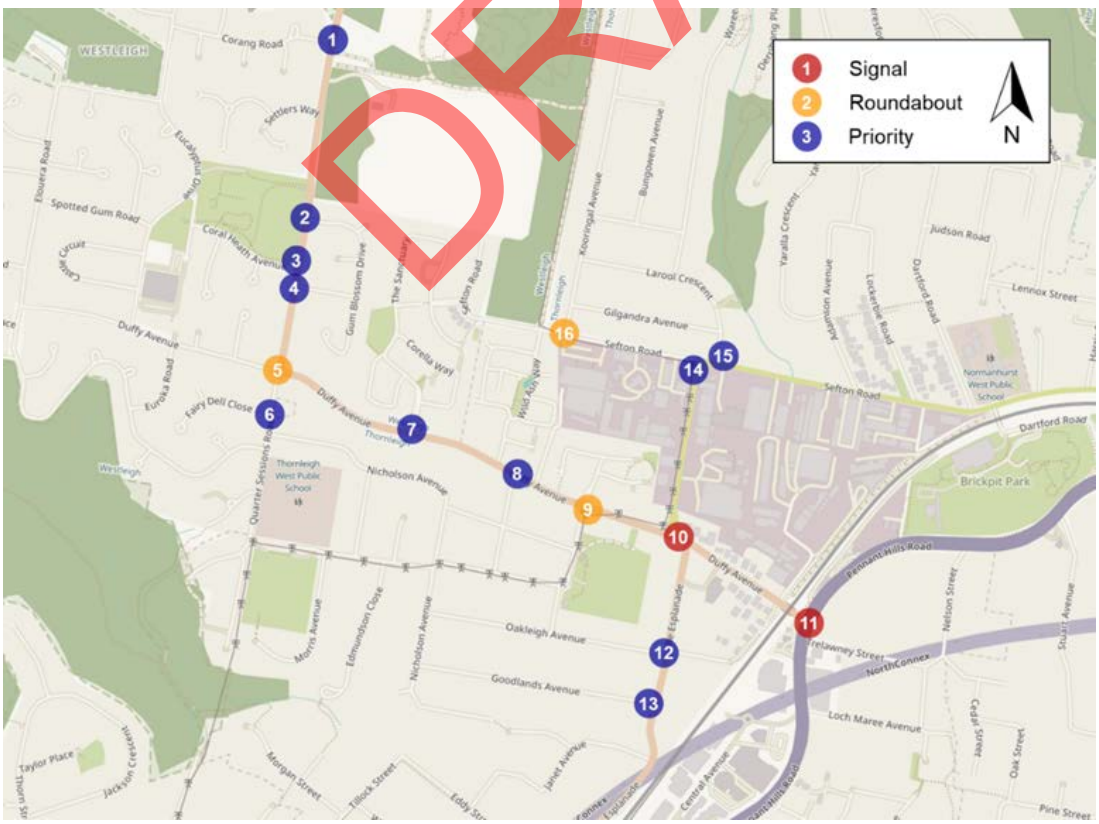


Figure 3.6: Intersection Turning Count Survey Locations

3.6.3 Travel Time Surveys

Travel time surveys were undertaken at the same times as the intersection counts along the two routes listed below and shown in Figure 3.2.

- **Route 1**: Corang Road to The Esplanade via Quarters Sessions Road and Duffy Avenue
- **Route 2**: Adamson Avenue to Janet Avenue via Sefton Road, Chilvers Road and The Esplanade.

A GPS device was used to record the location of the vehicle every second during the survey using the "Floating Car Method". The routes are detailed in Table 3.6 and Figure 3.7.

Table 3.6: Travel Time Survey Sections

Route 1 Sub-Sections	Route 2 Sub-Sections
Quarter Sessions Road / Corang Road	Sefton Road / Adamson Avenue
Quarter Sessions Road Sub-Sections / Duffy Avenue	Sefton Road / Chilvers Road
Duffy Avenue / Sinclair Avenue	Duffy Avenue / Chilvers Road
Duffy Avenue / Chilvers Road	Duffy Avenue / The Esplanade
Duffy Avenue / The Esplanade	The Esplanade / Janet Avenue

Figure 3.7: Travel Time Survey Routes

3.6.4 Origin-Destination Survey

An Origin-Destination (OD) survey was undertaken using 8 'stations' and was conducted at the same times as the intersection count surveys. The OD data was classified into light vehicles and heavy vehicles, and was recorded in 15-minute intervals. The OD station locations are listed in Table 3.7 and shown in Figure 3.8.

Table 3.7: Origin-Destination Survey Locations

No.	OD Survey Station Locations
1	Quarter Sessions Road, north of Corang Road
2	Quarter Sessions Road, north of Duffy Avenue
3	Duffy Avenue, west of Quarter Sessions Road
4	Larool Crescent, north of Sefton Road
5	Sefton Road, east of Larool Crescent
6	The Esplanade, south of Goodlands Avenue
7	Duffy Avenue, east of Chilvers Road
8	Nicholson Avenue, east of Quarter Sessions Road

Figure 3.8: Origin-Destination Survey Locations

3.6.5 SCATS Data

TfNSW provided SCATS Intersection Diagnostic Monitor data for the intersection count dates at the 2 signalised intersections within the study area:

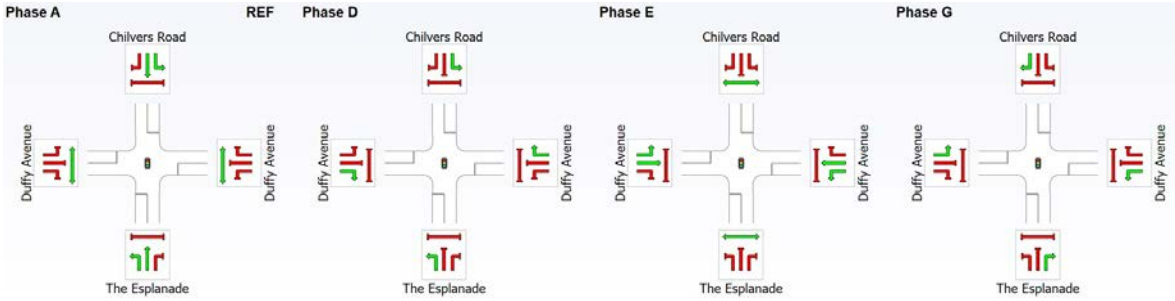
- TCS 1737: Duffy Avenue / The Esplanade / Chilvers Road
- TCS 1255: Duffy Avenue / Pennant Hills Road.

The LX file for the region was also obtained. The LX file contains information on SCATS settings including interphase times, phase sequence, pedestrian green time and clearance time, SCATS zone, offsets, high and low cycle time.

3.6.6 Signal Data

Traffic Phases

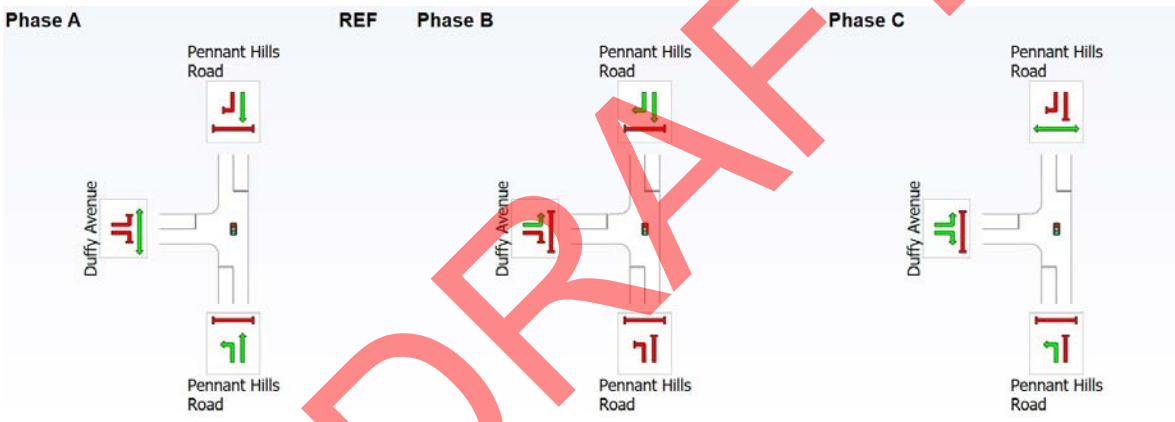
The Duffy Avenue / Chilvers Road / The Esplanade signals have four phases as shown in Figure 3.9. Phases A and G service traffic from Chilvers Road and The Esplanade, with leading right turns and Phases D and E service traffic from Duffy Avenue with leading right turns.



**Phasing sequence for illustration purposes only*

Figure 3.9: Duffy Avenue / Chilvers Road / The Esplanade Signal Phase Sequence

The Pennant Hills Road / Duffy Avenue signals have three phases as shown in Figure 3.10. Phases A and B service traffic Pennant Hills Road with a trailing right turn, and Phase C services traffic from Duffy Avenue.



**Phasing sequence for illustration purposes only*

Figure 3.10: Pennant Hills Road / Duffy Avenue Signal Phase Sequence

Cycle Time and Phase Times

The SCATS data was analysed to calculate the average cycle time and phase times during the AM, PM and weekend peak periods. The key observations include that:

- The Duffy Avenue / Chilvers Road / The Esplanade cycle time varies between 110 and 115 seconds
- The Pennant Hills Road / Duffy Avenue cycle time varies between 115 and 125 seconds
- Phase A is the reference phase in both signal cycles.

3.6.7 Peak Hour Traffic Profile

The total traffic volumes across the surveyed intersections for the AM, PM and Weekend peaks are shown in Figure 3.11, Figure 3.12 and Figure 3.13. The peak profiles show a stable traffic flow across all three survey periods. The weekday AM and PM and weekend peak intersection turning movement counts are summarised in **Appendix A**.

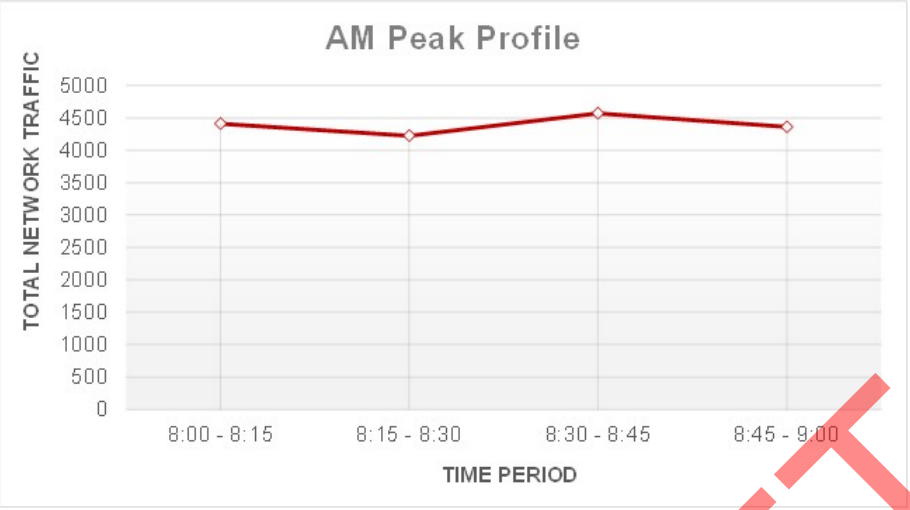


Figure 3.11: Network Traffic Volumes – AM Peak Profile

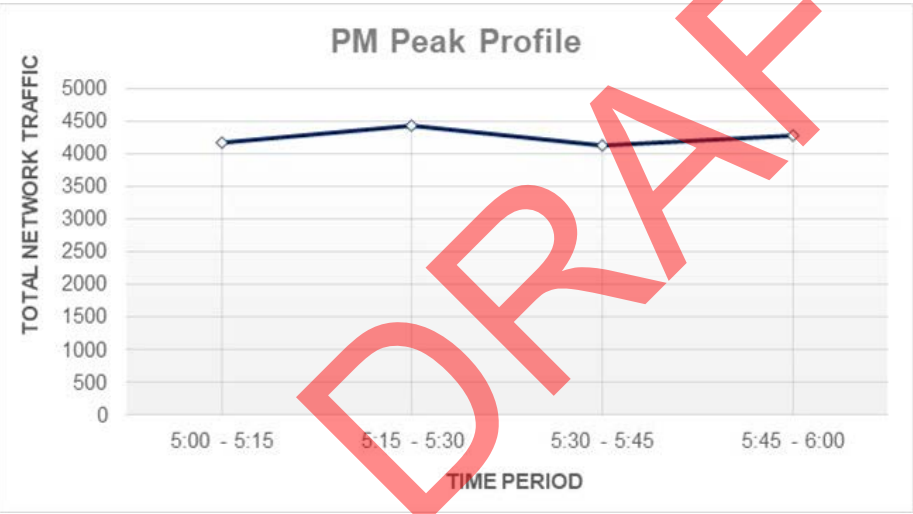


Figure 3.12: Network Traffic Volumes – PM Peak Profile

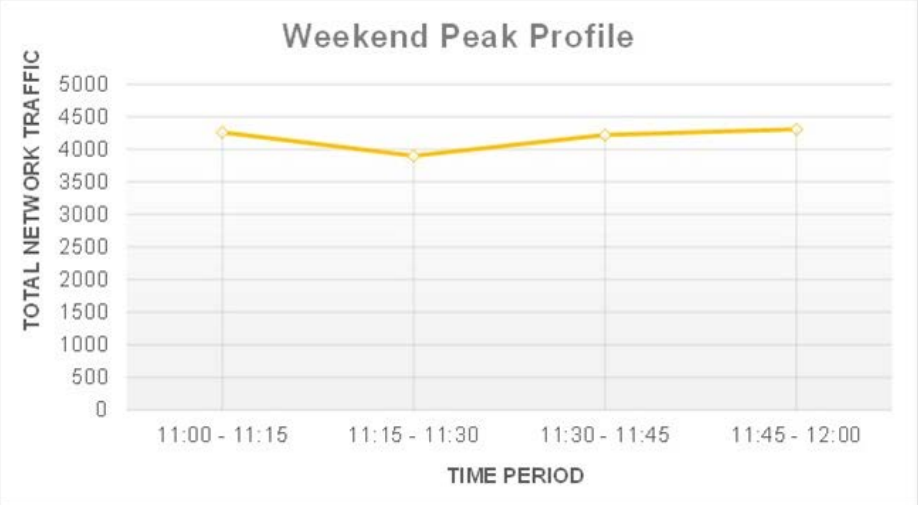


Figure 3.13: Network Traffic Volumes – Weekend Peak Profile

3.6.8 Travel Times

The average times from the survey results for the routes outlined in Section 3.6.3 are shown in Figure 3.14 through Figure 3.17. Key observations include that:

- The signalised intersection of Duffy Avenue / Chilvers Road / The Esplanade generates significant congestion during the AM peak, particularly to the northbound traffic on The Esplanade as shown in Figure 3.16
- Travel times along Duffy Avenue and Quarter Sessions Road, excluding delays at the major intersection, are consistent across the three survey periods, and are relatively free of congestion
- Similarly, travel times are consistent along sections of Chilvers Road, The Esplanade and Sefton Road away from the major intersection.

Detailed travel timetables are included in **Appendix B**.

Figure 3.14: Observed Travel Time – Route 1 Westbound / Northbound

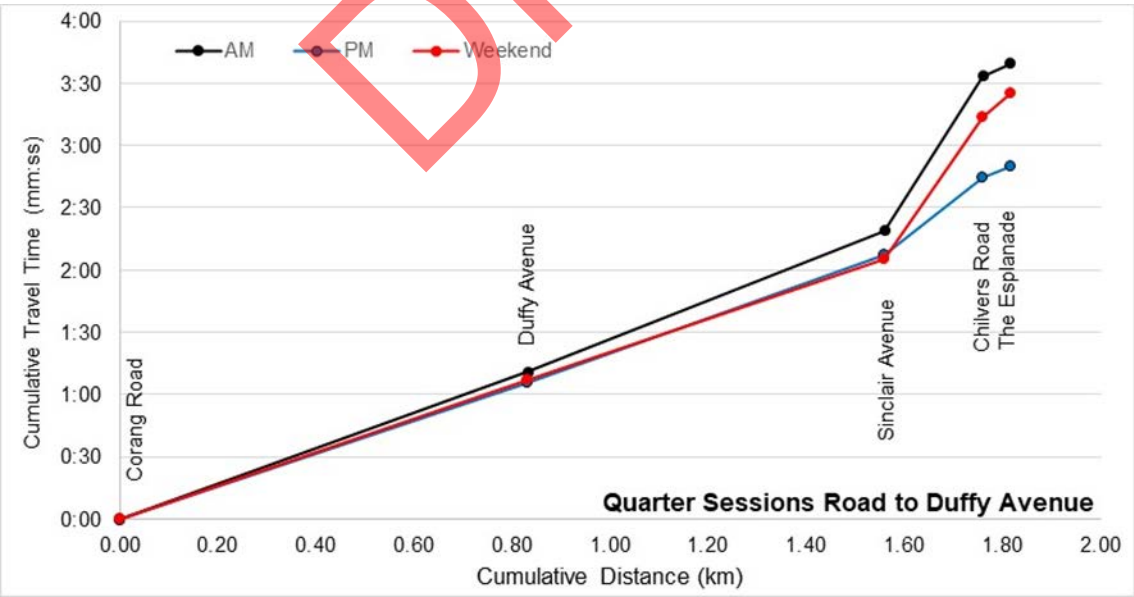


Figure 3.15: Observed Travel Time – Route 1 Southbound / Eastbound

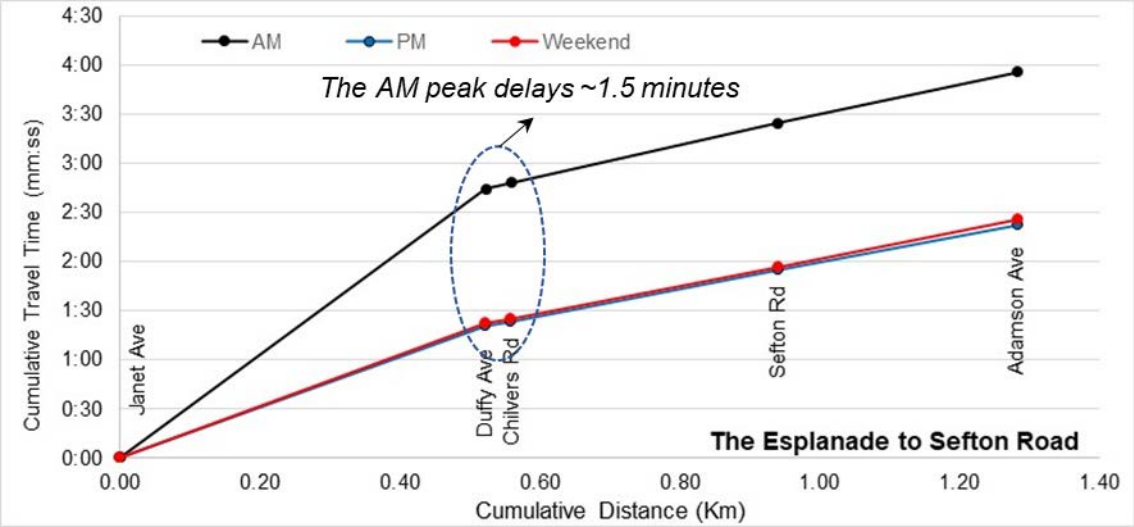


Figure 3.16: Observed Travel Time – Route 2 Northbound / Eastbound

Figure 3.17: Observed Travel Time – Route 2 Westbound / Southbound

3.7 NorthConnex Influences

Prior to NorthConnex Pennant Hills Road was widely regarded as one of the most congested corridors in Sydney. Prior to NorthConnex, large volumes of traffic which had origins and destinations outside of the study area used Yarrara Road - The Esplanade - Duffy Avenue as an alternative route to avoid congestion on Pennant Hills Road. Since the opening of the NorthConnex on 31 October 2020, traffic flows on Pennant Hills Road have reduced around 40% as shown in Figure 3.18, noting though that the tunnel opened during the COVID-19 pandemic. This reduction is likely to alter traffic route choice within the study area and the findings from the 2019 traffic study, which was pre-NorthConnex, will now very likely be different.

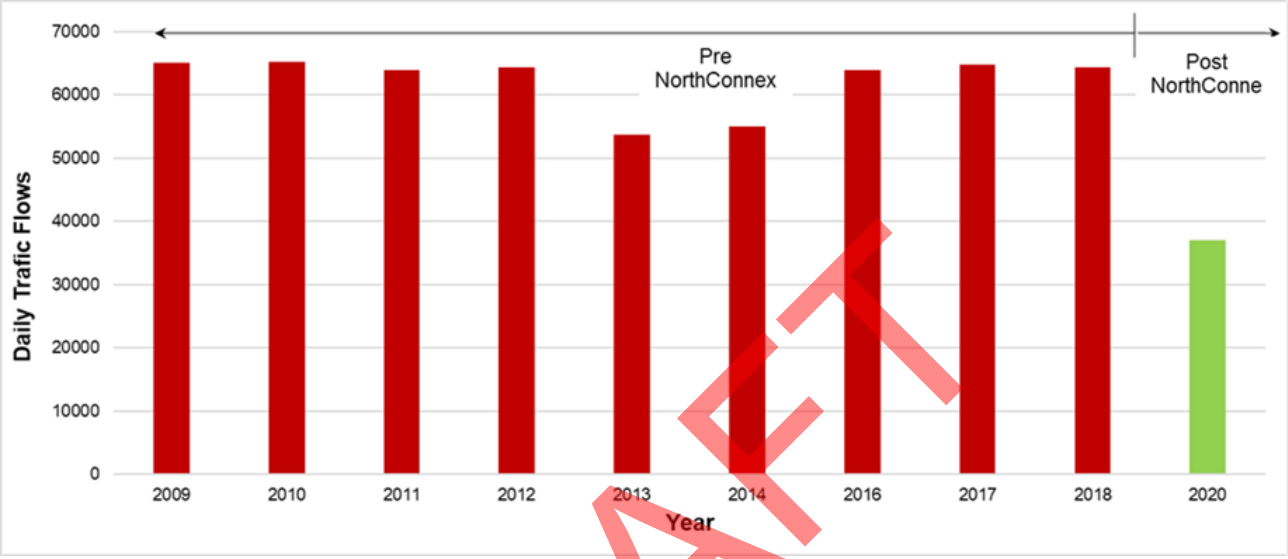


Figure 3.18: Daily Traffic Flows on Pennants Hill Road (2009 – 2020)

3.8 COVID 19 Impacts

3.8.1 Likely Impacts

It was anticipated that changes in travel behaviour due to COVID-19 restrictions such as working remotely may have had some influence in the reported reduction in traffic flows within the study area and that recent surveys would not represent future 'normal' traffic demands. To determine if any reduction in traffic could be attributed to COVID restrictions, the results of the 2022 survey were compared to the survey undertaken in 2019 as part of the preliminary investigations for this study.

Table 3.8 details the differences between the 2019 and 2022 AM and PM peak surveyed traffic volumes at the following two key intersections within the study area:

- Duffy Avenue / Chilvers Road / The Esplanade
- Pennant Hills Road / Duffy Avenue.

Table 3.8: Comparison of 2019 and 2022 Key Intersection Counts

Intersections	Approach	AM (veh/hr)				PM (veh/hr)			
		2019	2022	Diff	% Diff	2019	2022	Diff	% Diff
Duffy Avenue / Chilvers Road / The Esplanade	Chilvers Road SB	765	632	-133	-17%	922	800	122	-13%
	Duffy Avenue WB	289	307	18	6%	469	405	-64	-14%
	The Esplanade NB	687	633	-54	-8%	701	486	-215	-31%
	Duffy Avenue EB	581	607	26	4%	339	370	31	9%
	Total	**2,322**	**2,179**	**-143**	**-6%**	**2,431**	**2,061**	**-370**	**-15%**
Pennant Hills Road / Duffy Avenue	Pennant Hills Road SB	1,838	1,735	-103	-6%	1,925	1,880	-45	-2%
	Pennant Hills Road NB	2,493	1,819	-674	-27%	2,280	1,955	-325	-14%
	Duffy Avenue EB	351	407	56	16%	240	288	48	20%
	Total	**4,682**	**3,961**	**-721**	**-15%**	**4,445**	**4,123**	**-322**	**-7%**

3.8.2 Duffy Avenue / Chilvers Road / The Esplanade

There was an overall reduction in traffic by between 6% and 15% at this intersection. Traffic volumes on Chilvers Road, Duffy Avenue westbound and The Esplanade reduced substantially. This reduction is most likely due to reduced 'rat running' following reduced congestion on Pennant Hills Road. Traffic volumes eastbound Duffy Avenue have however increased by between 4% and 9% between 2019 and 2022.

3.8.3 Pennant Hills Road / Duffy Avenue

Traffic volumes along Pennant Hills Road reduced by between 2% and 27% (2019 v 2022). This reduction is most likely to be due to NorthConnex however volumes on Duffy Avenue increased by 16% to 20%.

3.8.4 Data Adjustment Need Conclusion

Traffic volumes along Pennant Hills Road, The Esplanade and Chilvers Road were reduced by between 2% and 27%. The Pennant Hills Road reduction is attributed to the opening of NorthConnex which improved traffic congestion on Pennant Hills Road. The improved congestion also reduced rat running along The Esplanade and Chilvers Road. However, traffic volumes on Duffy Avenue which generally services the local traffic increase by between 4% and 20%. There is insufficient and inconclusive data to suggest that changes in travel behaviour due to COVID-19 have had a significant impact on traffic volumes within the study area. On this basis, the survey results do not need to be adjusted.

3.9 Peak Period Traffic Movement Patterns (Origin-Destination, OD)

The OD data highlights the scale of local trip generation relative to 'through traffic'. The data analysis suggests that around 70% of the total traffic passing through an OD station was matched at another station, suggesting that 70% of traffic within the study area is through traffic with both their origins and their destinations outside of the study area. The remaining 30% of traffic entering or leaving the study area either starts or finishes its trip within the study area and is therefore locally generated.

Detailed summary tables for the OD survey data are attached in **Appendix C**.

3.10 Crash Data Analysis

3.10.1 Overall Crash Data

Crash statistics within the study area were obtained from TfNSW's OpenData Portal. In the five-year period ending 31 December 2020, a total of 66 crashes were reported in the study area. Of those 66 crashes, two resulted in a fatality and 46 resulted in injuries. The remaining 20 were non-casualty (damage only) crashes. A total of 126 vehicles were involved in these crashes. Heavy vehicles were involved in 13 (20%) crashes. This is considered to be high as compared to the proportion of heavy vehicles in the total vehicle mix.

On average, 13.2 crashes occurred per annum, with the lowest recorded in 2020 with 8 crashes (potentially COVID-19 affected) and the highest recorded in 2016 with 19 crashes, as shown in Figure 3.19.

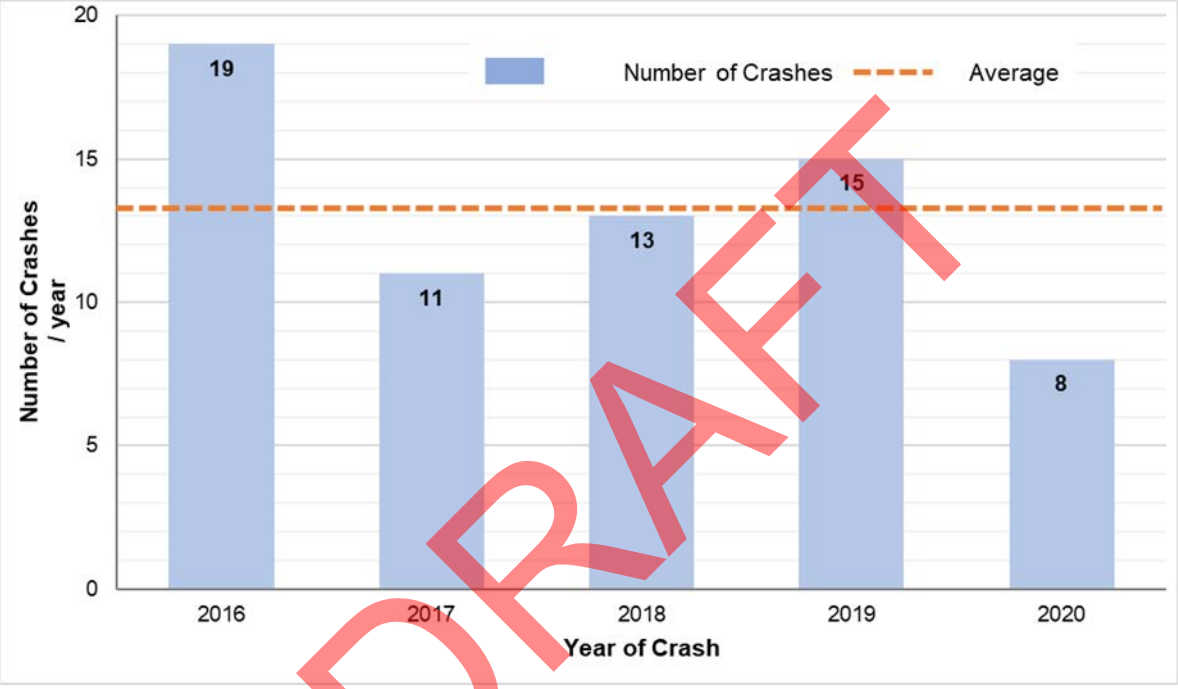


Figure 3.19: Number of Crashes Per Annum

About 89% of the crashes occurred in dry conditions and 70% of the crashes occurred in daylight hours. Table 3.9 summarises the number of casualties by crash severity. There were two fatalities which did not occur in the immediate vicinity of the proposed location for Westleigh Park as shown in Figure 3.20.

Table 3.9: Crash Severity Summary

Crash Severity	Number of Crashes	%	No of Casualties
Fatal	2	3%	2
Serious Injury	12	18%	14
Moderate Injury	14	21%	22
Minor/Other Injury	18	27%	21
Total	**48**	**100%**	**59**

3.10.2 Crash Locations

The crash locations by crash severity are presented in Figure 3.20. A significant proportion of crashes occurred at the following two intersections:

- Duffy Avenue / Chilvers Road / The Esplanade: 12 crashes / 18% of all crashes
- Pennant Hills Road / Duffy Avenue: 6 crashes / 9% of all crashes.

Two fatalities were recorded in the five-year period both of which occurred in 2018 at the following locations:

- Left off carriageway into object on Duffy Avenue between The Esplanade and Pennant Hills Road
- Head-on collision on The Esplanade between Janet Avenue and Eddy Street.

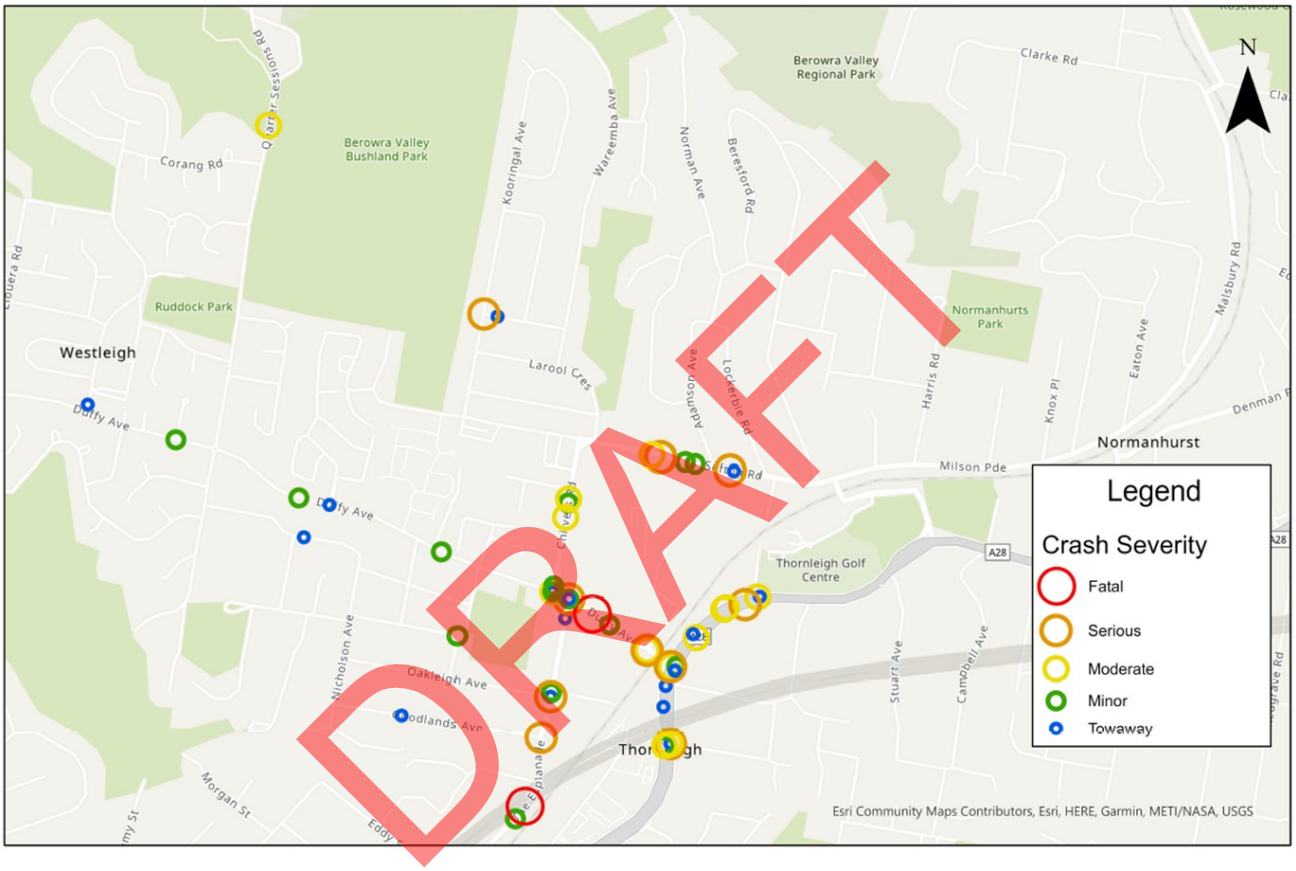


Figure 3.20: Crash Location and Severity

3.10.3 Crash Types

A breakdown of different crash types that occurred within the study area is summarised in Table 3.9. The crash locations are also shown in Figure 3.21. Over a third of the total crashes (38%) occurred between two vehicles colliding while travelling in the opposite direction (e.g. head on or at intersections).

Table 3.10: Crash Type Summary

Crash Type	Number of Crashes	%
Manoeuvring	6	9%
Off path into major object	17	26%
Pedestrian	3	5%
Vehicles from adjacent directions	5	8%
Vehicles from same direction	10	15%
Vehicles from opposite directions	25	38%

The crash classification by Road User Movement code is shown in Figure 3.21.

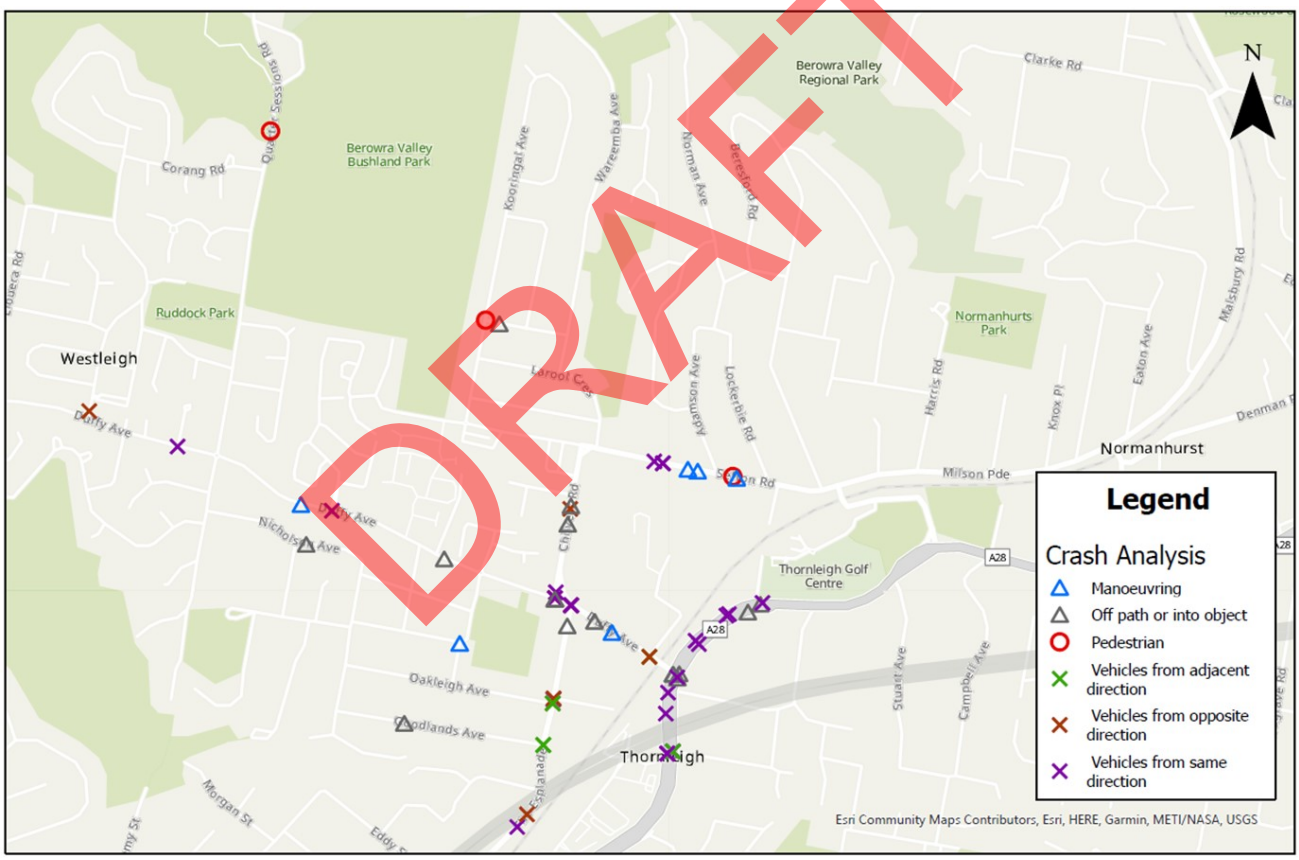


Figure 3.21: Crash Types Classification

3.11 Existing Traffic Performance

3.11.1 Overview

Year 2022 (base year) VISSIM models were developed for the AM, PM and Weekend peaks and were calibrated and validated to reflect traffic network conditions that were surveyed in March 2022.

It is noted that there were no sports at Ruddock Park at the time of the weekend peak traffic surveys and the usage was very low. Therefore, to understand the impacts of Ruddock Park matchday traffic on the surrounding road network a separate analysis was undertaken in SIDRA. The outcomes of the assessment are summarised in Section 6.7.

The intersection Level of Service (LoS) has been assessed based on average delay in accordance with the TfNSW criteria defined in Table 3.11.

Table 3.11: Intersection Level of Service Criteria

Level of Service (LoS)	Average Delay (s)	Description
A	<15	Good operation
B	15 to 29	Good with acceptable delays and spare capacity
C	29 to 43	Satisfactory
D	43 to 57	Operating near capacity
E	57 to 70	At capacity
F	>70	Unsatisfactory

As per the TfNSW guidelines, the delays presented in this report are:

- Average intersection delay for signalised intersections
- The highest turn delay for un-signalised intersections.

3.11.2 Key Intersection Performance

Total intersection flows and delays in the 2022 Base models at the key intersections are summarised in Table 3.12.

Table 3.12: 2022 Base Intersection Delays and LoS*

Intersection	AM Peak		PM Peak		Weekend Peak	
	Demand (veh/hr)	Delay (s) (LoS)	Demand (veh/hr)	Delay (s) (LoS)	Demand (veh/hr)	Delay (s) (LoS)
Duffy Avenue / Chilvers Road / The Esplanade	2,313	57 (E)	2,088	51 (D)	2,108	43 (D)
Sefton Road / Chilvers Road	1,601	17 (B)	1,429	8 (A)	1,477	11 (A)
Duffy Avenue / Quarter Sessions Road	996	4 (A)	897	3 (A)	909	3 (A)
Duffy Avenue / Pennant Hills Road	3,958	18 (B)	4,094	15 (B)	4,153	16 (B)

**Red = LoS E or F.*

Generally, the key intersections within the study area provide satisfactory LoS during the weekday AM, weekday PM and weekend peak periods. The only exception is the Duffy Avenue / Chilvers Road / The Esplanade intersection. Vehicles at this intersection experience relatively longer delays in the

weekday AM and PM peaks. In the AM peak, long queues were observed on The Esplanade and Duffy Avenue approaches as shown in Figure 3.22.

Figure 3.22: AM Peak Queues at Duffy Avenue/Chilvers Road/The Esplanade Intersection

3.11.3 Rat Run Route

Due the delays at the Duffy Avenue/Chilvers Road/The Esplanade Intersection, a portion of the AM peak traffic travelling from Quarter Sessions Road north-west of the study area are noted to use the residential streets of Nicholson Avenue and Oakleigh Avenue - Goodlands Avenue to access The Esplanade. This route is shown in Figure 3.23.

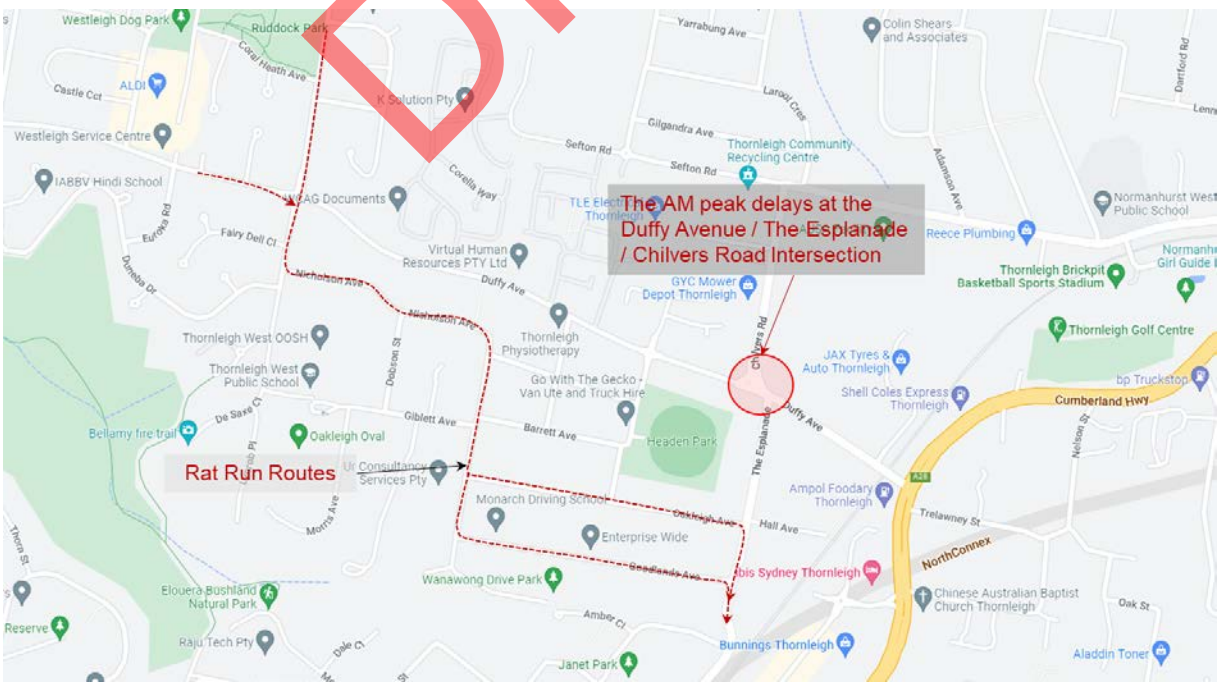


Figure 3.23: Known AM Peak Rat Run Through the Study Area

3.11.4 Link Capacity Analysis

A comparison between the observed volumes and theoretical capacity along a number of key roads within the study area is outlined in Table 3.13. The key observations include:

- For residential and collector roads, a capacity of 600 vehicles per hour per lane was assumed with a 50% factor applied if the road is narrow and cars travelling in opposite directions must slow or give way to each other
- For regional and major collector roads, a capacity of 900 vehicles per hour per lane was assumed
- For lower order local roads, a capacity of 250 vehicles per hour per lane has been assumed.

The results indicate that all the major collector roads within the study area including Duffy Avenue, Chilvers Road, Sefton Road, The Esplanade and Pennant Hills Road are operating near capacity.

Table 3.13: Link Capacity Data in Different Peaks

Road Name	Travel Direction	Capacity (veh/hr)	AM Peak Period		PM Peak Period		Weekend Peak	
			AM Peak Demand (veh/hr)	V/C Ratio*	PM Peak Demand (veh/hr)	V/C Ratio*	Weekend Peak Demand (veh/hr)	V/C Ratio*
Pennant Hills Road	Northbound	2,100	1,737	0.83	1,918	0.91	2,024	0.96
	Southbound	2,100	1,697	0.81	1,842	0.88	1,812	0.86
Duffy Avenue East of Chilvers Road	Eastbound	900	333	0.37	526	0.58	390	0.43
	Westbound	900	608	0.68	362	0.40	608	0.68
Duffy Avenue West of Chilvers Road	Eastbound	900	607	0.67	370	0.41	541	0.60
	Westbound	900	322	0.36	523	0.58	393	0.44
Chilvers Road	Northbound	900	742	0.82	523	0.58	628	0.70
	Southbound	900	623	0.69	793	0.88	674	0.75
Sefton Road East of Chilvers Road	Eastbound	900	594	0.66	768	0.85	645	0.72
	Westbound	900	720	0.80	498	0.55	601	0.67
Sefton Road West of Chilvers Road	Eastbound	600	145	0.24	81	0.14	135	0.23
	Westbound	600	123	0.21	103	0.17	125	0.21
The Esplanade	Northbound	900	755	0.84	643	0.71	609	0.68
	Southbound	900	810	0.90	818	0.91	737	0.82
Quarter Sessions Road	Westbound	900	123	0.14	103	0.11	125	0.14
	Southbound	900	246	0.27	123	0.14	222	0.25
Corang Road	Eastbound	500	16	0.03	32	0.06	14	0.03
	Westbound	500	4	0.01	16	0.03	10	0.02
Nicholson Avenue	Eastbound	250	66	0.26	68	0.27	37	0.15
	Westbound	250	81	0.32	39	0.16	32	0.13
Oakleigh Avenue	Eastbound	250	96	0.38	107	0.43	82	0.33
	Westbound	250	42	0.17	23	0.09	26	0.10
Goodlands Avenue	Eastbound	250	90	0.36	87	0.35	41	0.16
	Westbound	250	120	0.48	46	0.18	53	0.21
Sinclair Avenue	Northbound	250	135	0.54	107	0.43	135	0.54
	Southbound	250	60	0.24	46	0.18	60	0.24
Kooringal Avenue	Northbound	250	26	0.10	42	0.17	33	0.13
	Southbound	250	69	0.28	46	0.18	36	0.14
Larool Crescent	Northbound	250	58	0.23	73	0.29	61	0.24
	Southbound	250	83	0.33	35	0.14	67	0.27

**Value of 1 indicates 100% capacity*

4. FUTURE YEAR DO MINIMUM ASSESSMENT

4.1 Overview

Council is currently finalising the Westleigh Park masterplan. In consultation with Council, years 2027 and 2032 have been identified as the future assessment years for this traffic study.

4.2 Development of the 2027 and 2032 Traffic Demands

Cordon matrices from the Sydney Strategic Traffic Forecasting Model (STFM) were used to estimate the background traffic growth for the study area. The strategic model growth was applied to the 2022 Base VISSIM model traffic to create the future year Do Minimum models' traffic demands. The models were then run and used to understand how background traffic growth would impact the local traffic network and to provide a baseline for comparing the Park development traffic scenarios.

STFM 'cordon' traffic demand matrices for the study area were provided by TfNSW for 2021, 2026 and 2036 and for the AM two-hour and PM two-hour periods.

A review of the STFM cordon traffic demand matrices indicates that:

- Between 2021 and 2026, total traffic demands through and within the study area would increase by approximately 7% for the AM peak and 8% for the PM peak
- Traffic growth rates will decline after 2026 and to 2036, with the STFM showing a total growth in traffic through and within the study area of approximately 8% over the 10-year period for the AM peak and 10% for the PM peak.

The STFM demand matrices were split into the VISSIM zoning system based on population statistics from the 2016 Census at a meshblock level, and employment estimates from commercial and industrial lot area.

Difference matrices were calculated to understand the absolute increase and decrease of traffic movements between each zone pair over 5-year and 10-year periods. The difference matrices were added to the 2022 Base VISSIM traffic demands to create the 2027 and 2032 VISSIM traffic demands.

The difference matrices included negative differences between some zone pairs, likely due to changes in traffic patterns from the strategic model 'cut out' (cordon) area. To ensure that the final VISSIM matrices did not result in any zone pairs with negative demands, the differences matrices were adjusted to remove any total negative demands whilst maintaining a similar absolute increase in traffic across the network.

The STFM zoning system as compared with the VISSIM zoning system is detailed in Figure 4.1.

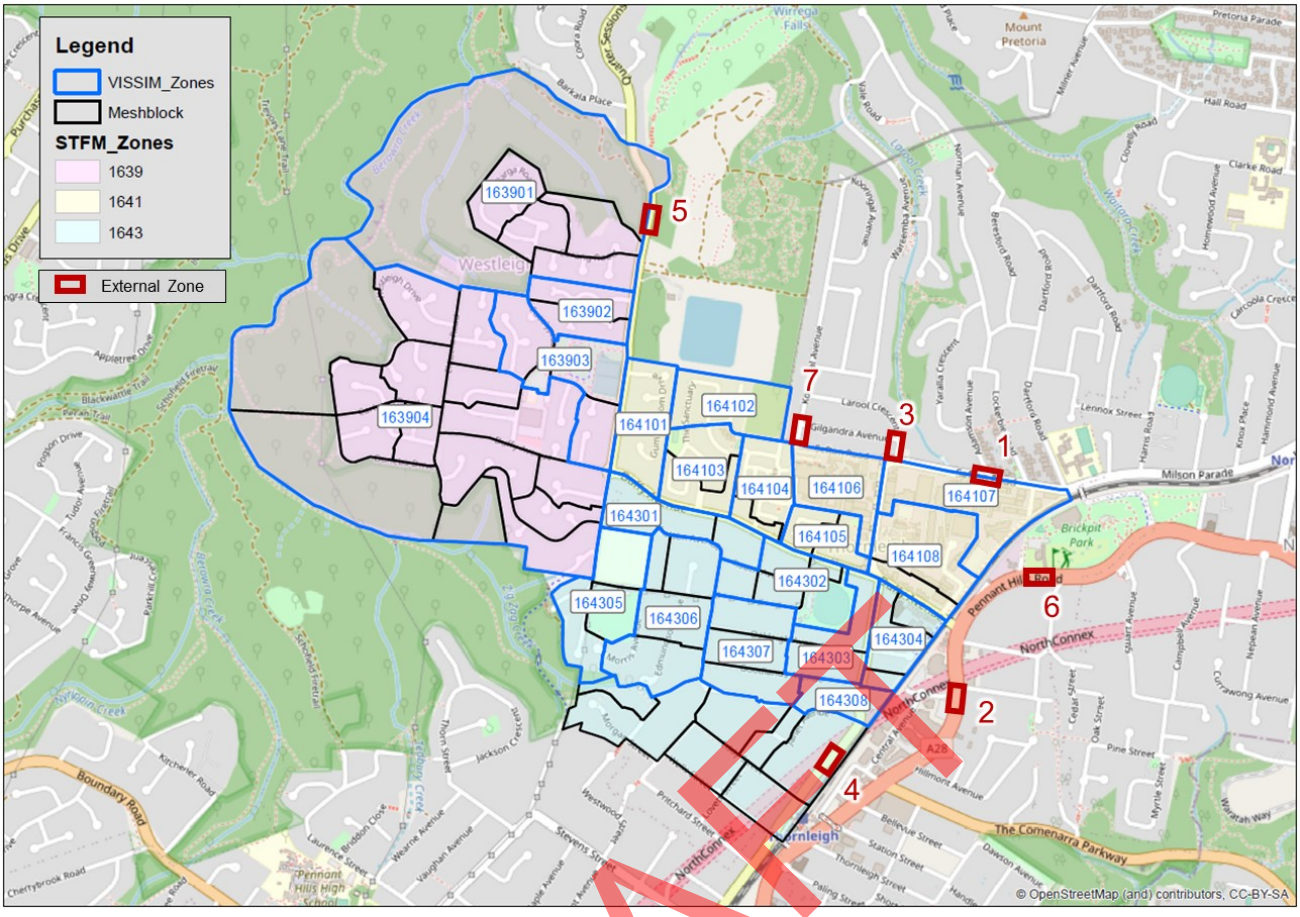


Figure 4.1: STFM and VISSIM Zoning System

4.3 Committed Network Upgrades

Council is planning to upgrade the Chilvers Road / Sefton Road intersection from a priority-controlled intersection to traffic signals. This may require the banning of right turns into and out of Larool Crescent due to the close proximity of Larool Crescent to the signalised intersection, subject to the outcome of community consultation. This upgrade was included in the year 2027 and 2032 base case VISSIM networks.

It was assumed that the new signalised intersection would run a three-phase cycle with a cycle time of 120s. The proposed layout of the Sefton Road / Chilvers Road signals is provided in Figure 4.2, and the assumed phasing sequence in Figure 4.3.

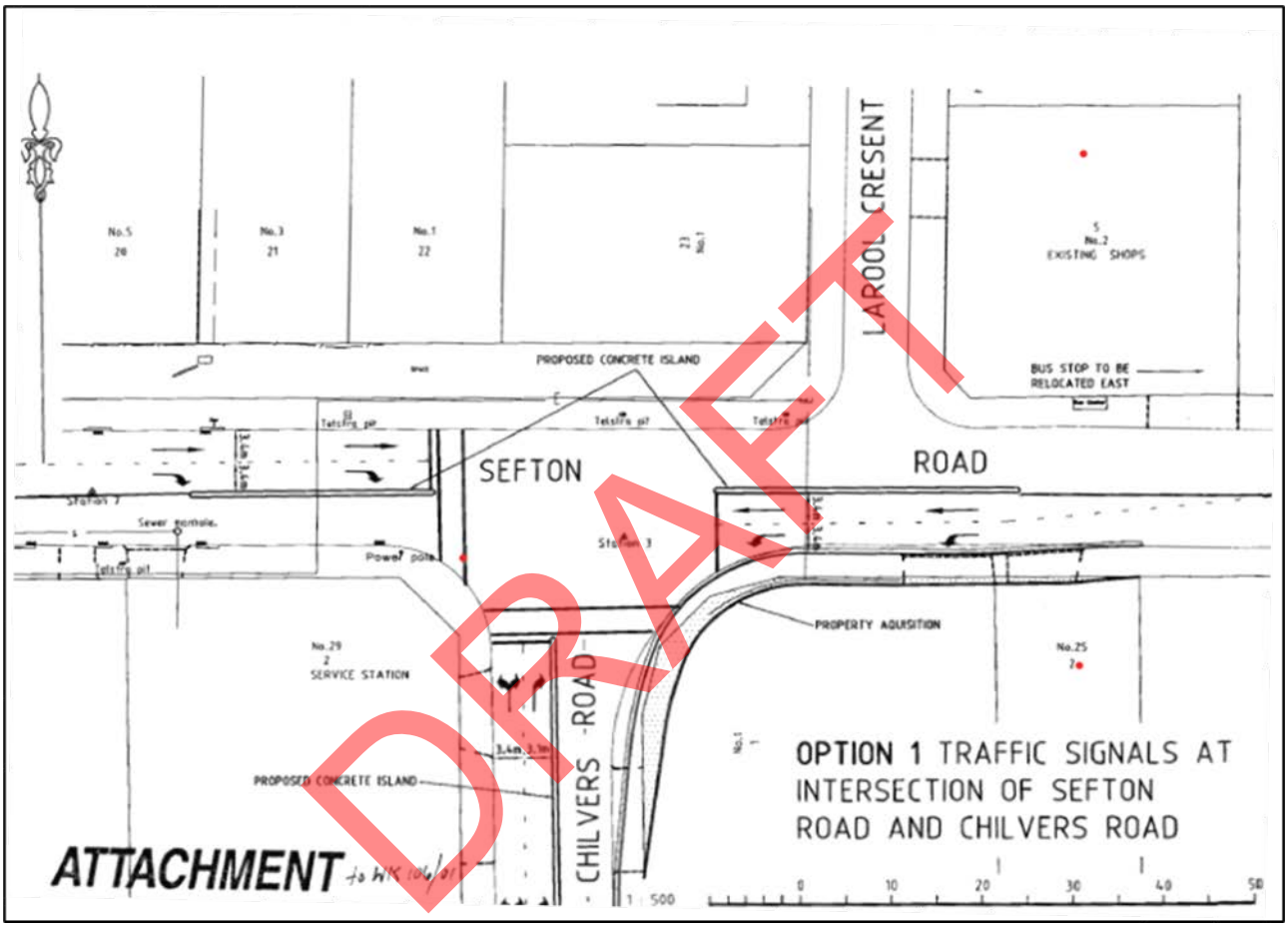


Figure 4.2: Traffic Signals Layout – Sefton Road / Chilvers Road

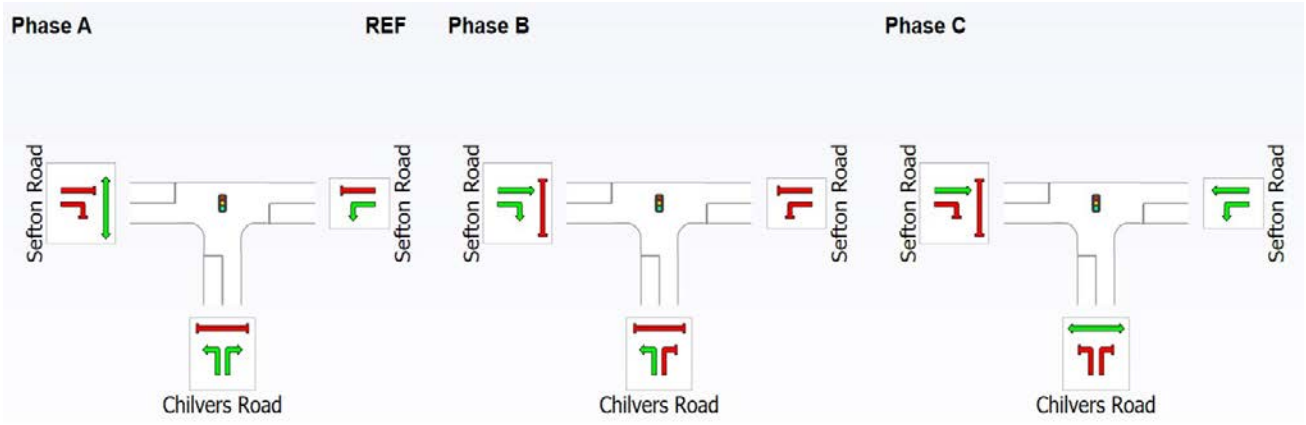


Figure 4.3: Signal Phase Sequence – Sefton Road / Chilvers Road

This proposed banning of right turns into and out of Larool Crescent will result in some traffic accessing the residential area north of Sefton Road being diverted to the Sefton Road roundabout at Kooringal Avenue west of the Chilvers Road intersection. The diverted routes are shown in Figure 4.4.

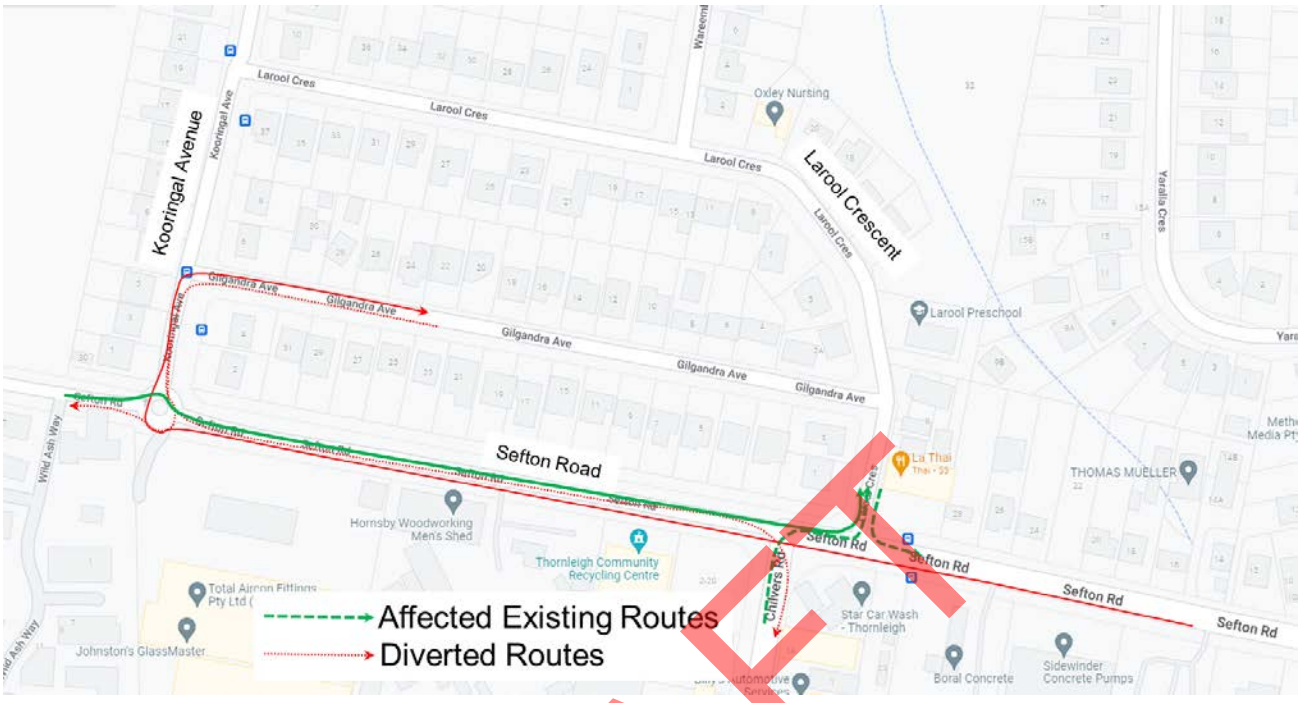


Figure 4.4: Diverted Traffic Due to Larool Crescent Turning Restrictions

4.4 VISSIM Model Results

The Future Year 2027 and 2032 Do Minimum VISSIM results are summarised in **Appendix D**.

4.4.1 Network Statistics

The 2022 AM, PM and Weekend peak network statistics are compared with the future year 2027 and 2032 Do Minimum scenarios in Table 4.1, Table 4.2 and Table 4.3.

The results indicate that the AM peak traffic network performance would substantially worsen between 2022 and 2032, with average delays increasing from 48 to 84 seconds. The unreleased trips in the 2032 Do Minimum AM peak scenario show that congestion within the network will lead to queues that extend outside of the study area.

While there are slight increases in average delays between 2022 and 2032 for the PM and Weekend peaks (about 10s), the network would operate within its capacity in 2032.

Table 4.1: Network Statistics – AM Do Minimum (8:00 – 9:00am)

Measure	2022 Base AM	2027 Do Min AM	2032 Do Min AM
Total Travel Time (hr)	*212*	253	305
Total Distance Travelled (km)	*6,570*	6,942	7,086
Total Delay (hr)	*90*	125	173
Average Speed (km/hr)	*35.8*	27.6	23.3
Average Travel Time (min)	*1.87*	2.09	2.45
Average Travel Distance (km)	*0.97*	0.96	0.95
Average Delay (sec)	*48*	62	84*
Completed Trips	*6,562*	7,005	7,102
Incomplete Trips	*215*	260	351
Unreleased Trips	*0*	1	77
Total Number of Vehicles	*6,778*	7,265	7,453

**The results indicate that the AM peak traffic network performance would substantially worsen between 2022 and 2032, with average delays increasing from 48 to 84 seconds.*

Table 4.2: Network Statistics – PM Do Minimum (5:00 – 6:00pm)

Measures	2022 Base PM	2027 Do Min PM	2032 Do Min PM
Total Travel Time (hr)	*175*	205	215
Total Distance Travelled (km)	*6,254*	6,776	6,915
Total Delay (hr)	*61*	82	89
Average Speed (km/hr)	*35.8*	33.0	32.2
Average Travel Time (min)	*1.60*	1.71	1.76
Average Travel Distance (km)	*0.96*	0.94	0.95
Average Delay (sec)	*34*	41	44
Completed Trips	*6,352*	6,974	7,090
Incomplete Trips	*176*	213	221
Unreleased Trips	*0*	0	1
Total Number of Vehicles	*6,529*	7,187	7,311

Table 4.3: Network Statistics – Weekend Do Minimum (11:00am – 12:00pm)

Measures	2022 Base WE	2027 Do Min WE	2032 Do Min WE
Total Travel Time (hr)	*168*	200	205
Total Distance Travelled (km)	*6,199*	6,741	6,846
Total Delay (hr)	*56*	78	80
Average Speed (km/hr)	*36.8*	33.7	33.5
Average Travel Time (min)	*1.56*	1.67	1.69
Average Travel Distance (km)	*0.96*	0.94	0.94
Average Delay (sec)	*31*	39	40
Completed Trips	*6,326*	6,977	7,067
Incomplete Trips	*164*	198	204
Unreleased Trips	*0*	0	0
Total Number of Vehicles	*6,490*	7,175	7,271

4.4.2 Key Intersection Performance

The 2022 AM, PM and Weekend peak demands and delays at key intersections are compared with the 2027 and 2032 Do Minimum scenarios in Table 4.4, Table 4.5 and Table 4.6.

The results show significant increases in delays in the AM peak, particularly at the signalised intersections along Duffy Avenue. The delays are caused by the demands on The Esplanade northbound and Duffy Avenue westbound exceeding the capacity of the maximum green time at the signals. The queues along Duffy Avenue westbound will extend through to Pennant Hills Road in the 2032 scenario and prevent vehicles entering from Pennant Hills Road. This queuing is illustrated in the section below.

Only slight increases in intersection delays were observed in the PM and Weekend peaks.

The introduction of signals at the Sefton Road / Chilvers Road intersection will slightly increase intersection delays from LoS A to B. The overall delay is acceptable for a signalised intersection, so the proposed introduction of a signalised pedestrian crossing for safety reasons will not cause significant traffic impacts.

Table 4.4: Key Intersection Performance – AM Do Minimum (8:00 – 9:00am)

Intersection	2022 Base AM		2027 Do Min AM		2032 Do Min AM	
	Demand (veh)	Delay (s) (LoS)	Demand (veh)	Delay (s) (LoS)	Demand (veh)	Delay (s) (LoS)
Duffy Avenue / Chilvers Road / The Esplanade	*2,313*	*57 (E)*	2,488	62 (E)	2,510	64 (E)
Sefton Road / Chilvers Road	*1,601*	*17 (B)*	1,720	22 (B)	1,754	22 (B)
Duffy Avenue / Quarter Sessions Road	*996*	*4 (A)*	1,043	4 (A)	1,066	4 (A)
Duffy Avenue / Pennant Hills Road	*3,958*	*18 (B)*	4,196	21 (B)	4,229	26 (B)

Table 4.5: Key Intersection Performance – PM Do Minimum (5:00 – 6:00pm)

Intersection	2022 Base PM		2027 Do Min PM		2032 Do Min PM	
	Demand (veh)	Delay (s) (LoS)	Demand (veh)	Delay (s) (LoS)	Demand (veh)	Delay (s) (LoS)
Duffy Avenue / Chilvers Road / The Esplanade	*2,088*	*51 (D)*	2,278	50 (D)	2,351	53 (D)
Sefton Road / Chilvers Road	*1,429*	*8 (A)*	1,553	18 (B)	1,601	19 (B)
Duffy Avenue / Quarter Sessions Road	*897*	*3 (A)*	985	4 (A)	1,002	4 (A)
Duffy Avenue / Pennant Hills Road	*4,094*	*15 (B)*	4,505	17 (B)	4,563	17 (B)

Table 4.6: Key Intersection Performance – Weekend Do Minimum (11:00am – 12:00pm)

Intersection	2022 Base AM		2027 Do Min AM		2032 Do Min AM	
	Demand (veh)	Delay (s) (LoS)	Demand (veh)	Delay (s) (LoS)	Demand (veh)	Delay (s) (LoS)
Duffy Avenue / Chilvers Road / The Esplanade	*2,108*	*43 (D)*	2,305	46 (D)	2,345	47 (D)
Sefton Road / Chilvers Road	*1,477*	*11 (A)*	1,594	22 (B)	1,623	22 (B)
Duffy Avenue / Quarter Sessions Road	*909*	*3 (A)*	963	3 (A)	971	3 (A)
Duffy Avenue / Pennant Hills Road	*4,153*	*16 (B)*	4,578	18 (B)	4,630	18 (B)

4.4.3 Travel Times

The 2027 and 2032 AM peak northbound traffic along The Esplanade - Chilvers Road would experience substantial delays as shown in Figure 4.5. This is primarily due to congestion at The Esplanade / Chilvers Road / Duffy Avenue intersection.

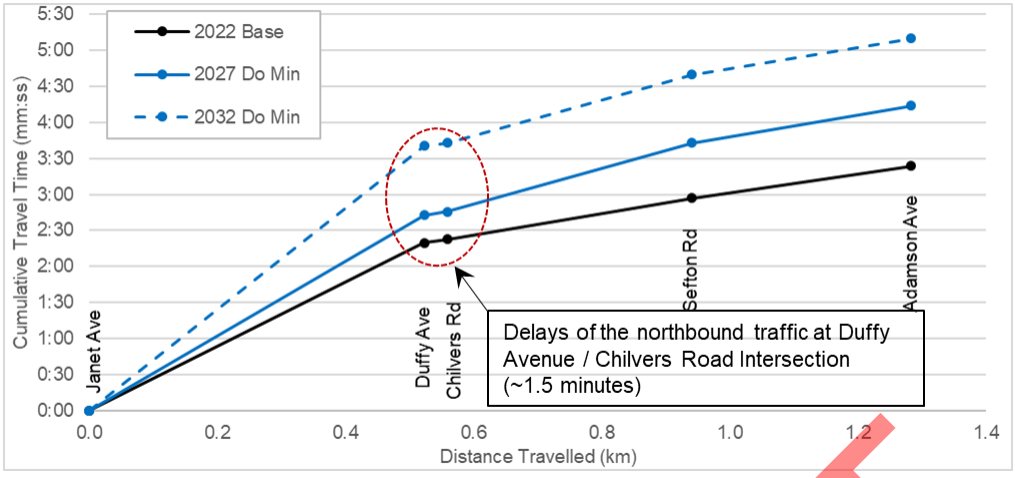


Figure 4.5: AM Peak Northbound Travel Times, Esplanade - Chilvers Road Corridor

4.4.4 Queue Observations

As described in the previous section, congestion in the AM peak is mainly caused by traffic demands exceeding the capacity of the Duffy Avenue / Chilvers Road / The Esplanade intersection. Without any changes at the intersection by 2032, queues along The Esplanade northbound will extend past Janet Avenue and outside of the study area boundary.

Queues along Duffy Avenue westbound will extend to Pennant Hills Road and prevent vehicles from entering the study area from this location. The blockage will reduce the capacity of right turn from Pennant Hills Road southbound, leading to queues exceeding the capacity of the right turn pocket and introducing additional delays and safety concerns on Pennant Hills Road. The AM peak queues are shown in Figure 4.6.

Figure 4.6: Modelled Queues – Duffy Avenue / The Esplanade – AM Peak

4.5 Upgrade Measures

4.5.1 Upgrade Concept

The main source of future traffic delays within the study area will be the Duffy Avenue / Chilvers Road / The Esplanade intersection. The intersection is predicted to operate close to capacity to service the future traffic demands with particularly long delays to traffic approaching from the south and the east.

In consultation with Council, an upgrade option was developed for the intersection and the VISSIM model was used to assess the performance of the upgrade option. The proposed upgrade included an addition traffic lane for westbound through traffic on the Duffy Avenue (east) approach. This is possible by removing a 50m section of on-street parking from the Duffy Avenue (east) eastbound departure lane.

The proposed upgrade would allow signal times to be adjusted to allow additional green time for traffic on The Esplanade's northbound approach. This would reduce queues and travel times along The Esplanade.

The proposed intersection layout is shown in Figure 4.7.

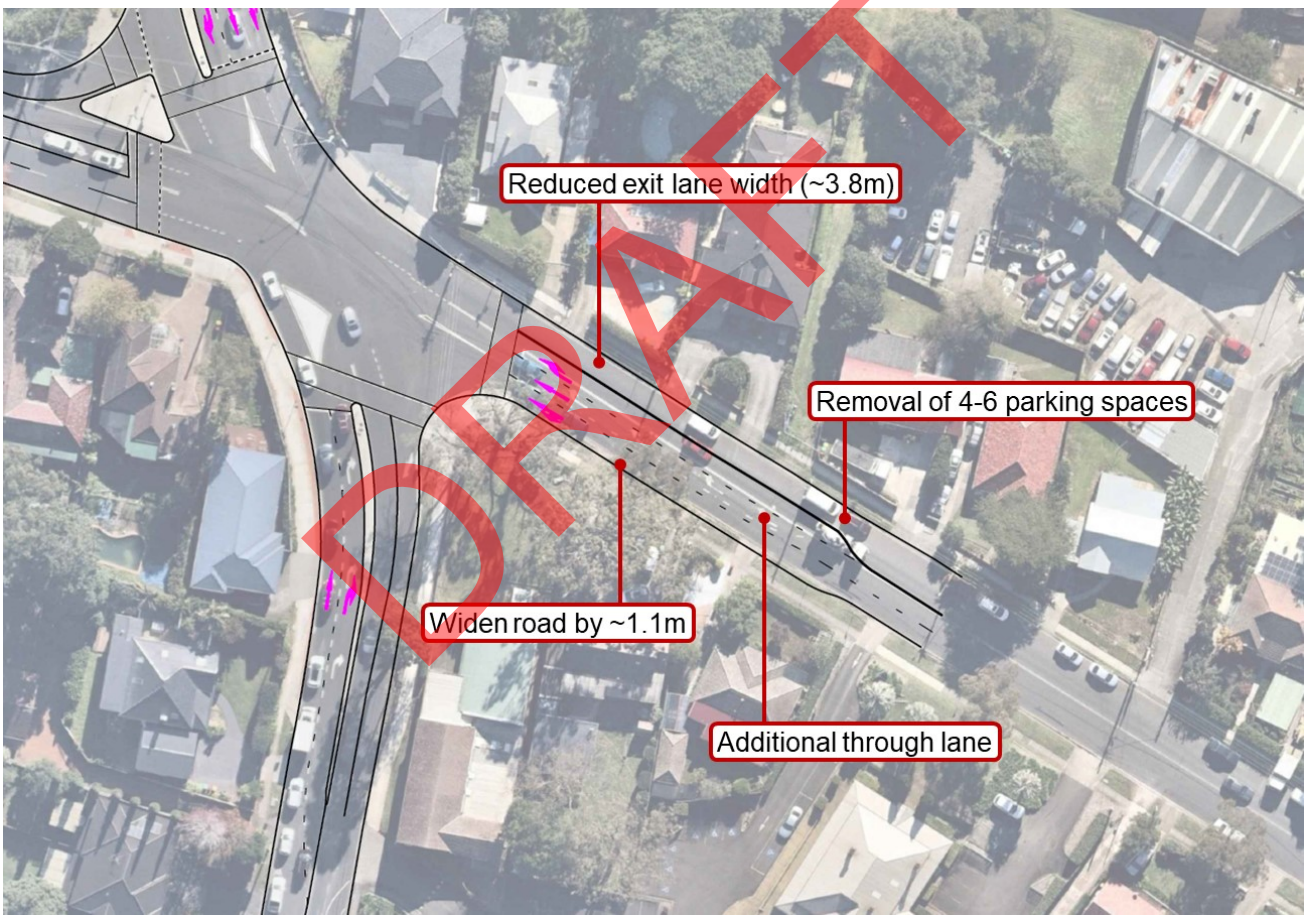


Figure 4.7: Proposed Intersection Layout – Duffy Avenue / Chilvers Road / The Esplanade

4.5.2 Upgrade Assessment

The 2027 and 2032 Do Minimum AM, PM and Weekend Peak VISSIM models were updated to include the proposed upgrade at the Duffy Avenue / Chilvers Road / The Esplanade intersection.

The AM peak Do Minimum and Do Minimum *Plus* Upgrade intersection performance results are summarised in Table 4.7. Only the AM peak results are presented because this is the critical peak period in the Do Minimum case. The results show that the proposed upgrade will substantially reduce traffic delays at the Duffy Avenue / Chilvers Road / The Esplanade intersection with the average intersection delay being reduced by 15 seconds in 2027 and by 13 seconds in 2032.

Table 4.7: Intersection Performance Benefits of the Upgrade (8:00 – 9:00am)

Intersection	2027 AM		2032 AM	
	Do Min	Do Min *plus* Upgrade	Do Min	Do Min *plus* Upgrade
Duffy Avenue / Chilvers Road / The Esplanade	*62 (E)*	47 (D)	*64 (E)*	51 (D)
Sefton Road / Chilvers Road	*22 (B)*	29 (C)	*22 (B)*	29 (C)
Duffy Avenue / Quarter Sessions Road	*4 (A)*	4 (A)	*4 (A)*	4 (A)
Duffy Avenue / Pennant Hills Road	*21 (B)*	18 (B)	*26 (B)*	18 (B)

The proposed intersection upgrade will also contribute to the reduction of average delay across the network. The AM peak Do Minimum and Do Minimum *Plus* Upgrade network performance results are summarised Table 4.8. The average per-vehicle delay will reduce by 16 seconds in 2027 and 23 seconds in 2032.

Table 4.8: Network Statistics, AM Do Minimum vs Do Minimum *Plus* Upgrade (8:00 – 9:00am)

Measures	2027 AM		2032 AM	
	Do Min	Do Min *plus* Upgrade	Do Min	Do Min *plus* Upgrade
Total Travel Time (hr)	*253*	222	*305*	262
Total Distance Travelled (km)	*6,942*	6,966	*7,086*	7,255
Total Delay (hr)	*125*	93	*173*	127
Average Speed (km/hr)	*27.6*	31.4	*23.3*	27.8
Average Travel Time (min)	*2.09*	1.84	*2.45*	2.1
Average Travel Distance (km)	*0.96*	0.96	*0.95*	0.97
Average Delay (sec)	*62*	46	*84*	61
Completed Trips	*7,005*	7,016	*7,102*	7,216
Incomplete Trips	*260*	232	*351*	260
Unreleased Trips	*1*	1	*77*	1
Total Number of Vehicles	*7,265*	7,248	*7,453*	7,476

5. WESTLEIGH PARK TRAFFIC IMPACT ASSESSMENT

5.1 Overview

Traffic generation and distribution volumes for the proposed Westleigh Park development were adopted from the *Westleigh Park Traffic and Access Assessment Report* prepared by Positive Traffic Pty Ltd (December 2019). The traffic demands were added to the 2027 and 2032 models to assess the Park's traffic impacts.

Council is currently considering a number of access options including the provision of the Sefton Road extension. In consultation with Council, a number of access options have been developed and assessed using the VISSIM models. The origins and destinations of the Park's traffic demands were adjusted to reflect the various traffic access options.

5.2 Park Traffic Generation

Traffic generation for the Park has been estimated for weekdays and weekends based on the demands of organised sport, mountain biking and playgrounds. No organised sports are expected to be played during the weekday AM peak, so the Park will not generate a significant amount of traffic in that period. Westleigh Park, once complete in 2032, is expected to generate about 176 vehicles during the PM peak one hour, and about 360 vehicles during the Weekend peak one hour.

There are three main roads connecting the Park to the broader road network: Sefton Road, Duffy Avenue and The Esplanade. The distribution of traffic between the three points at the boundary of the study area is shown in Figure 5.1.

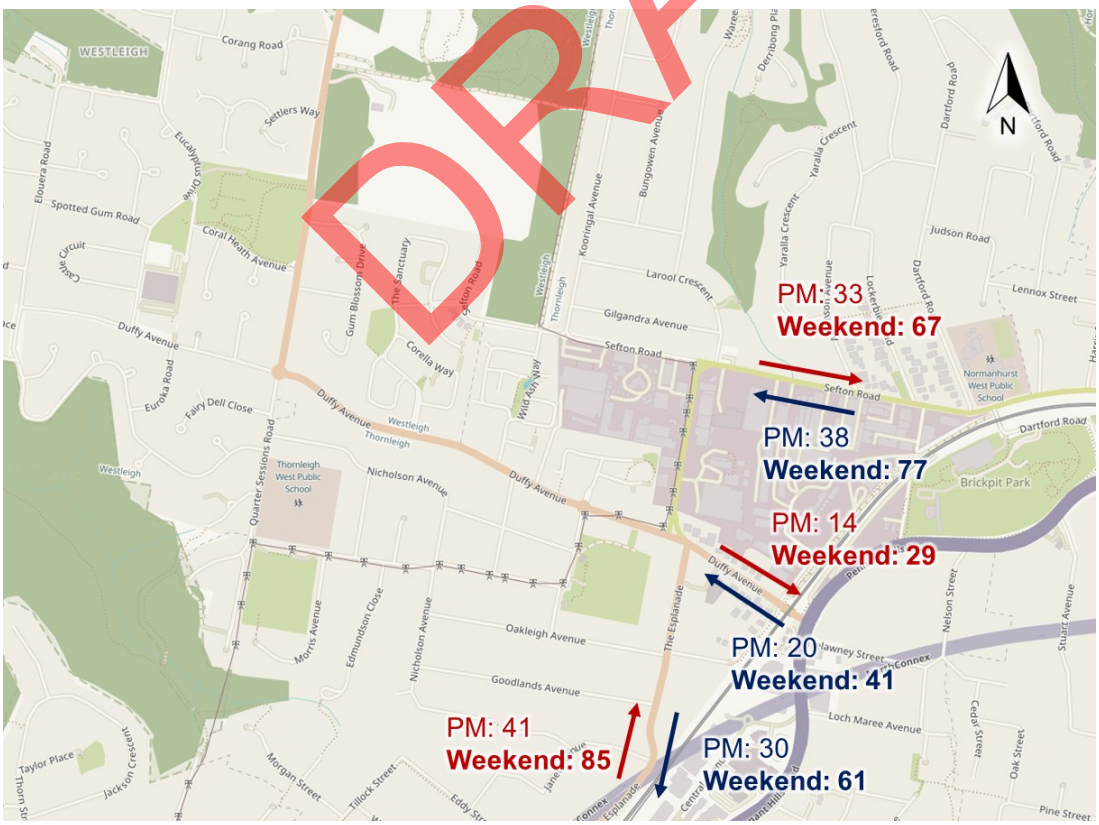


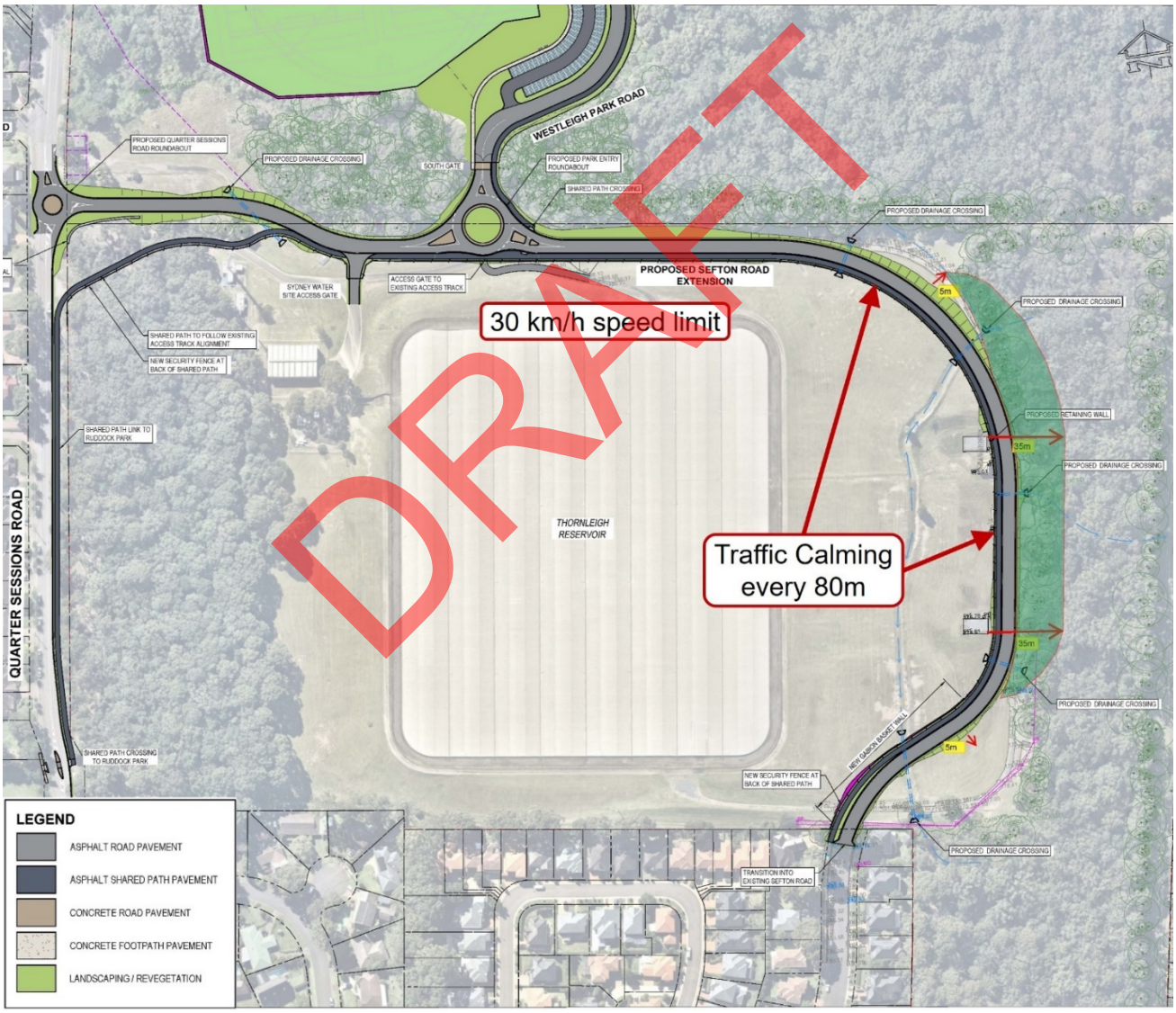
Figure 5.1: Westleigh Park Traffic Distribution (Veh/hr) – 2032

5.3 Park Access Options

In consultation with Council, the following three Park traffic access options have been developed for the purpose of this assessment:

- **Option 1:** All traffic to the Park enters and exits via Quarter Sessions Road. The proposed upgrade at the Duffy Road / The Esplanade / Chilvers Road intersection as presented in Section 4.5.1 was included in this option
- **Option 2:** Sefton Road is extended through the Sydney Water reservoir site and into the park and along the southern boundary of the Park to Quarter Sessions Road, with the extension open to general traffic, as shown in Figure 5.2
- **Option 3:** The Sefton Road extension through the Sydney Water site is for Park traffic only.

The extension of Sefton Road was assumed to be limited to 30 km/h and included traffic calming measures at 80m intervals to facilitate this. The assumed layout of the extension is shown in Figure 5.2.



Source: General Arrangement Plan, Taylor Thomson Whitting June 2021

Figure 5.2: Sefton Road Extension Proposal

5.4 Model Scenarios

The scenarios which have been modelled and assessed are described in Table 5.1. It is assumed that only one field will be complete by 2027, and all three fields will be complete by 2032. The 2027 scenarios therefore include a proportion of the total Park traffic generation. The AM peak traffic generation by the Park is expected to be minimal and the results in the section are limited to the PM and Weekend peak assessments. Both the 2027 and 2032 analyses include the proposed upgrade at the Duffy Avenue / Chilvers Road / The Esplanade intersection.

Table 5.1: Model Scenarios

Scenario	AM	PM	WE	Traffic	Network
2027 Do Minimum *plus* Upgrade	☑	☑	☑	▪ 2022 Base Demand ▪ + 5-year Traffic Growth	▪ 2022 Base Network ▪ + Chilvers Road / Sefton Road Signals ▪ + Duffy Avenue / Chilvers Road / The Esplanade Upgrade
2032 Do Minimum *plus* Upgrade	☑	☑	☑	▪ 2022 Base Demand ▪ + 10-year Traffic Growth	
2027 Option 1	n/a	☑	☑	▪ 2022 Base Demand ▪ + 5-year Traffic Growth ▪ + 33% Park Demand	▪ 2022 Base Network ▪ + Chilvers Road / Sefton Road Signals ▪ + Duffy Avenue / Chilvers Road / The Esplanade Upgrade
2032 Option 1	n/a	☑	☑	▪ 2022 Base Demand ▪ + 10-year Traffic Growth ▪ + 100% Park Demand	
2027 Option 2	n/a	☑	☑	▪ 2022 Base Demand ▪ + 5-year Traffic Growth ▪ + 33% Park Demand	▪ 2022 Base Network ▪ + Chilvers Road / Sefton Road Signals ▪ + Duffy Avenue / Chilvers Road / The Esplanade Upgrade ▪ + Sefton Road Extension
2032 Option 2	n/a	☑	☑	▪ 2022 Base Demand ▪ + 10-year Traffic Growth ▪ + 100% Park Demand	
2027 Option 3	n/a	☑	☑	▪ 2022 Base Demand ▪ + 5-year Traffic Growth ▪ + 33% Park Demand	▪ 2022 Base Network ▪ + Chilvers Road / Sefton Road Signals ▪ + Duffy Avenue / Chilvers Road / The Esplanade Upgrade ▪ + Sefton Road Extension (Park traffic access only)
2032 Option 3	n/a	☑	☑	▪ 2022 Base Demand ▪ + 10-year Traffic Growth ▪ + 100% Park Demand	

5.5 VISSIM Model Results

5.5.1 Network Statistics

The PM and Weekend peak network statistics for the 2027 and 2032 scenarios are compared in Table 5.2 and Table 5.3.

The network statistics for the PM peak are relatively similar across all scenarios modelled. Average delays in 2032 are reduced when the Sefton Road extension is introduced in Option 2, with a similar effect if the extension was limited to Park traffic only.

Table 5.2: Network Statistics Comparison – PM Peak (5:00 – 6:00pm)

Measure	Do Minimum *plus* Upgrade		2027 *With* Development			2032 Full Development		
	2027	2032	Opt 1	Opt 2	Opt 3	Opt 1	Opt 2	Opt 3
Total Travel Time (hr)	*200*	*205*	205	203	207	230	220	223
Total Distance Travelled (km)	*6,786*	*6,917*	6,939	6,902	6,940	7,363	7,269	7,311
Total Delay (hr)	*76*	*79*	78	76	80	95	84	88
Average Speed (km/hr)	*34*	*33.8*	33.9	33.9	33.5	32.1	33.1	32.8
Average Travel Time (min)	*1.67*	*1.68*	1.70	1.68	1.72	1.84	1.76	1.79
Average Travel Distance (km)	*0.94*	*0.95*	0.96	0.95	0.96	0.98	0.97	0.98
Average Delay (sec)	*38*	*39*	39	38	40	45	41	42
Completed Trips	*6,982*	*7,098*	7,038	7,042	7,040	7,270	7,262	7,263
Incomplete Trips	*201*	*207*	210	207	209	227	218	218
Unreleased Trips	*0*	*1*	0	1	0	1	1	1
Total Number of Vehicles	*7,183*	*7,304*	7,248	7,249	7,248	7,497	7,480	7,482

Table 5.3: Network Statistics Comparison – Weekend Peak (11:00am – 12:00pm)

Measure	Do Minimum *plus* Upgrade		2027 *With* Development			2032 Full Development		
	2027	2032	Opt 1	Opt 2	Opt 3	Opt 1	Opt 2	Opt 3
Total Travel Time (hr)	*196*	*201*	210	206	211	293	237	242
Total Distance Travelled (km)	*6,741*	*6,851*	7,052	6,976	7,012	7,592	7,645	7,682
Total Delay (hr)	*74*	*76*	81	77	82	153	93	99
Average Speed (km/hr)	*34.4*	*34.2*	33.7	33.8	33.2	26.1	32.3	31.7
Average Travel Time (min)	*1.64*	*1.66*	1.72	1.70	1.74	2.31	1.85	1.90
Average Travel Distance (km)	*0.94*	*0.94*	0.97	0.96	0.96	1.00	1.00	1.00
Average Delay (sec)	*37*	*38*	40	38	41	72	44	46
Completed Trips	*6,975*	*7,071*	7,096	7,090	7,093	7,313	7,436	7,442
Incomplete Trips	*192*	*197*	205	199	203	296	226	225
Unreleased Trips	*0*	*1*	0	0	0	80	0	0
Total Number of Vehicles	*7,168*	*7,268*	7,301	7,289	7,297	7,609	7,662	7,667

The network statistics for the Weekend peak show that the traffic generated by the full Westleigh Park development in 2032 will result in substantial congestion, with some unreleased trips and an increase in average delays by over 30 seconds. The results also show that the Sefton Road extension in both Options 2 and 3 will greatly reduce delays to a level that is only slightly worse than the Do Minimum scenario.

5.5.2 Key Intersection Performance

The 2027 and 2032 Weekday PM and Weekend peak key intersection performance are compared in Table 5.4 and Table 5.5.

The 2032 PM peak results show that the Park traffic will contribute to increased delays at the Duffy Road / Chilvers Road / The Esplanade intersection with the LoS deteriorating from LoS C to (high) LoS D without the Sefton Road extension under Option 1. However, with the proposed extension under Options 2 and 3, the average delay will reduce:

- By about 10 seconds in the PM peak as shown in Table 5.4
- By about 20 seconds in the Weekend peak as shown in Table 5.5.

Table 5.4: Key Intersection Performance Comparison – PM Peak

Intersection	Do Minimum *plus* Upgrade		2027 *With* Development			2032 *With Full* Development		
	2027	2032	Opt 1	Opt 2	Opt 3	Opt 1	Opt 2	Opt 3
Duffy Avenue / Chilvers Road / The Esplanade	*43 (C)*	*43 (C)*	44 (D)	41 (C)	44 (D)	53 (D)	43 (D)	46 (D)
Sefton Road / Chilvers Road	*18 (B)*	*19 (B)*	18 (B)	19 (B)	18 (B)	19 (B)	19 (B)	19 (B)
Duffy Avenue / Quarter Sessions Road	*5 (A)*	*5 (A)*	4 (A)	4 (A)	5 (A)	5 (A)	4 (A)	6 (A)
Duffy Avenue / Pennant Hills Road	*17 (B)*	*17 (B)*	17 (B)	17 (B)	17 (B)	17 (B)	17 (B)	17 (B)

Table 5.5: Key Intersection Performance Comparison – Weekend Peak

Intersection	Do Minimum *plus* Upgrade		2027 *With* Development			2032 *With Full* Development		
	2027	2032	Opt 1	Opt 2	Opt 3	Opt 1	Opt 2	Opt 3
Duffy Avenue / Chilvers Road / The Esplanade	40 (C)	41 (C)	43 (D)	41 (C)	44 (D)	67 (E)	45 (D)	46 (D)
Sefton Road / Chilvers Road	22 (B)	22 (B)	22 (B)	22 (B)	24 (B)	35 (C)	24 (B)	26 (B)
Duffy Avenue / Quarter Sessions Road	18 (B)	18 (B)	19 (B)	19 (B)	19 (B)	20 (B)	20 (B)	20 (B)
Duffy Avenue / Pennant Hills Road	3 (A)	3 (A)	4 (A)	3 (A)	4 (A)	6 (A)	5 (A)	5 (A)

The 2032 Weekend peak results show that the Park traffic will substantially increase delays at the Chilvers Road / Duffy Avenue / The Esplanade and Sefton Road / Chilvers Road intersections. The LoS will deteriorate from D to LoS E under the 2027 Option 1 with development scenario. The VISSIM modelling also shows that this will result in long queues at the Chilvers Road / Duffy Avenue / The Esplanade and Sefton Road / Chilvers Road intersections. Under the 2032 Option 1 with development scenario, the Park traffic travelling from Sefton Road within the study area would fill the right turn lane at the Chilvers Road (northern) approach of the Duffy Road / The Esplanade / Chilvers Road intersection and spill into the through traffic lane creating long queues as shown in Figure 5.3.

Figure 5.3: Modelled Queues – 2032 Weekend Peak With Full Development (Option 1)

Under this scenario, the southbound travel time on the Sefton Road / Chilvers Road / The Esplanade corridor will increase by 4.5 minutes as shown in Figure 5.4.

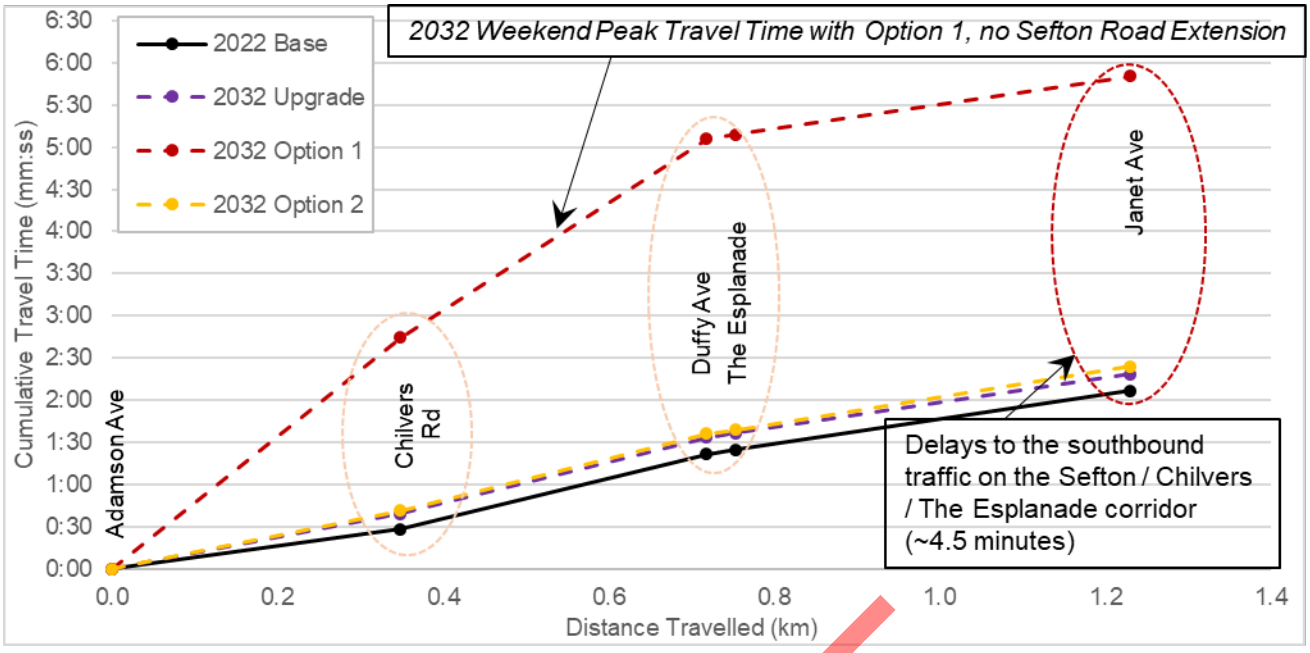


Figure 5.4: 2032 Weekend Peak Southbound Travel Time on Sefton / Chilvers / Duffy Corridor

5.5.3 Forecast Traffic Volumes on the Sefton Road Extension

Hourly Traffic Volumes

In Option 2, the Sefton Road extension will be used by both the Park traffic and general traffic travelling between Quarter Sessions Road and the existing part of Sefton Road. The 2022, 2027 and 2032 AM, PM and Weekend Peak Sefton Road Extension Traffic volumes are summarised in Table 5.6. The key observations include:

- In 2032 the proposed extension will service two-way traffic volumes of around 150 veh/hr in both the AM and PM peaks.
- In the 2032 weekend peak when the Park usage is substantially higher than the weekday peak, the two-way traffic volumes on Sefton Road would be over 300 veh/hr.

Table 5.6: Forecast Sefton Road Extension Peak Traffic Volumes (veh/hr) – Option 2

Direction	AM Peak			PM Peak			Weekend Peak		
	2022	2027	2032	2022	2027	2032	2022	2027	2032
Eastbound	52	79	80	18	37	70	34	84	138
Westbound	38	71	76	55	42	75	31	123	181
Two-way (hourly)	***90***	***150***	***156***	***73***	***79***	***145***	***65***	***207***	***319***

Daily Traffic Volumes

The peak traffic volumes were used to estimate the Annual Average Daily Traffic (AADT) on the Sefton Road Extension as follows:

- 2022: 815 veh/day
- 2027: 1,145 veh/day
- 2032: 1,505 veh/day.

In 2032, daily traffic on Sefton Road is estimated to be around 1,500 veh/day which is within the residential road environmental capacity of 2,000 veh/day (as per *Section 7.3 TfNSW's Guide to Traffic Generating Developments*).

Through Traffic

details the proportion of through traffic (i.e. the non-Park-related traffic) using the Sefton Road extension to access Quarter Sessions Road predominantly from the east of the study area. In the AM peak the Park traffic generation is limited to small number of vehicles. On this basis, in the AM peak almost all traffic using Sefton Road is expected to be through traffic.

In the 2032 PM peak, the proportion of through traffic is about 39% of total traffic on the Sefton Road Extension while in the weekend peak hour this proportion of through traffic is about half of the total traffic as shown in . It is noted that in the future assessment years as the volumes of the Part traffic grow, the percentages of through traffic fall.

Table 5.7: Sefton Road Extension Peak- Percentage of Through Traffic by Period –Option 2

Direction	AM Peak		PM Peak		Weekend Peak	
	2027	2032	2027	2032	2027	2032
Eastbound	100%	100%	70%	44%	71%	58%
Westbound	100%	100%	63%	33%	59%	33%
Two-way (hourly)	100%	100%	67%	39%	68%	49%

5.6 Assessment Outcomes

The modelling results demonstrate:

- **Option 1** which does not include the proposed Sefton Road extension will service the 2027 PM and Weekend peak traffic demands. However, in 2032 when the Park is expected to be fully developed, Park traffic will contribute to additional delays especially in the Weekend peak when the Duffy Avenue / Chilvers Road / The Esplanade intersection is predicted to operate very close or at capacity with long queues on the Chilvers Road approach. Therefore, while the proposed upgrade at the Duffy Avenue / Chilvers Road / The Esplanade will provide acceptable traffic performance until 2027, further upgrades are required between 2027 and 2032.
- **Option 2** which includes the Sefton Road extension, will substantially improve 2032 PM and Weekend Peak traffic conditions compared to Option 1. In 2032 the projected AADT on the Sefton Road extension is slightly over 1,500 veh/day which is still within the residential road environmental capacity of 2,000 veh/day (*Section 7.3 TfNSW's Guide to Traffic Generating Developments*)
- **Option 3** which only allows Park traffic onto the proposed Sefton Road extension, will marginally impact the Duffy Avenue / Chilvers Road / The Esplanade intersection traffic performance however this intersection still provides acceptable traffic performance.

5.7 Sensitivity Analysis

As summarised in Section 5.2, the weekday PM peak park traffic assessment was based on traffic generation of 176 vehicles with 4 teams of AFL (4 x22players) or 8 teams of Soccer (8 x11players) training (*source: Positive Traffic report*). In the event these numbers are doubled, the traffic generation would be similar to that of a Weekend peak i.e. 360 vehicles. Results from a sensitivity analysis suggest that the road network would be able to accommodate the increased PM peak traffic level.

6. INTERSECTION CAPACITY VERIFICATION

6.1 Overview

SIDRA models were created to verify the results from VISSIM network model. SIDRA models were developed for the following four key intersections:

- Duffy Avenue / Chilvers Road / The Esplanade
- Chilvers Road / Sefton Road
- Duffy Avenue / Quarter Sessions Road
- Pennant Hills Road / Duffy Avenue.

SIDRA modelling was then undertaken for the 2022 and 2032 AM, PM and Weekend Peak traffic using traffic volumes from VISSIM model for Do Minimum, Option 1, 2 and 3 scenarios.

All four intersections were assessed using '*SIDRA network'* model mainly due to their proximity and interaction.

6.2 2022 Base SIDRA Assessment Summary

The overall performance with 2022 AM, PM and Weekend peak traffic flows is summarised in Table 6.1. The Duffy Avenue / Chilvers Road / The Esplanade intersection provides LoS D based on average delay in the AM peak. But its DoS shows that the intersection is close to capacity in the AM and PM peak periods as evidenced by on-site observations. The detailed SIDRA outputs are provided in **Appendix E**.

Table 6.1: 2022 AM, PM and Weekend Peak SIDRA Results

Intersection	AM Peak			PM Peak			Weekend Peak		
	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS
Duffy Ave / Chilvers Rd / The Esplanade	2,313	52 (D)	0.927	2,088	56 (D)	0.961	2,108	47 (D)	0.884
Chilvers Rd / Sefton Rd	1,601	20 (B)	0.407	1,429	18 (B)	0.408	1,477	18 (B)	0.357
Duffy Ave / Quarter Sessions Rd	996	5 (A)	0.294	897	5 (A)	0.358	909	4 (A)	0.274
Pennant Hills Rd / Duffy Ave	3,958	17 (B)	0.818	4,094	18 (B)	0.681	4,153	19 (B)	0.7

6.3 2032 Do Minimum Assessment Summary

The performance of each intersection with the year 2032 Do Minimum (i.e. without development) traffic flows is summarised in Table 6.2. The Chilvers Road / Sefton Road intersection was assumed to be signal controlled.

The Duffy Avenue / Chilvers Road / The Esplanade intersection is expected to provide LoS F in the AM, PM and Weekend Peak periods with the intersection operating substantially over its capacity in the AM peak validating the VISSIM modelling results which demonstrates extensive queuing on the The Esplanade and Duffy Avenue approaches.

Table 6.2: 2032 Do Minimum AM, PM and Weekend Peak SIDRA Results

Intersection	AM Peak			PM Peak			Weekend Peak		
	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS
Duffy Ave / Chilvers Rd / The Esplanade	2,510	88 (F)	1.106	2,351	82 (F)	1.073	2,345	70 (E)	1.046
Chilvers Rd / Sefton Rd	1,754	36 (C)	0.816	1,601	30 (C)	0.820	1,623	32 (C)	0.750
Duffy Ave / Quarter Sessions Rd	1,066	9 (A)	0.345	1,002	9 (A)	0.399	971	8 (A)	0.306
Pennant Hills Rd / Duffy Ave	4,229	19 (B)	0.913	4,563	19 (B)	0.985	4,630	19 (B)	0.890

The 2032 Do Minimum Models were updated to incorporate the proposed upgrade at the Duffy Avenue / Chilvers Road / The Esplanade intersection as shown in Figure 4.7. The SIDRA results are summarised in Table 6.3. The proposed upgrade would substantially improve the 2032 AM, PM and Weekend peak intersection performance with all intersections operate within capacity.

Table 6.3: 2032 Do Minimum AM, PM and Weekend Peak SIDRA Results (with Upgrade)

Intersection	AM Peak			PM Peak			Weekend Peak		
	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS
Duffy Ave / Chilvers Rd / The Esplanade	2,510	58 (E)	0.957	2,351	53 (D)	0.911	2,345	49 (D)	0.913
Chilvers Rd / Sefton Rd	1,754	37 (C)	0.831	1,601	28 (B)	0.811	1,623	32 (C)	0.699
Duffy Ave / Quarter Sessions Rd	1,066	9 (A)	0.346	1,002	9 (A)	0.420	971	8 (A)	0.313
Pennant Hills Rd / Duffy Ave	4,229	19 (B)	0.913	4,563	18 (B)	0.955	4,630	19 (B)	0.890

6.4 2032 Option 1 Assessment Summary

The overall performance of each intersection with 2032 PM and Weekend Peak Option 1 traffic flows is summarised in Table 6.4. The Duffy Avenue / Chilvers Road / The Esplanade intersection is expected to provide LoS F in the Weekend Peak periods with the intersection operating over its capacity validating the VISSIM modelling results.

Table 6.4: 2032 Option 1 PM and Weekend Peak SIDRA Results

Intersection	PM Peak			Weekend Peak		
	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS
Duffy Ave / Chilvers Rd / The Esplanade	2,490	62 (E)	0.978	2,478	87 (F)	1.082
Chilvers Rd / Sefton Rd	1,670	30 (C)	0.837	1,656	32 (C)	0.784
Duffy Ave / Quarter Sessions Rd	1,176	10 (A)	0.497	1,295	10 (A)	0.444
Pennant Hills Rd / Duffy Ave	4,602	19 (B)	1.000	4,693	20 (B)	1.000

6.5 2032 Option 2 Assessment Summary

The overall performance of each intersection with 2032 PM and Weekend Peak Option 2 traffic flows is summarised in Table 6.5. All the intersections are expected to provide acceptable LoS and operate at or within capacity. This validates VISSIM modelling results that the introduction of the proposed Sefton Road extension will improve intersection performance.

Table 6.5: 2032 Option 2 PM and Weekend Peak SIDRA Results

Intersection	PM Peak			Weekend Peak		
	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS
Duffy Ave / Chilvers Rd / The Esplanade	2,355	51 (D)	0.907	2,357	50 (D)	0.893
Chilvers Rd / Sefton Rd	1,660	43 (D)	1.065	1,755	48 (D)	0.998
Duffy Ave / Quarter Sessions Rd	1,031	9 (A)	0.416	1,100	9 (A)	0.407
Pennant Hills Rd / Duffy Ave	4,601	19 (B)	1.000	4,699	20 (B)	0.984

6.6 2032 Option 3 Assessment Summary

The overall performance of each intersection with 2036 PM and Weekend Peak Option 3 traffic flows is summarised in Table 6.6. If the Sefton Road extension is restricted to the Park users only, all intersections will continue to provide acceptable LoS and operate at or within capacity which validates VISSIM modelling results.

Table 6.6: 2032 Option 3 PM and Weekend Peak SIDRA Results

Intersection	PM Peak			Weekend Peak		
	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS
Duffy Ave / Chilvers Rd / The Esplanade	2,420	56 (D)	0.945	2,434	57 (E)	0.954
Chilvers Rd / Sefton Rd	1,680	37 (C)	1.000	1,787	54 (D)	0.998
Duffy Ave / Quarter Sessions Rd	1,096	10 (A)	0.456	1,179	9 (A)	0.435
Pennant Hills Rd / Duffy Ave	4,601	19 (B)	1.000	4,700	19 (B)	0.984

6.7 Ruddock Park Traffic Impacts

As mentioned in Section 3.11.1, there were no sports at Ruddock Park at the time of the weekend peak traffic surveys. Therefore, the usage was very low. In order to understand the impacts of the park traffic on the surround intersections, the 2032 Option 3 weekend peak SIDRA models were updated to incorporate additional park traffic.

6.7.1 Trip Generation

A review of park usage identified that a large sporting event took place on 4 June 2022 when there were two matches with about 60 people using the park. Based on data from similar sites, a car occupancy rate of 2.25 persons / car was adopted to calculate the number of vehicles using the park facility. This equates to about ***48 vehicles*** during the weekend peak. For the purpose of a conservative SIDRA assessment, it was assumed that they park users access and exit the site in the same weekend peak hour i.e. between 11am and 12pm.

6.7.2 Trip Distribution

The available weekend peak turning count data at four key intersections were analysed to calculate the park's trip distribution. The outcomes are summarised in Figure 6.1. Of the total park traffic, 39% access the park from Duffy avenue (east) closely follow by 38% from Chilvers Road / Sefton Road corridor.

Figure 6.1: 2032 Ruddock Park Trip Distribution

6.7.3 Intersection Performance

The SIDRA analysis results for the 'with' and 'without' Ruddock Park traffic are compared in Table 6.7. The analysis suggests that with the inclusion of the park traffic, the key Duffy Avenue / Chilvers Road / The Esplanade intersection would still provide LoS E although the average delays would increase slightly by eight seconds. The analysis also suggests that delays at the Chilvers Road / Sefton Road intersection would increase by five seconds.

Table 6.7: 2032 Option 3 Weekend Peak 'With' and 'Without' Ruddock Park SIDRA Results

Intersection	Without Ruddock Park Trips			With Ruddock Park Trips		
	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS	Traffic Flows (veh/hr)	LoS (Delays in Sec)	DoS
Duffy Ave / Chilvers Rd / The Esplanade	2,434	57 (E)	0.954	2,530	65 (E)	0.986
Chilvers Rd / Sefton Rd	1,787	54 (D)	0.998	1,823	59 (E)	1.00
Duffy Ave / Quarter Sessions Rd	1,179	9 (A)	0.435	1,275	10 (A)	0.474
Pennant Hills Rd / Duffy Ave	4,700	19 (B)	0.984	4,738	20 (B)	0.794

6.7.4 Summary

To understand the impacts of the Ruddock Park weekend peak on the performance of four key intersections, a conservative analysis was undertaken in which it was assumed that the 48 vehicles/hour generated by the park would enter and exit the park within the same hour. The SIDRA assessment suggests that the inclusion of park traffic would not have any substantial impacts on the intersection performance. The critical intersection of Duffy Avenue / Chilvers Road / The Esplanade would continue to provide acceptable traffic performance of LoS E.

6.8 Suitability of Sefton Road (west) to Accommodate Additional Traffic

Traffic analysis and transport modelling undertaken for this project established that Sefton Road (west) has adequate capacity to accommodate additional traffic that would be generated by Westleigh Park including through traffic wishing to access areas west of Quarter Sessions Road.

It is noted as documented in the Submissions Report that Sefton Road does feature some steep grades/bends but is generally wide enough for two traffic lanes plus two parking lanes. While there appears to be no recent record of crashes involving either vehicles or active transport users including pedestrians and cyclists, it is acknowledged that this could pose a risk to drivers not familiar with the routes as well as some potential parking issues for residents. In this regard, the geometric suitability of Sefton Road should be reviewed by Council as part of the safe systems approach and operational management of local roads.

6.9 Westleigh Park Access Management Strategy

While Options 2 and 3 would both provide acceptable road network conditions in the study area, the following is noted in relation to Council's operational management requirements for the Park:

- **Option 2** would provide full access at all times for local residents and the Park users including during training on weekdays
- **Option 2** would also provide a second emergency evacuation route for Westleigh residents
- **Option 3** would only provide full access for the Park users. Therefore, the Sefton Road extension would not provide a connection to Quarter Sessions Road through the Park. In this regard, traffic entering the Park from the Sefton Road gate will be required to leave the site in the opposite direction. Similarly, traffic entering the Park via the Quarter Sessions gate will be required to exit the Park in the opposite direction
- **Option 3** may not provide Council opportunity to provide a second access via Sefton Road for emergency evacuation. If an emergency access is required via the Sefton Road extension, this can be achieved by providing a gated connection that could be used if required for example during emergency evacuation. The gated connection that could be provided as part of Option 3 can also be used during major events as part of the on site operational traffic management plan to quickly channel the Park users to alternative routes either via Sefton Road or Quarter Sessions Road.

With consideration of the above, either option is preferred. If Option 3 is preferred, emergency access for Westleigh residents and major event access when required should be considered.

7. PUBLIC TRANSPORT AND ACTIVE TRANSPORT

7.1 Overview

Improved public transport and active transport access to the site:

- Supports local access to the Park
- Reduces private vehicle trips
- Encourages more active and healthier lifestyle and habits.

A review of existing and proposed pedestrian and bicycle routes and facilities was undertaken with potential improvements identified to support the development, including:

- Extension of proposed shared paths and off-road links proposed for the Park for improved local access
- Extension of walking and cycling paths to better connect with rail stations
- Additional pedestrian crossings and access points to/from the Park.

Bus access to the site was also reviewed to determine the suitability of existing routes and stops and provide recommendations to improve public transport with:

- Potential bus route modifications
- New or modified bus stop locations.

7.2 Active Transport Improvements

7.2.1 Facilities Already Proposed

Already-proposed active transport connections to/from the site and the routes surrounding the site are shown in Figure 7.1. What has already been proposed includes:

- Shared path connections to and along Quarter Sessions Road
- Shared path along the Sefton Road extension to the south
- Mixed on-road and off-road link to Hornsby Park (Old Mans Valley Bike Park)
- Internal fire trails to the east of the site.

These improvements are proposed to connect with existing cycle routes and pedestrian paths surrounding the Park.

7.2.2 Recommended New / Modified Active Transport Facilities

Figure 7.2 shows additional facilities which may be considered by Council to improve active transport to, from and within the site.

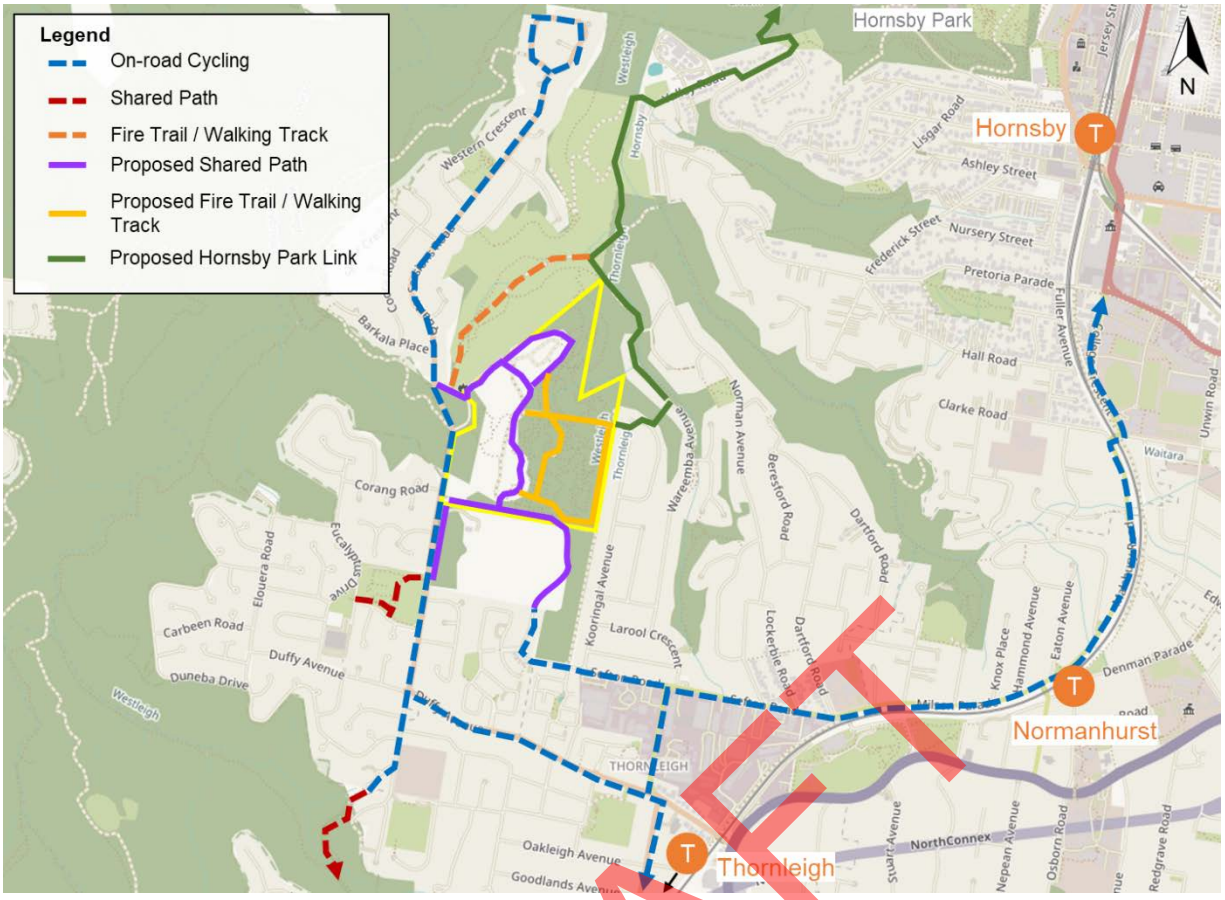


Figure 7.1: Previously Proposed Active Transport Connections

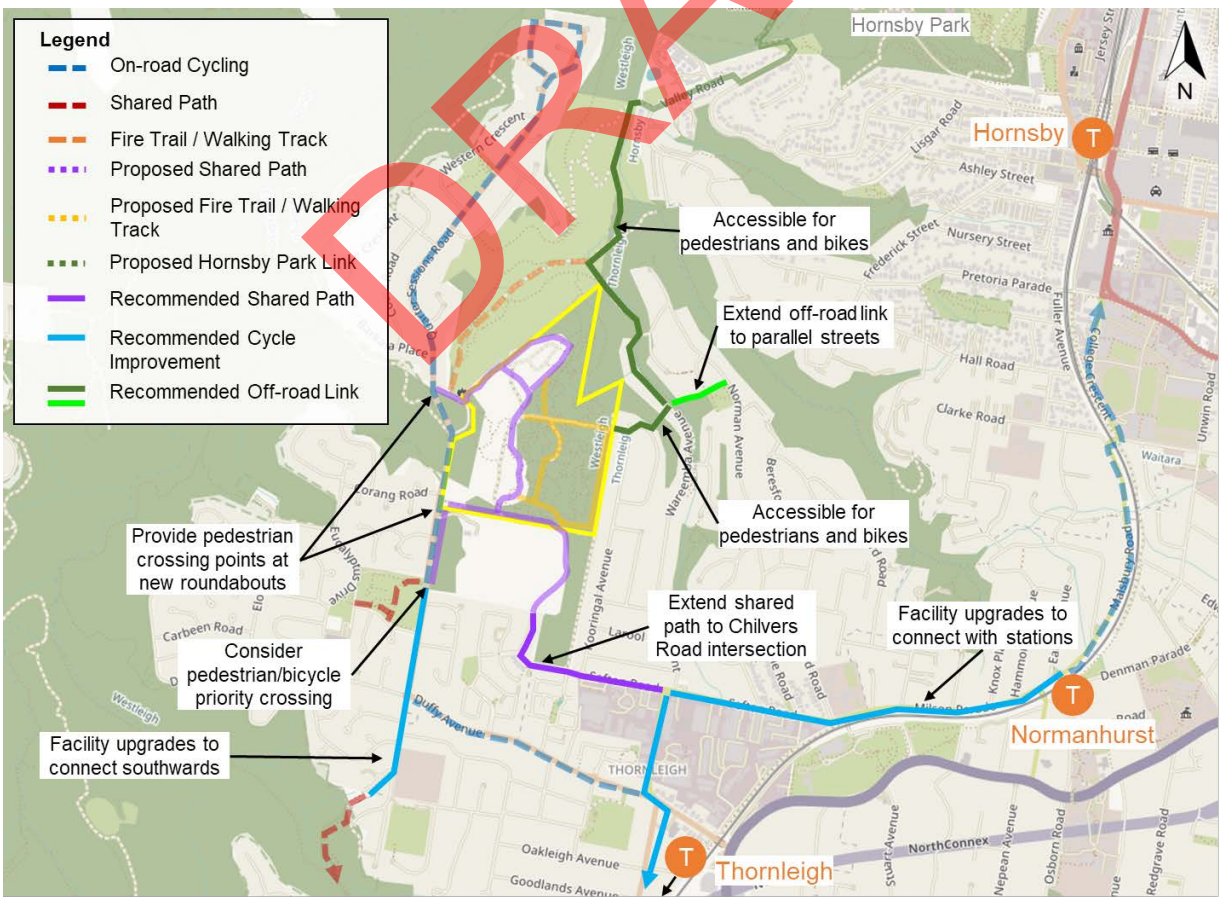


Figure 7.2: Recommended Additional Active Transport Improvements

Further details regarding the recommended additional active transport improvements are described below.

Shared Path Extension – Sefton Road

Consideration should be given to extending the proposed shared path on Sefton Road (south of the Park) to the Chilvers Road intersection (and ideally beyond it) to provide an off-road bicycle and pedestrian facility leading into and out of the eastern entry to the site. The benefits of this extension would include:

- Improved pedestrian access route and amenity
- A separated off-road facility for bicycle riders (considering increase in vehicle volumes along Sefton Road)
- Consistent path type along Sefton Road
- A pedestrian and cycling crossing facility as part of the proposed signalised intersection upgrade at Chilvers Road (Section 4.3)

Further investigation may be required to determine the constructability of this proposed shared path extension.

Local Access Improvements

Improvements to pedestrian facilities surrounding the Park will provide more convenient access for local residents and visitors walking to it. Proposed improvements include:

- **Hornsby Park Link extension:** This involves an extension of the off-road connection at Kooringal Avenue to the Norman Avenue Playground / Reserve (east of the Park) to connect with parallel streets. A link between parallel streets will reduce the lengthy detours that would otherwise be required due to the local topography and road locations. Further, this connection provides a direct path to bus stops along both Wareemba Avenue and Norman Avenue (Route 588) and will improve public transport access to the Park
- **Pedestrian Crossing Points on Quarter Sessions Road:** Additional pedestrian / bicycle crossing facilities on Quarter Sessions Road would link the proposed shared paths with existing paths on the western side of the road. The crossings would better connect residential areas to the west, north and south of the Park without the need to provide new paths on the eastern side of the road. The inclusion of roundabouts at Warringa Road and Sefton Road provide opportunities to 'design in' pedestrian refuges at these intersections. Consideration may also be given to providing raised zebra crossings at these locations subject to more detailed investigations.

Train Station Access Routes

The Park and particularly its mountain biking facilities will attract visitors from across the Sydney area, similar to the current trails present on site. With bicycles allowed on trains, improving bicycle routes between train stations and the site will encourage the use of public transport to reduce the amount of private vehicle trips. Also, mountain biking is popular with teenagers who are too young to drive and who may use the train for access to the Park for this purpose.

Existing cycle routes between the Park and Thornleigh and Normanhurst train stations can be improved through upgraded on-road facilities or off-road paths. It is noted that little to no infrastructure is provided in these locations to support on-road cycling. The mixing of bicycles and vehicles along these routes is highly unsuitable due to high traffic volumes (up to 1500vph during peak), and consideration should be given to investigating the provision of off-road bicycle facilities.

Access to Neighbouring Trails

The connection between the Park and Hornsby Park (Old Mans Valley Bike Park) is intended to link the two facilities together for mountain bike riders and pedestrians. To realise the full potential of the connection, the link should be accessible to both bicycle riders and pedestrians. This applies particularly to a link between the Park and Kooringal Avenue and Wareemba Avenue. This link will provide a pedestrian access point for local residents and provide access to the bush walking tracks to the east of the site. It is also recommended to provide end-of-trip facilities (i.e. bicycle racks, storage lockers etc.) at the Park itself to encourage cycling.

7.3 Public Transport Improvements

7.3.1 Public Transport Access

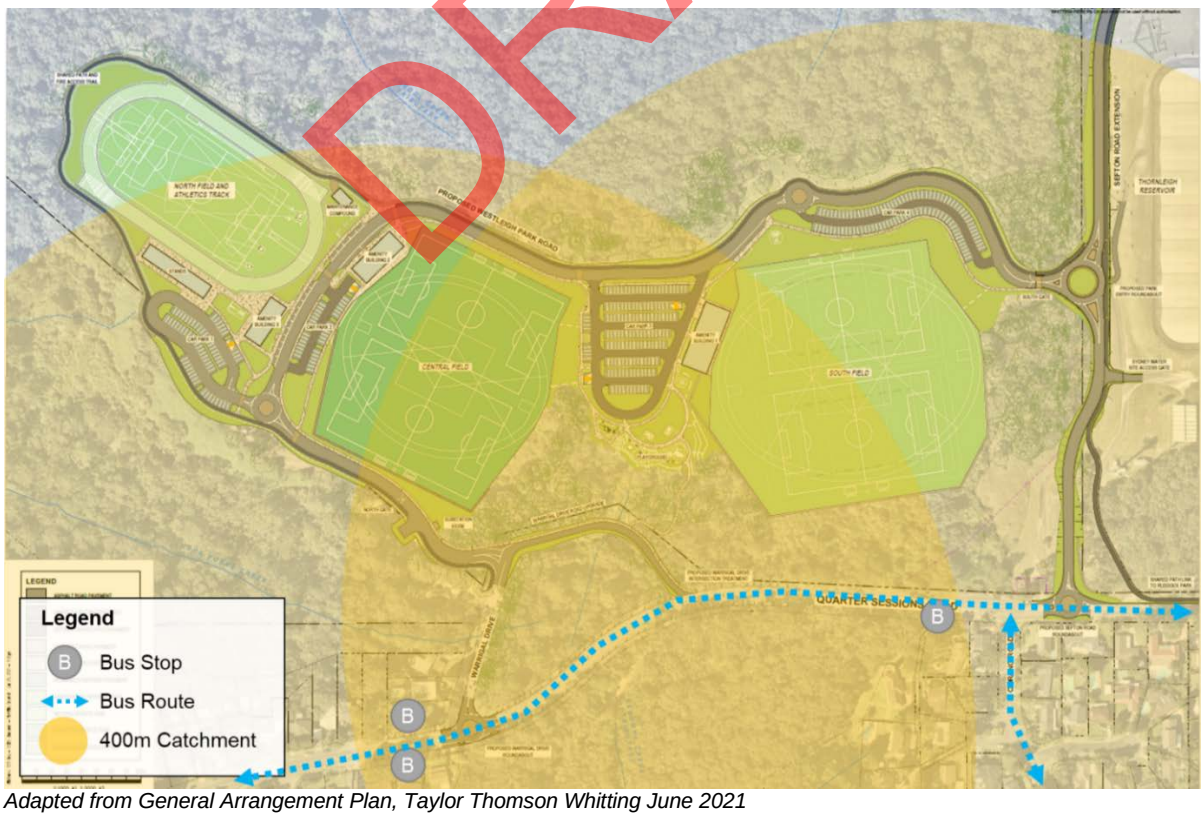
As outlined in Section 3.3, the site will primarily be serviced by local bus routes and associated stops along Quarter Sessions Road, summarised in Table 7.1 and shown Figure 7.3.

Table 7.1: Nearby Bus Routes and Stops

Routes	Stops
▪ Route 856 – Pennant Hills to Westleigh ▪ Route 857 – Hornsby to Westleigh (loop service)	▪ TSN 2120130 - Quarter Sessions Road after Corang Road ▪ TSN 2120131 – Quarter Sessions Road before Barkala Place ▪ TSN 2120103 - Quarter Sessions Rd before Warigal Drive

7.3.2 Catchment Assessment

TfNSW's *Integrated Public Transport Service Planning Guidelines 2013* provides guidance on the typical walking catchment for bus stops as 400m (radius) and train stations as 800m (radius). Application of the 400m radius to all existing bus stops near the Park is shown in Figure 7.3.



Adapted from General Arrangement Plan, Taylor Thomson Whitting June 2021

Figure 7.3: Bus Stops and Catchment Area

The Park mostly falls within the walking catchment area of nearby bus stops. However, while bus stops along Quarter Sessions Road are well connected to the site via proposed shared path links, indirect walking routes between other bus stops and facilities may not present buses as a convenient transport option for visitors.

7.3.3 Recommended Public Transport Improvements

Bus Route Re-alignment

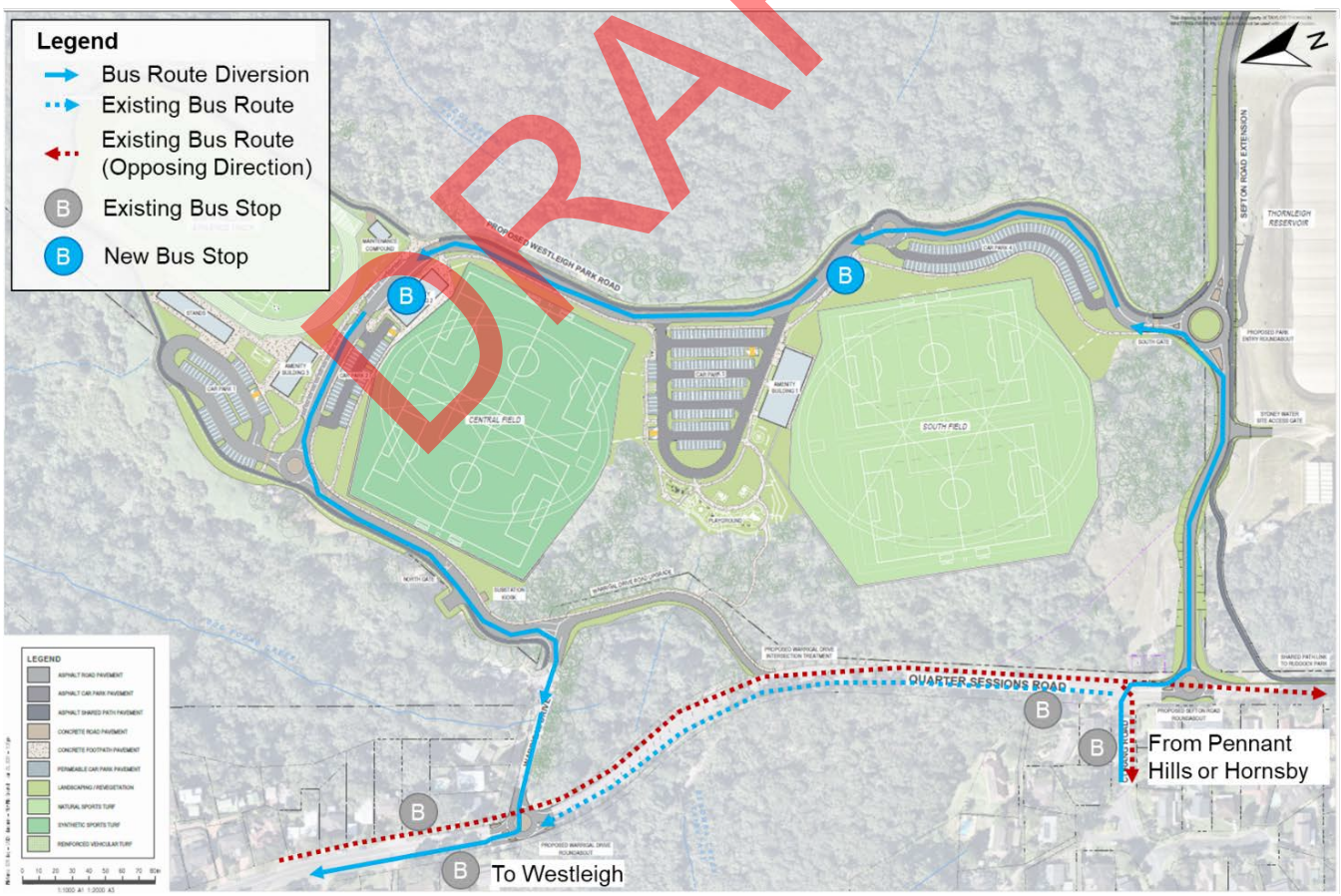
With the proposed extension of Sefton Road through the site, there is an opportunity to relocate local routes through the site and provide a stop/stops at the Park.

Considering local routes 856 and 857, two options have been identified for bus service re-routing, as presented below.

Option A – Outbound / Anti-clockwise

Bus Routes 856 and 857 could be diverted to within the Park in the outbound direction (to Westleigh), circulating anti-clockwise around the Park along the following route (see Figure 7.4):

- From Corang Road, turn right onto Quarter Sessions Road, then turn left onto Sefton Road
- Turn left onto internal roadway (south gate)
- Turn left to continue along the internal roadway to Warrigal Drive
- Turn right onto Warrigal Drive
- Turn right onto Quarter Sessions Road and continue along original route.



Adapted from General Arrangement Plan, Taylor Thomson Whitting June 2021

Figure 7.4: Bus Route Changes, Option A

Under Option A, two new bus stops could be provided to service the Park located:

- Between North and Central Fields
- East of South Field.

Under this arrangement, it is noted:

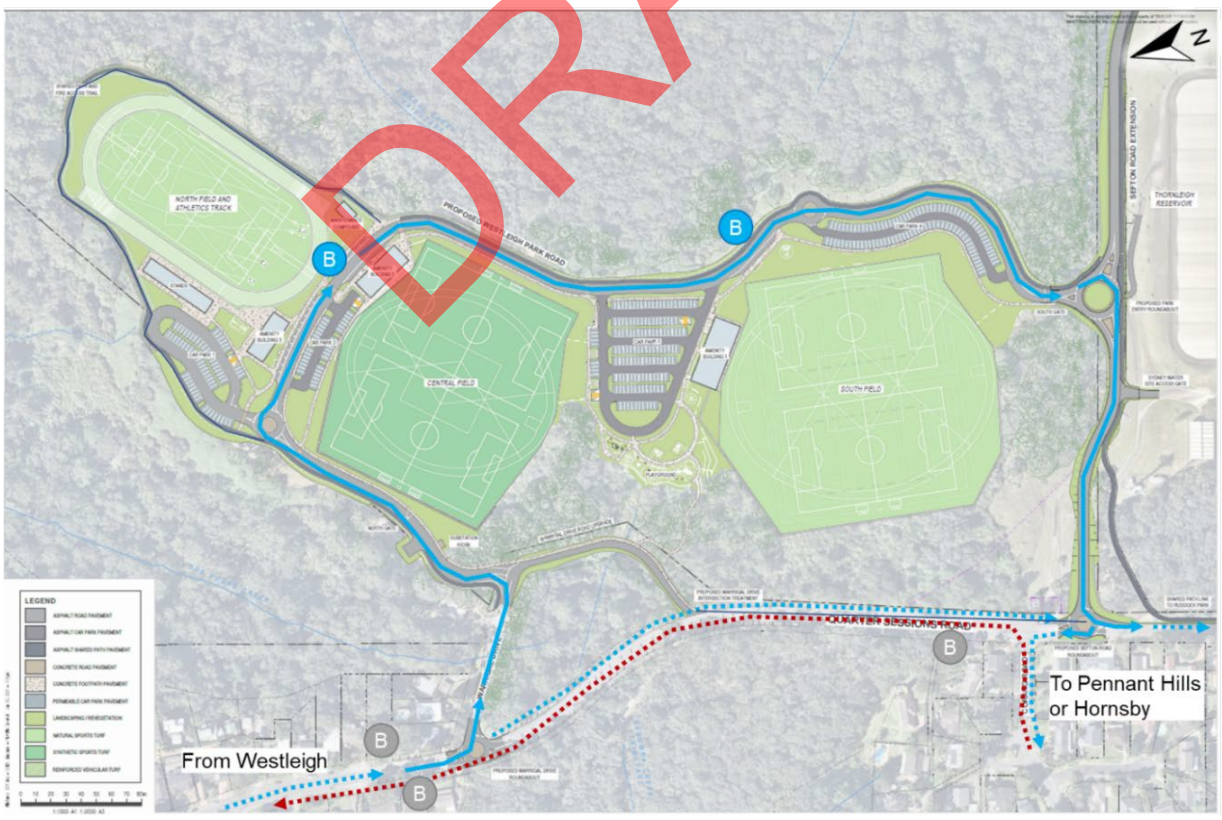
- Facilities are located on the same side of the road at the South Field stop
- One existing bus stop becomes redundant and could be removed
- Local passengers residing in Westleigh (north of the site) will be required to travel through the Park before reaching their destination, experiencing an increase in travel time.

It is recognised that relocating bus routes requires a broader range of considerations than those above including extensive consultation between TfNSW, the operator, Council and residents and that further work would be required to understand the impacts versus the benefits of these proposals.

Option B – Inbound / Clockwise

Bus Routes 856 and 857 can be diverted to within the Park in the inbound direction (to Pennant Hills or Hornsby), circulating clockwise around the Park along the following route (see Figure 7.5):

- From Quarter Sessions Road, turn left onto Warrigal Drive
- Turn left onto internal roadway (north gate)
- Turn right to continue along the internal roadway to Sefton Road (extension)
- Turn Right onto Sefton Road
- Turn left onto Quarter Sessions Road and continue along original route
- OR turn right into Quarter Sessions Road then turn left into Corang Road to continue along original route (timetable dependent).



Adapted from General Arrangement Plan, Taylor Thomson Whitting June 2021

Figure 7.5: Bus Route Changes, Option B

Under Option B, two new bus stops could be provided to service the site located:

- Between North and Central Fields
- East of South Field

Under this arrangement, it is noted:

- Facilities are located on the opposite side of the road at the South Field stop
- No existing bus stops are affected under this arrangement
- Passengers travelling from train stations (Pennant Hills or Hornsby) will be required to travel to the end of the route at Westleigh before alighting within the Park
- Passengers will experience a greater travel time in the inbound direction and direction of connecting train stations.

It is recognised that relocating bus routes requires a broader range of considerations than those above including extensive consultation between TfNSW, the operator, Council and residents and that further work would be required to understand the impacts versus the benefits of these proposals.

Required Works

To accommodate any bus route changes, roadways would need to be designed to accommodate typical buses (12.5m long), with key considerations including:

- Road profiles and lane widths
- Intersection turning paths (including at roundabouts)
- Any traffic calming or management devices to be sympathetic to buses using them

8. CONCLUSIONS

When fully developed, Westleigh Park is expected to generate 176 vehicles during the PM peak one hour, and about 360 vehicles during the Weekend peak one hour with the AM peak traffic generation expected to be negligible.

It is understood that the Park will be developed in stages. It is acknowledged that Council is still finalising the Park staging plan, however for the purpose of this assessment, it was assumed that the Park will be fully developed by 2032 and partially completed by 2027. In consultation with Council the following three options were assessed:

- **Option 1**: Includes 2027 / 2032 background traffic growth plus Park traffic. The proposed Sefton Road extension is not included in this option
- **Option 2**: As per Option 1 but with the proposed Sefton Road extension open to all traffic
- **Option 3**: Same as Option 2 but with the proposed Sefton Road extension only accessible for Park traffic (assuming an internal closure location to stop through traffic using it)

Traffic Impacts and Needs

The traffic modelling identified that with background traffic growth plus Park traffic:

- **Option 1** will service the 2027 PM and Weekend peak traffic demands. However, in 2032 when the Park is expected to be fully developed, the Park traffic will add to traffic delays especially in the Weekend peak when the Duffy Avenue / Chilvers Road / The Esplanade intersection is predicted to operate very close or at capacity
- **Option 2** will substantially improve the 2032 PM and Weekend Peak traffic conditions in the local road network including at the key intersection of Duffy Avenue / Chilvers Road / The Esplanade compared to the Base Case condition, because of the Sefton Road link. Under this option, 2032 daily traffic on the Sefton Road extension is estimated to be about 1,500 veh/day which is within the residential road environmental capacity of 2,000 veh/day as defined under Section 7.3 TfNSW's Guide to Traffic Generating Developments
- **Option 3** shows that Park traffic will marginally impact congestion at the Duffy Avenue / Chilvers Road / The Esplanade intersection compared to the Base Case condition. However, this intersection still operates with acceptable delays and queue lengths.

In summary, the proposed Sefton Road extension is required to be in place between completion of Stage 1 and completion of Stage 2 of the Park. If the extension is open to through traffic it provides network benefits particularly to the Duffy Avenue / Chilvers Road / The Esplanade intersection. If it is closed in the middle allowing access for Park traffic only, it impacts the local network and the Duffy Avenue / Chilvers Road / The Esplanade intersection only marginally.

Active and Public Transport

Suggested improvements additional to those already planned as part of the development include:

- Extend the off-road connection at Kooringal Avenue to the Norman Avenue Playground / Reserve (east of the site) to connect with parallel streets
- Additional pedestrian crossing facilities on Quarter Sessions Road
- Improve connections with nearby train stations to provide access for bicycle riders
- Extension of the proposed shared path on Sefton Road to (at least) the Chilvers Road intersection
- Ensure the connection between the Park and Hornsby Park is for both pedestrians and cyclists
- In consultation with stakeholders, further investigate re-routing local bus routes through the Park.

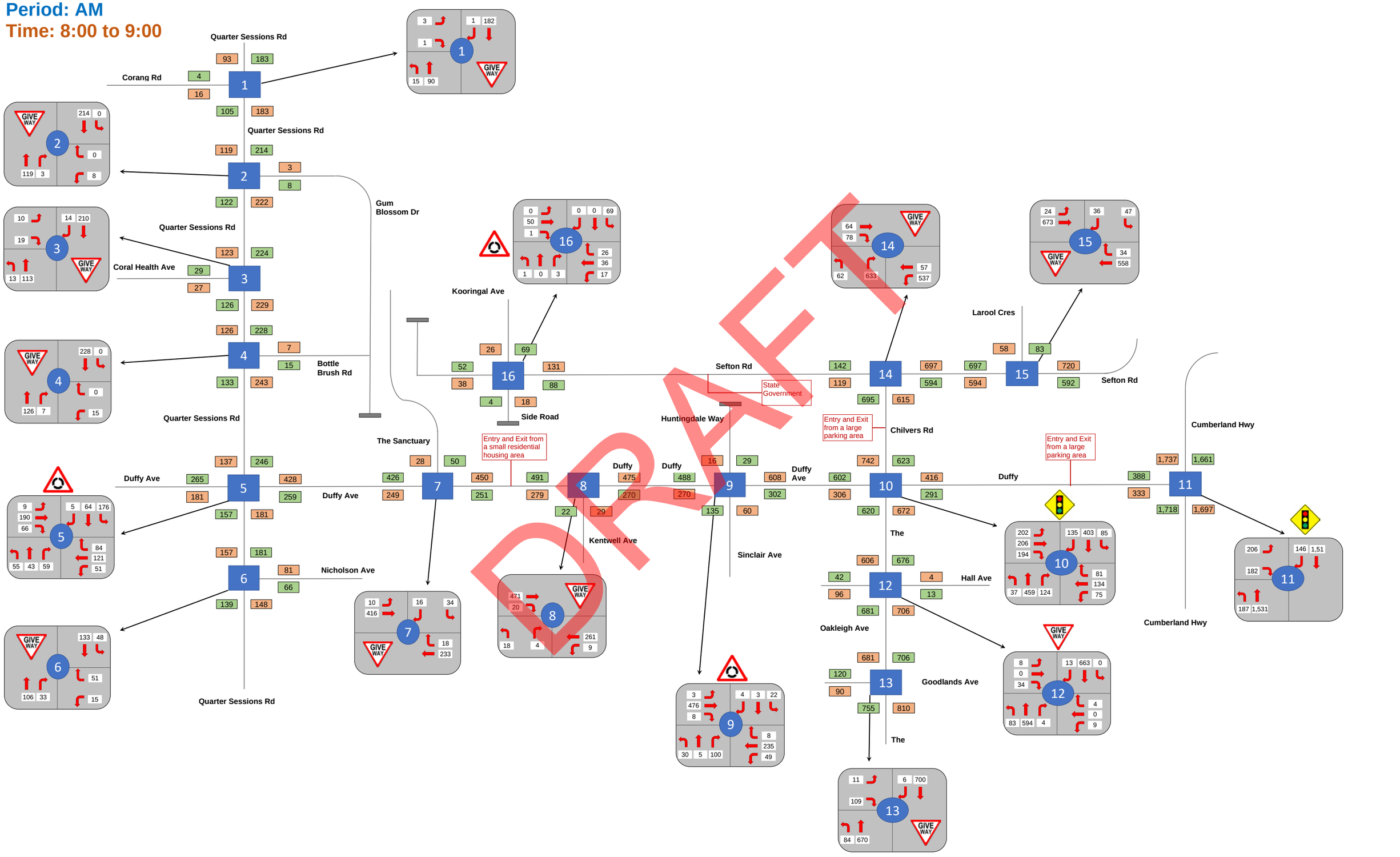
Appendix A

Weekday AM/PM and Weekend Peak Intersection Turning Movements

P5524 Westleigh Park Traffic Impact and Access Study

Period: AM

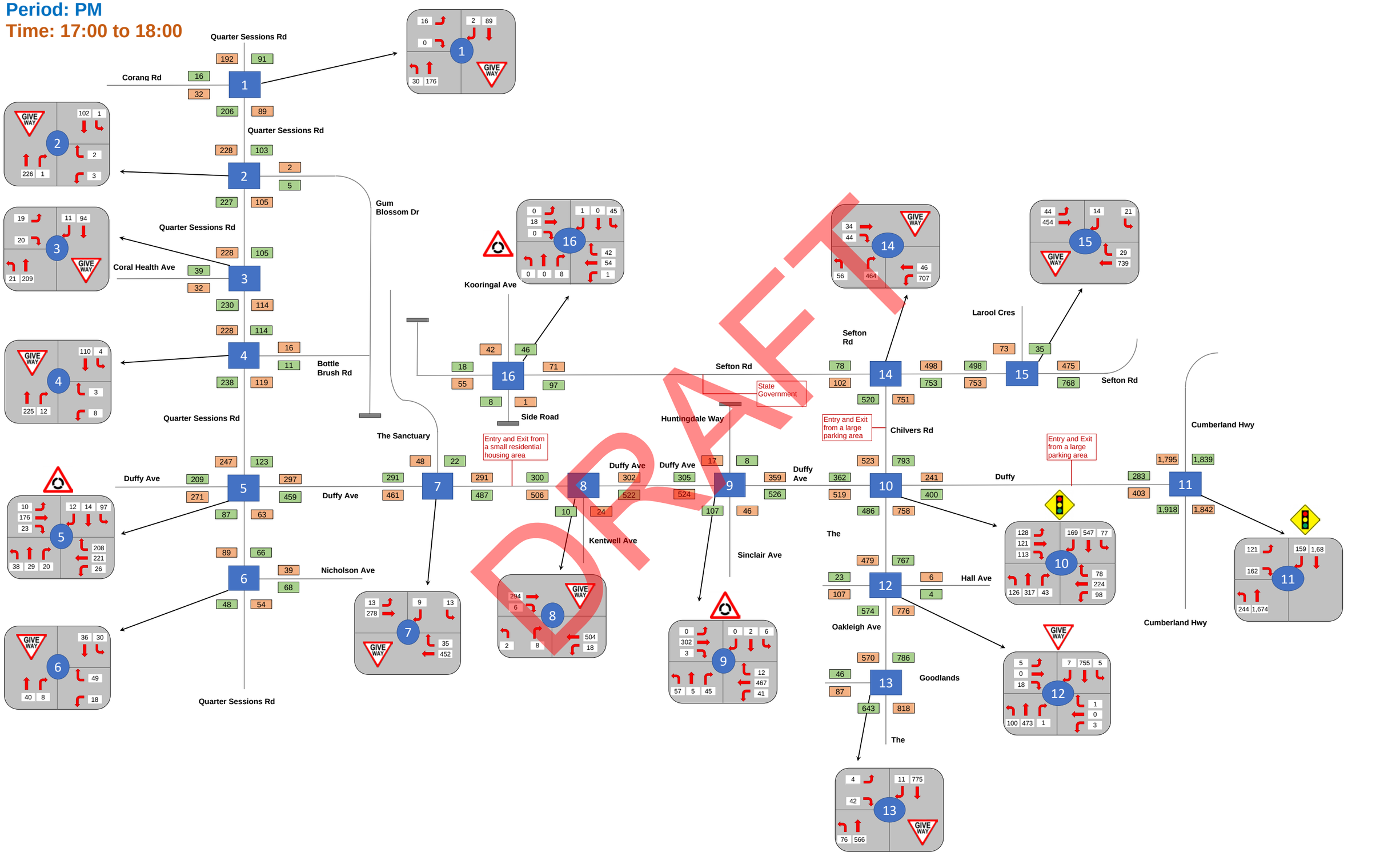
Time: 8:00 to 9:00



P5524 Westleigh Park Traffic Impact and Access Study

Period: PM

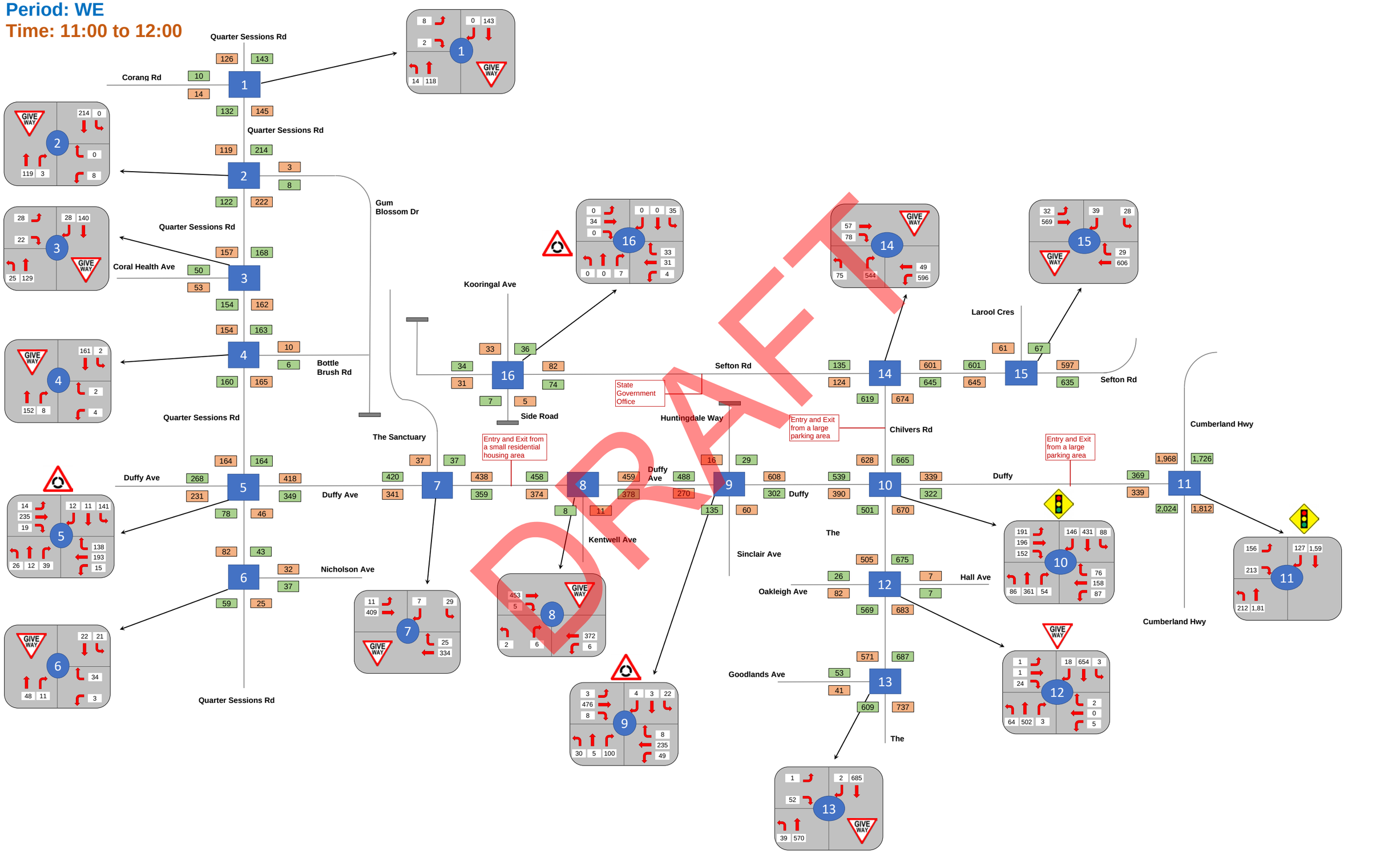
Time: 17:00 to 18:00



P5524 Westleigh Park Traffic Impact and Access Study

Period: WE

Time: 11:00 to 12:00



Appendix B

Weekday AM/PM and Weekend Peak Travel Time Survey Data

P5524 Westleigh Park Traffic Impact and Access Study
OD Survey Data - Cordon 1
AM Peak (0800 - 0900)

Origin - Destination Matches - Class 1 - Light

Survey Time 8:00 9:00	Destination	1N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	90	172	58	718	810	407	63	2318		
1S	180	9	6	3	30	41	46	0	135	75.0%	45
3E	265	6	20	4	50	68	47	1	196	74.0%	69
4S	70	1	3	2	36	17	5	0	64	91.4%	6
5W	592	14	47	29	12	326	40	0	468	79.1%	124
6N	760	14	27	9	381	14	108	45	598	78.7%	162
7W	297	24	23	7	33	64	7	0	158	53.2%	139
8E	80	0	1	0	2	53	3	4	63	78.8%	17
Total	2244	68	127	54	544	583	256	50	1682	75.0%	562
% Matched		75.6%	73.8%	93.1%	75.8%	72.0%	62.9%	79.4%	72.6%		
Local Origin		22	45	4	174	227	151	13	636		

Origin - Destination Matches - Class 2 - Heavy

Survey Time 8:00 9:00	Destination	1N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	8	9	1	15	8	10	1	52		
1S	6	0	0	0	1	0	0	0	1	16.7%	5
3E	7	1	0	0	1	0	2	0	4	57.1%	3
4S	1	0	0	0	1	0	0	0	1	100.0%	0
5W	8	1	0	1	0	1	1	0	4	50.0%	4
6N	15	1	0	0	3	0	4	1	9	60.0%	6
7W	15	2	6	0	1	1	0	0	10	66.7%	5
8E	5	0	0	0	1	4	0	0	5	100.0%	0
Total	57	5	6	1	8	6	7	1	34	59.6%	23
% Matched		62.5%	66.7%	100.0%	53.3%	75.0%	70.0%	100.0%	65.4%		
Local Origin		3	3	0	7	2	3	0	18		

Origin - Destination Matches - Total Vehicles

Survey Time 8:00 9:00	Destination	1N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	98	181	59	733	818	417	64	2370		
1S	186	9	6	3	31	41	46	0	136	73.1%	50
3E	272	7	20	4	51	68	49	1	200	73.5%	72
4S	71	1	3	2	37	17	5	0	65	91.5%	6
5W	600	15	47	30	12	327	41	0	472	78.7%	128
6N	775	15	27	9	384	14	112	46	607	78.3%	168
7W	312	26	29	7	34	65	7	0	168	53.8%	144
8E	85	0	1	0	3	57	3	4	68	80.0%	17
Total	2301	73	133	55	552	589	263	51	1716	74.6%	585
% Matched		74.5%	73.5%	93.2%	75.3%	72.0%	63.1%	79.7%	72.4%		
Local Origin		25	48	4	181	229	154	13	654		

P5524 Westleigh Park Traffic Impact and Access Study
OD Survey Data - Cordon 2
AM Peak (0800 - 0900)

Origin - Destination Matches - Class 1 - Light

Survey Time 8:00 9:00	Destination	2N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	131	172	58	718	810	407	63	2359		
2S	245	19	6	4	51	55	60	0	195	79.6%	50
3E	265	12	20	3	50	68	47	1	201	75.8%	64
4S	70	1	3	2	36	17	5	0	64	91.4%	6
5W	592	24	47	29	12	326	40	0	478	80.7%	114
6N	760	19	27	9	381	14	108	45	603	79.3%	157
7W	297	33	23	7	33	64	7	0	167	56.2%	130
8E	80	0	1	0	2	53	3	4	63	78.8%	17
Total	2309	108	127	54	565	597	270	50	1771	76.7%	538
% Matched		82.4%	73.8%	93.1%	78.7%	73.7%	66.3%	79.4%	75.1%		
Local Origin		23	45	4	153	213	137	13	588		

Origin - Destination Matches - Class 2 - Heavy

Survey Time 8:00 9:00	Destination	2N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	10	9	1	15	8	10	1	54		
2S	1	0	0	0	1	0	0	0	1	100.0%	0
3E	7	1	0	0	1	0	2	0	4	57.1%	3
4S	1	0	0	0	1	0	0	0	1	100.0%	0
5W	8	1	0	1	0	1	1	0	4	50.0%	4
6N	15	0	0	0	3	0	4	1	8	53.3%	7
7W	15	3	6	0	1	1	0	0	11	73.3%	4
8E	5	0	0	0	1	4	0	0	5	100.0%	0
Total	52	5	6	1	8	6	7	1	34	65.4%	18
% Matched		50.0%	66.7%	100.0%	53.3%	75.0%	70.0%	100.0%	63.0%		
Local Origin		5	3	0	7	2	3	0	20		

Origin - Destination Matches - Total Vehicles

Survey Time 8:00 9:00	Destination	2N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	141	181	59	733	818	417	64	2413		
2S	246	19	6	4	52	55	60	0	196	79.7%	50
3E	272	13	20	3	51	68	49	1	205	75.4%	67
4S	71	1	3	2	37	17	5	0	65	91.5%	6
5W	600	25	47	30	12	327	41	0	482	80.3%	118
6N	775	19	27	9	384	14	112	46	611	78.8%	164
7W	312	36	29	7	34	65	7	0	178	57.1%	134
8E	85	0	1	0	3	57	3	4	68	80.0%	17
Total	2361	113	133	55	573	603	277	51	1805	76.5%	556
% Matched		80.1%	73.5%	93.2%	78.2%	73.7%	66.4%	79.7%	74.8%		
Local Origin		28	48	4	160	215	140	13	608		

P5524 Westleigh Park Traffic Impact and Access Study
OD Survey Data - Cordon 1
PM Peak (1700 - 1800)

Origin - Destination Matches - Class 1 - Light

Survey Time 8:00 9:00	Destination	1N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	185	263	74	474	799	241	69	2105		
1S	91	3	9	1	12	21	23	0	69	75.8%	22
3E	213	8	2	5	43	46	50	0	154	72.3%	59
4S	32	0	2	0	18	10	1	0	31	96.9%	1
5W	761	30	46	28	11	455	54	1	625	82.1%	136
6N	636	41	68	17	247	4	36	53	466	73.3%	170
7W	408	60	67	19	35	79	3	1	264	64.7%	144
8E	38	0	0	0	2	15	0	0	17	44.7%	21
Total	2179	142	194	70	368	630	167	55	1626	74.6%	553
% Matched		76.8%	73.8%	94.6%	77.6%	78.8%	69.3%	79.7%	77.2%		
Local Origin		43	69	4	106	169	74	14	479		

Origin - Destination Matches - Class 2 - Heavy

Survey Time 8:00 9:00	Destination	1N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	3	6	0	7	8	3	1	28		
1S	4	0	0	0	0	1	1	0	2	50.0%	2
3E	4	0	0	0	2	1	0	0	3	75.0%	1
4S	0	0	0	0	0	0	0	0	0	0.0%	0
5W	7	0	2	0	0	5	0	0	7	100.0%	0
6N	2	0	0	0	0	0	0	1	1	50.0%	1
7W	5	0	2	0	1	0	0	0	3	60.0%	2
8E	0	0	0	0	0	0	0	0	0	0.0%	0
Total	22	0	4	0	3	7	1	1	16	72.7%	6
% Matched		0.0%	66.7%	0.0%	42.9%	87.5%	33.3%	100.0%	57.1%		
Local Origin		3	2	0	4	1	2	0	12		

Origin - Destination Matches - Total Vehicles

Survey Time 8:00 9:00	Destination	1N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	188	269	74	481	807	244	70	2133		
1S	95	3	9	1	12	22	24	0	71	74.7%	24
3E	217	8	2	5	45	47	50	0	157	72.4%	60
4S	32	0	2	0	18	10	1	0	31	96.9%	1
5W	768	30	48	28	11	460	54	1	632	82.3%	136
6N	638	41	68	17	247	4	36	54	467	73.2%	171
7W	413	60	69	19	36	79	3	1	267	64.6%	146
8E	38	0	0	0	2	15	0	0	17	44.7%	21
Total	2201	142	198	70	371	637	168	56	1642	74.6%	559
% Matched		75.5%	73.6%	94.6%	77.1%	78.9%	68.9%	80.0%	77.0%		
Local Origin		46	71	4	110	170	76	14	491		

P5524 Westleigh Park Traffic Impact and Access Study
OD Survey Data - Cordon 2
PM Peak (1700 - 1800)

Origin - Destination Matches - Class 1 - Light

Survey Time 8:00 9:00	Destination	2N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	234	263	74	474	799	241	69	2154		
2S	119	2	13	1	22	33	29	0	100	84.0%	19
3E	213	10	2	5	43	46	50	0	156	73.2%	57
4S	32	0	2	0	18	10	1	0	31	96.9%	1
5W	761	53	46	28	11	455	54	1	648	85.2%	113
6N	636	64	68	17	247	4	36	53	489	76.9%	147
7W	408	74	67	19	35	79	2	1	277	67.9%	131
8E	38	1	0	0	2	15	0	0	18	47.4%	20
Total	2207	204	198	70	378	642	172	55	1719	77.9%	488
% Matched		87.2%	75.3%	94.6%	79.7%	80.4%	71.4%	79.7%	79.8%		
Local Origin		30	65	4	96	157	69	14	435		

Origin - Destination Matches - Class 2 - Heavy

Survey Time 8:00 9:00	Destination	2N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	0	6	0	7	8	3	1	25		
2S	3	0	0	0	0	1	1	0	2	66.7%	1
3E	4	0	0	0	2	1	0	0	3	75.0%	1
4S	0	0	0	0	0	0	0	0	0	0.0%	0
5W	7	0	2	0	0	5	0	0	7	100.0%	0
6N	2	0	0	0	0	0	0	1	1	50.0%	1
7W	5	0	2	0	1	0	0	0	3	60.0%	2
8E	0	0	0	0	0	0	0	0	0	0.0%	0
Total	21	0	4	0	3	7	1	1	16	76.2%	5
% Matched		0.0%	66.7%	0.0%	42.9%	87.5%	33.3%	100.0%	64.0%		
Local Origin		0	2	0	4	1	2	0	9		

Origin - Destination Matches - Total Vehicles

Survey Time 8:00 9:00	Destination	2N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	234	269	74	481	807	244	70	2179		
2S	122	2	13	1	22	34	30	0	102	83.6%	20
3E	217	10	2	5	45	47	50	0	159	73.3%	58
4S	32	0	2	0	18	10	1	0	31	96.9%	1
5W	768	53	48	28	11	460	54	1	655	85.3%	113
6N	638	64	68	17	247	4	36	54	490	76.8%	148
7W	413	74	69	19	36	79	2	1	280	67.8%	133
8E	38	1	0	0	2	15	0	0	18	47.4%	20
Total	2228	204	202	70	381	649	173	56	1735	77.9%	493
% Matched		87.2%	75.1%	94.6%	79.2%	80.4%	70.9%	80.0%	79.6%		
Local Origin		30	67	4	100	158	71	14	444		

P5524 Westleigh Park Traffic Impact and Access Study
OD Survey Data - Cordon 1
Weekend Peak (1100 - 1200)

Origin - Destination Matches - Class 1 - Light

Survey Time 8:00 9:00	Destination	1N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	124	223	59	601	725	336	36	2104		
1S	138	1	9	0	28	31	35	0	104	75.4%	34
3E	264	9	1	6	64	72	69	0	221	0.0%	43
4S	55	1	6	0	21	14	11	0	53	96.4%	2
5W	632	21	58	29	2	354	54	2	520	82.3%	112
6N	592	22	47	18	293	6	43	17	446	75.3%	146
7W	306	33	49	6	40	66	4	1	199	65.0%	107
8E	30	0	0	0	1	19	1	1	22	73.3%	8
Total	2017	87	170	59	449	562	217	21	1565	77.6%	452
% Matched		70.2%	76.2%	100.0%	74.7%	77.5%	64.6%	58.3%	74.4%		
Local Origin		37	53	0	152	163	119	15	539		

Origin - Destination Matches - Class 2 - Heavy

Survey Time 8:00 9:00	Destination	1N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	2	2	0	1	3	1	0	9		
1S	2	0	0	0	0	0	1	0	1	50.0%	1
3E	2	0	0	0	0	1	0	0	1	50.0%	1
4S	0	0	0	0	0	0	0	0	0	0.0%	0
5W	3	0	1	0	0	1	0	0	2	66.7%	1
6N	1	0	0	0	0	0	0	0	0	0.0%	1
7W	2	1	0	0	1	0	0	0	2	100.0%	0
8E	0	0	0	0	0	0	0	0	0	0.0%	0
Total	10	1	1	0	1	2	1	0	6	60.0%	4
% Matched		50.0%	50.0%	0.0%	100.0%	66.7%	100.0%	0.0%	66.7%		
Local Origin		1	1	0	0	1	0	0	3		

Origin - Destination Matches - Total Vehicles

Survey Time 8:00 9:00	Destination	1N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	126	225	59	602	728	337	36	2113		
1S	140	1	9	0	28	31	36	0	105	75.0%	35
3E	266	9	1	6	64	73	69	0	222	83.5%	44
4S	55	1	6	0	21	14	11	0	53	96.4%	2
5W	635	21	59	29	2	355	54	2	522	82.2%	113
6N	593	22	47	18	293	6	43	17	446	75.2%	147
7W	308	34	49	6	41	66	4	1	201	65.3%	107
8E	30	0	0	0	1	19	1	1	22	73.3%	8
Total	2027	88	171	59	450	564	218	21	1571	77.5%	456
% Matched		69.8%	76.0%	100.0%	74.8%	77.5%	64.7%	58.3%	74.3%		
Local Origin		38	54	0	152	164	119	15	542		

P5524 Westleigh Park Traffic Impact and Access Study
OD Survey Data - Cordon 2
Weekend Peak (1100 -1200)

Origin - Destination Matches - Class 1 - Light

Survey Time 8:00 9:00	Destination	2N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	157	223	59	601	725	336	36	2137		
2S	164	3	13	0	41	39	49	0	145	88.4%	19
3E	264	15	1	6	64	72	69	0	227	86.0%	37
4S	55	1	6	0	21	14	11	0	53	96.4%	2
5W	632	37	58	29	2	354	54	2	536	84.8%	96
6N	592	39	47	18	292	6	43	17	462	78.0%	130
7W	306	48	49	6	0	66	4	1	214	69.9%	92
8E	30	0	0	0	1	19	1	1	22	73.3%	8
Total	2043	143	174	59	461	570	231	21	1659	81.2%	384
% Matched		91.1%	78.0%	100.0%	76.7%	78.6%	68.8%	58.3%	77.6%		
Local Origin		14	49	0	140	155	105	15	478		

Origin - Destination Matches - Class 2 - Heavy

Survey Time 8:00 9:00	Destination	2N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	2	2	0	1	3	1	0	9		
2S	1	0	0	0	0	0	1	0	1	100.0%	0
3E	2	1	0	0	0	1	0	0	2	100.0%	0
4S	0	0	0	0	0	0	0	0	0	0.0%	0
5W	3	0	1	0	0	1	0	0	2	66.7%	1
6N	1	0	0	0	0	0	0	0	0	0.0%	1
7W	2	1	0	0	1	0	0	0	2	100.0%	0
8E	0	0	0	0	0	0	0	0	0	0.0%	0
Total	9	2	1	0	1	2	1	0	7	77.8%	2
% Matched		100.0%	50.0%	0.0%	100.0%	66.7%	100.0%	0.0%	77.8%		
Local Origin		0	1	0	0	1	0	0	2		

Origin - Destination Matches - Total Vehicles

Survey Time 8:00 9:00	Destination	2N	3W	4N	5E	6S	7E	8W	Total	% Matched	Local Destination
Origin	Recorded	159	225	59	602	728	337	36	2146		
2S	165	3	13	0	41	39	50	0	146	88.5%	19
3E	266	16	1	6	64	73	69	0	229	86.1%	37
4S	55	1	6	0	21	14	11	0	53	96.4%	2
5W	635	37	59	29	2	355	54	2	538	84.7%	97
6N	593	39	47	18	292	6	43	17	462	77.9%	131
7W	308	49	49	6	41	66	4	1	216	70.1%	92
8E	30	0	0	0	1	19	1	1	22	73.3%	8
Total	2052	145	175	59	462	572	232	21	1666	81.2%	386
% Matched		91.2%	77.8%	100.0%	76.7%	78.6%	68.8%	58.3%	77.6%		
Local Origin		14	50	0	140	156	105	15	480		

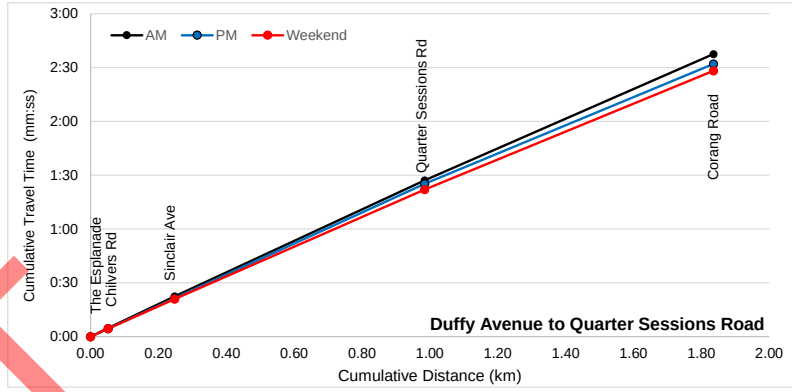
Appendix C

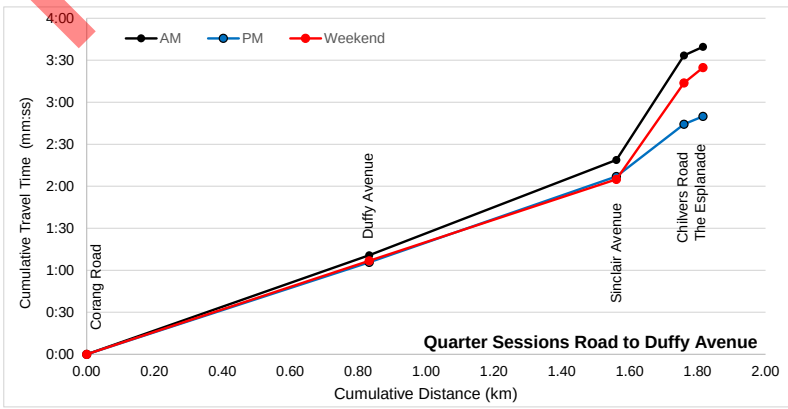
Weekday AM/PM and Weekend Peak OD Data

P5524 Westleigh Park Traffic Impact and Access Study
Travel Time Data Analysis: Base 2022
Route 1: Quarter Sessions Road / Duffy Avenue
Travel Time Survey Summary

Northbound				Section Travel Time			Cumulative Travel Time		
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	AM	PM	Weekend	AM	PM	Weekend
The Esplanade		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00
Chilvers Road	101	0.05	0.05	0:05	0:04	0:05	0:05	0:04	0:05
Sinclair Avenue	102	0.20	0.25	0:18	0:17	0:17	0:22	0:21	0:21
Quarter Sessions Road	103	0.74	0.98	1:05	1:04	1:01	1:27	1:25	1:22
H20 Bike Trail	104	0.85	1.84	1:10	1:07	1:06	2:37	2:32	2:28

Southbound				Section Travel Time			Cumulative Travel Time		
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	AM	PM	Weekend	AM	PM	Weekend
H20 Bike Trail		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00
Duffy Avenue	111	0.83	0.83	1:11	1:06	1:07	1:11	1:06	1:07
Sinclair Avenue	112	0.73	1.56	1:08	1:01	0:58	2:19	2:07	2:05
Chilvers Road	113	0.20	1.76	1:15	0:37	1:09	3:33	2:44	3:14
The Esplanade	114	0.06	1.82	0:06	0:06	0:11	3:40	2:50	3:25

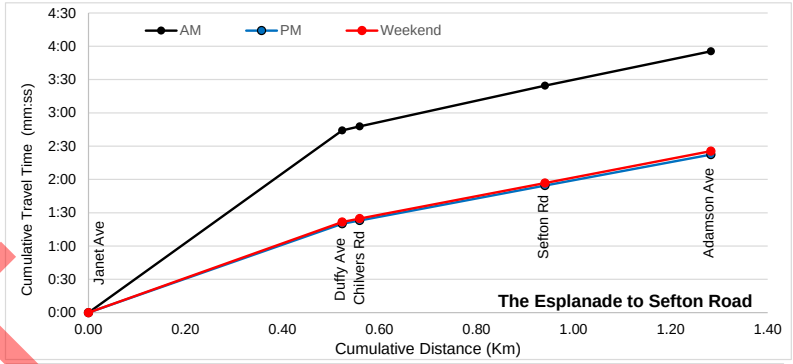


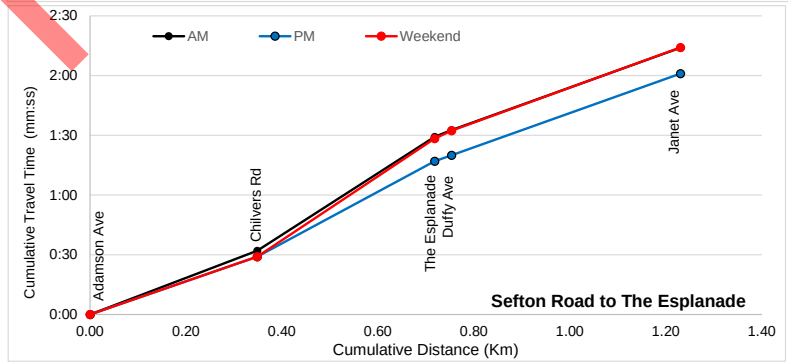


P5524 Westleigh Park Traffic Impact and Access Study
Travel Time Data Analysis: Base 2022
Route 2: The Esplanade / Chivers Road / Sefton Road
Travel Time Survey Summary

Northbound				Section Travel Time			Cumulative Travel Time		
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	AM	PM	Weekend	AM	PM	Weekend
Janet Avenue		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00
Duffy Avenue	201	0.52	0.52	2:44	1:20	1:22	2:44	1:20	1:22
Chilvers Road	202	0.04	0.56	0:04	0:03	0:03	2:48	1:23	1:25
Sefton Road	203	0.38	0.94	0:37	0:32	0:32	3:25	1:55	1:57
Adamson Avenue	204	0.34	1.28	0:31	0:28	0:29	3:56	2:22	2:26

Southbound				Section Travel Time			Cumulative Travel Time		
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	AM	PM	Weekend	AM	PM	Weekend
Adamson Avenue		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00
Chilvers Road	211	0.35	0.35	0:32	0:29	0:29	0:32	0:29	0:29
Duffy Avenue	212	0.37	0.72	0:57	0:48	0:59	1:29	1:17	1:28
The Esplanade	213	0.04	0.75	0:03	0:03	0:04	1:33	1:20	1:32
Janet Avenue	214	0.48	1.23	0:41	0:41	0:42	2:14	2:01	2:14





Appendix D

Year 2027 and Year 2032 VISSIM Results

P5524 Westleigh Park Traffic Impact and Access Study

VISSIM Data Analysis - Intersection Count Comparison

AM Peak 0800-0900

					Vehicle Counts							Delay (s)						
ID	Intersection	From	To	Turn	2022 Base	2027 Do Min	2032 Do Min	2027 Upgd	2032 Upgd	2027 Opt 2	2032 Opt 2	2022 Base	2027 Do Min	2032 Do Min	2027 Upgd	2032 Upgd	2027 Opt 2	2032 Opt 2
101	Quarter Sessions Rd	Quarter Sessions Rd (N)	Corang Rd (W)	R	2	3	4	3	4	3	4	1	1	2	2	2	3	2
101	Corang Rd		Quarter Sessions Rd (S)	T	184	196	200	196	200	196	200	0	0	0	0	0	2	2
101		Quarter Sessions Rd (S)	Quarter Sessions Rd (N)	T	91	98	112	NA	117	99	117	0	0	0	0	0	0	0
101			Corang Rd (W)	L	39	35	35	NA	39	35	39	1	0	0	1	0	0	0
101		Corang Rd (W)	Quarter Sessions Rd (S)	R	11	10	10	10	10	10	10	1	2	2	2	2	2	2
101			Quarter Sessions Rd (N)	L	5	4	4	4	4	4	4	3	4	4	4	4	4	4
101		All			332	346	366	348	374	347	374	3	4	4	4	4	4	4
102	Quarter Sessions Rd	Quarter Sessions Rd (N)	Quarter Sessions Rd (S)	T	225	236	241	236	237	229	237	0	0	0	0	0	0	0
102	Gum Blossom Dr		Gum Blossom Dr (E)	L	0	0	1	0	2	0	2	0	0	0	0	0	0	1
102		Gum Blossom Dr (E)	Quarter Sessions Rd (N)	R	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102			Quarter Sessions Rd (S)	L	8	11	12	11	12	11	12	1	1	2	1	2	1	1
102		Quarter Sessions Rd (S)	Gum Blossom Dr (E)	R	9	14	12	14	11	13	11	0	2	2	2	2	1	2
102			Quarter Sessions Rd (N)	T	145	152	168	153	166	142	166	0	0	0	0	0	0	0
102		All			387	413	435	414	429	395	429	1	2	2	2	2	1	2
103	Quarter Sessions Rd	Quarter Sessions Rd (N)	Coral Health Ave (W)	R	21	20	21	20	22	21	22	1	1	1	1	2	1	1
103	Coral Health Ave		Quarter Sessions Rd (S)	T	212	226	232	226	227	217	227	0	0	0	0	0	0	0
103		Quarter Sessions Rd (S)	Quarter Sessions Rd (N)	T	134	144	159	145	155	133	155	0	0	0	0	0	0	0
103			Coral Health Ave (W)	L	22	24	24	24	25	23	25	0	0	0	0	0	0	0
103		Coral Health Ave (W)	Quarter Sessions Rd (S)	R	33	35	36	35	35	35	35	1	2	3	2	3	2	2
103			Quarter Sessions Rd (N)	L	20	22	22	22	22	22	22	1	1	1	1	1	1	1
103		All			442	471	494	472	486	451	486	1	2	3	2	3	2	2
104	Quarter Sessions Rd	Quarter Sessions Rd (N)	Quarter Sessions Rd (S)	T	244	260	268	260	262	251	262	0	0	0	0	0	0	0
104	Bottle Brush Rd		Bottle Brush Rd (E)	L	1	1	0	1	0	1	0	0	0	0	0	0	0	0
104		Bottle Brush Rd (E)	Quarter Sessions Rd (N)	R	0	0	1	0	1	1	1	0	4	1	4	3	4	4
104			Quarter Sessions Rd (S)	L	24	22	25	22	24	21	24	1	2	2	2	2	2	2
104		Quarter Sessions Rd (S)	Bottle Brush Rd (E)	R	12	14	14	14	15	14	15	1	2	2	3	2	2	2
104			Quarter Sessions Rd (N)	T	155	167	182	168	179	156	179	0	0	0	0	0	0	0
104		All			436	463	489	465	481	444	481	1	4	2	4	3	4	4
105	Quarter Sessions Rd	Quarter Sessions Rd (N)	Duffy Ave (W)	R	10	10	10	10	20	19	20	2	4	4	4	3	3	3
105	Duffy Ave		Quarter Sessions Rd (S)	T	58	44	61	45	62	65	62	3	3	3	3	4	3	4
105			Duffy Ave (E)	L	201	227	221	226	203	189	203	2	3	3	3	3	3	3
105		Duffy Ave (E)	Quarter Sessions Rd (N)	R	130	136	140	136	140	130	140	4	3	3	3	4	4	4
105			Duffy Ave (W)	T	114	129	122	129	117	117	117	3	4	3	4	4	3	4
105			Quarter Sessions Rd (S)	L	51	53	50	54	45	42	45	4	3	3	3	3	3	4
105		Quarter Sessions Rd (S)	Duffy Ave (E)	R	87	73	73	69	72	63	72	2	2	3	2	3	2	2
105			Quarter Sessions Rd (N)	T	28	34	46	36	40	27	40	2	3	2	3	3	2	2
105			Duffy Ave (W)	L	53	63	64	63	62	65	62	3	3	2	2	2	2	2
105		Duffy Ave (W)	Quarter Sessions Rd (S)	R	88	69	77	76	101	85	101	3	4	4	4	4	3	4
105			Duffy Ave (E)	T	168	195	191	189	164	176	164	3	3	3	3	4	3	4
105			Quarter Sessions Rd (N)	L	8	10	11	10	15	13	15	3	4	3	4	3	3	4
105		All			996	1,043	1,066	1,043	1,040	991	1,040	4	4	4	4	4	4	4
106	Quarter Sessions Rd	Quarter Sessions Rd (N)	Quarter Sessions Rd (S)	T	133	134	132	135	129	126	129	0	0	0	0	0	0	0
106	Nicholson Ave		Nicholson Ave (E)	L	66	32	56	40	78	65	78	0	0	0	0	0	0	0
106		Nicholson Ave (E)	Quarter Sessions Rd (N)	R	47	61	74	64	65	54	65	2	2	3	3	3	3	3
106			Quarter Sessions Rd (S)	L	33	31	34	32	39	40	39	2	1	1	1	1	1	2
106		Quarter Sessions Rd (S)	Nicholson Ave (E)	R	27	43	43	47	42	51	42	2	2	2	2	2	2	3
106			Quarter Sessions Rd (N)	T	120	109	109	105	110	101	110	0	0	0	0	0	0	0
106		All			426	411	448	423	462	438	462	2	2	3	3	3	3	3
107	The Sanctuary	The Sanctuary (N)	Duffy Ave (W)	R	26	26	26	26	26	26	26	5	7	6	7	7	5	6
107	Duffy Ave		Duffy Ave (E)	L	41	44	50	44	50	44	50	2	4	3	4	3	3	3
107		Duffy Ave (E)	The Sanctuary (N)	R	32	34	36	34	37	34	37	5	5	4	5	4	4	3
107			Duffy Ave (W)	T	269	290	284	294	276	265	276	1	1	1	1	1	1	1
107		Duffy Ave (W)	Duffy Ave (E)	T	451	487	474	474	429	419	429	0	0	0	0	0	0	0
107			The Sanctuary (N)	L	6	8	9	8	9	8	9	0	0	0	0	0	0	0
107		All			825	889	878	880	826	796	826	5	7	6	7	7	5	6
108	Kentwell Ave	Duffy Ave (E)	Duffy Ave (W)	T	298	326	320	330	313	298	313	0	0	0	0	0	0	0
108	Duffy Ave		Kentwell Ave (S)	L	1	7	8	7	8	6	8	1	1	1	0	1	0	0
108		Kentwell Ave (S)	Duffy Ave (E)	R	4	21	14	21	10	14	10	5	6	5	5	7	4	6
108			Duffy Ave (W)	L	12	12	12	12	15	17	15	2	2	3	3	3	2	2
108		Duffy Ave (W)	Kentwell Ave (S)	R	3	10	16	13	10	9	10	2	4	3	3	4	2	3
108			Duffy Ave (E)	T	518	562	552	546	513	497	513	0	1	1	1	1	2	1
108		All			836	937	922	930	869	841	869	5	6	5	5	7	4	6
109	Huntingdale Way	Huntingdale Way (N)	Duffy Ave (W)	R	5	6	6	6	6	6	6	2	3	3	2	3	3	3
109	Duffy Ave		Sinclair Ave (S)	T	1	1	0	2	3	2	3	1	0	3	1	3	7	3
109	Sinclair Ave		Duffy Ave (E)	L	27	30	33	29	30	28	30	3	4	5	4	5	4	4
109		Duffy Ave (E)	Huntingdale Way (N)	R	12	11	12	11	15	13	15	4	5	6	6	7	7	7
109			Duffy Ave (W)	T	254	275	271	281	274	261	274	4	6	5	6	7	6	6
109			Sinclair Ave (S)	L	50	47	51	60	63	67	63	4	6	6	7	8	7	7
109		Sinclair Ave (S)	Duffy Ave (E)	R	88	96	101	95	108	108	108	2	3	4	3	5	4	4
109			Huntingdale Way (N)	T	7	7	8	8	6	6	6	1	3	3	2	5	3	3
109			Duffy Ave (W)	L	43	55	52	51	41	37	41	2	3	3	3	3	3	4
109		Duffy Ave (W)	Sinclair Ave (S)	R	8	12	11	16	16	13	16	1	4	4	4	7	7	9
109			Duffy Ave (E)	T	510	565	552	547	507	496	507	3	4	5	4	7	7	7
109			Huntingdale Way (N)	L	4	4	4	4	4	4	4	2	4	4	3	5	15	5
109		All			1,009	1,108	1,101	1,109	1,073	1,041	1,073	4	6	6	7	8	15	9

					Vehicle Counts							Delay (s)						
ID	Intersection	From	To	Turn	2022 Base	2027 Do Min	2032 Do Min	2027 Upgd	2032 Upgd	2027 Opt 2	2032 Opt 2	2022 Base	2027 Do Min	2032 Do Min	2027 Upgd	2032 Upgd	2027 Opt 2	2032 Opt 2
110	Chilvers Rd	Chilvers Rd (N)	Duffy Ave (W)	R	136	141	147	139	116	114	116	69	56	57	80	93	72	76
110	Duffy Ave		The Esplanade (S)	T	426	480	488	483	488	479	488	36	36	36	26	28	25	26
110	The Esplanade		Duffy Ave (E)	L	105	106	112	106	113	107	113	18	20	19	21	22	21	22
110		Duffy Ave (E)	Chilvers Rd (N)	R	87	88	90	96	99	97	99	104	121	130	54	55	55	55
110			Duffy Ave (W)	T	154	165	166	178	186	179	186	118	159	163	54	55	52	55
110			The Esplanade (S)	L	116	103	111	98	108	96	108	105	142	147	37	37	36	37
110		The Esplanade (S)	Duffy Ave (E)	R	134	137	136	132	136	130	136	62	69	69	68	76	65	76
110			Chilvers Rd (N)	T	503	541	546	546	587	542	587	58	57	61	44	51	46	51
110			Duffy Ave (W)	L	29	32	24	36	47	48	47	58	53	58	44	51	45	50
110		Duffy Ave (W)	The Esplanade (S)	R	188	237	221	219	210	206	210	62	76	78	86	89	90	91
110			Duffy Ave (E)	T	222	246	250	242	250	242	250	56	58	55	63	67	66	69
110			Chilvers Rd (N)	L	213	212	219	212	195	186	195	11	13	12	15	17	18	19
110		All			2,313	2,488	2,510	2,487	2,534	2,426	2,534	57	62	64	47	51	47	50
111	Pennant Hills Road	Pennant Hills Road (N)	Duffy Ave (W)	R	152	155	156	164	175	164	175	93	148	259	71	72	71	73
111	Duffy Ave		Pennant Hills Road (S)	T	1,579	1,612	1,639	1,612	1,643	1,612	1,643	6	7	10	6	6	6	6
111		Pennant Hills Road (S)	Pennant Hills Road (N)	T	1,601	1,766	1,770	1,766	1,769	1,766	1,769	17	16	17	16	16	16	16
111			Duffy Ave (W)	L	200	206	209	206	209	206	209	19	21	21	19	19	19	19
111		Duffy Ave (W)	Pennant Hills Road (S)	R	217	238	231	238	236	237	236	45	55	48	58	58	59	57
111			Pennant Hills Road (N)	L	209	220	224	217	228	217	228	36	42	39	39	35	39	35
111		All			3,958	4,196	4,229	4,203	4,260	4,202	4,260	18	21	26	18	18	18	18
112	The Esplanade	The Esplanade (N)	Oakleigh Ave (W)	R	23	17	15	8	6	5	6	10	9	12	6	17	7	13
112	Hall Ave		The Esplanade (S)	T	698	797	799	783	793	768	793	2	2	3	2	3	2	2
112	Oakleigh Ave		Hall Ave (E)	L	8	9	7	9	7	9	7	6	4	5	0	2	2	1
112		Hall Ave (E)	The Esplanade (N)	R	6	8	8	8	8	8	8	16	40	57	20	44	24	43
112			Oakleigh Ave (W)	T	1	3	2	3	2	3	2	15	13	29	22	37	23	17
112			The Esplanade (S)	L	9	9	10	9	10	9	10	4	8	11	7	10	7	12
112		The Esplanade (S)	Hall Ave (E)	R	7	7	6	7	7	7	7	27	19	41	12	16	9	29
112			The Esplanade (N)	T	660	697	700	696	761	709	761	13	19	31	4	22	5	23
112			Oakleigh Ave (W)	L	91	107	102	103	93	89	93	10	16	29	3	19	4	20
112		Oakleigh Ave (W)	The Esplanade (S)	R	35	40	39	47	58	52	58	17	52	49	28	75	29	54
112			Hall Ave (E)	T	0	2	1	2	1	2	1	0	36	37	22	36	30	26
112			The Esplanade (N)	L	1	6	6	5	4	5	4	0	47	64	22	85	18	62
112		All			1,539	1,701	1,695	1,679	1,749	1,665	1,749	27	52	64	28	85	30	62
113	The Esplanade	The Esplanade (N)	Goodlands Ave (W)	R	6	10	9	10	6	7	6	10	27	33	14	42	12	21
113	Goodlands Ave		The Esplanade (S)	T	737	841	838	829	853	822	853	4	6	6	6	7	8	8
113		The Esplanade (S)	The Esplanade (N)	T	759	810	805	804	860	804	860	8	17	44	2	23	2	25
113			Goodlands Ave (W)	L	60	66	81	67	81	67	81	9	19	39	2	26	3	24
113		Goodlands Ave (W)	The Esplanade (S)	R	100	57	91	69	86	76	86	32	35	90	25	106	31	59
113			The Esplanade (N)	L	0	2	3	2	2	1	2	0	21	57	11	108	9	38
113		All			1,662	1,785	1,827	1,781	1,888	1,778	1,888	32	35	90	25	108	31	59
114	Chilvers Rd	Sefton Rd (E)	Sefton Rd (W)	T	55	86	87	86	99	100	99	16	51	52	50	52	50	50
114	Sefton Rd		Chilvers Rd (S)	L	573	608	614	608	599	594	599	1	8	8	8	8	7	7
114		Chilvers Rd (S)	Sefton Rd (E)	R	711	742	751	749	774	727	774	5	25	26	40	39	40	39
114			Sefton Rd (W)	L	98	102	105	103	104	97	104	5	15	14	20	21	21	23
114		Sefton Rd (W)	Chilvers Rd (S)	R	105	127	137	127	118	110	118	17	53	54	52	54	52	52
114			Sefton Rd (E)	T	59	57	60	57	78	75	78	11	30	29	30	29	30	30
114		All			1,601	1,720	1,754	1,729	1,772	1,703	1,772	17	22	22	29	29	28	29
115	Larool Cres	Larool Cres (N)	Sefton Rd (W)	R	28	-	-	-	-	-	-	14	-	-	-	-	-	-
115	Sefton Rd		Sefton Rd (E)	L	38	36	37	36	37	36	37	6	8	10	10	10	9	10
115		Sefton Rd (E)	Larool Cres (N)	R	32	-	-	-	-	-	-	10	-	-	-	-	-	-
115			Sefton Rd (W)	T	598	693	702	693	699	692	699	6	12	12	12	11	13	13
115		Sefton Rd (W)	Sefton Rd (E)	T	745	775	790	782	829	779	829	0	1	1	1	1	1	1
115			Larool Cres (N)	L	26	23	21	23	23	23	23	0	0	0	0	0	0	0
115		All			1,467	1,527	1,550	1,534	1,587	1,531	1,587	14	12	12	12	11	13	13
116	Kooringal Ave	Kooringal Ave (N)	Sefton Rd (W)	R	1	0	1	0	10	9	10	0	2	2	2	2	1	2
116	Sefton Rd		Sefton Rd (E)	L	69	97	101	97	92	88	92	1	1	1	1	1	1	1
116		Sefton Rd (E)	Kooringal Ave (N)	R	26	59	60	60	60	59	60	1	2	1	2	1	2	1
116			Sefton Rd (W)	T	52	54	57	54	66	62	66	1	1	1	1	1	1	1
116		Sefton Rd (W)	Sefton Rd (E)	T	74	67	72	67	80	79	80	1	1	1	1	1	1	1
116			Kooringal Ave (N)	L	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116		All			148	277	291	278	308	297	308	1	2	2	2	2	2	2
153	Quarter Sessions Rd	Quarter Sessions Rd (N)	Quarter Sessions Rd (S)	T	-	-	-	NA	192	185	192	-	-	-	-	-	1	1
153	Sefton Rd		Sefton Rd (E)	L	-	-	-	NA	18	20	18	-	-	-	-	-	0	1
153		Sefton Rd (E)	Quarter Sessions Rd (N)	R	-	-	-	NA	15	14	15	-	-	-	-	-	1	1
153			Quarter Sessions Rd (S)	L	-	-	-	NA	18	16	18	-	-	-	-	-	1	1
153		Quarter Sessions Rd (S)	Sefton Rd (E)	R	-	-	-	NA	8	6	8	-	-	-	-	-	1	1
153			Quarter Sessions Rd (N)	T	-	-	-	NA	141	119	141	-	-	-	-	-	1	1
153		All			-	-	-	0	392	360	392	-	-	-	-	-	1	1

P5524 Westleigh Park Traffic Impact and Access Study
VISSIM Data Analysis - Intersection Count Comparison
PM Peak 1700-1800

					Vehicle Counts										Delay (s)									
ID	Intersection	From	To	Turn	2022 Base	2027 Do Min	2032 Do Min	2027 Upgd	2027 Opt 1	2027 Opt 2	2027 Opt 3	2032 Upgd	2032 Opt 1	2032 Opt 2	2032 Opt 3	2022 Base	2027 Do Min	2032 Do Min	2027 Upgd	2027 Opt 1	2027 Opt 2	2027 Opt 3	2032 Upgd	2032 Opt 1	2032 Opt 2	2032 Opt 3
101	Quarter Sessions Rd	Quarter Sessions Rd (N)	Corang Rd (W)	R	6	7	6	7	7	7	7	6	6	6	6	1	3	2	2	3	5	4	2	3	3	5
101	Corang Rd		Quarter Sessions Rd (S)	T	98	112	109	112	139	121	121	109	197	137	137	0	0	0	0	0	2	2	0	0	2	2
101		Quarter Sessions Rd (S)	Quarter Sessions Rd (N)	T	162	190	184	193	224	213	213	185	271	209	208	0	0	0	0	0	0	0	0	0	0	0
101			Corang Rd (W)	L	29	39	39	39	39	38	39	39	38	38	38	0	1	1	1	1	0	0	1	1	0	0
101		Corang Rd (W)	Quarter Sessions Rd (S)	R	4	9	11	9	9	8	8	11	11	11	11	4	3	2	4	4	5	6	2	3	3	3
101			Quarter Sessions Rd (N)	L	16	16	16	16	16	16	16	16	16	16	16	3	4	4	4	5	5	5	4	5	4	4
101		All			315	371	365	374	432	403	404	366	540	418	417	4	4	4	4	5	5	6	4	5	4	5
102	Quarter Sessions Rd	Quarter Sessions Rd (N)	Quarter Sessions Rd (S)	T	120	138	140	138	165	152	155	140	228	183	191	0	0	0	0	0	0	0	0	0	0	0
102	Gum Blossom Dr		Gum Blossom Dr (E)	L	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0
102		Gum Blossom Dr (E)	Quarter Sessions Rd (N)	R	0	1	1	1	1	1	1	1	1	1	1	0	3	3	4	3	2	2	2	5	5	6
102			Quarter Sessions Rd (S)	L	5	8	9	8	8	8	8	9	9	9	9	0	1	0	1	1	1	2	0	1	1	1
102		Quarter Sessions Rd (S)	Gum Blossom Dr (E)	R	10	11	11	11	11	10	11	11	12	12	14	1	1	1	1	1	1	1	1	1	1	1
102			Quarter Sessions Rd (N)	T	213	250	247	253	285	228	277	248	333	252	295	0	0	0	0	0	0	0	0	0	0	0
102		All			348	408	407	411	470	400	452	409	583	458	509	1	3	3	4	3	2	2	2	5	5	6
103	Quarter Sessions Rd	Quarter Sessions Rd (N)	Coral Health Ave (W)	R	11	11	12	11	11	12	11	12	12	13	12	2	2	3	2	3	2	1	2	2	2	3
103	Coral Health Ave		Quarter Sessions Rd (S)	T	114	135	137	135	163	147	152	137	225	178	188	0	0	0	0	0	0	0	0	0	0	0
103		Quarter Sessions Rd (S)	Quarter Sessions Rd (N)	T	214	250	248	253	285	226	277	248	336	252	299	0	0	0	0	0	0	0	0	0	0	0
103			Coral Health Ave (W)	L	27	31	32	31	31	30	31	32	32	31	32	0	0	0	0	0	0	0	0	0	0	0
103		Coral Health Ave (W)	Quarter Sessions Rd (S)	R	22	24	25	24	24	24	24	25	25	25	25	3	2	2	3	3	2	3	2	4	2	3
103			Quarter Sessions Rd (N)	L	11	11	10	11	11	11	11	10	10	11	10	1	1	1	2	1	1	1	1	2	1	1
103		All			399	461	464	464	523	449	504	464	640	510	566	3	2	3	3	3	2	3	2	4	2	3
104	Quarter Sessions Rd	Quarter Sessions Rd (N)	Quarter Sessions Rd (S)	T	136	158	162	158	186	169	175	162	249	202	213	0	0	0	0	0	0	0	0	0	0	0
104	Bottle Brush Rd		Bottle Brush Rd (E)	L	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104		Bottle Brush Rd (E)	Quarter Sessions Rd (N)	R	0	1	1	1	1	1	1	1	1	1	1	0	7	2	3	3	1	4	3	7	3	5
104			Quarter Sessions Rd (S)	L	11	13	14	13	13	13	13	14	14	14	14	0	1	1	1	1	1	1	1	2	1	1
104		Quarter Sessions Rd (S)	Bottle Brush Rd (E)	R	6	12	14	12	12	12	12	14	12	10	11	0	1	1	1	1	1	1	1	2	1	1
104			Quarter Sessions Rd (N)	T	242	280	279	282	314	255	307	279	366	282	330	0	0	0	0	0	0	0	0	0	0	0
104		All			395	464	470	467	525	450	508	470	643	511	568	0	7	2	3	3	1	4	3	7	3	5
105	Quarter Sessions Rd	Quarter Sessions Rd (N)	Duffy Ave (W)	R	16	16	16	16	16	22	16	16	16	22	16	1	2	2	2	2	2	2	2	3	2	2
105	Duffy Ave		Quarter Sessions Rd (S)	T	11	36	34	38	40	30	30	32	43	37	38	2	2	2	2	2	2	2	2	2	2	2
105			Duffy Ave (E)	L	121	119	127	117	143	131	143	129	206	159	173	2	2	2	2	2	2	2	2	2	2	2
105		Duffy Ave (E)	Quarter Sessions Rd (N)	R	202	247	249	256	275	231	283	254	335	251	298	3	3	4	4	4	3	3	4	4	3	4
105			Duffy Ave (W)	T	218	223	224	227	227	216	221	227	227	218	223	3	3	4	3	3	3	3	4	4	4	4
105			Quarter Sessions Rd (S)	L	20	21	18	23	22	19	19	19	18	14	15	2	4	4	3	3	3	3	4	5	4	5
105		Quarter Sessions Rd (S)	Duffy Ave (E)	R	20	27	26	27	24	20	23	27	24	25	20	2	2	4	3	3	3	4	4	5	4	4
105			Quarter Sessions Rd (N)	T	35	32	30	26	37	20	23	27	31	26	30	3	4	3	3	4	4	4	4	5	4	5
105			Duffy Ave (W)	L	21	28	34	26	25	31	31	33	32	36	39	2	4	4	5	4	3	5	5	5	4	6
105		Duffy Ave (W)	Quarter Sessions Rd (S)	R	36	41	42	42	43	41	41	39	42	40	43	2	4	4	4	4	3	4	4	4	4	4
105			Duffy Ave (E)	T	185	183	189	182	181	180	183	192	188	188	188	3	4	4	4	4	3	4	4	5	4	4
105			Quarter Sessions Rd (N)	L	12	12	12	12	12	15	12	12	12	15	12	3	4	4	4	4	3	4	5	5	4	5
105		All			897	985	1,002	991	1,047	956	1,024	1,005	1,176	1,031	1,096	3	4	4	5	4	4	5	5	5	4	6
106	Quarter Sessions Rd	Quarter Sessions Rd (N)	Quarter Sessions Rd (S)	T	40	42	39	43	43	40	40	39	39	35	35	0	0	0	0	0	0	0	0	0	0	0
106	Nicholson Ave		Nicholson Ave (E)	L	27	57	55	60	63	50	49	50	64	54	59	0	0	0	0	0	0	0	1	0	0	0
106		Nicholson Ave (E)	Quarter Sessions Rd (N)	R	52	59	62	49	59	47	51	57	60	58	65	1	2	2	2	2	2	2	2	2	2	2
106			Quarter Sessions Rd (S)	L	26	22	24	21	21	23	24	23	24	27	28	2	2	1	2	1	1	1	1	1	1	1
106		Quarter Sessions Rd (S)	Nicholson Ave (E)	R	20	16	17	16	19	23	21	16	19	18	23	0	1	2	2	2	1	2	2	2	2	2
106			Quarter Sessions Rd (N)	T	24	30	29	30	28	23	26	30	28	29	23	0	0	0	0	0	0	0	0	0	0	0
106		All			189	226	226	219	233	207	211	216	234	222	234	2	2	2	2	2	2	2	2	2	2	2
107	The Sanctuary	The Sanctuary (N)	Duffy Ave (W)	R	15	15	13	15	15	15	14	13	13	13	13	8	6	7	6	7	5	6	6	12	7	7
107	Duffy Ave		Duffy Ave (E)	L	16	18	23	18	18	18	19	23	23	23	23	2	2	2	2	2	2	2	2	3	2	2
107		Duffy Ave (E)	The Sanctuary (N)	R	33	38	38	38	38	38	38	37	37	37	38	2	2	3	3	3	2	3	3	4	3	3
107			Duffy Ave (W)	T	424	472	474	488	509	452	506	483	563	470	520	0	1	1	1	1	1	1	1	1	1	1
107		Duffy Ave (W)	Duffy Ave (E)	T	319	320	334	317	340	322	341	339	411	363	373	0	0	0	0	0	0	0	0	0	0	0
107			The Sanctuary (N)	L	9	9	9	9	9	9	9	9	9	9	9	1	0	1	0	0	0	0	0	0	0	0
107		All			816	873	890	885	928	854	927	904	1,055	916	976	8	6	7	6	7	5	6	6	12	7	7
108	Kentwell Ave	Duffy Ave (E)	Duffy Ave (W)	T	470	496	498	508	529	496	549	510	584	513	562	0	0	0	0	0	0	0	0	0	0	0
108	Duffy Ave		Kentwell Ave (S)	L	24	11	12	10	10	14	14	14	12	13	12	1	0	0	1	1	1	1	0	0	1	0
108		Kentwell Ave (S)	Duffy Ave (E)	R	5	15	23	14	15	16	16	15	17	14	14	2	5	5	5	5	6	6	5	8	6	8
108			Duffy Ave (W)	L	4	32	34	37	37	13	13	30	35	13	15	1	3	3	4	3	2	3	4	4	2	4
108		Duffy Ave (W)	Kentwell Ave (S)	R	2	4	6	4	3	3	5	4	10	6	8	3	6	7	6	4	3	5	5	7	7	9
108			Duffy Ave (E)	T	344	344	362	341	365	347	364	368	433	391	400	0	0	0	0	0	0	0	0	1	0	0
108		All			849	903	934	915	958	888	961	941	1,092	950	1,012	3	6	7	6	5	6	6	5	8	7	9
109	Huntingdale Way	Huntingdale Way (N)	Duffy Ave (W)	R	7	8	7	8	8	8	8	7	7	8	7	2	2	2	2	1	1	2	2	2	2	3
109	Duffy Ave		Sinclair Ave (S)	T	3	2	2	2	2	2	2	2	2	2	2	2	1	3	1	1	2	1	3	3	1	2
109	Sinclair Ave		Duffy Ave (E)	L	5	11	12	10	10	10	10	12	11	11	11	0	3	2	3	2	3	3	2	2	2	2
109		Duffy Ave (E)	Huntingdale Way (N)	R	19	17	18	18	19	19	19	18	17	19	19	4	5	5	5	5	4	5	5	6	6	6
109			Duffy Ave (W)	T	460	465	467	482	499	464	519	479	543	476	522	4	5	5	5	6	5	5	6	7	6	6
109			Sinclair Ave (S)	L	51	84	87	94	92	78	77	85	86	83	82	5	5	5	5	5	6	6	6	7	6	7
109		Sinclair Ave (S)	Duffy Ave (E)	R	46	70	74	69	71	63	63	74	75	58	64	4	4	4	4	4	4	4	4	4	4	4
109			Huntingdale Way (N)	T	4	3	3	3	2	2	2	3	4	2	2	1	4	5	4	3	4	4	4	8	5	8
109			Duffy Ave (W)	L	30	37	38	30	34	40	39	40	48	45	47	3	3	3	3	4	4	5	3	5	4	4
109		Duffy Ave (W)	Sinclair Ave (S)	R	9	7	6	7	7	11	12	6	6	12	10	2	2	4	2	3	3	3	4	5	4	3
109			Duffy Ave (E)	T	335	346	373	342	366	346	363	371	440	388	398	2	3	3	3	3	3	3	3	4	3	4
109			Huntingdale Way (N)	L	4	5	5	5	5	5	5	5	5	5	5	2	4	2	4	4	2	3	3	4	2	2
109		All			973	1,055	1,091	1,071	1,116	1,048	1,118	1,102	1,245	1,109	1,170	5	4	5	4	4	4	5	4	8	5	8

					Vehicle Counts											Delay (s)										
ID	Intersection	From	To	Turn	2022 Base	2027 Do Min	2032 Do Min	2027 Upgd	2027 Opt 1	2027 Opt 2	2027 Opt 3	2032 Upgd	2032 Opt 1	2032 Opt 2	2032 Opt 3	2022 Base	2027 Do Min	2032 Do Min	2027 Upgd	2027 Opt 1	2027 Opt 2	2027 Opt 3	2032 Upgd	2032 Opt 1	2032 Opt 2	2032 Opt 3
110	Chilvers Rd	Chilvers Rd (N)	Duffy Ave (W)	R	172	183	183	185	196	137	193	185	212	138	190	90	72	77	81	92	60	87	83	157	61	89
110	Duffy Ave		The Esplanade (S)	T	550	568	588	567	570	563	567	587	592	587	590	27	28	29	28	28	28	28	28	30	28	28
110	The Esplanade		Duffy Ave (E)	L	71	82	86	82	82	82	82	86	86	85	86	19	24	23	23	24	24	25	23	25	24	25
110		Duffy Ave (E)	Chilvers Rd (N)	R	96	92	94	95	95	95	95	96	95	97	97	93	87	93	57	57	55	56	55	57	56	57
110			Duffy Ave (W)	T	220	240	247	247	255	253	253	253	274	273	272	88	90	93	48	49	48	48	47	49	49	48
110			The Esplanade (S)	L	104	126	122	127	126	127	127	123	123	122	122	84	78	84	30	31	31	31	30	31	31	32
110		The Esplanade (S)	Duffy Ave (E)	R	53	62	63	62	62	63	62	62	62	63	63	69	73	70	71	69	68	66	67	65	66	70
110			Chilvers Rd (N)	T	298	352	365	350	350	349	347	364	362	364	364	49	49	53	49	48	49	51	50	54	54	58
110			Duffy Ave (W)	L	141	147	146	166	162	172	173	146	164	172	165	41	47	47	47	43	45	47	45	49	49	53
110		Duffy Ave (W)	The Esplanade (S)	R	114	134	152	131	142	140	140	150	171	150	149	65	60	68	63	68	67	68	69	93	84	78
110			Duffy Ave (E)	T	136	150	162	150	153	154	154	163	177	176	177	37	38	41	40	39	40	40	41	43	41	41
110			Chilvers Rd (N)	L	133	141	144	141	151	127	142	144	175	128	145	6	6	5	5	6	6	6	5	7	5	6
110		All			2,088	2,278	2,351	2,301	2,344	2,261	2,334	2,357	2,494	2,355	2,420	51	50	53	43	44	41	44	43	53	43	46
111	Pennant Hills Road	Pennant Hills Road (N)	Duffy Ave (W)	R	161	199	192	200	203	203	203	195	205	205	205	63	85	79	83	78	83	82	68	70	77	76
111	Duffy Ave		Pennant Hills Road (S)	T	1,727	1,893	1,934	1,893	1,893	1,893	1,893	1,934	1,933	1,934	1,934	5	5	5	5	5	6	6	5	5	5	5
111		Pennant Hills Road (S)	Pennant Hills Road (N)	T	1,696	1,878	1,879	1,880	1,879	1,878	1,878	1,879	1,879	1,879	1,878	16	17	17	17	17	17	17	17	17	17	17
111			Duffy Ave (W)	L	252	249	258	250	253	252	252	258	269	268	268	19	20	21	19	20	20	20	20	21	20	20
111		Duffy Ave (W)	Pennant Hills Road (S)	R	145	162	171	161	163	164	164	172	179	178	178	59	61	57	60	60	58	60	58	60	57	60
111			Pennant Hills Road (N)	L	113	124	129	123	125	126	126	130	137	137	137	38	37	36	37	37	36	38	36	36	36	36
111		All			4,094	4,505	4,563	4,507	4,516	4,516	4,516	4,568	4,602	4,601	4,601	15	17	17	17	17	17	17	16	17	17	17
112	The Esplanade	The Esplanade (N)	Oakleigh Ave (W)	R	4	6	6	4	4	3	4	3	5	2	4	8	8	6	7	7	3	4	7	8	7	7
112	Hall Ave		The Esplanade (S)	T	755	815	849	813	827	816	818	849	878	846	847	2	3	4	3	3	2	3	4	6	3	3
112	Oakleigh Ave		Hall Ave (E)	L	10	11	11	11	11	11	11	11	11	11	11	1	1	1	1	2	1	2	1	3	1	1
112		Hall Ave (E)	The Esplanade (N)	R	2	5	6	5	5	5	6	6	6	6	6	8	11	19	14	12	11	17	13	18	11	12
112			Oakleigh Ave (W)	T	2	5	5	5	5	5	5	5	5	5	5	8	14	12	11	14	17	19	12	19	18	15
112			The Esplanade (S)	L	7	6	6	6	6	6	6	6	6	6	6	6	7	9	7	8	6	7	8	12	8	8
112		The Esplanade (S)	Hall Ave (E)	R	5	6	6	6	6	6	6	6	6	6	6	15	9	8	6	9	8	8	11	13	10	12
112			The Esplanade (N)	T	491	555	569	575	572	580	580	568	588	595	588	1	1	2	1	1	2	2	2	3	3	4
112			Oakleigh Ave (W)	L	72	80	82	72	69	90	89	86	94	106	111	1	1	1	2	2	2	2	1	3	3	3
112		Oakleigh Ave (W)	The Esplanade (S)	R	31	19	16	19	19	14	17	18	23	20	21	17	23	21	19	23	17	23	22	30	25	24
112			Hall Ave (E)	T	4	3	3	3	3	3	3	3	3	3	3	4	15	12	18	19	16	16	19	15	19	14
112			The Esplanade (N)	L	1	1	1	1	1	0	0	1	1	1	0	2	9	6	8	4	3	14	6	11	18	8
112		All			1,384	1,510	1,561	1,519	1,529	1,538	1,545	1,561	1,625	1,607	1,606	17	23	21	19	23	17	23	22	30	25	24
113	The Esplanade	The Esplanade (N)	Goodlands Ave (W)	R	24	17	19	17	19	12	16	18	23	10	16	15	16	17	15	16	14	15	16	16	17	14
113	Goodlands Ave		The Esplanade (S)	T	771	831	859	828	841	826	829	861	890	863	857	6	9	10	9	9	8	8	10	10	8	8
113		The Esplanade (S)	The Esplanade (N)	T	569	638	655	650	646	675	675	659	687	706	704	1	1	1	1	1	1	1	2	2	2	1
113			Goodlands Ave (W)	L	76	96	97	83	99	69	69	93	95	75	78	1	1	1	1	1	1	1	2	2	2	2
113		Goodlands Ave (W)	The Esplanade (S)	R	38	46	38	50	51	60	58	38	51	66	71	8	19	18	21	21	21	21	18	23	24	26
113			The Esplanade (N)	L	0	2	2	2	2	2	2	2	2	1	1	0	4	3	2	4	6	4	5	5	6	8
113		All			1,478	1,630	1,670	1,630	1,657	1,643	1,648	1,672	1,749	1,722	1,727	15	19	18	21	21	21	21	18	23	24	26
114	Chilvers Rd	Sefton Rd (E)	Sefton Rd (W)	T	49	77	79	77	76	144	94	79	80	160	115	8	47	47	47	46	38	44	47	45	36	41
114	Sefton Rd		Chilvers Rd (S)	L	759	758	771	758	772	715	766	771	807	727	774	0	7	7	7	7	6	7	7	7	6	7
114		Chilvers Rd (S)	Sefton Rd (E)	R	446	482	496	485	494	481	483	496	528	492	497	3	25	26	25	26	26	26	26	27	26	27
114			Sefton Rd (W)	L	83	104	111	104	104	91	103	111	110	101	113	2	16	16	15	16	16	16	16	17	17	17
114		Sefton Rd (W)	Chilvers Rd (S)	R	41	81	92	81	81	71	82	92	92	90	96	5	51	51	51	51	52	51	52	52	50	51
114			Sefton Rd (E)	T	51	51	53	51	51	66	62	53	53	91	86	5	24	27	23	23	26	24	27	27	26	27
114		All			1,429	1,553	1,601	1,556	1,578	1,566	1,590	1,602	1,670	1,660	1,680	8	18	19	18	18	19	18	19	19	19	19
115	Larool Cres	Larool Cres (N)	Sefton Rd (W)	R	11	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-	-	-	-
115	Sefton Rd		Sefton Rd (E)	L	17	18	18	18	18	18	18	18	18	18	18	2	3	4	4	3	3	4	5	5	5	5
115		Sefton Rd (E)	Larool Cres (N)	R	28	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-
115			Sefton Rd (W)	T	798	833	849	834	847	859	861	849	887	887	888	4	9	11	9	10	11	10	11	12	15	12
115		Sefton Rd (W)	Sefton Rd (E)	T	457	493	509	493	503	504	503	509	541	541	542	0	0	0	0	0	0	0	0	0	0	0
115			Larool Cres (N)	L	40	41	40	42	41	42	41	40	40	40	40	0	0	0	0	0	0	0	0	0	0	0
115		All			1,351	1,384	1,416	1,386	1,409	1,422	1,423	1,416	1,486	1,487	1,488	11	9	11	9	10	11	10	11	12	15	12
116	Kooringal Ave	Kooringal Ave (N)	Sefton Rd (W)	R	1	1	1	1	1	10	1	1	1	10	1	1	1	2	1	1	1	1	2	3	2	4
116	Sefton Rd		Sefton Rd (E)	L	50	86	92	86	86	77	86	92	92	83	92	1	1	1	1	1	1	1	1	1	2	1
116		Sefton Rd (E)	Kooringal Ave (N)	R	43	93	97	93	93	89	93	97	97	92	97	1	1	1	1	1	1	1	1	1	2	1
116			Sefton Rd (W)	T	60	58	59	59	58	119	75	59	59	138	98	1	1	1	1	1	2	1	1	1	2	2
116		Sefton Rd (W)	Sefton Rd (E)	T	14	18	22	18	18	32	29	22	22	65	59	1	1	1	1	1	1	1	1	1	2	1
116			Kooringal Ave (N)	L	0	1	0	1	1	5	1	0	0	5	0	0	1	1	2	2	1	2	1	1	2	1
116		All			154	257	271	258	257	332	285	271	340	461	416	1	1	2	2	2	2	2	2	3	2	4
157	Quarter Sessions Rd	Quarter Sessions Rd (N)	Quarter Sessions Rd (S)	T	-	-	-	-	-	118	130	-	-	132	148	-	-	-	-	-	1	1	-	-	1	1
157	Sefton Rd		Sefton Rd (E)	L	-	-	-	-	-	11	0	-	-	16	0	-	-	-	-	-	1	0	-	-	1	0
157		Sefton Rd (E)	Quarter Sessions Rd (N)	R	-	-	-	-	-	53	4	-	-	42	0	-	-	-	-	-	2	1	-	-	2	0
157			Quarter Sessions Rd (S)	L	-	-	-	-	-	21	8	-	-	39	24	-	-	-	-	-	1	1	-	-	1	1
157		Quarter Sessions Rd (S)	Sefton Rd (E)	R	-	-	-	-	-	13	7	-	-	28	23	-	-	-	-	-	2	1	-	-	2	2
157			Quarter Sessions Rd (N)	T	-	-	-	-	-	199	247	-	-	205	247	-	-	-	-	-	2	1	-	-	2	1
157		All			-	-	-	-	-	415	396	-	-	463	442	-	-	-	-	-	2	1	-	-	2	2

P5524 Westleigh Park Traffic Impact and Access Study
VISSIM Data Analysis - Intersection Count Comparison
Weekend Peak 1100-1200

					Vehicle Counts										Delay (s)									
ID	Intersection	From	To	Turn	2022 Base	2027 Do Min	2032 Do Min	2027 Upgd	2027 Opt 1	2027 Opt 2	2027 Opt 3	2032 Upgd	2032 Opt 1	2032 Opt 2	2032 Opt 3	2022 Base	2027 Do Min	2032 Do Min	2027 Upgd	2027 Opt 1	2027 Opt 2	2027 Opt 3	2032 Upgd	2032 Opt 1	2032 Opt 2	2032 Opt 3
101	Quarter Sessions Rd	Quarter Sessions Rd (N)	Corang Rd (W)	R	2	2	2	2	2	2	2	2	2	2	2	1	3	1	1	2	2	2	2	1	1
101	Corang Rd		Quarter Sessions Rd (S)	T	140	154	150	154	214	173	173	150	329	207	207	0	0	0	0	0	2	2	0	0	2	2
101		Quarter Sessions Rd (S)	Quarter Sessions Rd (N)	T	123	146	136	146	205	162	162	136	301	186	187	0	0	0	0	0	0	0	0	0	0	0
101			Corang Rd (W)	L	20	23	23	23	23	23	24	24	23	24	23	1	0	0	0	0	0	0	0	0	0	0
101		Corang Rd (W)	Quarter Sessions Rd (S)	R	2	6	9	6	6	6	6	9	9	9	9	1	3	2	3	3	3	3	2	4	2	3
101			Quarter Sessions Rd (N)	L	11	11	10	11	11	11	11	10	10	10	10	2	2	3	2	3	2	2	2	4	3	3
101		All			298	341	329	341	460	377	377	329	673	437	437	2	3	3	3	3	3	3	2	4	3	3
102	Quarter Sessions Rd	Quarter Sessions Rd (N)	Quarter Sessions Rd (S)	T	168	186	185	186	245	204	218	185	363	272	286	0	0	0	0	0	0	0	0	0	0	0
102	Gum Blossom Dr		Gum Blossom Dr (E)	L	0	0	0	0	0	3	0	0	0	3	0	0	0	1	0	1	1	1	1	1	0	1
102		Gum Blossom Dr (E)	Quarter Sessions Rd (N)	R	0	1	1	1	1	2	1	1	1	2	1	0	2	3	2	3	2	4	0	2	4	3
102			Quarter Sessions Rd (S)	L	6	7	8	7	7	6	7	8	8	7	8	0	1	1	1	1	1	2	1	2	2	2
102		Quarter Sessions Rd (S)	Gum Blossom Dr (E)	R	9	13	12	13	12	11	14	12	10	10	13	3	1	1	1	1	1	1	2	2	2	3
102			Quarter Sessions Rd (N)	T	166	193	184	193	252	197	226	185	348	258	286	0	0	0	0	0	0	0	0	0	0	0
102		All			349	400	389	400	517	423	466	390	730	552	594	3	2	3	2	3	2	4	2	2	4	3
103	Quarter Sessions Rd	Quarter Sessions Rd (N)	Coral Health Ave (W)	R	30	28	28	28	28	29	28	28	28	29	28	1	2	2	1	2	2	2	2	4	3	3
103	Coral Health Ave		Quarter Sessions Rd (S)	T	144	164	165	165	224	181	196	165	342	250	266	0	0	0	0	0	0	0	0	1	0	0
103		Quarter Sessions Rd (S)	Quarter Sessions Rd (N)	T	148	179	169	179	238	180	212	169	331	240	271	0	0	0	0	0	0	0	0	0	0	0
103			Coral Health Ave (W)	L	30	32	34	32	32	31	32	34	33	33	34	0	0	0	0	0	0	0	0	0	0	0
103		Coral Health Ave (W)	Quarter Sessions Rd (S)	R	26	30	32	30	30	29	30	32	32	30	32	2	2	2	2	4	2	3	2	6	4	4
103			Quarter Sessions Rd (N)	L	28	28	28	28	28	29	28	28	28	29	28	1	1	1	1	1	1	1	1	2	1	1
103		All			406	461	455	462	580	479	527	456	794	611	659	2	2	2	2	4	2	3	2	6	4	4
104	Quarter Sessions Rd	Quarter Sessions Rd (N)	Quarter Sessions Rd (S)	T	170	194	196	194	253	209	226	196	374	280	297	0	0	0	0	0	0	0	0	0	0	0
104	Bottle Brush Rd		Bottle Brush Rd (E)	L	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
104		Bottle Brush Rd (E)	Quarter Sessions Rd (N)	R	0	1	1	1	1	1	1	1	1	1	1	0	1	4	1	3	7	8	4	6	3	4
104			Quarter Sessions Rd (S)	L	11	11	11	11	11	10	11	11	11	10	11	1	1	1	1	2	1	1	1	1	1	1
104		Quarter Sessions Rd (S)	Bottle Brush Rd (E)	R	12	11	13	11	12	10	11	13	13	12	12	1	1	1	1	2	1	2	2	3	2	3
104			Quarter Sessions Rd (N)	T	179	210	202	210	269	210	243	202	364	272	305	0	0	0	0	0	0	0	0	0	0	0
104		All			372	427	422	427	545	442	492	423	762	575	626	1	1	4	1	3	7	8	4	6	3	4
105	Quarter Sessions Rd	Quarter Sessions Rd (N)	Duffy Ave (W)	R	8	10	10	10	10	31	10	10	10	34	10	3	2	2	3	3	2	2	2	4	3	3
105	Duffy Ave		Quarter Sessions Rd (S)	T	18	19	26	21	25	26	29	24	40	55	58	2	3	3	3	3	2	2	2	3	3	3
105			Duffy Ave (E)	L	155	176	170	173	229	161	198	172	332	201	239	2	2	2	2	3	2	3	2	3	3	3
105		Duffy Ave (E)	Quarter Sessions Rd (N)	R	165	180	177	181	232	182	219	178	318	237	276	3	3	3	3	3	3	3	3	4	4	4
105			Duffy Ave (W)	T	219	197	195	195	196	190	202	196	182	190	203	3	3	3	3	3	3	3	3	4	4	4
105			Quarter Sessions Rd (S)	L	10	7	9	8	7	10	10	8	6	12	12	3	3	3	3	3	3	3	3	4	5	5
105		Quarter Sessions Rd (S)	Duffy Ave (E)	R	33	24	23	24	23	30	28	23	22	25	26	2	2	3	2	3	3	2	3	6	4	5
105			Quarter Sessions Rd (N)	T	19	31	29	30	38	24	26	28	50	34	32	3	3	3	3	3	3	3	3	5	4	4
105			Duffy Ave (W)	L	17	45	53	47	46	30	39	52	55	33	43	3	3	3	3	4	3	3	3	4	5	4
105		Duffy Ave (W)	Quarter Sessions Rd (S)	R	31	21	27	25	26	26	28	30	30	46	46	3	3	3	3	4	3	4	4	4	4	4
105			Duffy Ave (E)	T	225	243	242	239	238	233	236	240	239	219	223	3	3	3	3	3	3	3	3	5	4	4
105			Quarter Sessions Rd (N)	L	9	11	10	11	11	15	11	10	10	14	10	2	3	3	3	3	3	3	3	5	3	3
105		All			909	963	971	964	1,080	959	1,035	971	1,295	1,100	1,179	3	3	3	3	4	3	4	4	6	5	5
106	Quarter Sessions Rd	Quarter Sessions Rd (N)	Quarter Sessions Rd (S)	T	15	13	15	14	13	16	16	15	12	18	18	0	0	0	0	0	0	0	0	0	0	0
106	Nicholson Ave		Nicholson Ave (E)	L	44	33	46	40	45	45	50	47	64	94	98	0	0	0	0	0	0	0	0	1	1	1
106		Nicholson Ave (E)	Quarter Sessions Rd (N)	R	33	73	79	75	80	51	62	78	101	64	72	1	1	1	1	1	1	1	1	2	2	1
106			Quarter Sessions Rd (S)	L	10	13	13	12	13	9	10	13	14	9	10	1	1	1	1	1	1	1	1	1	1	1
106		Quarter Sessions Rd (S)	Nicholson Ave (E)	R	11	18	19	18	19	12	14	19	20	17	16	2	1	1	1	1	1	1	1	2	1	2
106			Quarter Sessions Rd (N)	T	36	27	26	27	26	32	31	26	25	27	29	0	0	0	0	0	0	0	0	0	0	0
106		All			149	177	197	186	196	167	183	197	236	230	243	2	1	1	1	1	1	1	1	2	2	2
107	The Sanctuary	The Sanctuary (N)	Duffy Ave (W)	R	12	13	13	13	13	13	13	13	13	13	13	6	4	5	4	6	5	6	6	14	6	10
107	Duffy Ave		Duffy Ave (E)	L	34	38	39	37	37	38	37	39	39	39	39	2	3	3	3	3	3	3	3	4	3	4
107		Duffy Ave (E)	The Sanctuary (N)	R	33	36	39	36	36	36	36	39	37	39	39	3	4	3	4	4	3	4	4	6	4	6
107			Duffy Ave (W)	T	385	372	368	371	424	367	418	370	495	426	480	1	1	1	1	1	1	1	1	1	1	1
107		Duffy Ave (W)	Duffy Ave (E)	T	405	432	426	425	479	415	453	425	585	437	479	0	0	0	0	0	0	0	0	0	0	0
107			The Sanctuary (N)	L	10	9	9	9	9	9	9	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0
107		All			879	900	894	893	999	878	967	895	1,178	962	1,059	6	4	5	4	6	5	6	6	14	6	10
108	Kentwell Ave	Duffy Ave (E)	Duffy Ave (W)	T	413	399	396	398	449	383	439	401	517	448	504	0	0	0	0	0	0	0	0	0	0	0
108	Duffy Ave		Kentwell Ave (S)	L	5	7	8	7	8	3	4	8	6	4	3	1	0	0	0	1	0	0	0	1	0	1
108		Kentwell Ave (S)	Duffy Ave (E)	R	9	15	10	8	11	12	11	11	8	9	10	5	6	5	4	8	4	6	7	13	6	5
108			Duffy Ave (W)	L	9	15	23	16	18	31	24	20	26	27	26	2	2	3	3	3	2	3	3	2	3	4
108		Duffy Ave (W)	Kentwell Ave (S)	R	2	6	7	6	8	6	7	9	28	19	18	3	6	4	5	3	5	4	5	11	5	6
108			Duffy Ave (E)	T	440	482	480	475	527	464	501	477	617	479	521	0	0	0	0	0	0	0	0	2	1	1
108		All			878	925	924	909	1,021	899	987	927	1,202	985	1,082	5	6	5	5	8	5	6	7	13	6	6
109	Huntingdale Way	Huntingdale Way (N)	Duffy Ave (W)	R	8	7	8	7	7	7	7	8	8	8	8	2	2	2	2	2	2	2	3	4	2	2
109	Duffy Ave		Sinclair Ave (S)	T	2	2	3	2	2	2	2	3	4	4	4	0	4	1	4	3	2	3	1	3	2	2
109	Sinclair Ave		Duffy Ave (E)	L	13	13	13	13	12	12	12	13	12	12	12	3	3	3	2	4	3	3	3	4	5	4
109		Duffy Ave (E)	Huntingdale Way (N)	R	19	19	18	19	19	19	19	18	18	18	17	4	5	4	5	6	5	6	5	7	6	6
109			Duffy Ave (W)	T	367	372	373	372	421	344	399	377	474	389	432	4	5	5	5	6	5	5	5	8	6	7
109			Sinclair Ave (S)	L	32	58	60	60	58	59	62	64	51	56	59	4	5	5	5	6	4	5	5	8	6	7
109		Sinclair Ave (S)	Duffy Ave (E)	R	67	77	91	82	80	80	80	85	73	84	78	2	3	3	3	3	3	4	3	5	5	6
109			Huntingdale Way (N)	T	0	1	2	1	1	2	2	2	2	3	4	0	5	3	6	6	1	4	2	4	3	6
109			Duffy Ave (W)	L	42	24	20	24	27	36	38	22	40	55	65	3	3	2	3	3	3	3	3	4	4	4
109		Duffy Ave (W)	Sinclair Ave (S)	R	8	12	10	12	11	8	8	12	33	21	19	2	3	3	3	3	3	3	3	8	9	6
109			Duffy Ave (E)	T	435	481	473	466	523	463	498	471	587	463	510	3	4	3	3	4	3	4	4	10	8	7
109			Huntingdale Way (N)	L	4	5	5	5	5	5	5	5	5	5	5	5	4	3	4	5	2	2	3	6	7	5
109		All			997	1,070	1,076	1,062	1,165	1,035	1,131	1,080	1,307	1,116	1,212	5	5	3	6	6	3	4	4	10	9	7

					Vehicle Counts											Delay (s)										
ID	Intersection	From	To	Turn	2022 Base	2027 Do Min	2032 Do Min	2027 Upgd	2027 Opt 1	2027 Opt 2	2027 Opt 3	2032 Upgd	2032 Opt 1	2032 Opt 2	2032 Opt 3	2022 Base	2027 Do Min	2032 Do Min	2027 Upgd	2027 Opt 1	2027 Opt 2	2027 Opt 3	2032 Upgd	2032 Opt 1	2032 Opt 2	2032 Opt 3
110	Chilvers Rd	Chilvers Rd (N)	Duffy Ave (W)	R	159	152	160	152	175	103	163	161	190	105	167	81	60	70	67	90	51	72	78	293	52	84
110	Duffy Ave		The Esplanade (S)	T	441	464	481	464	466	462	456	481	429	488	481	26	26	26	26	26	26	26	26	36	26	27
110	The Esplanade		Duffy Ave (E)	L	99	109	111	109	109	111	111	111	99	113	113	21	18	21	18	20	20	19	21	26	22	21
110		Duffy Ave (E)	Chilvers Rd (N)	R	121	115	118	115	115	117	117	119	120	120	120	58	72	74	50	51	50	50	51	55	52	51
110			Duffy Ave (W)	T	167	187	191	190	204	203	203	193	239	233	229	70	82	86	44	45	44	44	46	48	46	47
110			The Esplanade (S)	L	85	105	102	105	105	106	106	103	105	102	101	57	71	76	32	31	32	31	31	30	31	30
110		The Esplanade (S)	Duffy Ave (E)	R	67	67	69	67	66	66	66	69	69	69	69	66	64	63	63	65	63	65	62	66	73	73
110			Chilvers Rd (N)	T	357	422	431	423	422	420	421	430	428	429	430	38	48	46	48	48	45	50	46	54	48	52
110			Duffy Ave (W)	L	92	110	100	109	118	116	113	105	115	124	111	37	44	42	45	44	42	47	40	51	45	51
110		Duffy Ave (W)	The Esplanade (S)	R	147	178	180	168	192	197	194	173	188	181	183	63	61	63	60	69	79	83	67	116	108	109
110			Duffy Ave (E)	T	195	212	219	211	220	220	220	219	247	247	247	46	44	44	45	46	46	46	45	54	54	54
110			Chilvers Rd (N)	L	178	184	183	184	207	146	185	183	250	146	183	7	8	7	8	8	7	8	7	12	11	11
110		All			2,108	2,305	2,345	2,299	2,399	2,266	2,355	2,347	2,478	2,357	2,434	43	46	47	40	43	41	44	41	67	45	48
111	Pennant Hills Road	Pennant Hills Road (N)	Duffy Ave (W)	R	129	166	163	165	173	173	173	163	184	181	181	61	89	78	84	102	99	99	77	111	126	126
111	Duffy Ave		Pennant Hills Road (S)	T	1,622	1,797	1,839	1,797	1,797	1,796	1,796	1,839	1,840	1,839	1,839	6	6	6	6	6	6	6	6	7	7	7
111		Pennant Hills Road (S)	Pennant Hills Road (N)	T	1,842	2,027	2,024	2,027	2,028	2,025	2,025	2,025	2,025	2,025	2,025	14	16	17	17	17	17	17	17	17	17	17
111			Duffy Ave (W)	L	210	212	218	211	219	218	218	219	239	238	238	20	18	20	18	19	19	19	20	20	20	20
111		Duffy Ave (W)	Pennant Hills Road (S)	R	193	209	209	209	212	213	213	209	218	224	225	54	55	57	55	57	57	57	56	64	61	60
111			Pennant Hills Road (N)	L	157	169	175	169	174	174	174	176	187	191	191	46	38	39	38	38	38	38	39	43	39	37
111		All			4,153	4,578	4,630	4,578	4,602	4,600	4,600	4,631	4,693	4,699	4,700	16	18	18	18	19	19	19	18	20	20	20
112	The Esplanade	The Esplanade (N)	Oakleigh Ave (W)	R	19	20	21	19	22	13	11	20	30	11	12	5	4	5	4	4	6	5	4	5	6	8
112	Hall Ave		The Esplanade (S)	T	647	719	735	708	730	745	737	729	680	750	744	1	1	2	1	2	1	1	2	2	2	2
112	Oakleigh Ave		Hall Ave (E)	L	11	12	12	12	12	12	12	13	13	12	12	0	1	1	1	1	1	1	1	2	1	1
112		Hall Ave (E)	The Esplanade (N)	R	6	7	7	7	7	7	7	7	7	7	7	9	10	13	13	11	14	12	13	13	18	16
112			Oakleigh Ave (W)	T	2	3	3	3	3	3	3	3	3	3	3	15	18	12	27	18	15	15	16	10	17	21
112			The Esplanade (S)	L	11	9	10	10	9	9	9	10	9	9	9	6	6	6	6	7	7	7	7	4	7	8
112		The Esplanade (S)	Hall Ave (E)	R	7	6	6	6	6	6	6	6	6	6	6	3	5	5	5	5	5	6	6	8	5	5
112			The Esplanade (N)	T	505	590	590	588	599	596	591	594	602	611	599	0	1	1	1	1	1	1	1	3	3	4
112			Oakleigh Ave (W)	L	65	42	43	43	47	54	58	44	71	82	94	1	1	1	1	1	1	1	1	4	1	3
112		Oakleigh Ave (W)	The Esplanade (S)	R	35	28	31	33	34	23	25	35	71	54	53	12	11	17	13	17	18	15	14	33	25	25
112			Hall Ave (E)	T	1	2	2	2	2	1	2	2	2	1	2	0	11	11	7	11	8	2	12	18	19	16
112			The Esplanade (N)	L	5	3	4	3	3	2	2	4	3	3	3	3	7	4	7	8	5	5	5	9	14	9
112		All			1,314	1,440	1,464	1,434	1,475	1,473	1,464	1,466	1,498	1,551	1,545	15	18	17	27	18	18	15	16	33	25	25
113	The Esplanade	The Esplanade (N)	Goodlands Ave (W)	R	3	10	7	10	9	8	9	7	5	4	6	9	11	8	12	12	10	11	9	11	13	11
113	Goodlands Ave		The Esplanade (S)	T	690	750	771	745	769	771	764	770	759	807	798	3	4	4	4	4	6	5	4	4	6	6
113		The Esplanade (S)	The Esplanade (N)	T	576	639	642	638	653	657	656	647	680	700	699	1	1	1	1	1	1	1	1	1	1	2
113			Goodlands Ave (W)	L	33	50	60	51	56	51	52	55	82	62	63	1	1	1	1	1	1	1	1	1	1	2
113		Goodlands Ave (W)	The Esplanade (S)	R	62	59	65	64	70	66	74	69	100	117	126	13	15	17	15	17	14	13	18	33	26	27
113			The Esplanade (N)	L	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	1	2	16
113		All			1,365	1,508	1,545	1,507	1,557	1,553	1,554	1,548	1,626	1,691	1,693	13	15	17	15	17	14	13	18	33	26	27
114	Chilvers Rd	Sefton Rd (E)	Sefton Rd (W)	T	51	78	78	78	79	133	102	78	70	193	161	10	42	43	42	44	34	38	44	46	32	34
114	Sefton Rd		Chilvers Rd (S)	L	626	599	617	599	624	567	599	617	590	581	615	0	8	8	8	8	7	7	8	26	6	7
114		Chilvers Rd (S)	Sefton Rd (E)	R	580	612	615	610	634	587	617	614	682	590	619	3	27	27	27	28	30	34	27	32	34	38
114			Sefton Rd (W)	L	82	113	115	114	115	104	114	115	115	108	116	2	15	15	16	16	18	20	15	18	20	21
114		Sefton Rd (W)	Chilvers Rd (S)	R	82	135	143	135	135	116	139	143	143	134	154	11	53	54	54	53	53	52	54	100	51	51
114			Sefton Rd (E)	T	56	56	56	56	56	106	78	56	56	150	122	9	22	22	22	22	19	20	22	27	20	21
114		All			1,477	1,594	1,623	1,592	1,642	1,613	1,648	1,623	1,656	1,755	1,787	11	22	22	22	22	22	24	22	35	24	26
115	Larool Cres	Larool Cres (N)	Sefton Rd (W)	R	34	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-
115	Sefton Rd		Sefton Rd (E)	L	21	22	21	22	22	22	22	21	21	21	21	3	6	4	6	7	6	6	4	6	5	6
115		Sefton Rd (E)	Larool Cres (N)	R	29	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
115			Sefton Rd (W)	T	643	677	696	677	703	701	702	696	662	774	776	4	8	8	8	9	9	9	8	58	13	12
115		Sefton Rd (W)	Sefton Rd (E)	T	601	637	640	636	659	663	664	640	708	709	711	0	0	0	0	0	0	0	0	1	0	0
115			Larool Cres (N)	L	34	31	30	30	31	31	30	30	30	30	30	0	0	0	0	0	0	0	0	0	0	0
115		All			1,362	1,366	1,387	1,365	1,414	1,416	1,418	1,387	1,421	1,535	1,538	7	8	8	8	9	9	9	8	58	13	12
116	Kooringal Ave	Kooringal Ave (N)	Sefton Rd (W)	R	0	0	0	0	0	17	0	0	0	16	0	0	1	0	1	1	1	1	0	0	2	1
116	Sefton Rd		Sefton Rd (E)	L	41	92	97	92	92	75	92	97	97	81	97	1	1	1	1	1	1	1	1	1	2	2
116		Sefton Rd (E)	Kooringal Ave (N)	R	40	93	95	93	93	89	93	95	91	93	96	1	1	1	1	1	2	1	1	1	2	2
116			Sefton Rd (W)	T	52	56	55	56	57	106	80	55	54	165	137	1	1	1	1	1	2	1	1	1	3	2
116		Sefton Rd (W)	Sefton Rd (E)	T	37	35	37	35	35	84	60	37	37	138	113	1	1	1	1	1	2	2	1	1	2	2
116			Kooringal Ave (N)	L	0	0	0	0	0	4	0	0	0	4	0	0	1	2	1	1	1	1	2	9	2	8
116		All			133	276	284	276	277	375	325	284	279	497	443	1	1	2	1	1	2	2	2	9	3	8
153	Quarter Sessions Rd	Quarter Sessions Rd (N)	Quarter Sessions Rd (S)	T	-	-	-	-	-	142	178	-	-	177	214	-	-	-	-	-	1	1	-	-	1	1
153	Sefton Rd		Sefton Rd (E)	L	-	-	-	-	-	37	0	-	-	38	2	-	-	-	-	-	1	0	-	-	1	0
153		Sefton Rd (E)	Quarter Sessions Rd (N)	R	-	-	-	-	-	30	0	-	-	29	0	-	-	-	-	-	1	0	-	-	2	0
153			Quarter Sessions Rd (S)	L	-	-	-	-	-	45	14	-	-	79	46	-	-	-	-	-	1	1	-	-	1	1
153		Quarter Sessions Rd (S)	Sefton Rd (E)	R	-	-	-	-	-	24	16	-	-	61	51	-	-	-	-	-	1	1	-	-	2	1
153			Quarter Sessions Rd (N)	T	-	-	-	-	-	155	186	-	-	181	211	-	-	-	-	-	1	1	-	-	1	1
153		All			-	-	-	-	-	433	394	-	-	565	524	-	-	-	-	-	1	1	-	-	2	1

P5524 Westleigh Park Traffic Impact and Access Study

VISSIM Data Analysis - Network Statistics

AM Peak 0800 - 0900

	2022 Base	2027 Do Minimum	2032 Do Minimum	2027 Do Minimum Plus Upgrade	2032 Do Minimum Plus Upgrade	2027 Option 2	2032 Option 2
Total Travel Time (hr)	212	253	305	222	262	224	259
Total Distance Travelled (km)	6,570	6,942	7,086	6,966	7,255	6,941	7,210
Total Delay (hr)	90	125	173	93	127	95	125
Average Speed (km/hr)	31.2	27.6	23.3	31.4	27.8	31.0	27.9
Average Travel Time (min)	1.87	2.09	2.45	1.84	2.10	1.85	2.09
Average Distance (km)	0.97	0.96	0.95	0.96	0.97	0.96	0.97
Average Delay (s)	48	62	84	46	61	47	60
Completed Trips	6,562	7,005	7,102	7,016	7,216	7,013	7,201
Incomplete Trips	215	260	351	232	260	237	261
Unreleased Trips	0	1	77	1	1	1	1
Total Number of Vehicles	6,778	7,265	7,453	7,248	7,476	7,250	7,462
Stops per vehicle	1.0	1.3	1.7	1.0	1.3	1.0	1.3

P5524 Westleigh Park Traffic Impact and Access Study

VISSIM Data Analysis - Network Statistics

PM Peak 1700 - 1800

	2022 Base	2027 Do Minimum	2032 Do Minimum	2027 Do Minimum Plus Upgrade	2027 Option 1	2027 Option 2	2027 Option 3	2032 Do Minimum Plus Upgrade	2027 Option 1	2027 Option 2	2027 Option 3
Total Travel Time (hr)	175	205	215	200	205	203	207	205	230	220	223
Total Distance Travelled (km)	6,254	6,776	6,915	6,786	6,939	6,902	6,940	6,917	7,363	7,269	7,311
Total Delay (hr)	61	82	89	76	78	76	80	79	95	84	88
Average Speed (km/hr)	35.8	33.0	32.2	34.0	33.9	33.9	33.5	33.8	32.1	33.1	32.8
Average Travel Time (min)	1.60	1.71	1.76	1.67	1.70	1.68	1.72	1.68	1.84	1.76	1.79
Average Distance (km)	0.96	0.94	0.95	0.94	0.96	0.95	0.96	0.95	0.98	0.97	0.98
Average Delay (s)	34	41	44	38	39	38	40	39	45	41	42
Completed Trips	6,352	6,974	7,090	6,982	7,038	7,042	7,040	7,098	7,270	7,262	7,263
Incomplete Trips	176	213	221	201	210	207	209	207	227	218	218
Unreleased Trips	0	0	1	0	0	1	0	1	1	1	1
Total Number of Vehicles	6,529	7,187	7,311	7,183	7,248	7,249	7,248	7,304	7,497	7,480	7,482
Stops per vehicle	0.7	0.9	0.9	0.8	0.8	0.8	0.9	0.8	1.0	0.9	0.9

P5524 Westleigh Park Traffic Impact and Access Study

VISSIM Data Analysis - Network Statistics

Weekend Peak 1100 - 1200

	2022 Base	2027 Do Minimum	2032 Do Minimum	2027 Do Minimum Plus Upgrade	2027 Option 1	2027 Option 2	2027 Option 3	2032 Do Minimum Plus Upgrade	2027 Option 1	2027 Option 2	2027 Option 3
Total Travel Time (hr)	175	200	205	196	210	206	211	201	293	237	242
Total Distance Travelled (km)	6,254	6,741	6,846	6,741	7,052	6,976	7,012	6,851	7,592	7,645	7,682
Total Delay (hr)	61	78	80	74	81	77	82	76	153	93	99
Average Speed (km/hr)	35.8	33.7	33.5	34.4	33.7	33.8	33.2	34.2	26.1	32.3	31.7
Average Travel Time (min)	1.60	1.67	1.69	1.64	1.72	1.70	1.74	1.66	2.31	1.85	1.90
Average Distance (km)	0.96	0.94	0.94	0.94	0.97	0.96	0.96	0.94	1.00	1.00	1.00
Average Delay (s)	34	39	40	37	40	38	41	38	72	44	46
Completed Trips	6,352	6,977	7,067	6,975	7,096	7,090	7,093	7,071	7,313	7,436	7,442
Incomplete Trips	176	198	204	192	205	199	203	197	296	226	225
Unreleased Trips	0	0	0	0	0	0	0	0	80	0	0
Total Number of Vehicles	6,529	7,175	7,271	7,168	7,301	7,289	7,297	7,268	7,609	7,662	7,667
Stops per vehicle	0.7	0.8	0.9	0.8	0.9	0.8	0.9	0.8	1.7	0.9	1.0

P5524 Westleigh Park Traffic Impact and Access Study
Travel Time Data Analysis
Route 1: Quarter Sessions Road / Duffy Avenue
AM Peak (0800 - 0900)

Northbound				Section Travel Time							Cumulative Travel Time						
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 2	2032 Option 2	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 2	2032 Option 2
The Esplanade		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
Chilvers Road	101	0.05	0.05	00:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04
Sinclair Avenue	102	0.20	0.25	00:22	0:24	0:23	0:24	0:25	0:24	0:24	0:26	0:28	0:28	0:28	0:29	0:28	0:28
Quarter Sessions Road	103	0.74	0.98	01:03	1:04	1:04	1:04	1:04	1:04	1:04	1:29	1:32	1:32	1:32	1:33	1:32	1:32
H20 Bike Trail	104	0.85	1.84	01:04	1:04	1:04	1:04	1:04	1:09	1:09	2:33	2:36	2:36	2:36	2:38	2:40	2:41

Southbound				Section Travel Time							Cumulative Travel Time						
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 2	2032 Option 2	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 2	2032 Option 2
H20 Bike Trail		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
Duffy Avenue	111	0.83	0.83	01:04	1:04	1:05	1:05	1:05	1:09	1:10	1:04	1:04	1:05	1:05	1:05	1:09	1:10
Sinclair Avenue	112	0.73	1.56	01:00	1:01	1:02	1:01	1:04	1:05	1:04	2:03	2:05	2:07	2:05	2:08	2:14	2:13
Chilvers Road	113	0.20	1.76	01:11	1:13	1:11	1:19	1:25	1:24	1:28	3:14	3:18	3:18	3:25	3:34	3:39	3:41
The Esplanade	114	0.06	1.82	00:05	0:05	0:05	0:05	0:05	0:05	0:05	3:19	3:23	3:23	3:29	3:38	3:44	3:46

P5524 Westleigh Park Traffic Impact and Access Study
Travel Time Data Analysis
Route 2: The Esplanade / Chivers Road / Sefton Road
AM Peak (0800 - 0900)

Northbound				Section Travel Time							Cumulative Travel Time						
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 2	2032 Option 2	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 2	2032 Option 2
Janet Avenue		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
Duffy Avenue	201	0.52	0.52	02:20	2:43	3:40	1:37	2:48	1:43	2:48	2:20	2:43	3:40	1:37	2:48	1:43	2:48
Chilvers Road	202	0.04	0.56	00:03	0:03	0:03	0:03	0:03	0:03	0:03	2:23	2:46	3:43	1:40	2:50	1:45	2:51
Sefton Road	203	0.38	0.94	00:35	0:57	0:57	1:24	1:25	1:22	1:23	2:57	3:43	4:40	3:03	4:15	3:08	4:14
Adamson Avenue	204	0.34	1.28	00:27	0:31	0:30	0:31	0:31	0:31	0:31	3:24	4:14	5:10	3:35	4:46	3:38	4:46

Southbound				Section Travel Time							Cumulative Travel Time						
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 2	2032 Option 2	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 2	2032 Option 2
Adamson Avenue		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
Chilvers Road	211	0.35	0.35	00:30	0:43	0:42	0:43	0:42	0:43	0:44	0:30	0:43	0:42	0:43	0:42	0:43	0:44
Duffy Avenue	212	0.37	0.72	01:05	1:02	1:02	0:48	0:49	0:47	0:49	1:34	1:45	1:44	1:31	1:31	1:31	1:32
The Esplanade	213	0.04	0.75	00:03	0:03	0:03	0:03	0:03	0:03	0:03	1:37	1:48	1:47	1:34	1:35	1:34	1:35
Janet Avenue	214	0.48	1.23	00:40	0:43	0:43	0:43	0:46	0:46	0:45	2:17	2:31	2:31	2:16	2:21	2:19	2:21

P5524 Westleigh Park Traffic Impact and Access Study
Travel Time Data Analysis
Route 1: Quarter Sessions Road / Duffy Avenue
PM Peak (1700 - 1800)

Northbound				Section Travel Time											Cumulative Travel Time										
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3
The Esplanade		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
Chilvers Road	101	0.05	0.05	00:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04
Sinclair Avenue	102	0.20	0.25	00:22	0:23	0:23	0:23	0:23	0:24	0:25	0:22	0:23	0:23	0:24	0:26	0:27	0:27	0:27	0:27	0:28	0:29	0:26	0:27	0:27	0:28
Quarter Sessions Road	103	0.74	0.98	01:02	1:03	1:03	1:03	1:03	1:03	1:04	1:03	1:03	1:03	1:03	1:28	1:30	1:30	1:30	1:30	1:31	1:33	1:29	1:30	1:30	1:31
H20 Bike Trail	104	0.85	1.84	01:03	1:04	1:04	1:04	1:04	1:04	1:04	1:15	1:15	1:15	1:15	2:32	2:34	2:34	2:34	2:34	2:34	2:36	2:44	2:46	2:45	2:47

Southbound				Section Travel Time											Cumulative Travel Time										
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3
H20 Bike Trail		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
Duffy Avenue	111	0.83	0.83	01:02	1:03	1:03	1:03	1:03	1:03	1:04	1:09	1:09	1:09	1:09	1:02	1:03	1:03	1:03	1:03	1:03	1:04	1:09	1:09	1:09	1:09
Sinclair Avenue	112	0.73	1.56	00:58	1:00	1:00	1:00	1:00	1:00	1:01	0:59	1:00	1:00	1:01	2:00	2:02	2:03	2:03	2:03	2:03	2:05	2:08	2:09	2:09	2:09
Chilvers Road	113	0.20	1.76	00:52	0:54	0:56	0:54	0:56	0:54	0:59	0:55	0:56	0:55	0:56	2:53	2:56	2:59	2:57	2:59	2:57	3:04	3:03	3:05	3:04	3:05
The Esplanade	114	0.06	1.82	00:05	0:05	0:05	0:05	0:05	0:05	0:05	0:05	0:05	0:05	0:05	2:58	3:01	3:04	3:02	3:04	3:02	3:09	3:08	3:10	3:09	3:10

P5524 Westleigh Park Traffic Impact and Access Study
Travel Time Data Analysis
Route 2: The Esplanade / Chivers Road / Sefton Road
PM Peak (1700 - 1800)

Northbound				Section Travel Time											Cumulative Travel Time										
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3
Janet Avenue		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
Duffy Avenue	201	0.52	0.52	01:27	1:30	1:35	1:34	1:36	1:31	1:46	1:29	1:47	1:38	1:55	1:27	1:30	1:35	1:34	1:36	1:31	1:46	1:29	1:47	1:38	1:55
Chilvers Road	202	0.04	0.56	00:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	1:30	1:33	1:38	1:36	1:39	1:34	1:49	1:32	1:50	1:41	1:57
Sefton Road	203	0.38	0.94	00:31	0:31	0:31	0:54	0:56	0:55	0:56	0:31	0:56	0:55	0:57	2:01	2:04	2:09	2:31	2:34	2:29	2:45	2:03	2:46	2:36	2:54
Adamson Avenue	204	0.34	1.28	00:25	0:25	0:26	0:26	0:26	0:26	0:26	0:25	0:27	0:26	0:27	2:26	2:30	2:35	2:57	3:01	2:54	3:12	2:28	3:13	3:02	3:21

Southbound				Section Travel Time											Cumulative Travel Time										
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3
Adamson Avenue		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
Chilvers Road	211	0.35	0.35	00:28	0:28	0:29	0:40	0:41	0:40	0:44	0:31	0:45	0:40	0:43	0:28	0:28	0:29	0:40	0:41	0:40	0:44	0:31	0:45	0:40	0:43
Duffy Avenue	212	0.37	0.72	00:55	0:57	0:56	0:55	0:55	0:55	1:00	0:56	0:55	0:55	0:55	1:23	1:25	1:26	1:35	1:36	1:35	1:44	1:27	1:40	1:36	1:38
The Esplanade	213	0.04	0.75	00:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	1:26	1:28	1:29	1:38	1:39	1:38	1:47	1:30	1:43	1:39	1:41
Janet Avenue	214	0.48	1.23	00:50	0:46	0:47	0:51	0:52	0:51	0:55	0:46	0:49	0:49	0:49	2:16	2:14	2:15	2:28	2:32	2:29	2:42	2:16	2:32	2:27	2:31

P5524 Westleigh Park Traffic Impact and Access Study
Travel Time Data Analysis
Route 1: Quarter Sessions Road / Duffy Avenue
Weekend Peak (1100 - 1200)

Northbound				Section Travel Time											Cumulative Travel Time										
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3
The Esplanade		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
Chilvers Road	101	0.05	0.05	00:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04	0:04
Sinclair Avenue	102	0.20	0.25	00:22	0:23	0:23	0:22	0:23	0:23	0:25	0:22	0:23	0:23	0:24	0:26	0:27	0:27	0:27	0:27	0:28	0:29	0:26	0:28	0:27	0:28
Quarter Sessions Road	103	0.74	0.98	01:02	1:02	1:03	1:02	1:02	1:03	1:05	1:03	1:04	1:03	1:04	1:28	1:29	1:29	1:29	1:29	1:30	1:34	1:29	1:31	1:30	1:32
H20 Bike Trail	104	0.85	1.84	01:03	1:03	1:03	1:03	1:04	1:04	1:04	1:09	1:09	1:09	1:09	2:31	2:32	2:33	2:32	2:33	2:34	2:38	2:38	2:40	2:39	2:42

Southbound				Section Travel Time											Cumulative Travel Time										
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3
H20 Bike Trail		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
Duffy Avenue	111	0.83	0.83	01:02	1:03	1:03	1:03	1:03	1:04	1:06	1:09	1:10	1:09	1:10	1:02	1:03	1:03	1:03	1:03	1:04	1:06	1:09	1:10	1:09	1:10
Sinclair Avenue	112	0.73	1.56	00:59	1:00	1:00	1:00	1:00	1:01	1:08	1:00	1:06	1:01	1:04	2:01	2:04	2:03	2:03	2:04	2:05	2:14	2:09	2:15	2:10	2:14
Chilvers Road	113	0.20	1.76	01:01	0:59	0:59	1:00	1:00	1:01	1:13	1:01	1:12	1:02	1:13	3:02	3:03	3:02	3:03	3:03	3:06	3:27	3:10	3:27	3:12	3:26
The Esplanade	114	0.06	1.82	00:05	0:05	0:05	0:05	0:05	0:05	0:05	0:05	0:05	0:05	0:05	3:07	3:08	3:07	3:08	3:08	3:11	3:32	3:15	3:32	3:17	3:31

P5524 Westleigh Park Traffic Impact and Access Study
Travel Time Data Analysis
Route 2: The Esplanade / Chivers Road / Sefton Road
Weekend Peak (1100 - 1200)

Northbound				Section Travel Time											Cumulative Travel Time										
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2027 Option 2	2032 Option 2	2027 Option 3	2032 Option 3
Janet Avenue		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
Duffy Avenue	201	0.52	0.52	01:16	1:31	1:28	1:32	1:28	1:33	1:49	1:27	1:36	1:36	1:47	1:16	1:31	1:28	1:32	1:28	1:33	1:49	1:27	1:36	1:36	1:47
Chilvers Road	202	0.04	0.56	00:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	1:18	1:34	1:31	1:35	1:31	1:36	1:52	1:30	1:39	1:39	1:50
Sefton Road	203	0.38	0.94	00:32	0:53	0:53	0:53	0:54	0:56	1:01	0:57	1:02	1:02	1:08	1:50	2:27	2:24	2:28	2:25	2:32	2:52	2:27	2:41	2:41	2:59
Adamson Avenue	204	0.34	1.28	00:25	0:26	0:26	0:26	0:26	0:26	0:29	0:26	0:27	0:26	0:27	2:15	2:53	2:50	2:54	2:51	2:58	3:21	2:53	3:08	3:07	3:26

Southbound				Section Travel Time											Cumulative Travel Time										
Sections	Vissim Section	Distance (km)	Cumulative Distance (km)	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2032 Option 2	2032 Option 2	2032 Option 3	2032 Option 3	2022 Base	2027 Do Min	2032 Do Min	2027 Upgrade	2032 Upgrade	2027 Option 1	2032 Option 1	2027 Option 2	2032 Option 2	2027 Option 3	2032 Option 3
Adamson Avenue		0.00	0.00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00	0:00
Chilvers Road	211	0.35	0.35	00:28	0:38	0:39	0:38	0:39	0:39	2:44	0:38	0:41	0:39	0:42	0:28	0:38	0:39	0:38	0:39	0:39	2:44	0:38	0:41	0:39	0:42
Duffy Avenue	212	0.37	0.72	00:54	0:54	0:55	0:54	0:55	0:54	2:22	0:54	0:55	0:54	0:55	1:21	1:32	1:34	1:32	1:33	1:33	5:06	1:32	1:36	1:33	1:36
The Esplanade	213	0.04	0.75	00:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	0:03	1:24	1:35	1:36	1:35	1:36	1:36	5:09	1:35	1:39	1:36	1:39
Janet Avenue	214	0.48	1.23	00:42	0:42	0:42	0:42	0:42	0:42	0:42	0:43	0:45	0:43	0:45	2:06	2:17	2:18	2:17	2:18	2:18	5:51	2:19	2:24	2:19	2:24

Appendix E

Year 2022 and 2032 SIDRA Modelling Results

MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road (Site Folder: Base AM)]

Network: N101 [Base AM (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	59	1.8	59	1.8	0.167	4.3	LOS A	0.4	3.1	0.50	0.55	0.50	37.7
2	T1	45	0.0	45	0.0	0.167	4.0	LOS A	0.4	3.1	0.50	0.55	0.50	38.2
3	R2	62	0.0	62	0.0	0.167	7.2	LOS A	0.4	3.1	0.50	0.55	0.50	35.8
Approach		166	0.6	166	0.6	0.167	5.3	LOS A	0.4	3.1	0.50	0.55	0.50	37.4
East: Duffy Avenue														
4	L2	54	0.0	54	0.0	0.264	3.7	LOS A	0.6	4.6	0.37	0.50	0.37	38.5
5	T1	136	6.2	136	6.2	0.264	3.5	LOS A	0.6	4.6	0.37	0.50	0.37	38.9
6	R2	97	8.7	97	8.7	0.264	6.7	LOS A	0.6	4.6	0.37	0.50	0.37	38.9
Approach		286	5.9	286	5.9	0.264	4.6	LOS A	0.6	4.6	0.37	0.50	0.37	38.8
North: Quarter Sessions Road														
7	L2	187	1.1	187	1.1	0.294	5.4	LOS A	0.8	5.5	0.63	0.63	0.63	35.8
8	T1	67	0.0	67	0.0	0.294	5.1	LOS A	0.8	5.5	0.63	0.63	0.63	38.3
9	R2	5	0.0	5	0.0	0.294	8.2	LOS A	0.8	5.5	0.63	0.63	0.63	38.3
Approach		260	0.8	260	0.8	0.294	5.3	LOS A	0.8	5.5	0.63	0.63	0.63	36.8
West: Duffy Avenue														
10	L2	11	10.0	11	10.0	0.270	4.1	LOS A	0.7	4.7	0.45	0.52	0.45	37.9
11	T1	203	1.6	203	1.6	0.270	3.6	LOS A	0.7	4.7	0.45	0.52	0.45	36.1
12	R2	73	4.3	73	4.3	0.270	6.9	LOS A	0.7	4.7	0.45	0.52	0.45	38.4
Approach		286	2.6	286	2.6	0.270	4.5	LOS A	0.7	4.7	0.45	0.52	0.45	37.1
All Vehicles		999	2.7	999	2.7	0.294	4.9	LOS A	0.8	5.5	0.48	0.55	0.48	37.8

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: Base AM)]

Network: N101 [Base AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 115 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	40	2.6	40	2.6	* 0.927	65.1	LOS E	22.1	157.0	1.00	1.12	1.31	18.8
22	T1	491	1.5	491	1.5	0.927	61.6	LOS E	22.1	157.0	1.00	1.12	1.31	18.8
23b	R3	136	3.9	136	3.9	0.704	61.5	LOS E	4.8	34.7	1.00	0.85	1.11	18.9
Approach		666	2.1	666	2.1	0.927	61.8	LOS E	22.1	157.0	1.00	1.07	1.26	18.8
East: Duffy Avenue														
4b	L3	80	1.3	80	1.3	* 0.819	61.4	LOS E	8.5	62.7	1.00	0.97	1.20	25.2
5	T1	154	8.2	154	8.2	0.819	56.2	LOS D	8.5	62.7	1.00	0.97	1.20	14.2
6a	R1	88	3.6	88	3.6	0.363	53.6	LOS D	2.9	20.6	0.96	0.76	0.96	15.1
Approach		322	5.2	322	5.2	0.819	56.8	LOS E	8.5	62.7	0.99	0.92	1.13	18.0
NorthWest: Chilvers Road														
27a	L1	93	3.4	93	3.4	0.450	38.1	LOS C	7.2	51.1	0.85	0.75	0.85	20.5
28	T1	427	0.7	427	0.7	0.450	34.8	LOS C	7.2	50.7	0.86	0.74	0.86	31.6
29b	R3	145	2.2	145	2.2	0.745	62.7	LOS E	5.2	37.2	1.00	0.88	1.15	14.4
Approach		665	1.4	665	1.4	0.745	41.4	LOS C	7.2	51.1	0.89	0.77	0.92	26.8
West: Duffy Avenue														
10b	L3	216	1.5	216	1.5	0.395	37.0	LOS C	5.7	40.2	0.81	0.79	0.81	32.4
11	T1	219	1.0	219	1.0	0.722	52.2	LOS D	7.5	52.9	1.00	0.88	1.07	27.9
12a	R1	204	0.0	204	0.0	0.819	62.1	LOS E	7.5	52.5	1.00	0.95	1.21	31.1
Approach		639	0.8	639	0.8	0.819	50.2	LOS D	7.5	52.9	0.94	0.87	1.03	30.4
All Vehicles		2293	2.0	2293	2.0	0.927	51.9	LOS D	22.1	157.0	0.95	0.90	1.08	24.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
East: Duffy Avenue											
P2	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
NorthWest: Chilvers Road											
P7	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	221.4	220.5	1.00
West: Duffy Avenue											

P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
P4B	Slip/ Bypass	53	51.8	LOS E	0.2	0.2	0.95	0.95	208.9	204.3	0.98
All Pedestrians		263	51.8	LOS E	0.2	0.2	0.95	0.95	216.2	213.8	0.99

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: Base AM)]

Network: N101 [Base AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 115 seconds (Site User-Given Phase Times)

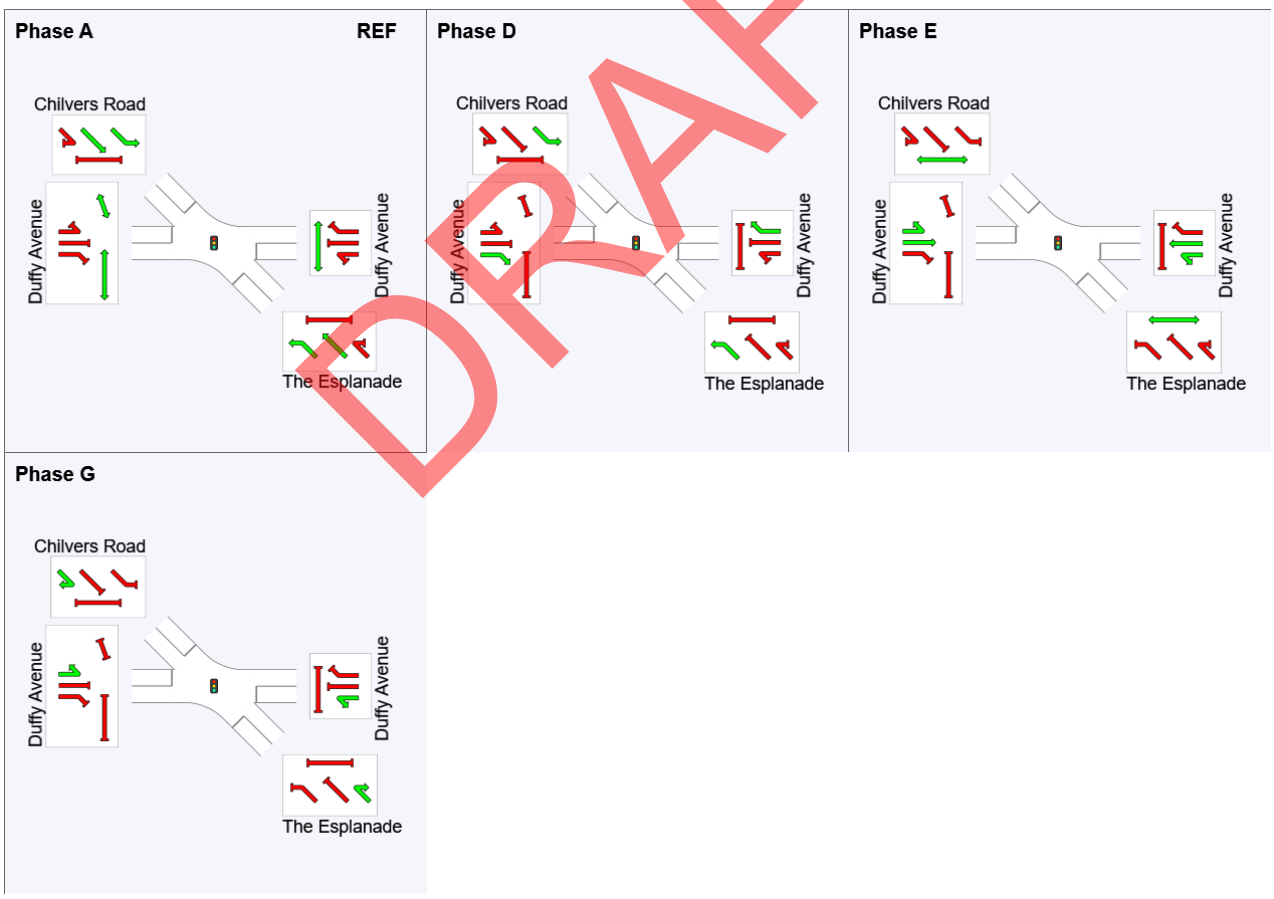
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

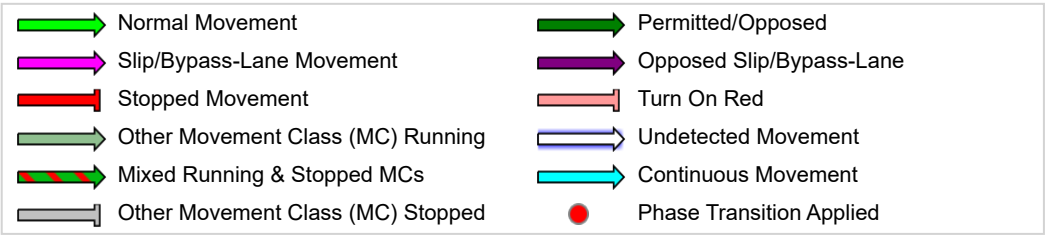
Phase	A	D	E	G
Phase Change Time (sec)	0	43	67	94
Green Time (sec)	34	15	18	14
Phase Time (sec)	43	24	25	23
Phase Split	37%	21%	22%	20%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Wednesday, 20 July 2022 3:53:29 PM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_AM.sip9

MOVEMENT SUMMARY

Site: 14 [Chilvers Road / Sefton Road (Site Folder: Base AM)]

Network: N101 [Base AM (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	67	3.1	67	3.1	0.407	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
3	R2	678	1.7	678	1.7	0.407	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
Approach		745	1.8	745	1.8	0.407	4.7	NA	0.0	0.0	0.00	0.53	0.00	45.8
East: Sefton Road														
4	L2	573	1.3	573	1.3	0.311	5.9	LOS A	0.0	0.0	0.00	0.53	0.00	50.9
5	T1	62	3.4	62	3.4	0.087	8.2	LOS A	0.1	1.0	0.57	0.74	0.57	51.8
Approach		635	1.5	635	1.5	0.311	6.1	LOS A	0.1	1.0	0.06	0.55	0.06	51.1
West: Sefton Road														
11	T1	68	1.5	68	1.5	0.385	8.6	LOS A	0.7	4.7	0.74	0.96	0.99	41.4
12	R2	84	2.5	84	2.5	0.385	19.5	LOS B	0.7	4.7	0.74	0.96	0.99	35.8
Approach		153	2.1	153	2.1	0.385	14.6	LOS B	0.7	4.7	0.74	0.96	0.99	39.1
All Vehicles		1533	1.7	1533	1.7	0.407	6.3	NA	0.7	4.7	0.10	0.58	0.12	46.6

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

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. (Site Folder: Base AM)]

Network: N101 [Base AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	211	6.5	211	6.5	0.593	22.2	LOS B	13.2	97.1	0.67	0.67	0.67	41.8
2	T1	1704	5.4	1704	5.4	* 0.593	16.5	LOS B	14.0	102.9	0.69	0.64	0.69	52.7
Approach		1915	5.6	1915	5.6	0.593	17.1	LOS B	14.0	102.9	0.69	0.65	0.69	51.9
North: Pennant Hills Road.														
8	T1	1662	4.1	1662	4.1	0.395	5.8	LOS A	6.9	49.7	0.40	0.36	0.40	63.0
9	R2	164	6.4	164	6.4	* 0.818	67.3	LOS E	6.1	45.1	1.00	0.90	1.25	19.9
Approach		1826	4.3	1826	4.3	0.818	11.3	LOS A	6.9	49.7	0.45	0.41	0.47	57.0
West: Duffy Avenue														
10	L2	231	5.9	231	5.9	0.392	36.5	LOS C	6.1	44.8	0.82	0.79	0.82	30.6
12	R2	198	3.2	198	3.2	* 0.660	54.6	LOS D	6.6	47.3	0.99	0.83	1.01	25.8
Approach		428	4.7	428	4.7	0.660	44.8	LOS D	6.6	47.3	0.90	0.81	0.91	28.2
All Vehicles		4169	4.9	4169	4.9	0.818	17.4	LOS B	14.0	102.9	0.61	0.56	0.62	50.2

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	225.7	226.1	1.00
West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	220.2	219.0	0.99

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. (Site Folder: Base AM)]

Network: N101 [Base AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network Site User-Given Phase Times)

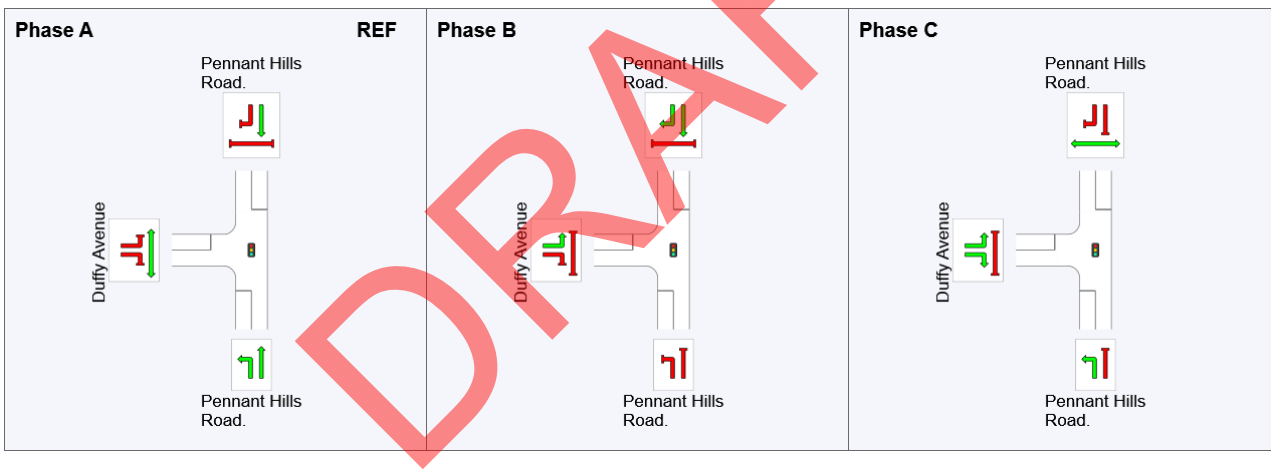
Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

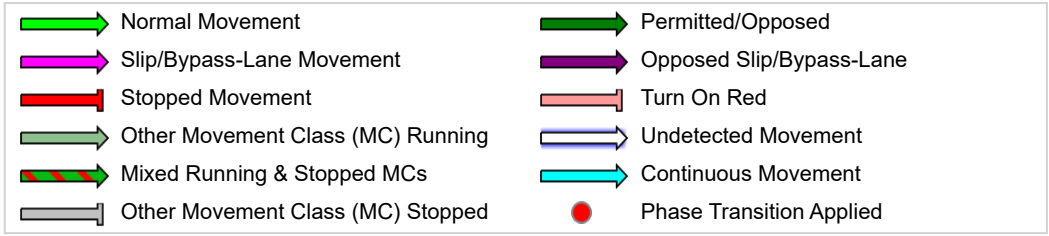
Phase	A	B	C
Phase Change Time (sec)	0	71	90
Green Time (sec)	66	13	19
Phase Time (sec)	72	19	24
Phase Split	63%	17%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road (Site Folder: Base PM)]

Network: N101 [Base PM (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	41	2.6	41	2.6	0.113	6.1	LOS A	0.3	2.1	0.64	0.62	0.64	37.3
2	T1	31	0.0	31	0.0	0.113	5.8	LOS A	0.3	2.1	0.64	0.62	0.64	37.8
3	R2	22	0.0	22	0.0	0.113	8.9	LOS A	0.3	2.1	0.64	0.62	0.64	35.0
Approach		94	1.1	94	1.1	0.113	6.7	LOS A	0.3	2.1	0.64	0.62	0.64	37.1
East: Duffy Avenue														
4	L2	27	0.0	27	0.0	0.358	2.9	LOS A	1.0	7.1	0.23	0.45	0.23	38.6
5	T1	238	3.5	238	3.5	0.358	2.7	LOS A	1.0	7.1	0.23	0.45	0.23	39.0
6	R2	219	3.8	219	3.8	0.358	5.9	LOS A	1.0	7.1	0.23	0.45	0.23	39.0
Approach		484	3.5	484	3.5	0.358	4.1	LOS A	1.0	7.1	0.23	0.45	0.23	39.0
North: Quarter Sessions Road														
7	L2	105	2.0	105	2.0	0.137	4.3	LOS A	0.3	2.3	0.49	0.53	0.49	36.3
8	T1	15	0.0	15	0.0	0.137	3.9	LOS A	0.3	2.3	0.49	0.53	0.49	38.6
9	R2	13	0.0	13	0.0	0.137	7.1	LOS A	0.3	2.3	0.49	0.53	0.49	38.6
Approach		133	1.6	133	1.6	0.137	4.5	LOS A	0.3	2.3	0.49	0.53	0.49	37.1
West: Duffy Avenue														
10	L2	11	10.0	11	10.0	0.224	4.6	LOS A	0.5	3.9	0.48	0.51	0.48	37.9
11	T1	189	1.7	189	1.7	0.224	4.0	LOS A	0.5	3.9	0.48	0.51	0.48	36.2
12	R2	24	13.0	24	13.0	0.224	7.4	LOS A	0.5	3.9	0.48	0.51	0.48	38.4
Approach		224	3.3	224	3.3	0.224	4.4	LOS A	0.5	3.9	0.48	0.51	0.48	36.7
All Vehicles		935	2.9	935	2.9	0.358	4.5	LOS A	1.0	7.1	0.37	0.50	0.37	38.3

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: Base PM)]

Network: N101 [Base PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 115 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	133	0.8	133	0.8	* 0.910	63.3	LOS E	18.7	133.2	1.00	1.08	1.28	19.0
22	T1	334	2.2	334	2.2	0.910	59.5	LOS E	18.7	133.2	1.00	1.08	1.28	19.0
23b	R3	45	11.6	45	11.6	0.246	56.5	LOS D	1.5	11.2	0.94	0.75	0.94	19.9
Approach		512	2.7	512	2.7	0.910	60.2	LOS E	18.7	133.2	0.99	1.05	1.25	19.1
East: Duffy Avenue														
4b	L3	103	1.0	103	1.0	* 0.961	83.9	LOS F	15.4	111.7	1.00	1.22	1.52	21.1
5	T1	238	5.3	238	5.3	0.961	78.9	LOS F	15.4	111.7	1.00	1.22	1.52	11.1
6a	R1	85	3.7	85	3.7	0.478	58.5	LOS E	2.9	20.9	0.99	0.77	0.99	14.2
Approach		426	4.0	426	4.0	0.961	76.0	LOS F	15.4	111.7	1.00	1.13	1.42	14.7
NorthWest: Chilvers Road														
27a	L1	81	3.9	81	3.9	0.650	44.4	LOS D	10.2	72.2	0.94	0.82	0.94	18.7
28	T1	581	0.5	581	0.5	0.650	40.7	LOS C	10.2	72.2	0.95	0.81	0.95	29.8
29b	R3	180	1.8	180	1.8	0.920	77.6	LOS F	7.5	53.3	1.00	1.05	1.50	12.3
Approach		842	1.1	842	1.1	0.920	48.9	LOS D	10.2	72.2	0.96	0.86	1.06	25.2
West: Duffy Avenue														
10b	L3	138	2.3	138	2.3	0.211	29.2	LOS C	3.0	21.7	0.68	0.74	0.68	35.0
11	T1	131	1.6	131	1.6	0.324	41.9	LOS C	3.8	27.3	0.89	0.72	0.89	30.5
12a	R1	121	0.0	121	0.0	0.662	60.5	LOS E	4.2	29.7	1.00	0.83	1.07	31.4
Approach		389	1.4	389	1.4	0.662	43.2	LOS D	4.2	29.7	0.85	0.76	0.87	32.1
All Vehicles		2169	2.1	2169	2.1	0.961	55.9	LOS D	18.7	133.2	0.96	0.94	1.14	23.2

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
East: Duffy Avenue											
P2	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
NorthWest: Chilvers Road											
P7	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	221.4	220.5	1.00
West: Duffy Avenue											

P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
P4B	Slip/ Bypass	53	51.8	LOS E	0.2	0.2	0.95	0.95	208.9	204.3	0.98
All Pedestrians		263	51.8	LOS E	0.2	0.2	0.95	0.95	216.2	213.8	0.99

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: Base PM)]

Network: N101 [Base PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 115 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

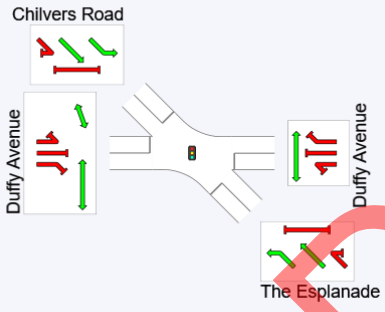
Phase Timing Summary

Phase	A	D	E	G
Phase Change Time (sec)	0	39	59	92
Green Time (sec)	30	11	24	14
Phase Time (sec)	39	20	33	23
Phase Split	34%	17%	29%	20%

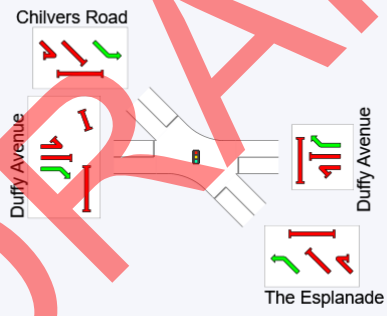
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

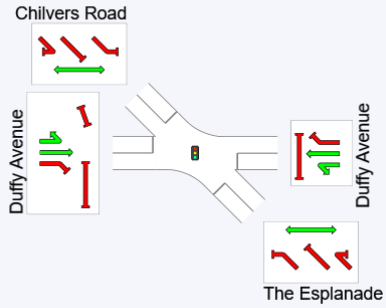
Phase A REF



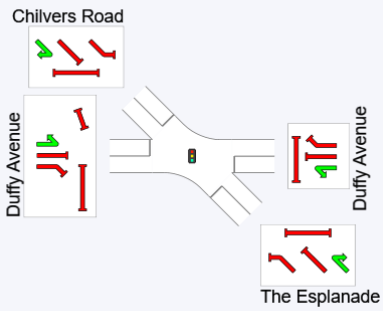
Phase D



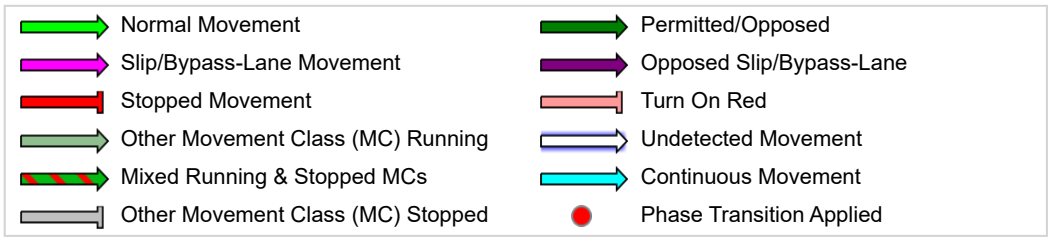
Phase E



Phase G



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Wednesday, 20 July 2022 6:10:07 PM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_PM.sip9

MOVEMENT SUMMARY

Site: 14 [Chilvers Road / Sefton Road (Site Folder: Base PM)]

Network: N101 [Base PM (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	60	3.5	60	3.5	0.303	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
3	R2	493	2.4	493	2.4	0.303	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
Approach		553	2.5	553	2.5	0.303	4.6	NA	0.0	0.0	0.00	0.53	0.00	45.8
East: Sefton Road														
4	L2	752	1.0	752	1.0	0.408	5.9	LOS A	0.0	0.0	0.00	0.53	0.00	50.9
5	T1	48	4.3	48	4.3	0.054	6.8	LOS A	0.1	0.6	0.48	0.64	0.48	52.9
Approach		800	1.2	800	1.2	0.408	5.9	LOS A	0.1	0.6	0.03	0.53	0.03	51.1
West: Sefton Road														
11	T1	39	2.7	39	2.7	0.217	5.7	LOS A	0.3	2.2	0.66	0.80	0.69	42.5
12	R2	46	4.5	46	4.5	0.217	18.0	LOS B	0.3	2.2	0.66	0.80	0.69	37.4
Approach		85	3.7	85	3.7	0.217	12.4	LOS A	0.3	2.2	0.66	0.80	0.69	40.4
All Vehicles		1438	1.8	1438	1.8	0.408	5.8	NA	0.3	2.2	0.06	0.55	0.06	47.7

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

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. (Site Folder: Base PM)]

Network: N101 [Base PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	262	5.2	262	5.2	0.679	26.3	LOS B	16.2	118.4	0.76	0.75	0.76	38.0
2	T1	1796	5.2	1796	5.2	* 0.679	20.3	LOS B	17.1	124.7	0.78	0.72	0.78	50.0
Approach		2058	5.2	2058	5.2	0.679	21.1	LOS B	17.1	124.7	0.78	0.73	0.78	48.9
North: Pennant Hills Road.														
8	T1	1811	3.7	1811	3.7	0.434	6.4	LOS A	8.0	57.9	0.43	0.39	0.43	62.3
9	R2	168	6.3	168	6.3	* 0.681	59.8	LOS E	5.8	42.6	1.00	0.84	1.06	21.6
Approach		1979	3.9	1979	3.9	0.681	11.0	LOS A	8.0	57.9	0.48	0.42	0.48	57.4
West: Duffy Avenue														
10	L2	131	10.5	131	10.5	0.212	32.2	LOS C	3.1	23.7	0.74	0.74	0.74	32.0
12	R2	173	3.7	173	3.7	* 0.577	53.4	LOS D	5.6	40.5	0.97	0.81	0.97	26.0
Approach		303	6.6	303	6.6	0.577	44.3	LOS D	5.6	40.5	0.87	0.78	0.87	28.3
All Vehicles		4340	4.7	4340	4.7	0.681	18.1	LOS B	17.1	124.7	0.65	0.59	0.65	50.2

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	225.7	226.1	1.00
West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	220.2	219.0	0.99

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. (Site Folder: Base PM)]

Network: N101 [Base PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

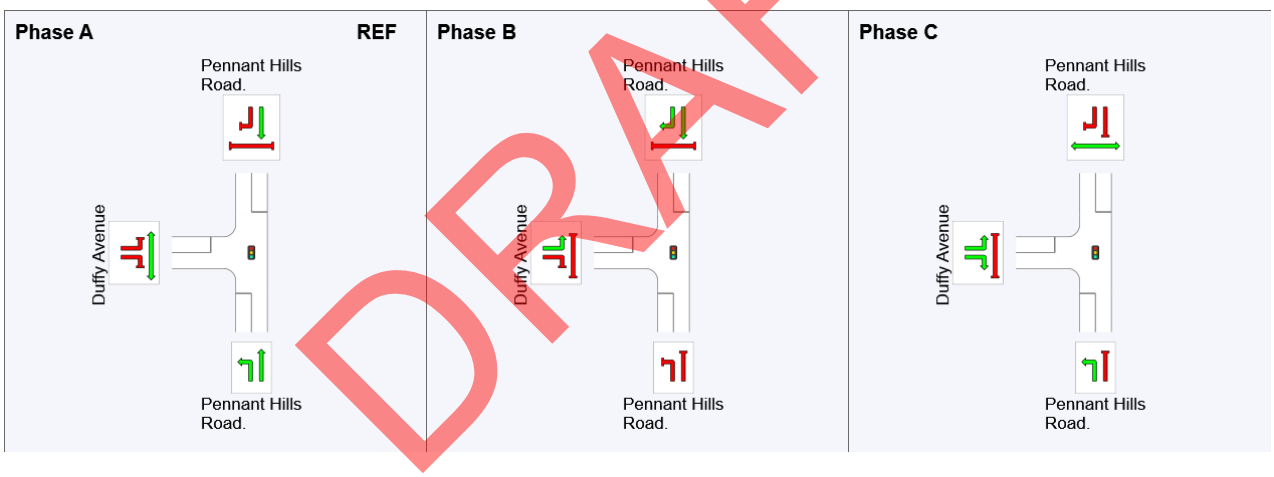
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

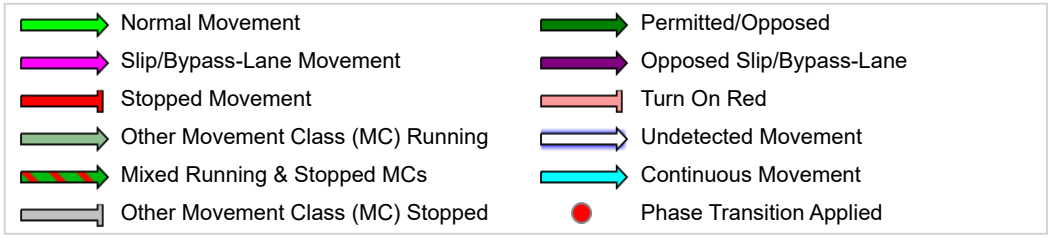
Phase	A	B	C
Phase Change Time (sec)	0	68	90
Green Time (sec)	62	16	19
Phase Time (sec)	68	22	25
Phase Split	59%	19%	22%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road (Site Folder: Base WE)]

Network: N101 [Base WE (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	27	3.8	27	3.8	0.090	5.2	LOS A	0.2	1.6	0.56	0.59	0.56	37.3
2	T1	13	0.0	13	0.0	0.090	4.8	LOS A	0.2	1.6	0.56	0.59	0.56	37.8
3	R2	41	0.0	41	0.0	0.090	8.0	LOS A	0.2	1.6	0.56	0.59	0.56	35.1
Approach		81	1.3	81	1.3	0.090	6.5	LOS A	0.2	1.6	0.56	0.59	0.56	36.6
East: Duffy Avenue														
4	L2	16	0.0	16	0.0	0.274	2.8	LOS A	0.7	5.0	0.20	0.44	0.20	38.7
5	T1	205	4.1	205	4.1	0.274	2.6	LOS A	0.7	5.0	0.20	0.44	0.20	39.1
6	R2	146	5.8	146	5.8	0.274	5.8	LOS A	0.7	5.0	0.20	0.44	0.20	39.1
Approach		367	4.6	367	4.6	0.274	3.9	LOS A	0.7	5.0	0.20	0.44	0.20	39.1
North: Quarter Sessions Road														
7	L2	149	1.4	149	1.4	0.192	4.9	LOS A	0.5	3.3	0.57	0.59	0.57	36.0
8	T1	12	0.0	12	0.0	0.192	4.6	LOS A	0.5	3.3	0.57	0.59	0.57	38.4
9	R2	13	0.0	13	0.0	0.192	7.8	LOS A	0.5	3.3	0.57	0.59	0.57	38.4
Approach		174	1.2	174	1.2	0.192	5.1	LOS A	0.5	3.3	0.57	0.59	0.57	36.6
West: Duffy Avenue														
10	L2	15	7.1	15	7.1	0.263	4.1	LOS A	0.6	4.6	0.43	0.47	0.43	38.1
11	T1	248	1.3	248	1.3	0.263	3.6	LOS A	0.6	4.6	0.43	0.47	0.43	36.5
12	R2	20	15.8	20	15.8	0.263	7.0	LOS A	0.6	4.6	0.43	0.47	0.43	38.6
Approach		283	2.6	283	2.6	0.263	3.9	LOS A	0.6	4.6	0.43	0.47	0.43	36.9
All Vehicles		905	3.0	905	3.0	0.274	4.4	LOS A	0.7	5.0	0.37	0.49	0.37	38.1

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: Base WE)]

Network: N101 [Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	92	1.1	92	1.1	* 0.859	51.6	LOS D	16.5	117.6	1.00	1.00	1.17	21.6
22	T1	380	1.9	380	1.9	0.859	48.0	LOS D	16.5	117.6	1.00	1.00	1.17	21.6
23b	R3	57	9.3	57	9.3	0.340	56.5	LOS E	1.8	13.7	0.96	0.76	0.96	19.9
Approach		528	2.6	528	2.6	0.859	49.5	LOS D	16.5	117.6	1.00	0.98	1.15	21.4
East: Duffy Avenue														
4b	L3	92	1.1	92	1.1	0.839	59.4	LOS E	9.2	67.1	1.00	1.00	1.23	25.6
5	T1	167	7.5	167	7.5	* 0.839	54.2	LOS D	9.2	67.1	1.00	1.00	1.23	14.5
6a	R1	81	3.9	81	3.9	0.369	52.9	LOS D	2.5	18.4	0.96	0.76	0.96	15.2
Approach		340	5.0	340	5.0	0.839	55.3	LOS D	9.2	67.1	0.99	0.94	1.17	18.6
NorthWest: Chilvers Road														
27a	L1	93	3.4	93	3.4	0.497	39.0	LOS C	7.6	53.7	0.88	0.77	0.88	20.2
28	T1	456	0.7	456	0.7	0.497	35.3	LOS C	7.6	53.7	0.88	0.76	0.88	31.4
29b	R3	155	2.0	155	2.0	* 0.884	70.2	LOS E	5.9	42.0	1.00	1.01	1.43	13.2
Approach		703	1.3	703	1.3	0.884	43.5	LOS D	7.6	53.7	0.91	0.81	1.01	26.3
West: Duffy Avenue														
10b	L3	201	1.6	201	1.6	0.353	33.9	LOS C	4.9	34.7	0.78	0.78	0.78	33.3
11	T1	207	1.0	207	1.0	0.620	46.4	LOS D	6.5	45.6	0.98	0.81	0.98	29.3
12a	R1	161	0.0	161	0.0	0.713	56.9	LOS E	5.4	37.9	1.00	0.87	1.10	32.1
Approach		569	0.9	569	0.9	0.713	45.0	LOS D	6.5	45.6	0.92	0.81	0.94	31.5
All Vehicles		2141	2.1	2141	2.1	0.884	47.2	LOS D	16.5	117.6	0.95	0.87	1.05	25.9

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	216.3	217.2	1.00
East: Duffy Avenue											
P2	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	212.3	211.9	1.00
NorthWest: Chilvers Road											
P7	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	218.9	220.5	1.01
West: Duffy Avenue											

P4	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	214.8	215.2	1.00
P4B	Slip/ Bypass	53	49.3	LOS E	0.2	0.2	0.95	0.95	206.4	204.3	0.99
All Pedestrians		263	49.3	LOS E	0.2	0.2	0.95	0.95	213.7	213.8	1.00

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

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: Base WE)]

Network: N101 [Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

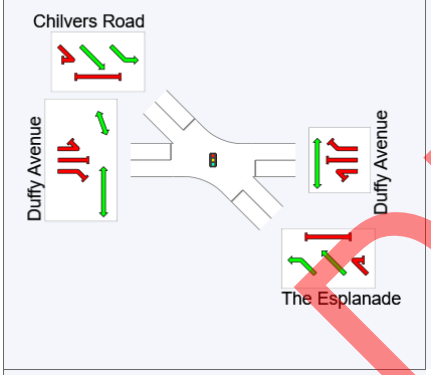
Phase Timing Summary

Phase	A	D	E	G
Phase Change Time (sec)	0	40	62	90
Green Time (sec)	31	13	19	12
Phase Time (sec)	40	22	27	21
Phase Split	36%	20%	25%	19%

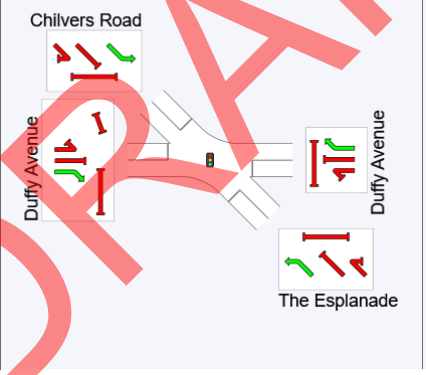
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

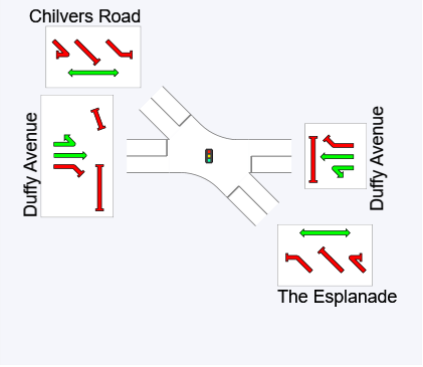
Phase A **REF**



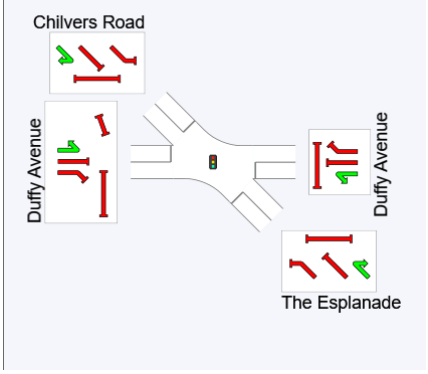
Phase D



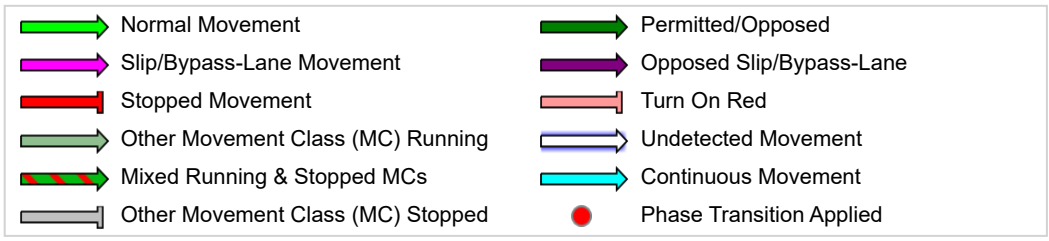
Phase E



Phase G



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Wednesday, 20 July 2022 4:17:19 PM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 14 [Chilvers Road / Sefton Road (Site Folder: Base WE)]

Network: N101 [Base WE (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	79	2.7	79	2.7	0.357	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
3	R2	574	2.0	574	2.0	0.357	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
Approach		653	2.1	653	2.1	0.357	4.7	NA	0.0	0.0	0.00	0.53	0.00	45.8
East: Sefton Road														
4	L2	631	1.2	631	1.2	0.342	5.9	LOS A	0.0	0.0	0.00	0.53	0.00	50.9
5	T1	53	4.0	53	4.0	0.066	7.4	LOS A	0.1	0.7	0.53	0.69	0.53	52.3
Approach		683	1.4	683	1.4	0.342	6.0	LOS A	0.1	0.7	0.04	0.54	0.04	51.1
West: Sefton Road														
11	T1	60	1.8	60	1.8	0.339	7.4	LOS A	0.6	3.9	0.70	0.90	0.88	42.1
12	R2	82	2.6	82	2.6	0.339	17.7	LOS B	0.6	3.9	0.70	0.90	0.88	36.7
Approach		142	2.2	142	2.2	0.339	13.3	LOS A	0.6	3.9	0.70	0.90	0.88	39.7
All Vehicles		1478	1.8	1478	1.8	0.357	6.1	NA	0.6	3.9	0.09	0.57	0.10	46.9

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

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. (Site Folder: Base WE)]

Network: N101 [Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	226	6.0	226	6.0	0.700	26.1	LOS B	17.2	125.6	0.77	0.75	0.77	38.5
2	T1	1936	4.8	1936	4.8	* 0.700	20.1	LOS B	18.1	131.7	0.79	0.73	0.79	50.2
Approach		2162	4.9	2162	4.9	0.700	20.7	LOS B	18.1	131.7	0.79	0.73	0.79	49.3
North: Pennant Hills Road.														
8	T1	1713	3.9	1713	3.9	0.421	7.1	LOS A	7.9	57.0	0.44	0.40	0.44	61.6
9	R2	135	7.8	135	7.8	* 0.678	62.5	LOS E	4.7	35.2	1.00	0.83	1.08	21.0
Approach		1847	4.2	1847	4.2	0.678	11.2	LOS A	7.9	57.0	0.48	0.43	0.49	57.3
West: Duffy Avenue														
10	L2	164	8.3	164	8.3	0.269	33.6	LOS C	4.0	30.3	0.76	0.76	0.76	31.5
12	R2	225	2.8	225	2.8	* 0.678	53.3	LOS D	7.4	53.4	0.99	0.84	1.01	26.1
Approach		389	5.1	389	5.1	0.678	45.0	LOS D	7.4	53.4	0.89	0.81	0.91	28.1
All Vehicles		4399	4.6	4399	4.6	0.700	18.9	LOS B	18.1	131.7	0.67	0.61	0.67	49.5

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	225.7	226.1	1.00
West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	220.2	219.0	0.99

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. (Site Folder: Base WE)]

Network: N101 [Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

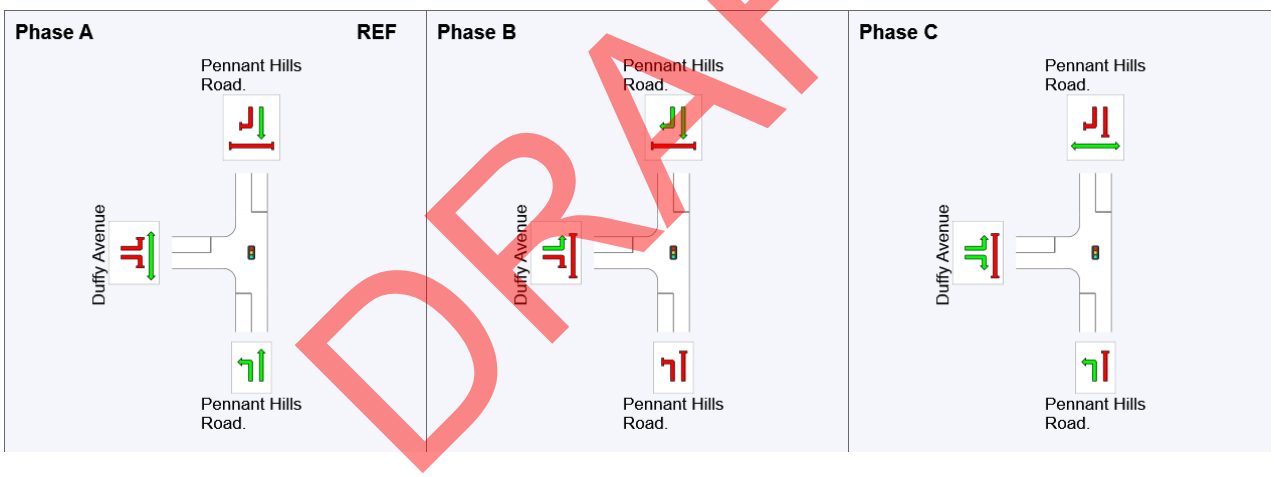
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	69	88
Green Time (sec)	63	13	21
Phase Time (sec)	69	19	27
Phase Split	60%	17%	23%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road - Copy (Site Folder: 2032 Base AM)]

Network: N101 [2032 Base AM (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	65	1.6	65	1.6	0.192	4.7	LOS A	0.5	3.6	0.55	0.59	0.55	37.6
2	T1	42	0.0	42	0.0	0.192	4.4	LOS A	0.5	3.6	0.55	0.59	0.55	38.1
3	R2	76	0.0	76	0.0	0.192	7.6	LOS A	0.5	3.6	0.55	0.59	0.55	35.5
Approach		183	0.6	183	0.6	0.192	5.8	LOS A	0.5	3.6	0.55	0.59	0.55	37.1
East: Duffy Avenue														
4	L2	47	0.0	45	0.0	0.297	4.1	LOS A	0.7	5.2	0.43	0.56	0.43	38.3
5	T1	123	6.8	118	6.8	0.297	4.0	LOS A	0.7	5.2	0.43	0.56	0.43	38.7
6	R2	147	5.7	141	5.7	0.297	7.1	LOS A	0.7	5.2	0.43	0.56	0.43	38.7
Approach		318	5.3	304 N1	5.3	0.297	5.5	LOS A	0.7	5.2	0.43	0.56	0.43	38.6
North: Quarter Sessions Road														
7	L2	214	1.0	214	1.0	0.345	5.6	LOS A	0.9	6.7	0.66	0.67	0.66	35.5
8	T1	65	0.0	65	0.0	0.345	5.3	LOS A	0.9	6.7	0.66	0.67	0.66	38.1
9	R2	21	0.0	21	0.0	0.345	8.5	LOS A	0.9	6.7	0.66	0.67	0.66	38.1
Approach		300	0.7	300	0.7	0.345	5.8	LOS A	0.9	6.7	0.66	0.67	0.66	36.6
West: Duffy Avenue														
10	L2	16	6.7	16	6.7	0.293	4.5	LOS A	0.7	5.2	0.51	0.58	0.51	37.7
11	T1	173	1.8	173	1.8	0.293	4.1	LOS A	0.7	5.2	0.51	0.58	0.51	35.7
12	R2	106	3.0	106	3.0	0.293	7.3	LOS A	0.7	5.2	0.51	0.58	0.51	38.2
Approach		295	2.5	295	2.5	0.293	5.2	LOS A	0.7	5.2	0.51	0.58	0.51	37.1
All Vehicles		1096	2.5	1082 N1	2.5	0.345	5.5	LOS A	0.9	6.7	0.54	0.60	0.54	37.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
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 SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Copy (Site Folder: 2032 Base AM)]

Network: N101 [2032 Base AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	47	2.1	47	2.1	* 1.106	167.1	LOS F	43.6	308.6	1.00	1.74	2.09	9.0
22	T1	587	1.2	587	1.2	1.106	163.6	LOS F	43.6	308.6	1.00	1.74	2.09	9.0
23b	R3	136	3.7	136	3.7	0.704	61.5	LOS E	4.8	34.7	1.00	0.85	1.11	18.9
Approach		770	1.7	770	1.7	1.106	145.8	LOS F	43.6	308.6	1.00	1.58	1.92	10.0
East: Duffy Avenue														
4b	L3	108	0.9	108	0.9	* 1.064	143.1	LOS F	17.8	129.5	1.00	1.53	2.01	14.6
5	T1	186	6.5	186	6.5	1.064	137.9	LOS F	17.8	129.5	1.00	1.53	2.01	6.9
6a	R1	99	3.0	99	3.0	0.405	53.9	LOS D	3.2	23.1	0.96	0.77	0.96	15.0
Approach		393	4.1	393	4.1	1.064	118.2	LOS F	17.8	129.5	0.99	1.34	1.75	10.7
NorthWest: Chilvers Road														
27a	L1	113	2.7	113	2.7	0.518	39.2	LOS C	8.9	63.4	0.91	0.80	0.91	20.1
28	T1	488	0.6	488	0.6	0.518	36.5	LOS C	9.0	63.4	0.93	0.80	0.93	31.1
29b	R3	116	2.6	116	2.6	0.596	54.4	LOS D	3.8	27.1	0.95	0.79	0.96	15.9
Approach		717	1.3	717	1.3	0.596	39.8	LOS C	9.0	63.4	0.93	0.80	0.93	27.7
West: Duffy Avenue														
10b	L3	195	1.5	195	1.5	0.357	36.5	LOS C	5.0	35.8	0.80	0.78	0.80	32.5
11	T1	250	0.8	250	0.8	0.823	56.8	LOS E	9.1	64.3	1.00	0.97	1.19	26.8
12a	R1	210	0.0	210	0.0	0.842	63.7	LOS E	7.9	55.0	1.00	0.97	1.25	30.8
Approach		655	0.8	655	0.8	0.842	53.0	LOS D	9.1	64.3	0.94	0.91	1.09	29.8
All Vehicles		2535	1.7	2535	1.7	1.106	87.5	LOS F	43.6	308.6	0.96	1.15	1.40	18.1

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
East: Duffy Avenue											
P2	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
NorthWest: Chilvers Road											
P7	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	221.4	220.5	1.00

West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
P4B	Slip/ Bypass	53	51.8	LOS E	0.2	0.2	0.95	0.95	208.9	204.3	0.98
All Pedestrians		263	51.8	LOS E	0.2	0.2	0.95	0.95	216.2	213.8	0.99

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Copy (Site Folder: 2032 Base AM)]

Network: N101 [2032 Base AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network Site User-Given Phase Times)

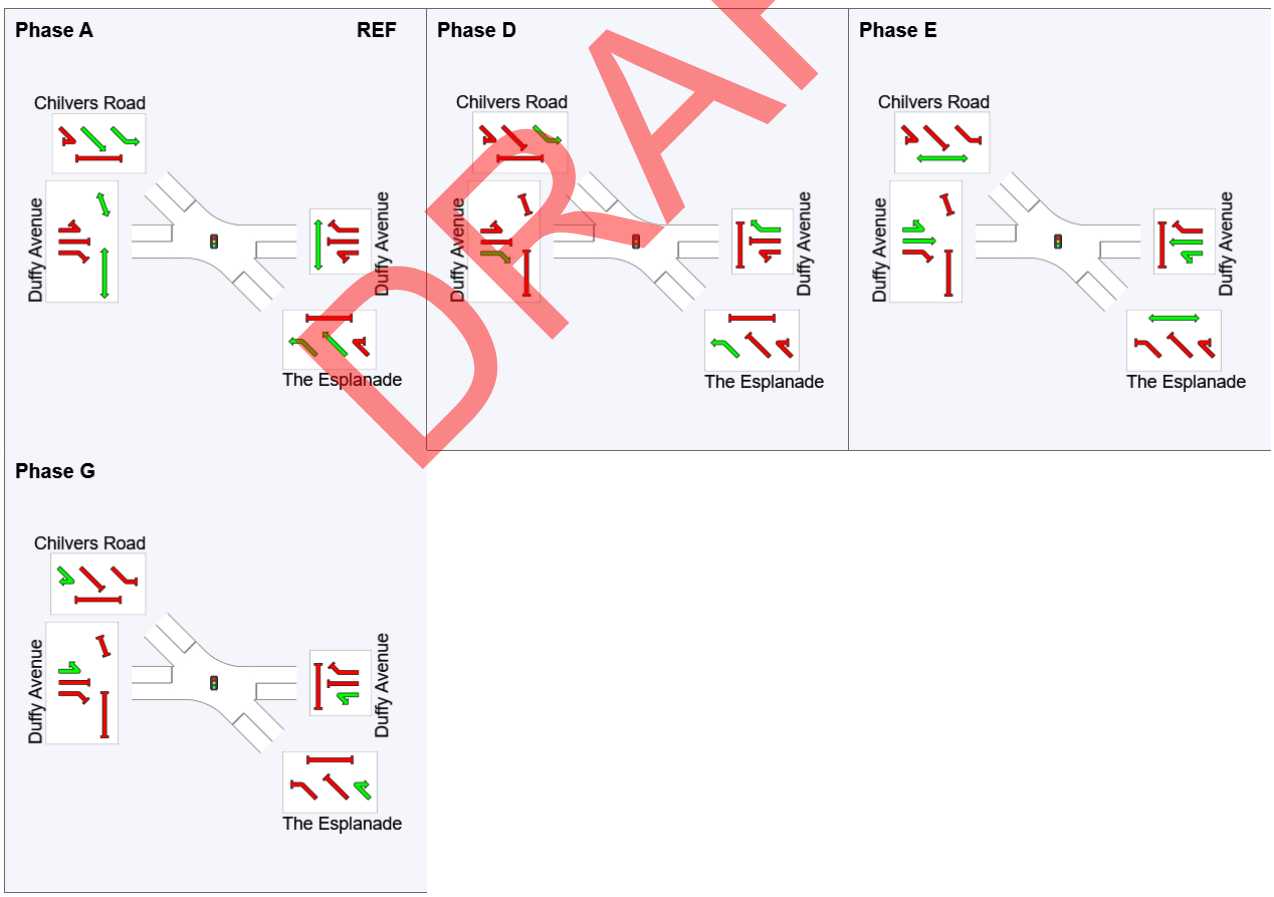
Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

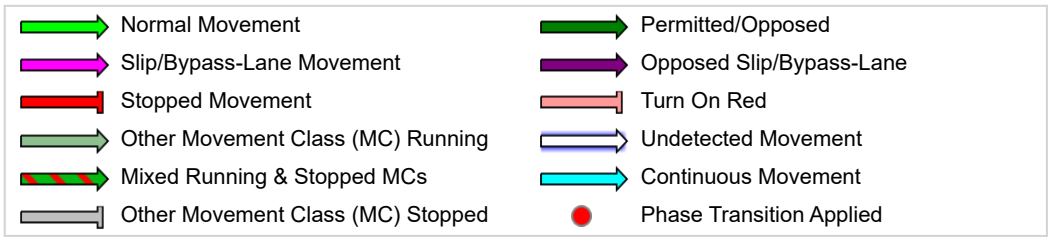
Phase	A	D	E	G
Phase Change Time (sec)	0	43	67	94
Green Time (sec)	34	15	18	14
Phase Time (sec)	43	24	25	23
Phase Split	37%	21%	22%	20%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Copy - Conversion (Site Folder: 2032 Base AM)]

Network: N101 [2032 Base AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	109	1.9	103	1.9	0.816	51.3	LOS D	15.1	107.3	1.00	0.91	1.08	27.0
3	R2	815	1.4	765	1.4	* 0.816	52.5	LOS D	15.1	107.3	1.00	0.91	1.08	26.7
Approach		924	1.5	868 N1	1.5	0.816	52.4	LOS D	15.1	107.3	1.00	0.91	1.08	26.7
East: Sefton Road														
4	L2	631	1.2	631	1.2	0.664	14.2	LOS A	7.0	49.1	0.68	0.79	0.68	41.5
5	T1	104	2.0	104	2.0	* 0.815	47.4	LOS D	3.3	23.5	0.78	0.78	1.18	33.8
Approach		735	1.3	735	1.3	0.815	18.9	LOS B	7.0	49.1	0.70	0.79	0.75	39.3
West: Sefton Road														
11	T1	82	1.3	82	1.3	0.076	12.4	LOS A	1.3	9.0	0.49	0.39	0.49	42.8
12	R2	124	1.7	124	1.7	* 0.649	34.2	LOS C	2.3	16.3	1.00	0.81	1.05	26.0
Approach		206	1.5	206	1.5	0.649	25.5	LOS B	2.3	16.3	0.80	0.64	0.83	33.4
All Vehicles		1865	1.4	1809 N1	1.5	0.816	35.7	LOS C	15.1	107.3	0.85	0.83	0.92	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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
West: Sefton Road											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.6	0.99

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Copy - Conversion (Site Folder: 2032 Base AM)]

Network: N101 [2032 Base AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

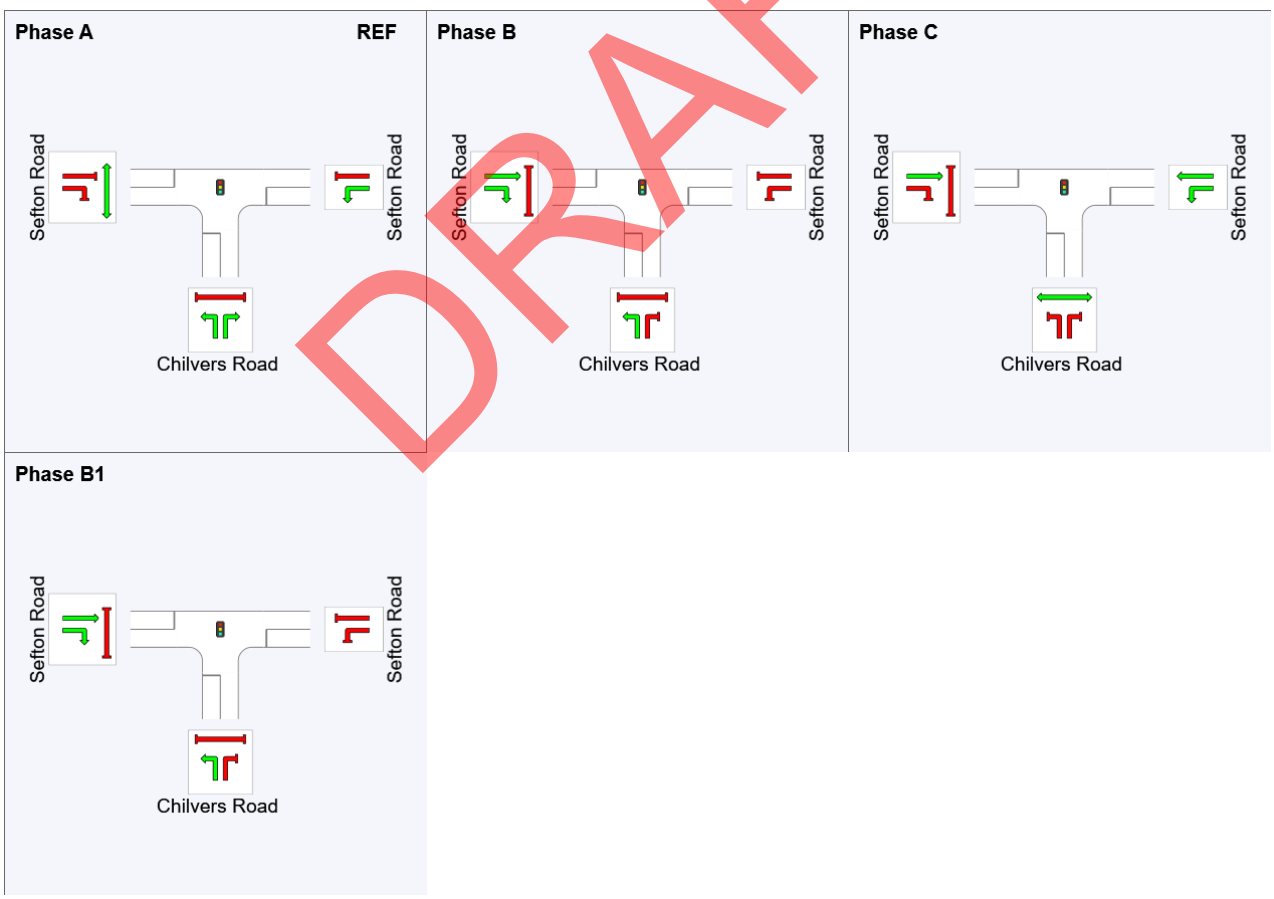
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

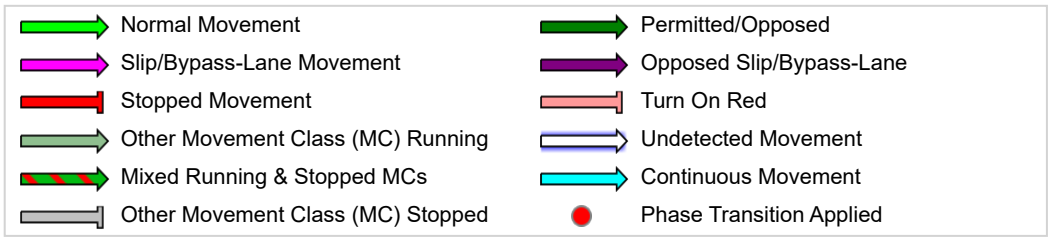
Phase	A	B	C	B1
Phase Change Time (sec)	0	42	57	100
Green Time (sec)	33	6	34	6
Phase Time (sec)	42	15	43	15
Phase Split	37%	13%	37%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Copy (Site Folder: 2032 Base AM)]

Network: N101 [2032 Base AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 115 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	220	6.2	220	6.2	0.643	22.8	LOS B	15.0	109.9	0.70	0.70	0.70	41.3
2	T1	1862	5.0	1862	5.0	* 0.643	17.3	LOS B	16.0	116.5	0.72	0.67	0.72	52.2
Approach		2082	5.1	2082	5.1	0.643	17.9	LOS B	16.0	116.5	0.72	0.68	0.72	51.4
North: Pennant Hills Road.														
8	T1	1729	3.9	1729	3.9	0.410	5.9	LOS A	7.3	52.5	0.40	0.37	0.40	62.9
9	R2	184	5.7	184	5.7	* 0.913	76.7	LOS F	7.5	55.1	1.00	0.99	1.47	18.1
Approach		1914	4.1	1914	4.1	0.913	12.7	LOS A	7.5	55.1	0.46	0.43	0.51	55.7
West: Duffy Avenue														
10	L2	240	5.7	240	5.7	0.407	36.6	LOS C	6.4	46.8	0.82	0.79	0.82	30.5
12	R2	248	2.5	248	2.5	* 0.824	61.1	LOS E	9.1	65.0	1.00	0.93	1.20	24.4
Approach		488	4.1	488	4.1	0.824	49.1	LOS D	9.1	65.0	0.91	0.86	1.01	27.1
All Vehicles		4484	4.6	4484	4.6	0.913	19.1	LOS B	16.0	116.5	0.63	0.59	0.66	48.9

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	225.7	226.1	1.00
West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	220.2	219.0	0.99

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Copy (Site Folder: 2032 Base AM)]

Network: N101 [2032 Base AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 115 seconds (Site User-Given Phase Times)

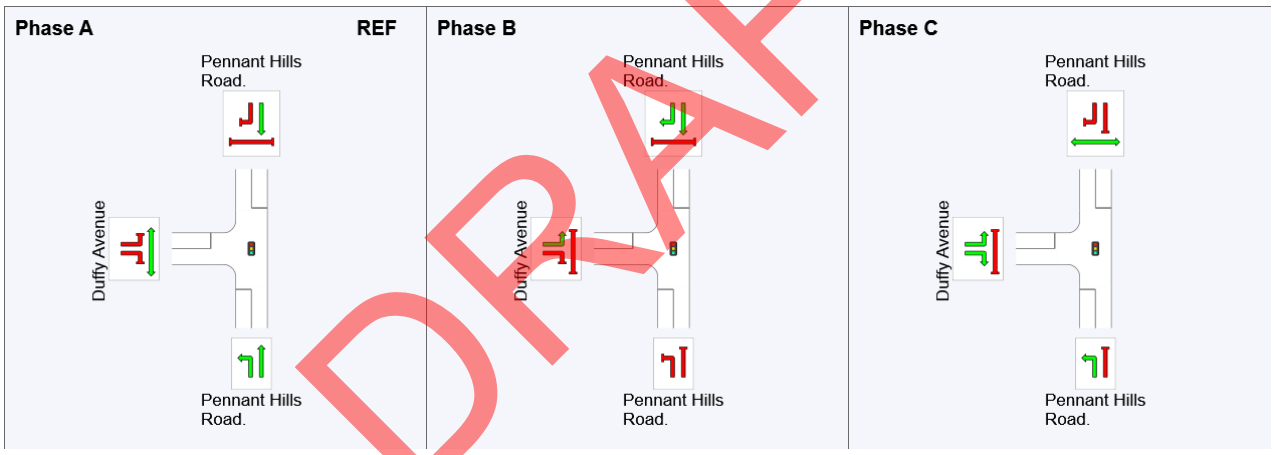
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	71	90
Green Time (sec)	66	13	19
Phase Time (sec)	72	19	24
Phase Split	63%	17%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road - 2032 (Site Folder: 2032 Base PM)]

Network: N101 [2032 Base PM (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	35	3.0	35	3.0	0.115	6.3	LOS A	0.3	2.2	0.66	0.64	0.66	37.1
2	T1	28	0.0	28	0.0	0.115	6.0	LOS A	0.3	2.2	0.66	0.64	0.66	37.6
3	R2	28	0.0	28	0.0	0.115	9.1	LOS A	0.3	2.2	0.66	0.64	0.66	34.7
Approach		92	1.1	92	1.1	0.115	7.1	LOS A	0.3	2.2	0.66	0.64	0.66	36.8
East: Duffy Avenue														
4	L2	20	0.0	19	0.0	0.399	3.3	LOS A	1.1	8.1	0.33	0.49	0.33	38.5
5	T1	239	3.5	226	3.5	0.399	3.1	LOS A	1.1	8.1	0.33	0.49	0.33	38.8
6	R2	267	3.1	253	3.1	0.399	6.3	LOS A	1.1	8.1	0.33	0.49	0.33	38.8
Approach		526	3.2	498 N1	3.2	0.399	4.7	LOS A	1.1	8.1	0.33	0.49	0.33	38.8
North: Quarter Sessions Road														
7	L2	136	1.6	136	1.6	0.199	4.6	LOS A	0.5	3.6	0.55	0.57	0.55	36.1
8	T1	34	0.0	34	0.0	0.199	4.3	LOS A	0.5	3.6	0.55	0.57	0.55	38.5
9	R2	17	0.0	17	0.0	0.199	7.5	LOS A	0.5	3.6	0.55	0.57	0.55	38.5
Approach		186	1.1	186	1.1	0.199	4.8	LOS A	0.5	3.6	0.55	0.57	0.55	37.1
West: Duffy Avenue														
10	L2	13	8.3	13	8.3	0.265	4.9	LOS A	0.7	4.8	0.54	0.56	0.54	37.8
11	T1	202	1.6	202	1.6	0.265	4.4	LOS A	0.7	4.8	0.54	0.56	0.54	35.9
12	R2	41	7.7	41	7.7	0.265	7.7	LOS A	0.7	4.8	0.54	0.56	0.54	38.3
Approach		256	2.9	256	2.9	0.265	4.9	LOS A	0.7	4.8	0.54	0.56	0.54	36.7
All Vehicles		1060	2.6	1032 N1	2.7	0.399	5.0	LOS A	1.1	8.1	0.45	0.54	0.45	38.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
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 SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - 2032 (Site Folder: 2032 Base PM)]

Network: N101 [2032 Base PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	154	0.7	154	0.7	* 1.013	104.1	LOS F	28.5	202.3	1.00	1.35	1.65	13.3
22	T1	383	1.9	383	1.9	1.013	100.4	LOS F	28.5	202.3	1.00	1.35	1.65	13.3
23b	R3	65	8.1	65	8.1	0.374	58.5	LOS E	2.2	16.2	0.97	0.76	0.97	19.5
Approach		602	2.3	602	2.3	1.013	96.8	LOS F	28.5	202.3	1.00	1.29	1.57	13.8
East: Duffy Avenue														
4b	L3	129	0.8	129	0.8	* 1.073	148.5	LOS F	25.0	179.9	1.00	1.56	2.01	14.2
5	T1	266	4.7	266	4.7	1.073	143.5	LOS F	25.0	179.9	1.00	1.56	2.01	6.7
6a	R1	101	3.1	101	3.1	0.621	60.8	LOS E	3.5	25.5	1.00	0.81	1.05	13.8
Approach		497	3.4	497	3.4	1.073	128.0	LOS F	25.0	179.9	1.00	1.41	1.81	9.9
NorthWest: Chilvers Road														
27a	L1	91	3.5	91	3.5	0.673	44.0	LOS D	11.0	78.1	0.96	0.83	0.96	18.8
28	T1	618	0.5	618	0.5	0.673	40.3	LOS C	11.0	78.1	0.95	0.82	0.95	29.9
29b	R3	195	1.6	195	1.6	1.071	148.5	LOS F	11.8	84.0	1.00	1.33	2.12	7.1
Approach		903	1.0	903	1.0	1.071	64.0	LOS E	11.8	84.0	0.96	0.93	1.20	21.6
West: Duffy Avenue														
10b	L3	152	2.1	152	2.1	0.231	29.4	LOS C	3.4	24.1	0.69	0.74	0.69	34.9
11	T1	172	1.2	172	1.2	0.408	42.0	LOS C	5.1	36.1	0.91	0.74	0.91	30.5
12a	R1	158	0.0	158	0.0	0.950	81.6	LOS F	6.8	47.3	1.00	1.13	1.62	27.8
Approach		481	1.1	481	1.1	0.950	51.0	LOS D	6.8	47.3	0.87	0.87	1.07	30.3
All Vehicles		2483	1.8	2483	1.8	1.073	82.2	LOS F	28.5	202.3	0.96	1.10	1.39	18.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
East: Duffy Avenue											
P2	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
NorthWest: Chilvers Road											
P7	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	221.4	220.5	1.00

West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
P4B	Slip/ Bypass	53	51.8	LOS E	0.2	0.2	0.95	0.95	208.9	204.3	0.98
All Pedestrians		263	51.8	LOS E	0.2	0.2	0.95	0.95	216.2	213.8	0.99

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - 2032 (Site Folder: 2032 Base PM)]

Network: N101 [2032 Base PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network Site User-Given Phase Times)

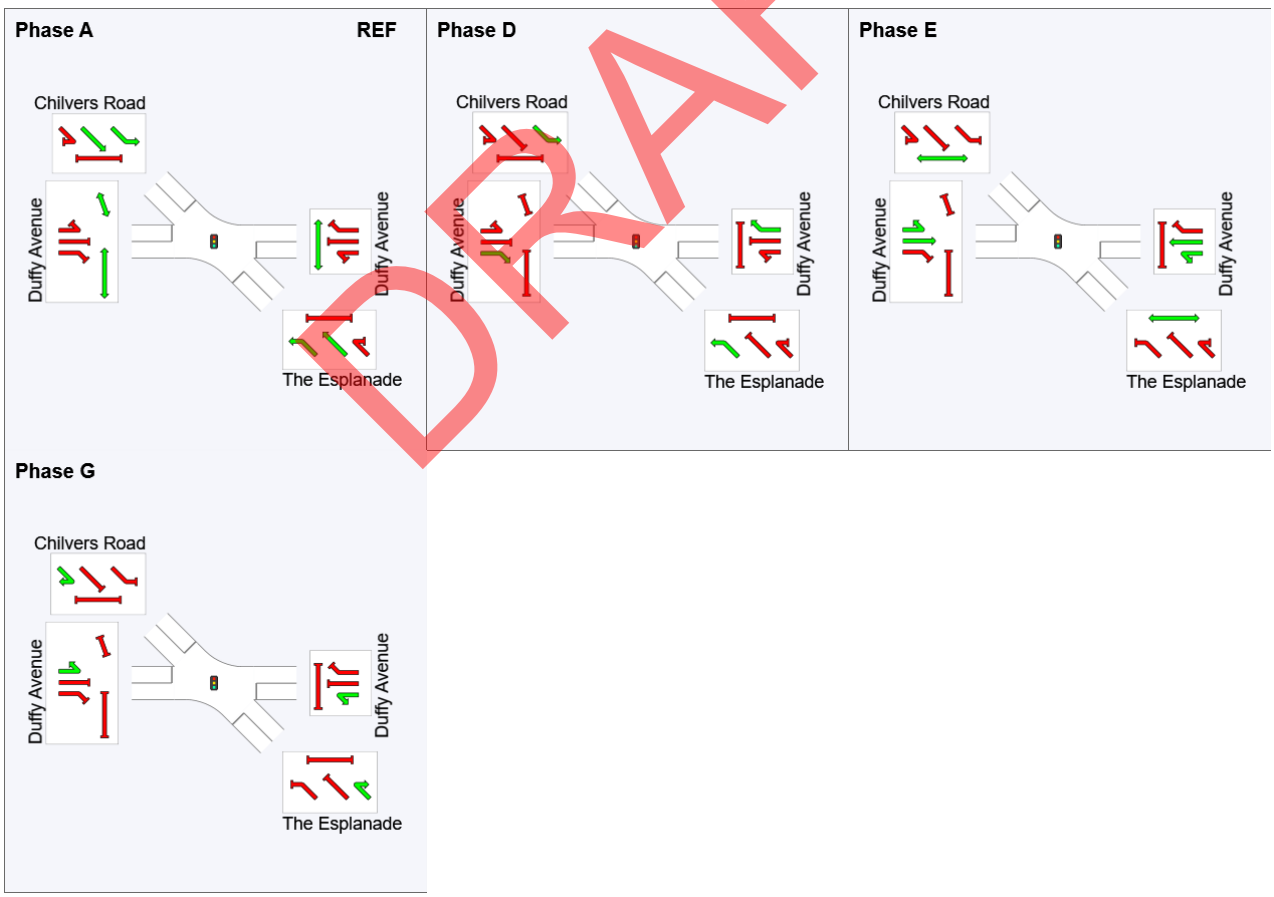
Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

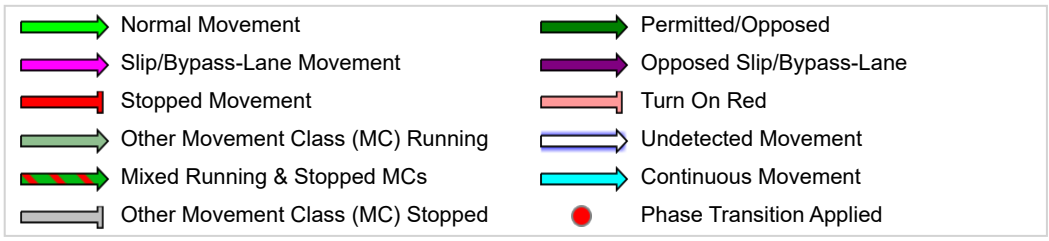
Phase	A	D	E	G
Phase Change Time (sec)	0	40	59	93
Green Time (sec)	31	10	25	13
Phase Time (sec)	40	19	34	22
Phase Split	35%	17%	30%	19%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_PM.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - 2032 (Site Folder: 2032 Base PM)]

Network: N101 [2032 Base PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	117	1.8	116	1.8	0.577	42.7	LOS D	9.9	70.8	0.96	0.85	0.96	29.2
3	R2	522	2.2	518	2.2	0.577	43.7	LOS D	9.9	70.8	0.96	0.85	0.96	28.9
Approach		639	2.1	634 N1	2.1	0.577	43.5	LOS D	9.9	70.8	0.96	0.85	0.96	28.9
East: Sefton Road														
4	L2	812	0.9	812	0.9	* 0.820	17.1	LOS B	11.2	79.3	0.80	0.85	0.82	38.9
5	T1	83	2.5	83	2.5	0.818	49.8	LOS D	2.7	19.2	0.78	0.77	1.25	33.0
Approach		895	1.1	895	1.1	0.820	20.2	LOS B	11.2	79.3	0.80	0.84	0.86	37.7
West: Sefton Road														
11	T1	56	1.9	56	1.9	0.053	12.7	LOS A	0.9	6.2	0.49	0.38	0.49	42.6
12	R2	97	2.2	97	2.2	* 0.507	33.1	LOS C	1.7	12.3	0.99	0.77	0.99	26.4
Approach		153	2.1	153	2.1	0.507	25.6	LOS B	1.7	12.3	0.80	0.63	0.80	33.1
All Vehicles		1686	1.6	1681 N1	1.6	0.820	29.5	LOS C	11.2	79.3	0.86	0.82	0.90	32.7

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
West: Sefton Road											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.6	0.99

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - 2032 (Site Folder: 2032 Base PM)]

Network: N101 [2032 Base PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

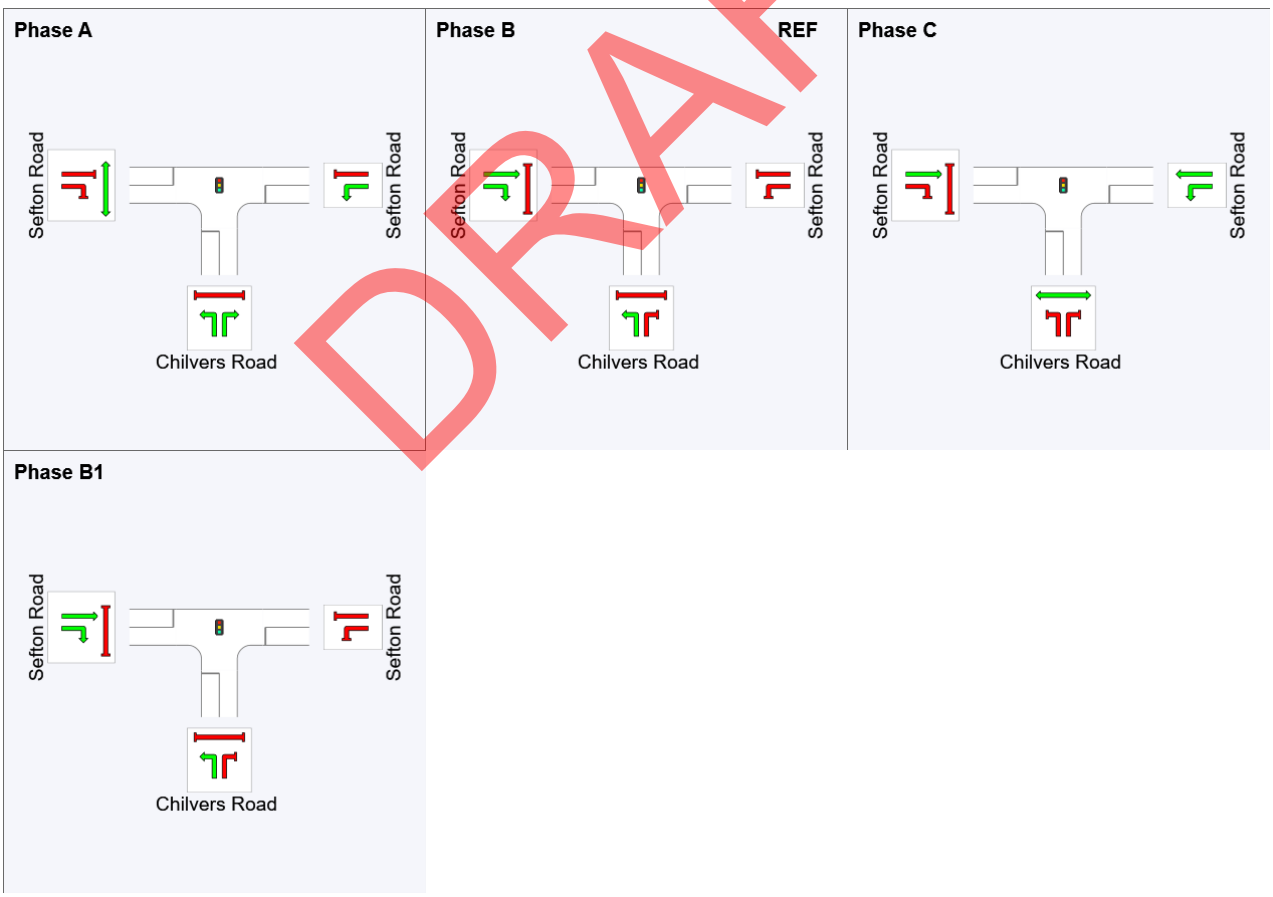
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase B
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

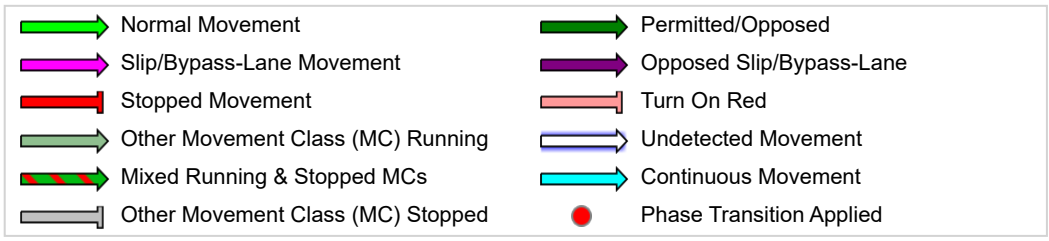
Phase	A	B	C	B1
Phase Change Time (sec)	72	0	15	57
Green Time (sec)	34	6	33	6
Phase Time (sec)	43	15	42	15
Phase Split	37%	13%	37%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_PM.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - 2032 (Site Folder: 2032 Base PM)]

Network: N101 [2032 Base PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	272	5.0	272	5.0	0.665	22.9	LOS B	17.2	125.6	0.69	0.70	0.69	40.9
2	T1	1978	4.7	1978	4.7	* 0.665	17.3	LOS B	18.5	134.5	0.71	0.67	0.71	52.1
Approach		2249	4.7	2249	4.7	0.665	18.0	LOS B	18.5	134.5	0.71	0.68	0.71	51.2
North: Pennant Hills Road.														
8	T1	2036	3.3	2036	3.3	0.463	5.5	LOS A	8.9	64.1	0.39	0.36	0.39	63.3
9	R2	205	5.1	205	5.1	* 0.985	103.4	LOS F	10.4	76.0	1.00	1.08	1.66	14.4
Approach		2241	3.5	2241	3.5	0.985	14.5	LOS A	10.4	76.0	0.45	0.42	0.51	54.3
West: Duffy Avenue														
10	L2	137	10.0	137	10.0	0.247	38.2	LOS C	3.8	28.5	0.78	0.76	0.78	30.0
12	R2	181	3.5	181	3.5	* 0.657	60.0	LOS E	6.6	47.3	0.99	0.83	1.01	24.6
Approach		318	6.3	318	6.3	0.657	50.6	LOS D	6.6	47.3	0.90	0.80	0.91	26.7
All Vehicles		4808	4.2	4808	4.2	0.985	18.5	LOS B	18.5	134.5	0.60	0.57	0.63	49.9

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	56.8	LOS E	0.2	0.2	0.95	0.95	230.7	226.1	0.98
West: Duffy Avenue											
P4	Full	53	56.8	LOS E	0.2	0.2	0.95	0.95	219.8	211.9	0.96
All Pedestrians		105	56.8	LOS E	0.2	0.2	0.95	0.95	225.2	219.0	0.97

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - 2032 (Site Folder: 2032 Base PM)]

Network: N101 [2032 Base PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

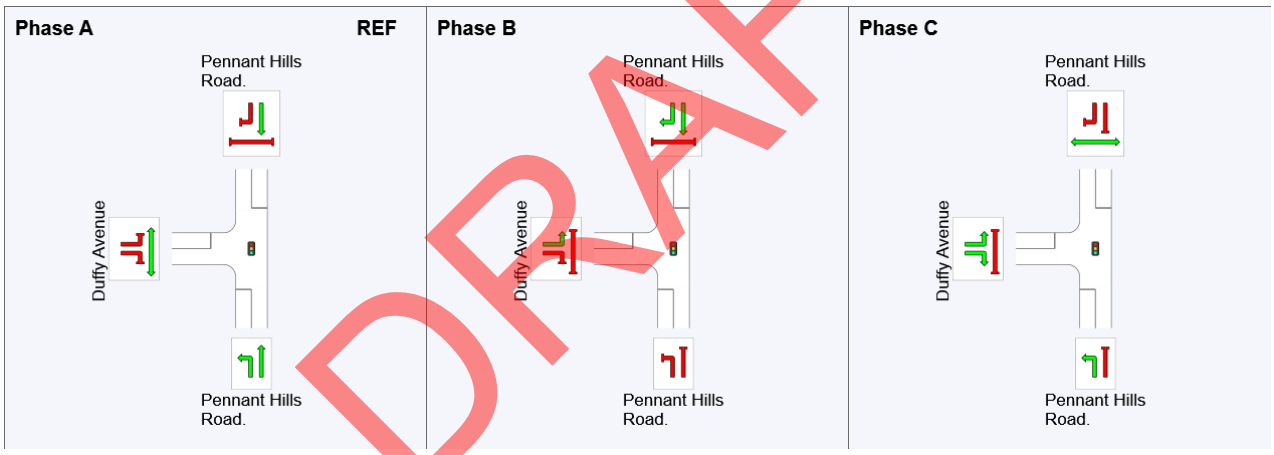
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

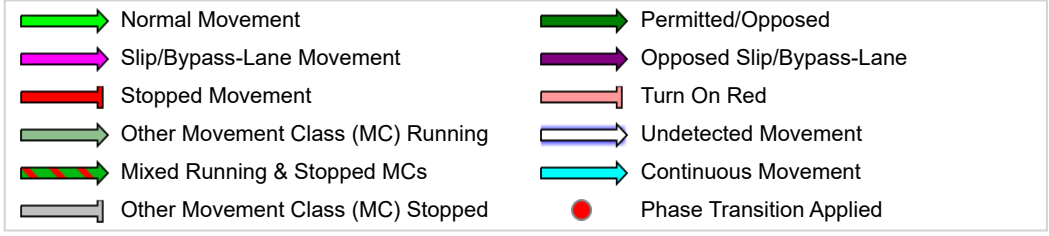
Phase	A	B	C
Phase Change Time (sec)	0	79	100
Green Time (sec)	75	15	19
Phase Time (sec)	81	21	23
Phase Split	65%	17%	18%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road - 2032 (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	55	1.9	55	1.9	0.124	5.5	LOS A	0.3	2.3	0.60	0.59	0.60	37.5
2	T1	29	0.0	29	0.0	0.124	5.1	LOS A	0.3	2.3	0.60	0.59	0.60	38.0
3	R2	24	0.0	24	0.0	0.124	8.3	LOS A	0.3	2.3	0.60	0.59	0.60	35.4
Approach		108	1.0	108	1.0	0.124	6.0	LOS A	0.3	2.3	0.60	0.59	0.60	37.4
East: Duffy Avenue														
4	L2	8	0.0	8	0.0	0.306	3.0	LOS A	0.8	5.7	0.26	0.46	0.26	38.6
5	T1	206	4.1	201	4.0	0.306	2.8	LOS A	0.8	5.7	0.26	0.46	0.26	38.9
6	R2	187	4.5	183	4.4	0.306	6.0	LOS A	0.8	5.7	0.26	0.46	0.26	38.9
Approach		402	4.2	392 N1	4.1	0.306	4.3	LOS A	0.8	5.7	0.26	0.46	0.26	38.9
North: Quarter Sessions Road														
7	L2	181	1.2	181	1.2	0.240	5.0	LOS A	0.6	4.4	0.59	0.61	0.59	36.0
8	T1	25	0.0	25	0.0	0.240	4.7	LOS A	0.6	4.4	0.59	0.61	0.59	38.4
9	R2	11	0.0	11	0.0	0.240	7.9	LOS A	0.6	4.4	0.59	0.61	0.59	38.4
Approach		217	1.0	217	1.0	0.240	5.1	LOS A	0.6	4.4	0.59	0.61	0.59	36.6
West: Duffy Avenue														
10	L2	11	10.0	11	10.0	0.284	4.4	LOS A	0.7	5.1	0.48	0.51	0.48	37.9
11	T1	253	1.3	253	1.3	0.284	3.9	LOS A	0.7	5.1	0.48	0.51	0.48	36.2
12	R2	32	10.0	32	10.0	0.284	7.2	LOS A	0.7	5.1	0.48	0.51	0.48	38.5
Approach		295	2.5	295	2.5	0.284	4.3	LOS A	0.7	5.1	0.48	0.51	0.48	36.7
All Vehicles		1022	2.7	1012 N1	2.7	0.306	4.6	LOS A	0.8	5.7	0.43	0.52	0.43	38.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
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 SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - 2032 (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	111	1.0	111	1.0	* 1.024	107.8	LOS F	30.0	212.9	1.00	1.42	1.72	13.0
22	T1	453	1.6	453	1.6	1.024	104.2	LOS F	30.0	212.9	1.00	1.42	1.72	13.0
23b	R3	73	7.2	73	7.2	0.429	57.1	LOS E	2.3	17.4	0.98	0.77	0.98	19.8
Approach		636	2.2	636	2.2	1.024	99.4	LOS F	30.0	212.9	1.00	1.35	1.63	13.5
East: Duffy Avenue														
4b	L3	108	1.0	108	1.0	* 1.046	129.0	LOS F	17.6	127.8	1.00	1.51	1.96	15.8
5	T1	203	6.2	203	6.2	1.046	124.0	LOS F	17.6	127.8	1.00	1.51	1.96	7.6
6a	R1	125	2.5	125	2.5	0.564	54.3	LOS D	4.0	28.9	0.99	0.79	0.99	14.9
Approach		437	3.9	437	3.9	1.046	105.2	LOS F	17.6	127.8	1.00	1.30	1.68	11.5
NorthWest: Chilvers Road														
27a	L1	117	2.7	117	2.7	0.563	40.7	LOS C	9.3	65.9	0.95	0.82	0.95	19.7
28	T1	506	0.6	506	0.6	0.563	38.0	LOS C	9.3	65.5	0.96	0.83	0.96	30.6
29b	R3	169	1.9	169	1.9	0.968	71.4	LOS F	6.8	48.5	1.00	1.03	1.47	13.1
Approach		793	1.2	793	1.2	0.968	45.5	LOS D	9.3	65.9	0.97	0.87	1.07	25.6
West: Duffy Avenue														
10b	L3	193	1.6	193	1.6	0.338	33.8	LOS C	4.7	33.0	0.78	0.77	0.78	33.4
11	T1	231	0.9	231	0.9	0.688	47.7	LOS D	7.4	52.0	0.99	0.85	1.03	29.0
12a	R1	182	0.0	182	0.0	0.806	60.2	LOS E	6.4	44.8	1.00	0.94	1.22	31.4
Approach		605	0.9	605	0.9	0.806	47.0	LOS D	7.4	52.0	0.93	0.85	1.01	31.1
All Vehicles		2471	1.8	2471	1.8	1.046	70.3	LOS E	30.0	212.9	0.97	1.06	1.31	20.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	216.3	217.2	1.00
East: Duffy Avenue											
P2	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	212.3	211.9	1.00
NorthWest: Chilvers Road											
P7	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	218.9	220.5	1.01

West: Duffy Avenue											
P4	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	214.8	215.2	1.00
P4B	Slip/ Bypass	53	49.3	LOS E	0.2	0.2	0.95	0.95	206.4	204.3	0.99
All Pedestrians		263	49.3	LOS E	0.2	0.2	0.95	0.95	213.7	213.8	1.00

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

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - 2032 (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Site User-Given Phase Times)

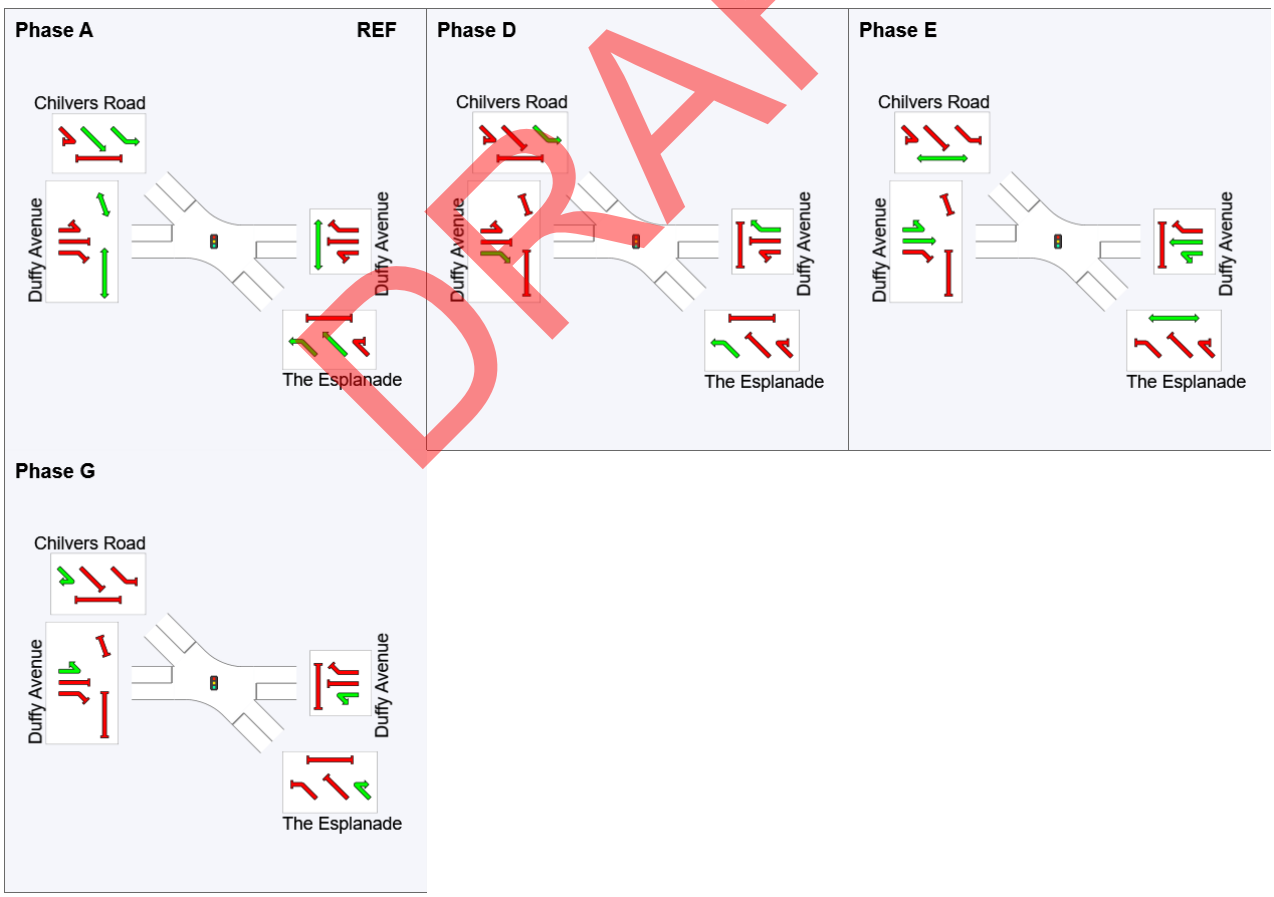
Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

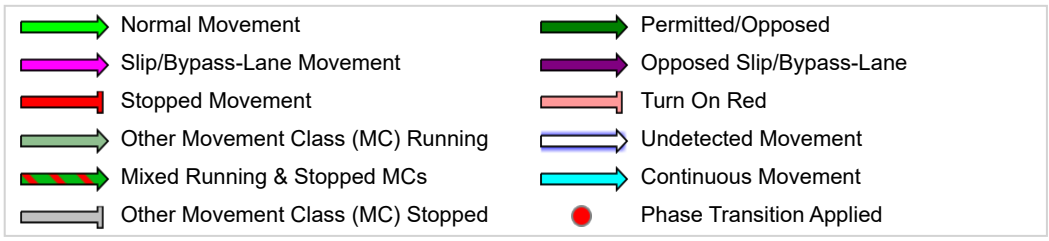
Phase	A	D	E	G
Phase Change Time (sec)	0	40	62	90
Green Time (sec)	31	13	19	12
Phase Time (sec)	40	22	27	21
Phase Split	36%	20%	25%	19%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - 2032 (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	121	1.7	119	1.7	0.700	45.5	LOS D	11.9	84.8	1.00	0.87	1.00	28.4
3	R2	646	1.8	637	1.8	* 0.700	48.5	LOS D	11.9	84.8	1.00	0.87	1.00	27.6
Approach		767	1.8	757 N1	1.8	0.700	48.0	LOS D	11.9	84.8	1.00	0.87	1.00	27.8
East: Sefton Road														
4	L2	649	1.1	649	1.1	* 0.688	14.8	LOS B	7.3	51.6	0.72	0.80	0.72	41.0
5	T1	82	2.6	82	2.6	0.629	34.6	LOS C	2.1	15.3	0.80	0.65	0.90	38.3
Approach		732	1.3	732	1.3	0.688	17.0	LOS B	7.3	51.6	0.73	0.79	0.74	40.4
West: Sefton Road														
11	T1	59	1.8	59	1.8	0.056	12.3	LOS A	0.9	6.3	0.49	0.39	0.49	42.8
12	R2	151	1.4	151	1.4	* 0.750	34.8	LOS C	2.8	20.1	1.00	0.86	1.16	25.8
Approach		209	1.5	209	1.5	0.750	28.5	LOS B	2.8	20.1	0.86	0.73	0.97	31.2
All Vehicles		1708	1.5	1698 N1	1.5	0.750	32.3	LOS C	11.9	84.8	0.87	0.82	0.89	31.6

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	216.3	217.2	1.00
West: Sefton Road											
P4	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	212.3	211.9	1.00
All Pedestrians		105	49.3	LOS E	0.2	0.2	0.95	0.95	214.3	214.6	1.00

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

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - 2032 (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

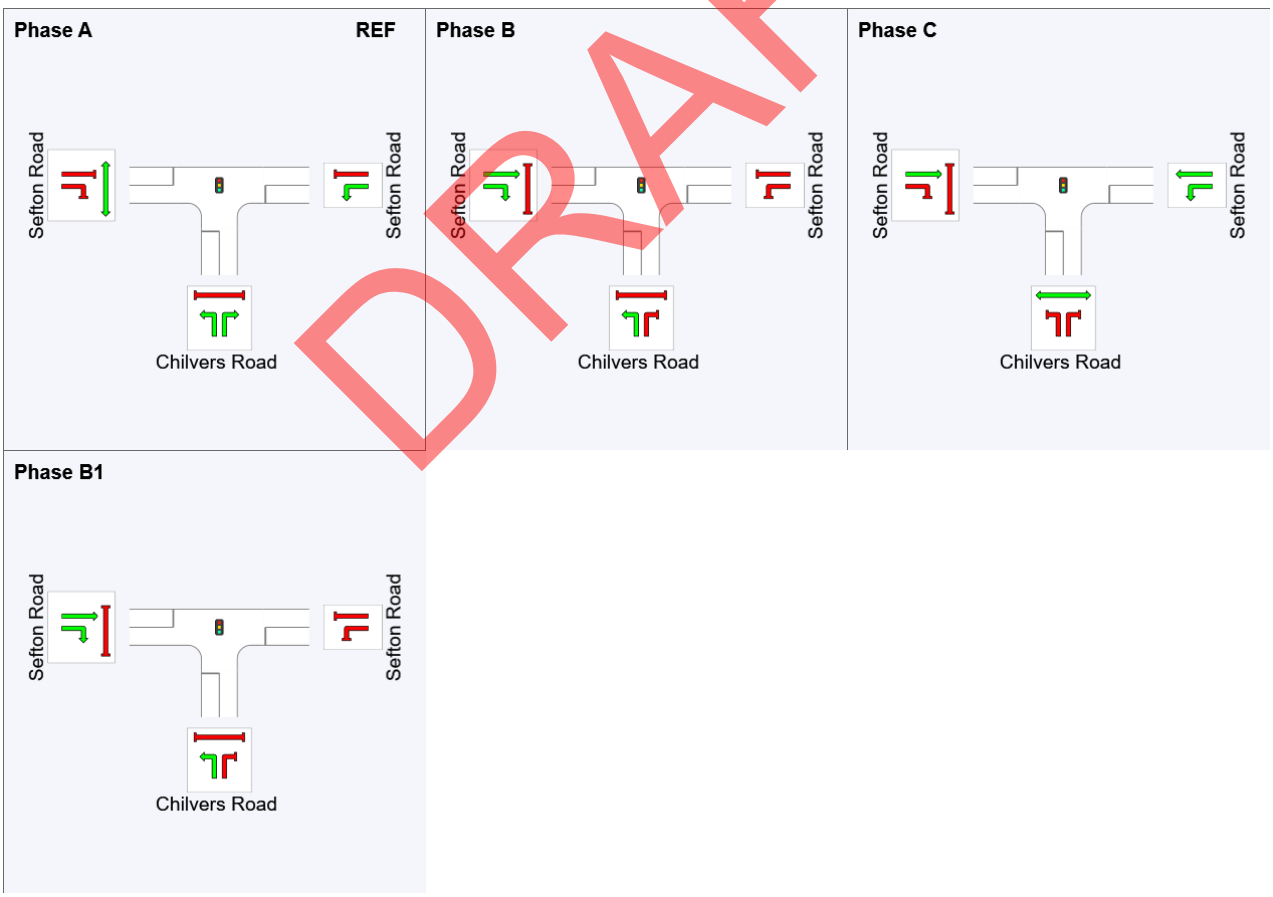
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

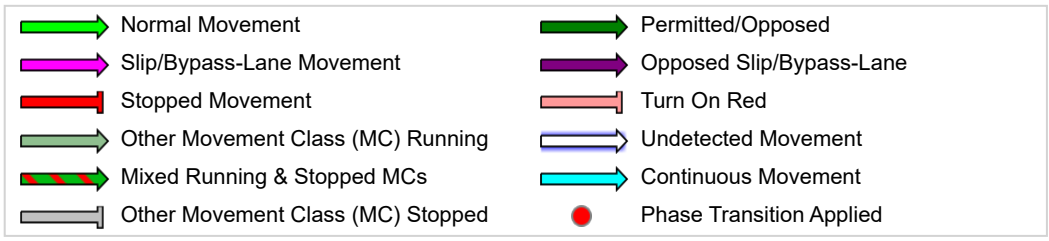
Phase	A	B	C	B1
Phase Change Time (sec)	0	41	56	95
Green Time (sec)	32	6	30	6
Phase Time (sec)	41	15	39	15
Phase Split	37%	14%	35%	14%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Thursday, 21 July 2022 10:03:41 AM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - 2032 (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	231	5.9	231	5.9	0.715	24.1	LOS B	18.7	136.6	0.74	0.73	0.74	40.3
2	T1	2132	4.3	2132	4.3	* 0.715	18.6	LOS B	20.0	145.1	0.77	0.72	0.77	51.2
Approach		2362	4.5	2362	4.5	0.715	19.2	LOS B	20.0	145.1	0.76	0.72	0.76	50.5
North: Pennant Hills Road.														
8	T1	1936	3.5	1936	3.5	0.456	6.4	LOS A	8.8	63.7	0.42	0.39	0.42	62.4
9	R2	172	6.1	172	6.1	* 0.890	76.2	LOS F	7.1	52.0	1.00	0.96	1.40	18.2
Approach		2107	3.7	2107	3.7	0.890	12.1	LOS A	8.8	63.7	0.47	0.43	0.50	56.4
West: Duffy Avenue														
10	L2	185	7.4	185	7.4	0.323	37.4	LOS C	5.0	37.2	0.80	0.77	0.80	30.3
12	R2	220	2.9	220	2.9	* 0.725	58.3	LOS E	7.8	56.2	1.00	0.86	1.07	25.0
Approach		405	4.9	405	4.9	0.725	48.7	LOS D	7.8	56.2	0.91	0.82	0.95	27.1
All Vehicles		4875	4.2	4875	4.2	0.890	18.5	LOS B	20.0	145.1	0.65	0.60	0.67	49.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	228.2	226.1	0.99
West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	222.7	219.0	0.98

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - 2032 (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

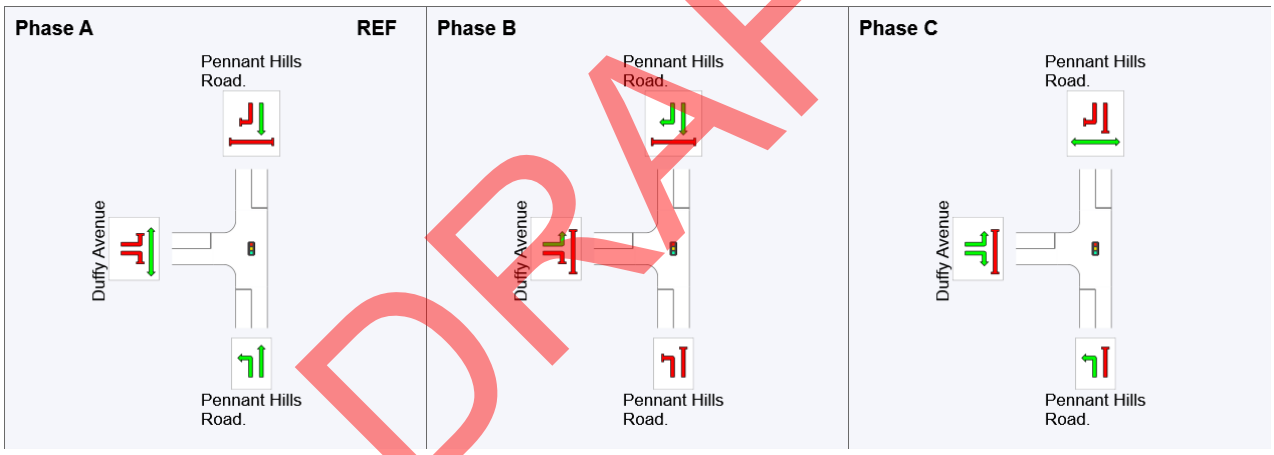
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

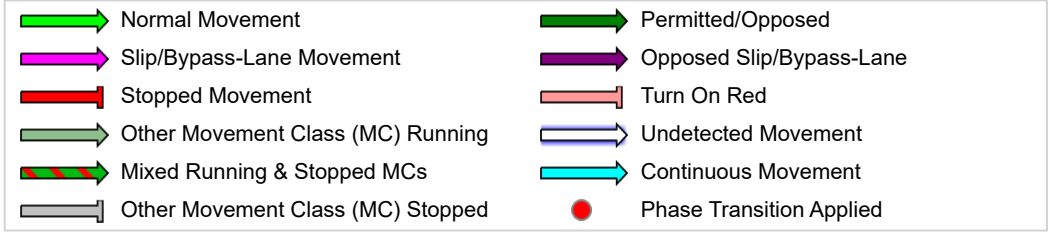
Phase	A	B	C
Phase Change Time (sec)	0	75	94
Green Time (sec)	70	13	20
Phase Time (sec)	76	19	25
Phase Split	63%	16%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road - Copy - Copy (Site Folder: 2032 Base + Upgrade AM)]

Network: N101 [2032 Base + Upgrade AM (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	65	1.6	65	1.6	0.194	4.8	LOS A	0.5	3.6	0.56	0.60	0.56	37.5
2	T1	42	0.0	42	0.0	0.194	4.5	LOS A	0.5	3.6	0.56	0.60	0.56	38.0
3	R2	76	0.0	76	0.0	0.194	7.7	LOS A	0.5	3.6	0.56	0.60	0.56	35.4
Approach		183	0.6	183	0.6	0.194	5.9	LOS A	0.5	3.6	0.56	0.60	0.56	37.1
East: Duffy Avenue														
4	L2	47	0.0	47	0.0	0.310	4.1	LOS A	0.8	5.5	0.43	0.56	0.43	38.3
5	T1	123	6.8	123	6.8	0.310	4.0	LOS A	0.8	5.5	0.43	0.56	0.43	38.7
6	R2	147	5.7	147	5.7	0.310	7.1	LOS A	0.8	5.5	0.43	0.56	0.43	38.7
Approach		318	5.3	318	5.3	0.310	5.5	LOS A	0.8	5.5	0.43	0.56	0.43	38.6
North: Quarter Sessions Road														
7	L2	214	1.0	214	1.0	0.346	5.6	LOS A	0.9	6.7	0.66	0.67	0.66	35.5
8	T1	65	0.0	65	0.0	0.346	5.3	LOS A	0.9	6.7	0.66	0.67	0.66	38.1
9	R2	21	0.0	21	0.0	0.346	8.5	LOS A	0.9	6.7	0.66	0.67	0.66	38.1
Approach		300	0.7	300	0.7	0.346	5.8	LOS A	0.9	6.7	0.66	0.67	0.66	36.6
West: Duffy Avenue														
10	L2	16	6.7	16	6.7	0.295	4.6	LOS A	0.7	5.2	0.51	0.58	0.51	37.6
11	T1	173	1.8	173	1.8	0.295	4.1	LOS A	0.7	5.2	0.51	0.58	0.51	35.7
12	R2	106	3.0	106	3.0	0.295	7.3	LOS A	0.7	5.2	0.51	0.58	0.51	38.2
Approach		295	2.5	295	2.5	0.295	5.3	LOS A	0.7	5.2	0.51	0.58	0.51	37.1
All Vehicles		1096	2.5	1096	2.5	0.346	5.6	LOS A	0.9	6.7	0.54	0.60	0.54	37.7

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Copy - Copy (Site Folder: 2032 Base + Upgrade AM)]

Network: N101 [2032 Base + Upgrade AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	47	2.1	47	2.1	* 0.957	74.3	LOS F	29.6	209.4	1.00	1.17	1.36	17.2
22	T1	587	1.2	587	1.2	0.957	70.5	LOS F	29.6	209.4	1.00	1.17	1.36	17.2
23b	R3	136	3.7	136	3.7	* 0.935	84.7	LOS F	6.0	43.3	1.00	1.07	1.58	15.4
Approach		770	1.7	770	1.7	0.957	73.3	LOS F	29.6	209.4	1.00	1.15	1.40	16.8
East: Duffy Avenue														
4b	L3	108	0.9	108	0.9	0.211	37.7	LOS C	2.8	20.0	0.77	0.75	0.77	30.5
5	T1	186	6.5	186	6.5	0.663	53.5	LOS D	6.5	48.0	1.00	0.83	1.02	14.8
6a	R1	99	3.0	99	3.0	0.453	58.0	LOS E	3.4	24.5	0.98	0.78	0.98	14.3
Approach		393	4.1	393	4.1	0.663	50.3	LOS D	6.5	48.0	0.93	0.80	0.94	19.7
NorthWest: Chilvers Road														
27a	L1	113	2.7	113	2.7	0.450	34.6	LOS C	8.1	57.7	0.80	0.73	0.80	21.7
28	T1	488	0.6	488	0.6	0.450	32.1	LOS C	8.3	58.3	0.82	0.72	0.82	32.5
29b	R3	116	2.6	116	2.6	0.792	69.0	LOS E	4.4	31.7	1.00	0.88	1.19	13.4
Approach		717	1.3	717	1.3	0.792	38.5	LOS C	8.3	58.3	0.85	0.74	0.88	28.1
West: Duffy Avenue														
10b	L3	195	1.5	195	1.5	0.383	40.1	LOS C	5.5	38.7	0.82	0.79	0.82	31.4
11	T1	250	0.8	250	0.8	* 0.924	71.7	LOS F	10.6	75.0	1.00	1.12	1.43	23.9
12a	R1	210	0.0	210	0.0	0.942	81.0	LOS F	9.2	64.7	1.00	1.14	1.51	28.0
Approach		655	0.8	655	0.8	0.942	65.3	LOS E	10.6	75.0	0.95	1.03	1.28	27.2
All Vehicles		2535	1.7	2535	1.7	0.957	57.8	LOS E	29.6	209.4	0.93	0.95	1.15	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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
East: Duffy Avenue											
P2	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
NorthWest: Chilvers Road											
P7	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	223.9	220.5	0.98

West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
P4B	Slip/ Bypass	53	54.3	LOS E	0.2	0.2	0.95	0.95	211.4	204.3	0.97
All Pedestrians		263	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.5	0.98

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Copy - Copy (Site Folder: 2032 Base + Upgrade AM)]

Network: N101 [2032 Base + Upgrade AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

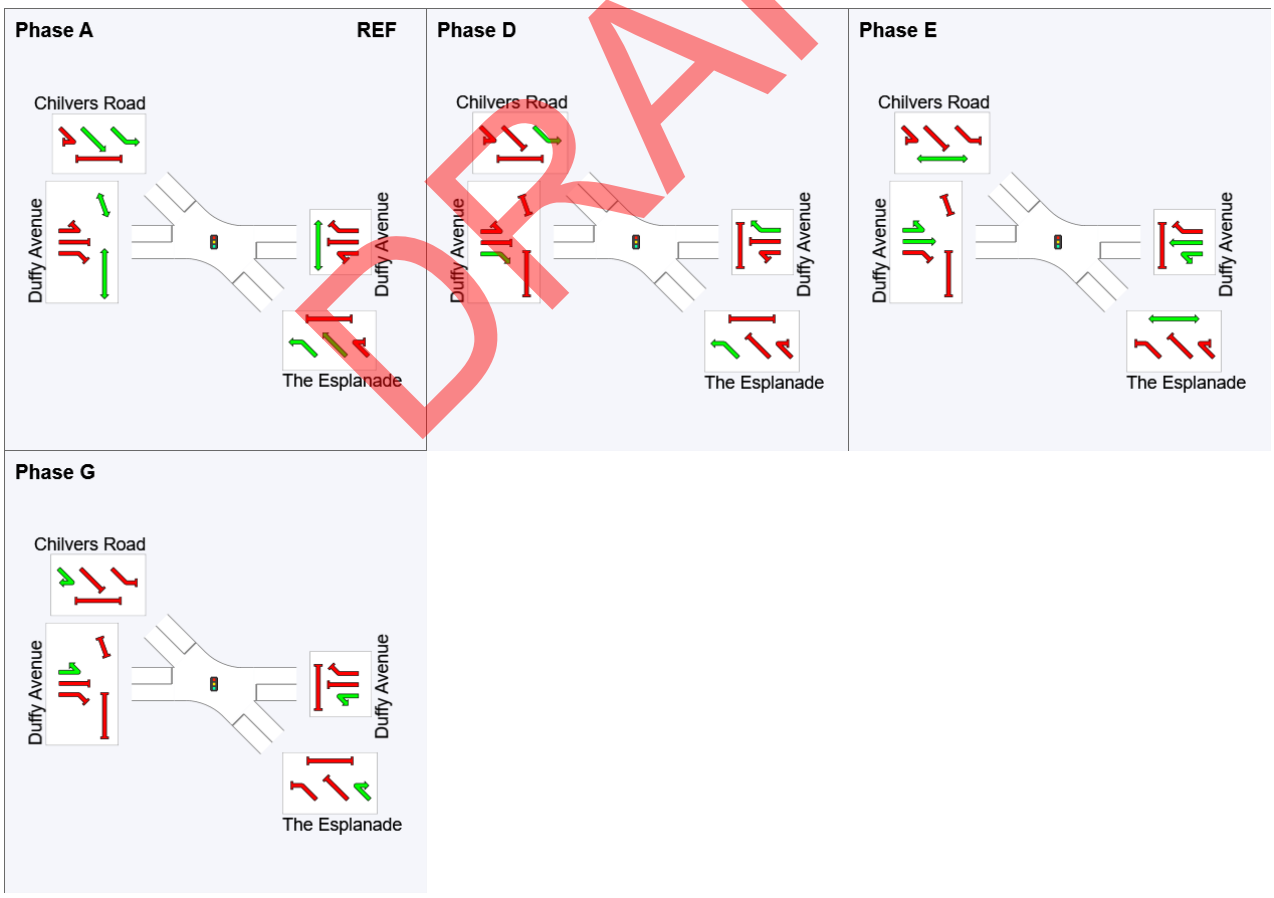
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects not included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

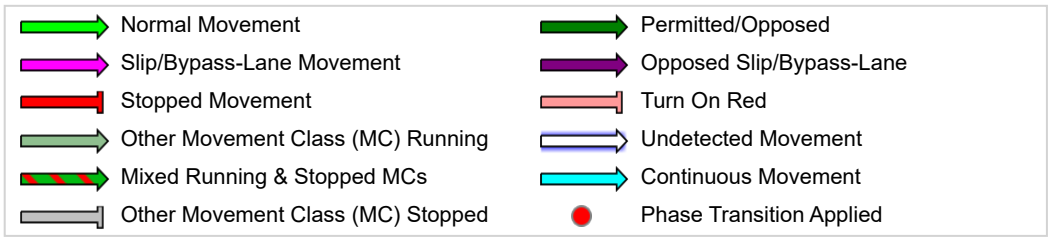
Phase	A	D	E	G
Phase Change Time (sec)	0	50	73	100
Green Time (sec)	41	14	18	11
Phase Time (sec)	50	23	27	20
Phase Split	42%	19%	23%	17%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Thursday, 21 July 2022 10:09:14 AM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_AM.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Copy - Conversion - Copy (Site Folder: 2032 Base + Upgrade AM)]

Network: N101 [2032 Base + Upgrade AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	109	1.9	109	1.9	0.831	52.1	LOS D	16.8	118.9	1.00	0.92	1.08	26.8
3	R2	815	1.4	815	1.4	* 0.831	53.4	LOS D	16.8	119.3	1.00	0.92	1.08	26.5
Approach		924	1.5	924	1.5	0.831	53.2	LOS D	16.8	119.3	1.00	0.92	1.08	26.5
East: Sefton Road														
4	L2	631	1.2	631	1.2	0.645	13.8	LOS A	6.9	49.0	0.65	0.78	0.65	41.8
5	T1	104	2.0	104	2.0	* 0.826	50.5	LOS D	3.5	24.8	0.78	0.78	1.19	32.8
Approach		735	1.3	735	1.3	0.826	19.0	LOS B	6.9	49.0	0.67	0.78	0.73	39.2
West: Sefton Road														
11	T1	82	1.3	82	1.3	0.077	13.3	LOS A	1.3	9.5	0.49	0.40	0.49	42.3
12	R2	124	1.7	124	1.7	* 0.677	36.1	LOS C	2.4	17.1	1.00	0.82	1.08	25.3
Approach		206	1.5	206	1.5	0.677	27.0	LOS B	2.4	17.1	0.80	0.65	0.85	32.8
All Vehicles		1865	1.4	1865	1.4	0.831	36.8	LOS C	16.8	119.3	0.85	0.83	0.92	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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
West: Sefton Road											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.6	0.98

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Copy - Conversion - Copy (Site Folder: 2032 Base + Upgrade AM)]

Network: N101 [2032 Base + Upgrade AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

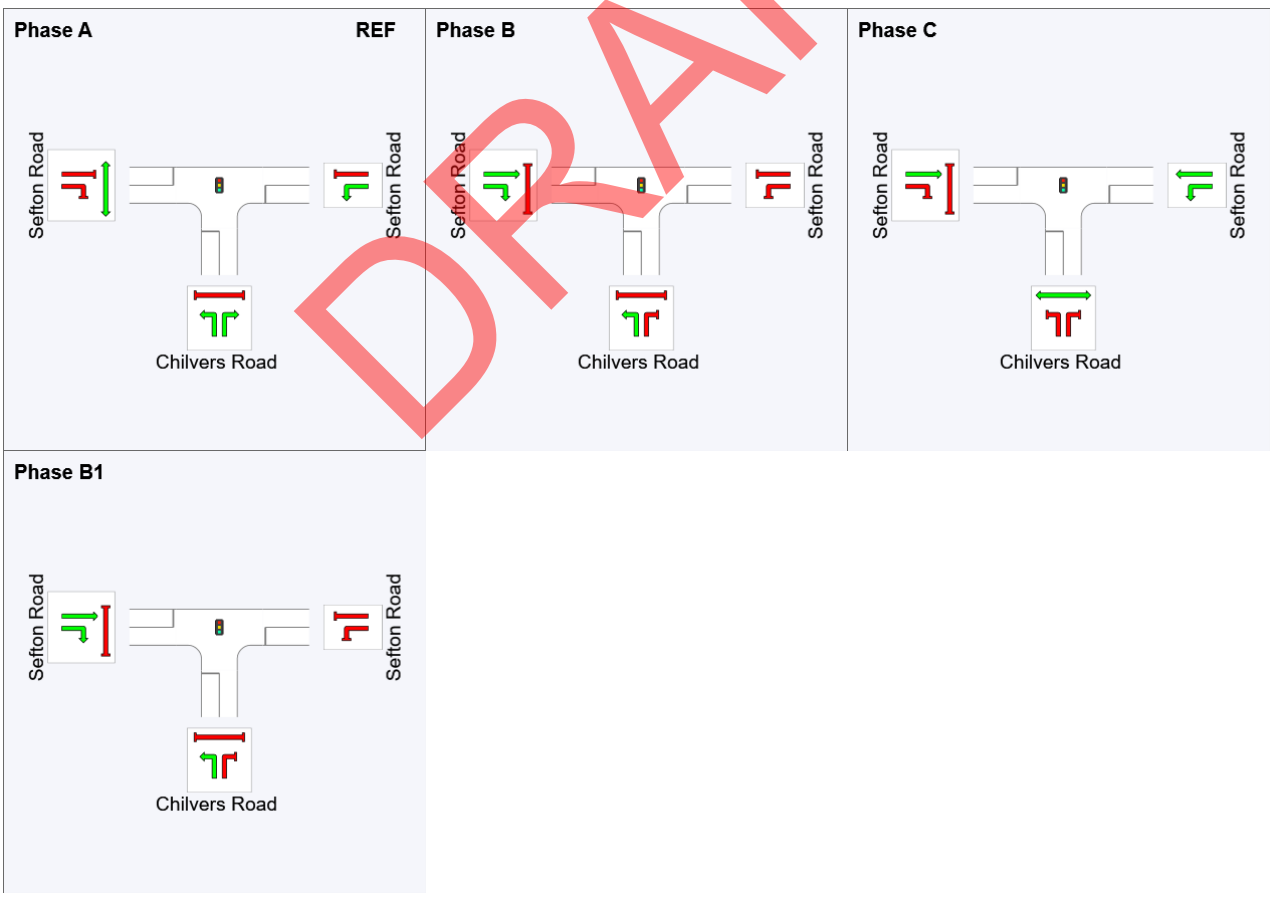
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

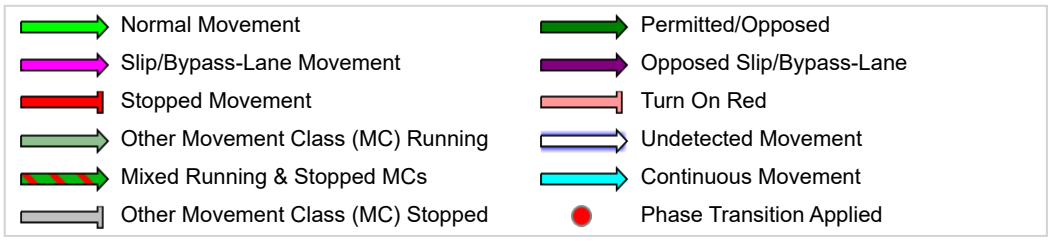
Phase	A	B	C	B1
Phase Change Time (sec)	0	45	60	105
Green Time (sec)	36	6	36	6
Phase Time (sec)	45	15	45	15
Phase Split	38%	13%	38%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Thursday, 21 July 2022 10:09:14 AM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_AM.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Copy - Copy (Site Folder: 2032 Base + Upgrade AM)]

Network: N101 [2032 Base + Upgrade AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 115 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	220	6.2	220	6.2	0.643	22.8	LOS B	15.0	109.9	0.70	0.70	0.70	41.3
2	T1	1862	5.0	1862	5.0	* 0.643	17.3	LOS B	16.0	116.5	0.72	0.67	0.72	52.2
Approach		2082	5.1	2082	5.1	0.643	17.9	LOS B	16.0	116.5	0.72	0.68	0.72	51.4
North: Pennant Hills Road.														
8	T1	1729	3.9	1729	3.9	0.410	5.9	LOS A	7.3	52.5	0.40	0.37	0.40	62.9
9	R2	184	5.7	184	5.7	* 0.913	76.7	LOS F	7.5	55.1	1.00	0.99	1.47	18.1
Approach		1914	4.1	1914	4.1	0.913	12.7	LOS A	7.5	55.1	0.46	0.43	0.51	55.7
West: Duffy Avenue														
10	L2	240	5.7	240	5.7	0.407	36.6	LOS C	6.4	46.8	0.82	0.79	0.82	30.5
12	R2	248	2.5	248	2.5	* 0.824	61.1	LOS E	9.1	65.0	1.00	0.93	1.20	24.4
Approach		488	4.1	488	4.1	0.824	49.1	LOS D	9.1	65.0	0.91	0.86	1.01	27.1
All Vehicles		4484	4.6	4484	4.6	0.913	19.1	LOS B	16.0	116.5	0.63	0.59	0.66	48.9

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	225.7	226.1	1.00
West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	220.2	219.0	0.99

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Copy - Copy (Site Folder: 2032 Base + Upgrade AM)]

Network: N101 [2032 Base + Upgrade AM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 115 seconds (Site User-Given Phase Times)

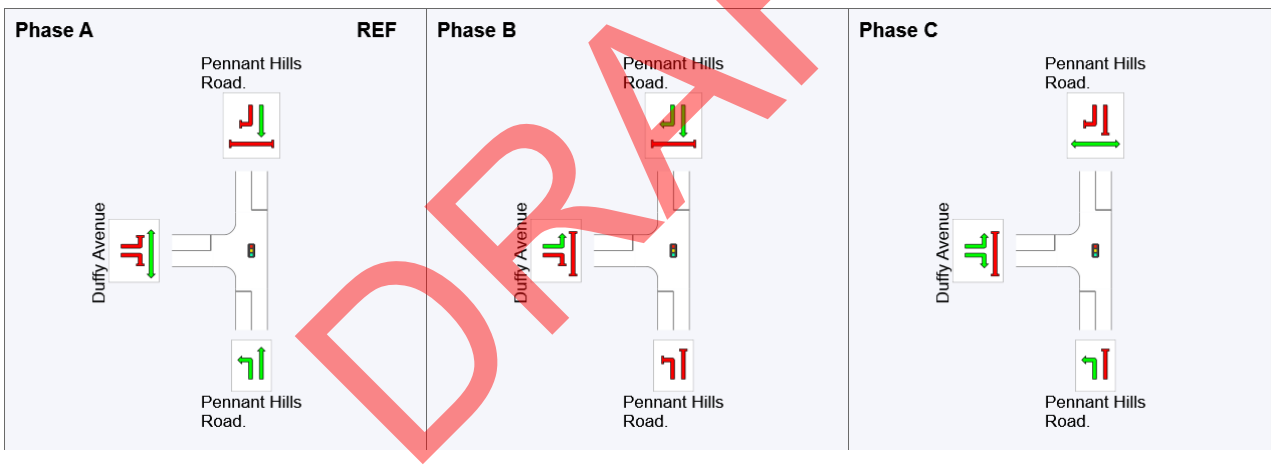
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	71	90
Green Time (sec)	66	13	19
Phase Time (sec)	72	19	24
Phase Split	63%	17%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road - 2032- Upg (Site Folder: 2032 Base + Upgrade PM)]

Network: N101 [2032 Base + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	35	3.0	35	3.0	0.118	6.6	LOS A	0.3	2.2	0.68	0.65	0.68	37.0
2	T1	28	0.0	28	0.0	0.118	6.2	LOS A	0.3	2.2	0.68	0.65	0.68	37.5
3	R2	28	0.0	28	0.0	0.118	9.4	LOS A	0.3	2.2	0.68	0.65	0.68	34.6
Approach		92	1.1	92	1.1	0.118	7.4	LOS A	0.3	2.2	0.68	0.65	0.68	36.7
East: Duffy Avenue														
4	L2	20	0.0	20	0.0	0.420	3.3	LOS A	1.2	8.8	0.34	0.49	0.34	38.4
5	T1	239	3.5	239	3.5	0.420	3.1	LOS A	1.2	8.8	0.34	0.49	0.34	38.8
6	R2	267	3.1	267	3.1	0.420	6.3	LOS A	1.2	8.8	0.34	0.49	0.34	38.8
Approach		526	3.2	526	3.2	0.420	4.7	LOS A	1.2	8.8	0.34	0.49	0.34	38.8
North: Quarter Sessions Road														
7	L2	136	1.6	136	1.6	0.200	4.6	LOS A	0.5	3.6	0.55	0.57	0.55	36.1
8	T1	34	0.0	34	0.0	0.200	4.3	LOS A	0.5	3.6	0.55	0.57	0.55	38.5
9	R2	17	0.0	17	0.0	0.200	7.5	LOS A	0.5	3.6	0.55	0.57	0.55	38.5
Approach		186	1.1	186	1.1	0.200	4.8	LOS A	0.5	3.6	0.55	0.57	0.55	37.1
West: Duffy Avenue														
10	L2	13	8.3	13	8.3	0.268	5.0	LOS A	0.7	4.8	0.55	0.57	0.55	37.7
11	T1	202	1.6	202	1.6	0.268	4.5	LOS A	0.7	4.8	0.55	0.57	0.55	35.9
12	R2	41	7.7	41	7.7	0.268	7.8	LOS A	0.7	4.8	0.55	0.57	0.55	38.3
Approach		256	2.9	256	2.9	0.268	5.0	LOS A	0.7	4.8	0.55	0.57	0.55	36.6
All Vehicles		1060	2.6	1060	2.6	0.420	5.0	LOS A	1.2	8.8	0.46	0.54	0.46	38.1

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - 2032-Upg (Site Folder: 2032 Base + Upgrade PM)]

Network: N101 [2032 Base + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	154	0.7	154	0.7	0.889	58.0	LOS E	21.2	150.4	1.00	1.02	1.19	20.2
22	T1	383	1.9	383	1.9	* 0.889	53.7	LOS D	21.2	150.4	1.00	1.02	1.19	20.2
23b	R3	65	8.1	65	8.1	0.317	57.7	LOS E	2.2	16.4	0.95	0.76	0.95	19.7
Approach		602	2.3	602	2.3	0.889	55.2	LOS D	21.2	150.4	0.99	0.99	1.16	20.2
East: Duffy Avenue														
4b	L3	129	0.8	129	0.8	0.262	37.6	LOS C	3.6	25.6	0.78	0.76	0.78	30.6
5	T1	266	4.7	266	4.7	* 0.911	67.4	LOS E	10.8	78.6	0.99	1.09	1.37	12.5
6a	R1	101	3.1	101	3.1	0.589	62.1	LOS E	3.6	26.2	1.00	0.79	1.02	13.6
Approach		497	3.4	497	3.4	0.911	58.6	LOS E	10.8	78.6	0.94	0.95	1.14	17.8
NorthWest: Chilvers Road														
27a	L1	91	3.5	91	3.5	0.589	42.2	LOS C	11.3	80.0	0.95	0.83	0.95	19.2
28	T1	618	0.5	618	0.5	0.589	38.7	LOS C	11.3	80.0	0.95	0.82	0.95	30.4
29b	R3	195	1.6	195	1.6	* 0.908	77.2	LOS F	8.3	58.8	1.00	1.02	1.43	12.3
Approach		903	1.0	903	1.0	0.908	47.3	LOS D	11.3	80.0	0.96	0.86	1.05	25.6
West: Duffy Avenue														
10b	L3	152	2.1	152	2.1	0.252	33.4	LOS C	3.7	26.6	0.73	0.75	0.73	33.5
11	T1	172	1.2	172	1.2	0.532	50.1	LOS D	5.7	40.5	0.96	0.79	0.96	28.4
12a	R1	158	0.0	158	0.0	* 0.901	74.6	LOS F	6.5	45.7	1.00	1.05	1.44	29.0
Approach		481	1.1	481	1.1	0.901	52.9	LOS D	6.5	45.7	0.90	0.86	1.05	29.9
All Vehicles		2483	1.8	2483	1.8	0.911	52.6	LOS D	21.2	150.4	0.95	0.91	1.10	24.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
East: Duffy Avenue											
P2	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
NorthWest: Chilvers Road											
P7	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	223.9	220.5	0.98

West: Duffy Avenue										
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
P4B	Slip/ Bypass	53	54.3	LOS E	0.2	0.2	0.95	0.95	211.4	204.3	0.97
All Pedestrians		263	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.5	0.98

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - 2032-Upg (Site Folder: 2032 Base + Upgrade PM)]

Network: N101 [2032 Base + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

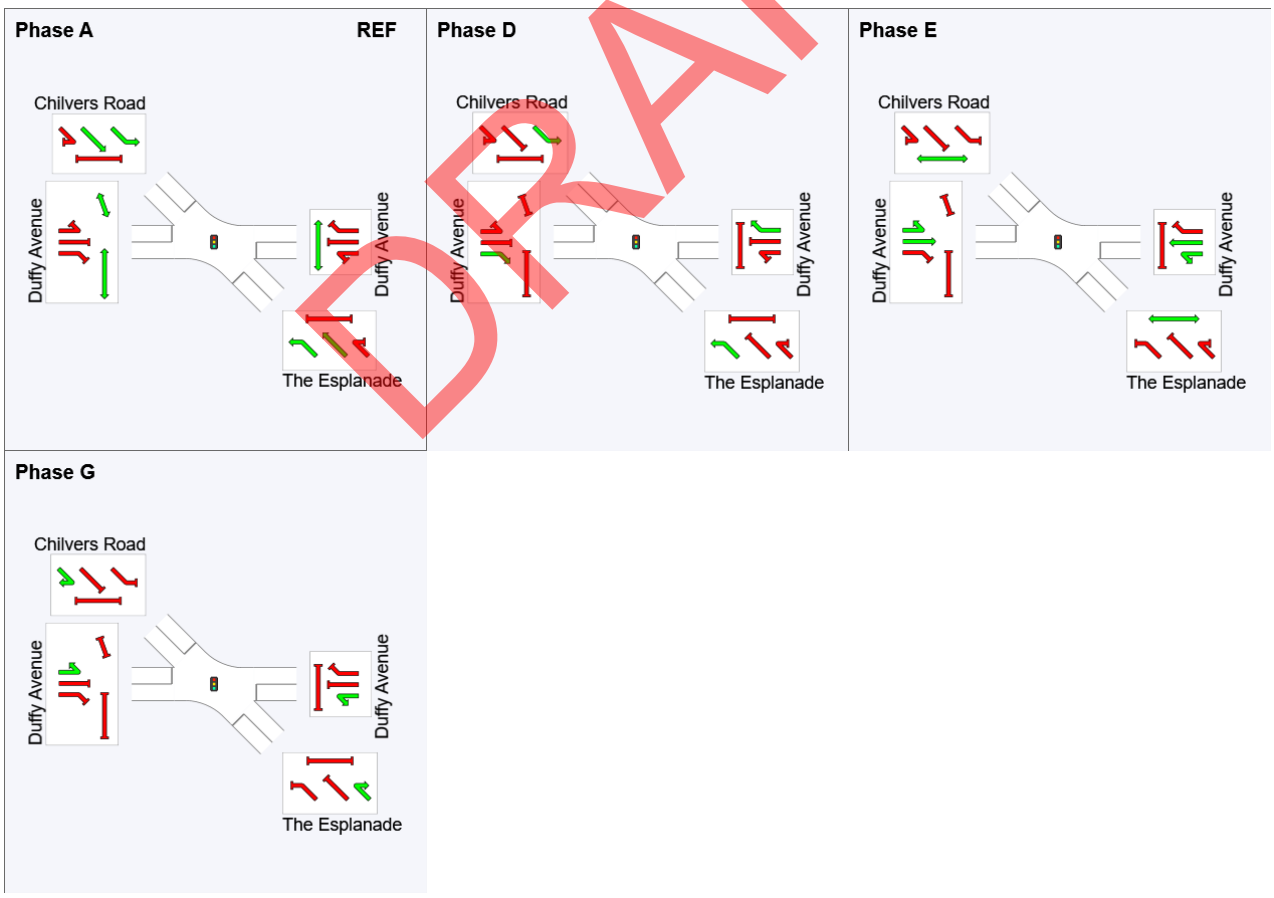
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

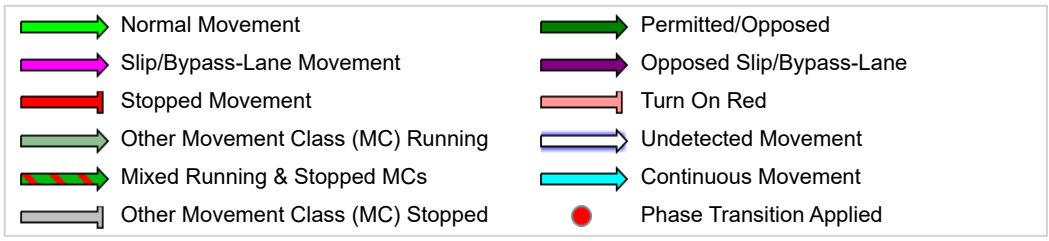
Phase	A	D	E	G
Phase Change Time (sec)	0	46	66	95
Green Time (sec)	37	11	20	16
Phase Time (sec)	46	20	29	25
Phase Split	38%	17%	24%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_PM.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - 2032- Upg (Site Folder: 2032 Base + Upgrade PM)]

Network: N101 [2032 Base + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	117	1.8	117	1.8	0.573	41.6	LOS C	10.1	71.7	0.92	0.84	0.92	29.5
3	R2	522	2.2	522	2.2	0.573	42.6	LOS D	10.1	71.7	0.93	0.84	0.93	29.2
Approach		639	2.1	639	2.1	0.573	42.4	LOS C	10.1	71.7	0.93	0.84	0.93	29.3
East: Sefton Road														
4	L2	812	0.9	812	0.9	* 0.796	15.2	LOS B	10.5	74.0	0.77	0.83	0.77	40.5
5	T1	83	2.5	83	2.5	* 0.811	49.8	LOS D	2.7	19.6	0.77	0.76	1.20	33.0
Approach		895	1.1	895	1.1	0.811	18.4	LOS B	10.5	74.0	0.77	0.82	0.81	39.1
West: Sefton Road														
11	T1	56	1.9	56	1.9	0.053	13.1	LOS A	0.9	6.4	0.49	0.38	0.49	42.4
12	R2	97	2.2	97	2.2	* 0.530	34.6	LOS C	1.8	12.8	0.99	0.77	0.99	25.8
Approach		153	2.1	153	2.1	0.530	26.8	LOS B	1.8	12.8	0.81	0.63	0.81	32.6
All Vehicles		1686	1.6	1686	1.6	0.811	28.2	LOS B	10.5	74.0	0.83	0.81	0.86	33.2

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
West: Sefton Road											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.6	0.98

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - 2032- Upg (Site Folder: 2032 Base + Upgrade PM)]

Network: N101 [2032 Base + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

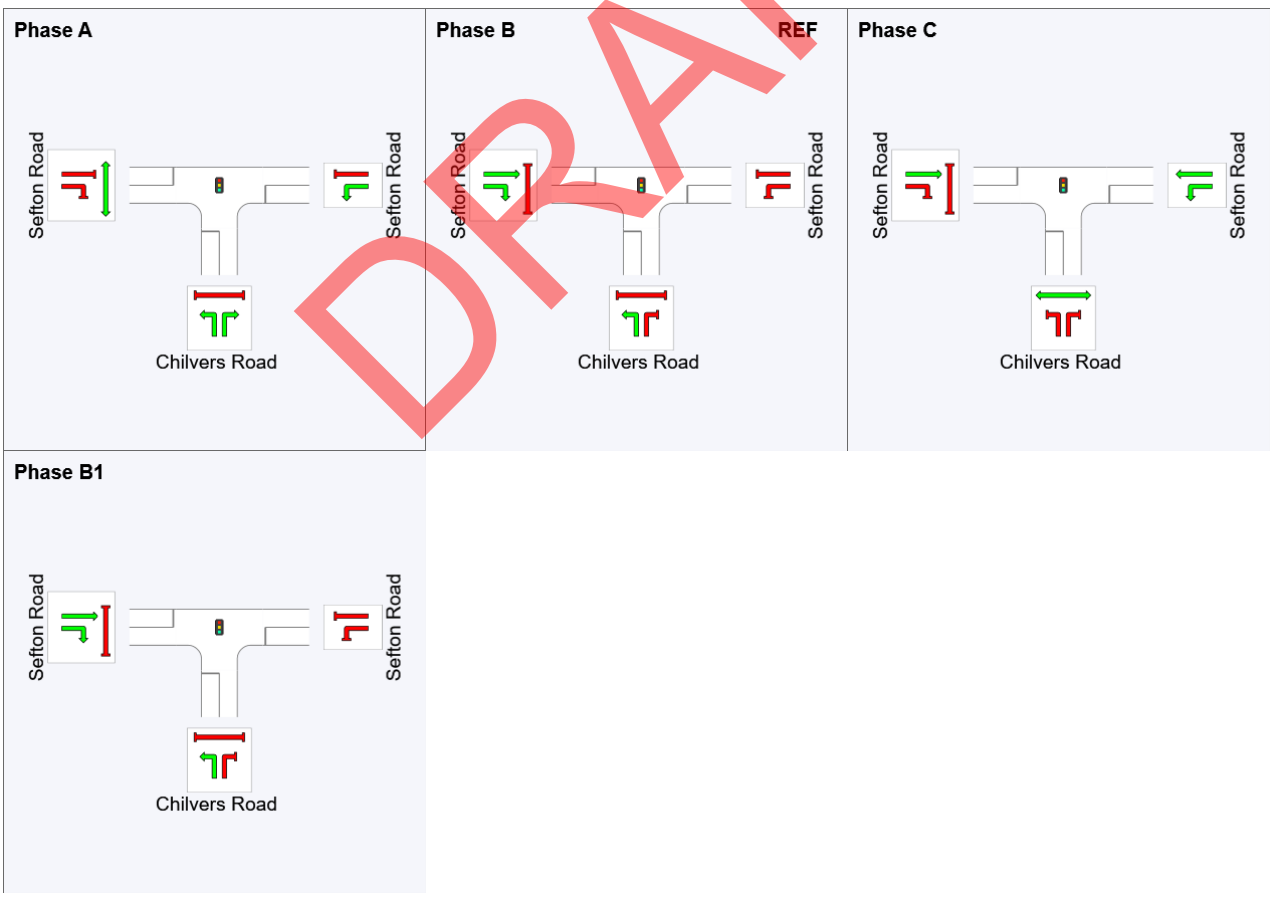
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase B
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

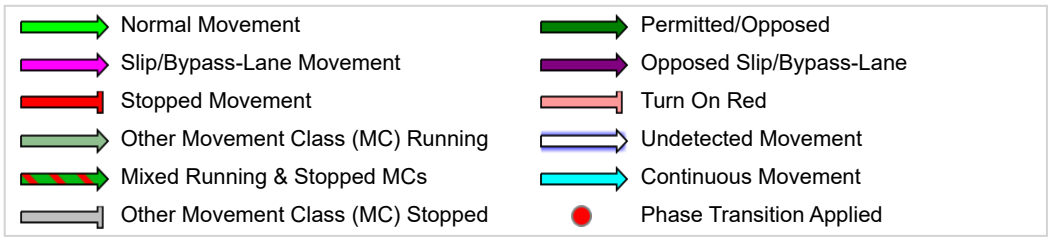
Phase	A	B	C	B1
Phase Change Time (sec)	75	0	15	60
Green Time (sec)	36	6	36	6
Phase Time (sec)	45	15	45	15
Phase Split	38%	13%	38%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_PM.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - 2032- Upg (Site Folder: 2032 Base + Upgrade PM)]

Network: N101 [2032 Base + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	272	5.0	272	5.0	0.663	22.8	LOS B	17.3	126.2	0.69	0.70	0.69	41.0
2	T1	1978	4.7	1978	4.7	* 0.663	17.3	LOS B	18.4	133.7	0.71	0.67	0.71	52.1
Approach		2249	4.7	2249	4.7	0.663	18.0	LOS B	18.4	133.7	0.71	0.67	0.71	51.2
North: Pennant Hills Road.														
8	T1	2036	3.3	2036	3.3	0.463	5.5	LOS A	8.9	64.1	0.39	0.36	0.39	63.3
9	R2	205	5.1	205	5.1	* 0.955	91.4	LOS F	9.7	70.7	1.00	1.03	1.55	15.8
Approach		2241	3.5	2241	3.5	0.955	13.3	LOS A	9.7	70.7	0.45	0.42	0.50	55.2
West: Duffy Avenue														
10	L2	137	10.0	137	10.0	0.247	38.2	LOS C	3.8	28.5	0.78	0.76	0.78	30.0
12	R2	181	3.5	181	3.5	* 0.657	60.0	LOS E	6.6	47.3	0.99	0.83	1.01	24.6
Approach		318	6.3	318	6.3	0.657	50.6	LOS D	6.6	47.3	0.90	0.80	0.91	26.7
All Vehicles		4808	4.2	4808	4.2	0.955	18.0	LOS B	18.4	133.7	0.60	0.56	0.62	50.3

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	56.8	LOS E	0.2	0.2	0.95	0.95	230.7	226.1	0.98
West: Duffy Avenue											
P4	Full	53	56.8	LOS E	0.2	0.2	0.95	0.95	219.8	211.9	0.96
All Pedestrians		105	56.8	LOS E	0.2	0.2	0.95	0.95	225.2	219.0	0.97

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - 2032- Upg (Site Folder: 2032 Base + Upgrade PM)]

Network: N101 [2032 Base + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

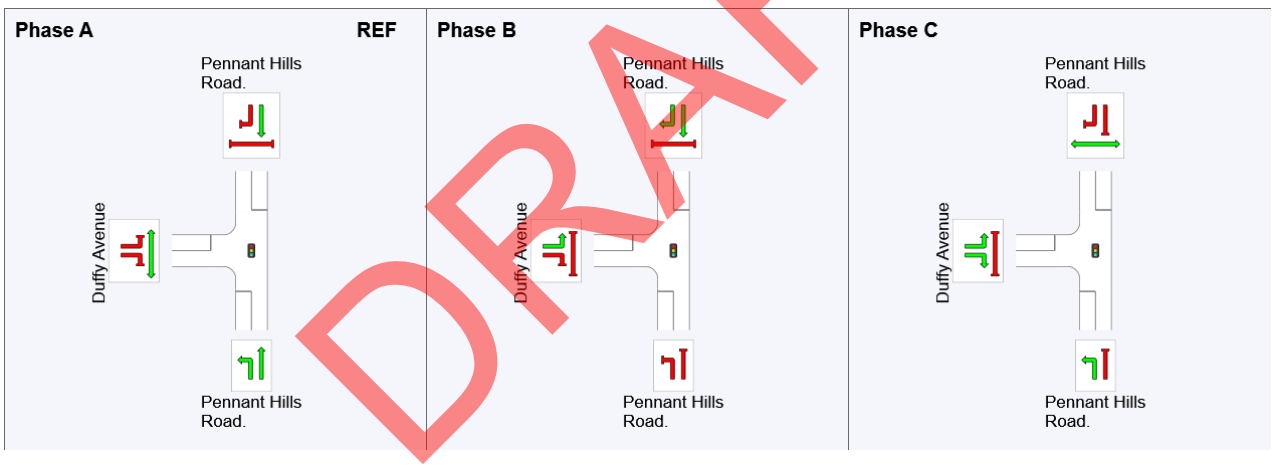
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	79	100
Green Time (sec)	75	15	19
Phase Time (sec)	81	21	23
Phase Split	65%	17%	18%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road - 2032- Upg (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	55	1.9	55	1.9	0.125	5.6	LOS A	0.3	2.3	0.60	0.60	0.60	37.5
2	T1	29	0.0	29	0.0	0.125	5.2	LOS A	0.3	2.3	0.60	0.60	0.60	38.0
3	R2	24	0.0	24	0.0	0.125	8.4	LOS A	0.3	2.3	0.60	0.60	0.60	35.4
Approach		108	1.0	108	1.0	0.125	6.1	LOS A	0.3	2.3	0.60	0.60	0.60	37.4
East: Duffy Avenue														
4	L2	8	0.0	8	0.0	0.313	3.0	LOS A	0.8	5.9	0.26	0.46	0.26	38.6
5	T1	206	4.1	206	4.1	0.313	2.8	LOS A	0.8	5.9	0.26	0.46	0.26	38.9
6	R2	187	4.5	187	4.5	0.313	6.0	LOS A	0.8	5.9	0.26	0.46	0.26	38.9
Approach		402	4.2	402	4.2	0.313	4.3	LOS A	0.8	5.9	0.26	0.46	0.26	38.9
North: Quarter Sessions Road														
7	L2	181	1.2	181	1.2	0.240	5.0	LOS A	0.6	4.4	0.59	0.61	0.59	36.0
8	T1	25	0.0	25	0.0	0.240	4.7	LOS A	0.6	4.4	0.59	0.61	0.59	38.4
9	R2	11	0.0	11	0.0	0.240	7.9	LOS A	0.6	4.4	0.59	0.61	0.59	38.4
Approach		217	1.0	217	1.0	0.240	5.1	LOS A	0.6	4.4	0.59	0.61	0.59	36.6
West: Duffy Avenue														
10	L2	11	10.0	11	10.0	0.286	4.5	LOS A	0.7	5.1	0.48	0.51	0.48	37.9
11	T1	253	1.3	253	1.3	0.286	3.9	LOS A	0.7	5.1	0.48	0.51	0.48	36.2
12	R2	32	10.0	32	10.0	0.286	7.3	LOS A	0.7	5.1	0.48	0.51	0.48	38.5
Approach		295	2.5	295	2.5	0.286	4.3	LOS A	0.7	5.1	0.48	0.51	0.48	36.7
All Vehicles		1022	2.7	1022	2.7	0.313	4.7	LOS A	0.8	5.9	0.43	0.52	0.43	38.0

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - 2032-Upg (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	111	1.0	111	1.0	0.875	52.2	LOS D	20.8	147.2	1.00	1.01	1.16	21.6
22	T1	453	1.6	453	1.6	* 0.875	48.2	LOS D	20.8	147.2	1.00	1.01	1.16	21.6
23b	R3	73	7.2	73	7.2	0.384	57.5	LOS E	2.4	17.8	0.96	0.77	0.96	19.7
Approach		636	2.2	636	2.2	0.875	50.0	LOS D	20.8	147.2	1.00	0.98	1.14	21.4
East: Duffy Avenue														
4b	L3	108	1.0	108	1.0	0.236	36.8	LOS C	2.8	19.9	0.78	0.75	0.78	30.8
5	T1	203	6.2	203	6.2	0.820	58.6	LOS E	7.4	54.4	1.00	0.96	1.21	13.9
6a	R1	125	2.5	125	2.5	0.639	59.0	LOS E	4.3	31.0	1.00	0.82	1.04	14.1
Approach		437	3.9	437	3.9	0.820	53.3	LOS D	7.4	54.4	0.94	0.87	1.06	18.7
NorthWest: Chilvers Road														
27a	L1	117	2.7	117	2.7	0.482	35.2	LOS C	8.6	61.2	0.86	0.76	0.86	21.4
28	T1	506	0.6	506	0.6	0.482	32.4	LOS C	8.8	61.8	0.87	0.76	0.87	32.4
29b	R3	169	1.9	169	1.9	* 0.867	60.5	LOS E	6.2	44.2	1.00	0.91	1.20	14.7
Approach		793	1.2	793	1.2	0.867	38.8	LOS C	8.8	61.8	0.90	0.79	0.94	27.6
West: Duffy Avenue														
10b	L3	193	1.6	193	1.6	0.363	37.4	LOS C	5.0	35.8	0.81	0.78	0.81	32.3
11	T1	231	0.9	231	0.9	* 0.912	68.1	LOS E	9.3	65.7	1.00	1.09	1.42	24.6
12a	R1	182	0.0	182	0.0	* 0.913	73.1	LOS F	7.4	51.5	1.00	1.08	1.46	29.2
Approach		605	0.9	605	0.9	0.913	59.8	LOS E	9.3	65.7	0.94	0.99	1.24	28.2
All Vehicles		2471	1.8	2471	1.8	0.913	49.4	LOS D	20.8	147.2	0.94	0.90	1.08	25.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
East: Duffy Avenue											
P2	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
NorthWest: Chilvers Road											
P7	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	221.4	220.5	1.00

West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
P4B	Slip/ Bypass	53	51.8	LOS E	0.2	0.2	0.95	0.95	208.9	204.3	0.98
All Pedestrians		263	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.5	0.99

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - 2032-Upg (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

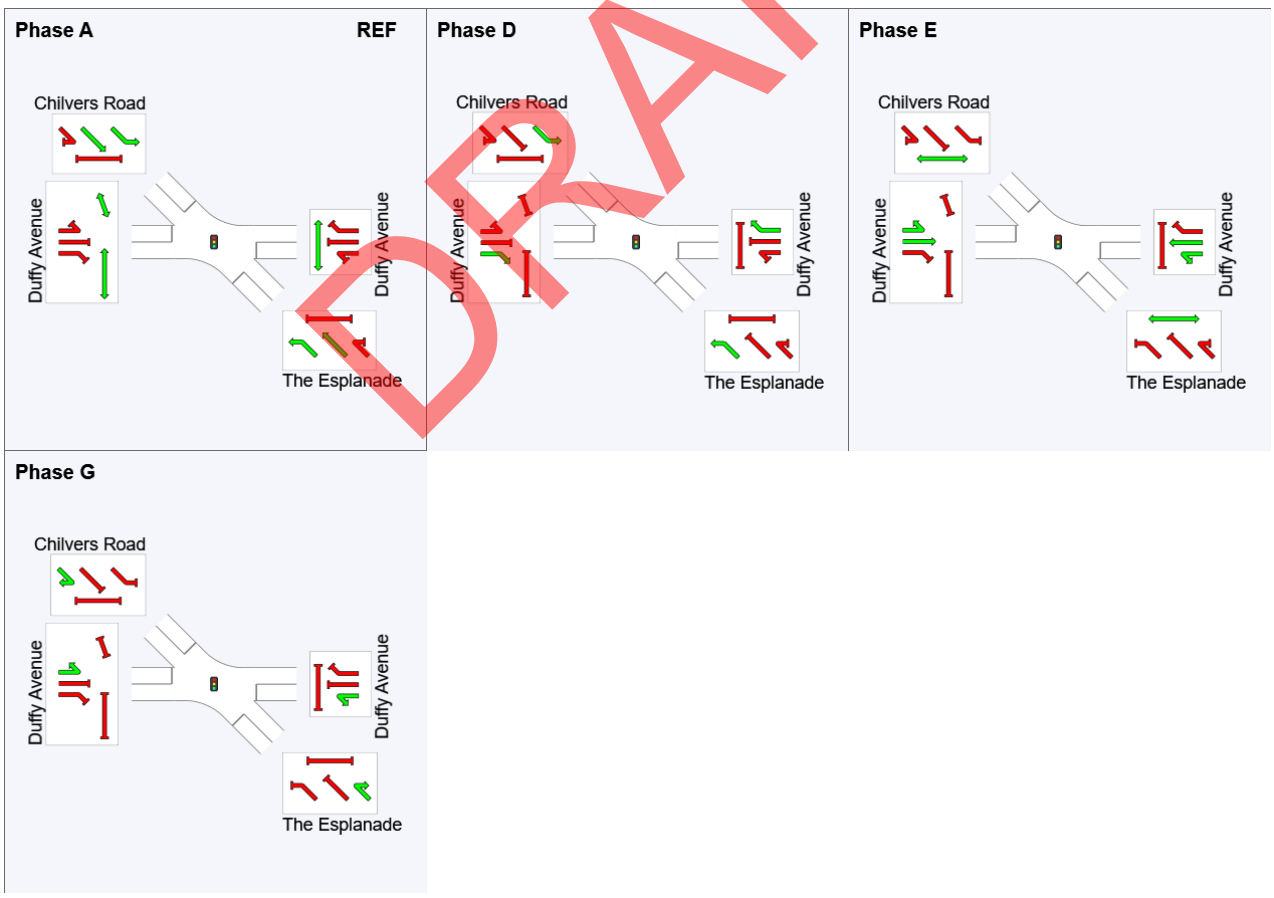
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

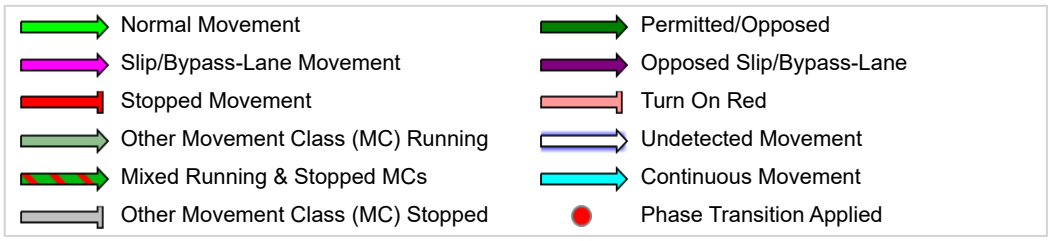
Phase	A	D	E	G
Phase Change Time (sec)	0	47	68	92
Green Time (sec)	38	12	15	14
Phase Time (sec)	47	21	24	23
Phase Split	41%	18%	21%	20%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - 2032- Upg (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	121	1.7	121	1.7	0.699	45.9	LOS D	12.5	88.7	1.00	0.87	1.00	28.3
3	R2	646	1.8	646	1.8	* 0.699	47.1	LOS D	12.5	88.7	1.00	0.87	1.00	28.0
Approach		767	1.8	767	1.8	0.699	46.9	LOS D	12.5	88.7	1.00	0.87	1.00	28.0
East: Sefton Road														
4	L2	649	1.1	649	1.1	* 0.687	15.1	LOS B	7.9	55.6	0.72	0.80	0.72	40.7
5	T1	82	2.6	82	2.6	0.690	38.8	LOS C	2.3	16.6	0.80	0.69	0.99	36.7
Approach		732	1.3	732	1.3	0.690	17.8	LOS B	7.9	55.6	0.73	0.79	0.75	39.8
West: Sefton Road														
11	T1	59	1.8	59	1.8	0.056	12.7	LOS A	0.9	6.5	0.49	0.38	0.49	42.6
12	R2	151	1.4	151	1.4	* 0.672	33.6	LOS C	2.9	20.2	1.00	0.82	1.06	26.2
Approach		209	1.5	209	1.5	0.672	27.7	LOS B	2.9	20.2	0.86	0.70	0.90	31.5
All Vehicles		1708	1.5	1708	1.5	0.699	32.1	LOS C	12.5	88.7	0.87	0.81	0.88	31.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
West: Sefton Road											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.6	0.99

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - 2032- Upg (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

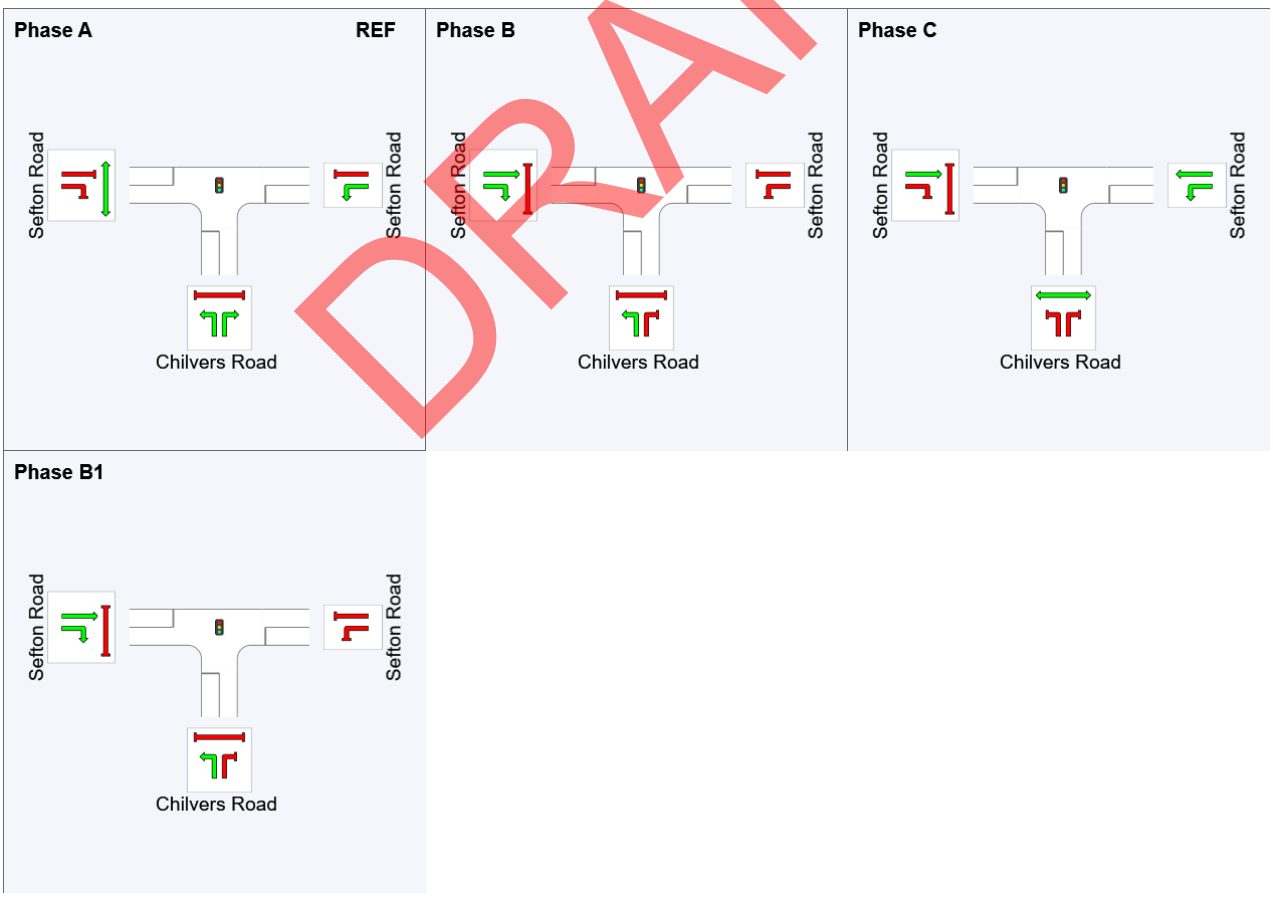
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

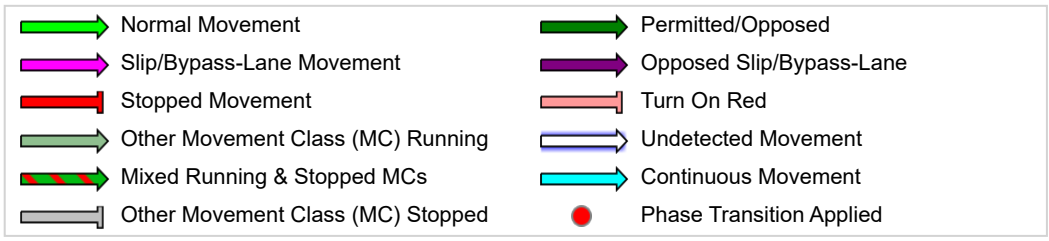
Phase	A	B	C	B1
Phase Change Time (sec)	0	43	58	98
Green Time (sec)	34	6	31	8
Phase Time (sec)	43	15	40	17
Phase Split	37%	13%	35%	15%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - 2032- Upg (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	231	5.9	231	5.9	0.715	24.1	LOS B	18.7	136.6	0.74	0.73	0.74	40.3
2	T1	2132	4.3	2132	4.3	* 0.715	18.6	LOS B	20.0	145.1	0.77	0.72	0.77	51.2
Approach		2362	4.5	2362	4.5	0.715	19.2	LOS B	20.0	145.1	0.76	0.72	0.76	50.5
North: Pennant Hills Road.														
8	T1	1936	3.5	1936	3.5	0.456	6.4	LOS A	8.8	63.7	0.42	0.39	0.42	62.4
9	R2	172	6.1	172	6.1	* 0.890	76.2	LOS F	7.1	52.0	1.00	0.96	1.40	18.2
Approach		2107	3.7	2107	3.7	0.890	12.1	LOS A	8.8	63.7	0.47	0.43	0.50	56.4
West: Duffy Avenue														
10	L2	185	7.4	185	7.4	0.323	37.4	LOS C	5.0	37.2	0.80	0.77	0.80	30.3
12	R2	220	2.9	220	2.9	* 0.725	58.3	LOS E	7.8	56.2	1.00	0.86	1.07	25.0
Approach		405	4.9	405	4.9	0.725	48.7	LOS D	7.8	56.2	0.91	0.82	0.95	27.1
All Vehicles		4875	4.2	4875	4.2	0.890	18.5	LOS B	20.0	145.1	0.65	0.60	0.67	49.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	228.2	226.1	0.99
West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	222.7	219.0	0.98

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - 2032- Upg (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

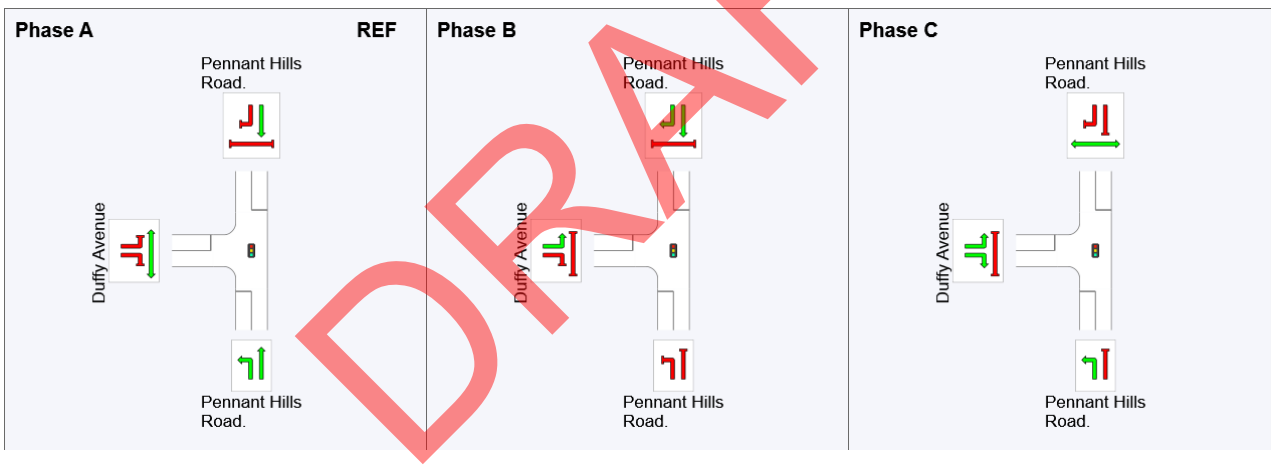
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

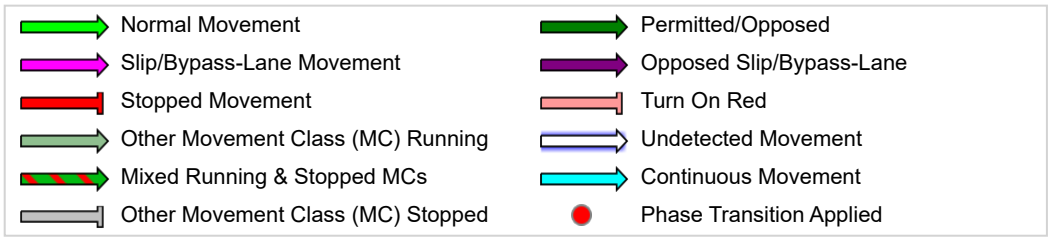
Phase	A	B	C
Phase Change Time (sec)	0	75	94
Green Time (sec)	70	13	20
Phase Time (sec)	76	19	25
Phase Split	63%	16%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road - Op1 (Site Folder: 2032 Option 1 + Upgrade PM)]

Network: N101 [2032 Option 1 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	34	3.1	34	3.1	0.129	7.5	LOS A	0.4	2.5	0.74	0.69	0.74	36.7
2	T1	33	0.0	33	0.0	0.129	7.1	LOS A	0.4	2.5	0.74	0.69	0.74	37.2
3	R2	25	0.0	25	0.0	0.129	10.3	LOS A	0.4	2.5	0.74	0.69	0.74	34.1
Approach		92	1.1	92	1.1	0.129	8.1	LOS A	0.4	2.5	0.74	0.69	0.74	36.5
East: Duffy Avenue														
4	L2	19	0.0	19	0.0	0.494	3.6	LOS A	1.6	11.4	0.40	0.52	0.40	38.3
5	T1	239	3.5	239	3.5	0.494	3.4	LOS A	1.6	11.4	0.40	0.52	0.40	38.7
6	R2	353	2.4	353	2.4	0.494	6.5	LOS A	1.6	11.4	0.40	0.52	0.40	38.7
Approach		611	2.8	610 N1	2.8	0.494	5.2	LOS A	1.6	11.4	0.40	0.52	0.40	38.7
North: Quarter Sessions Road														
7	L2	217	1.0	217	1.0	0.298	4.8	LOS A	0.8	5.8	0.59	0.60	0.59	36.1
8	T1	45	0.0	45	0.0	0.298	4.5	LOS A	0.8	5.8	0.59	0.60	0.59	38.4
9	R2	17	0.0	17	0.0	0.298	7.7	LOS A	0.8	5.8	0.59	0.60	0.59	38.4
Approach		279	0.8	279	0.8	0.298	4.9	LOS A	0.8	5.8	0.59	0.60	0.59	36.9
West: Duffy Avenue														
10	L2	13	8.3	13	8.3	0.288	5.7	LOS A	0.7	5.4	0.63	0.63	0.63	37.6
11	T1	198	1.6	198	1.6	0.288	5.2	LOS A	0.7	5.4	0.63	0.63	0.63	35.5
12	R2	44	7.1	44	7.1	0.288	8.5	LOS A	0.7	5.4	0.63	0.63	0.63	38.1
Approach		255	2.9	255	2.9	0.288	5.8	LOS A	0.7	5.4	0.63	0.63	0.63	36.4
All Vehicles		1236	2.2	1236	2.2	0.494	5.5	LOS A	1.6	11.4	0.51	0.57	0.51	38.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
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 SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Op1 (Site Folder: 2032 Option 1 + Upgrade PM)]

Network: N101 [2032 Option 1 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	173	0.6	173	0.6	* 0.966	81.5	LOS F	26.5	187.6	1.00	1.18	1.42	16.1
22	T1	381	1.9	381	1.9	0.966	77.0	LOS F	26.5	187.6	1.00	1.18	1.42	16.1
23b	R3	65	8.1	65	8.1	0.298	56.6	LOS E	2.2	16.2	0.94	0.76	0.94	20.0
Approach		619	2.2	619	2.2	0.966	76.1	LOS F	26.5	187.6	0.99	1.14	1.36	16.4
East: Duffy Avenue														
4b	L3	129	0.8	129	0.8	0.279	39.2	LOS C	3.8	26.7	0.80	0.76	0.80	30.1
5	T1	288	4.4	288	4.4	* 0.970	83.8	LOS F	13.1	95.3	0.99	1.22	1.55	10.6
6a	R1	100	3.2	100	3.2	0.534	60.6	LOS E	3.5	25.5	1.00	0.78	1.00	13.8
Approach		518	3.3	517 N1	3.3	0.970	68.2	LOS E	13.1	95.3	0.95	1.02	1.25	15.9
NorthWest: Chilvers Road														
27a	L1	91	3.5	91	3.5	0.627	42.7	LOS D	11.4	80.9	0.95	0.83	0.95	19.1
28	T1	623	0.5	623	0.5	0.627	39.4	LOS C	11.4	80.9	0.95	0.82	0.95	30.2
29b	R3	223	1.4	223	1.4	* 0.978	91.8	LOS F	10.5	74.5	1.00	1.08	1.55	10.8
Approach		937	1.0	937	1.0	0.978	52.2	LOS D	11.4	80.9	0.96	0.88	1.09	24.2
West: Duffy Avenue														
10b	L3	184	1.7	184	1.7	0.299	33.3	LOS C	4.6	32.5	0.74	0.76	0.74	33.5
11	T1	186	1.1	186	1.1	0.577	50.6	LOS D	6.3	44.4	0.97	0.80	0.97	28.3
12a	R1	180	0.0	180	0.0	0.942	81.6	LOS F	7.9	55.3	1.00	1.13	1.54	27.9
Approach		551	1.0	551	1.0	0.942	54.9	LOS D	7.9	55.3	0.90	0.89	1.08	29.4
All Vehicles		2624	1.7	2624	1.7	0.978	61.6	LOS E	26.5	187.6	0.95	0.97	1.19	22.2

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
East: Duffy Avenue											
P2	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
NorthWest: Chilvers Road											
P7	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	223.9	220.5	0.98

West: Duffy Avenue										
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
P4B	Slip/ Bypass	53	54.3	LOS E	0.2	0.2	0.95	0.95	211.4	204.3	0.97
All Pedestrians		263	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.5	0.98

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Op1 (Site Folder: 2032 Option 1 + Upgrade PM)]

Network: N101 [2032 Option 1 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

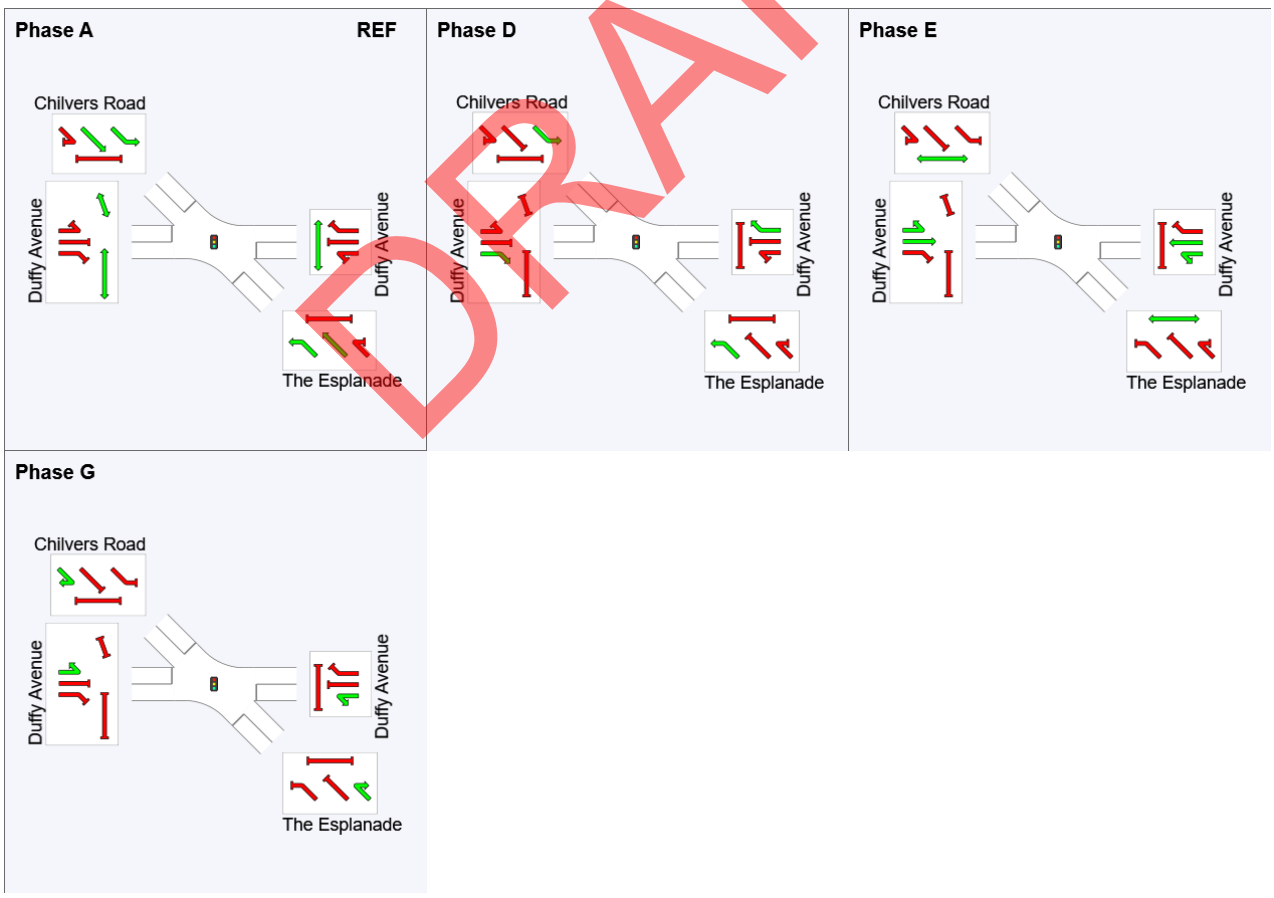
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

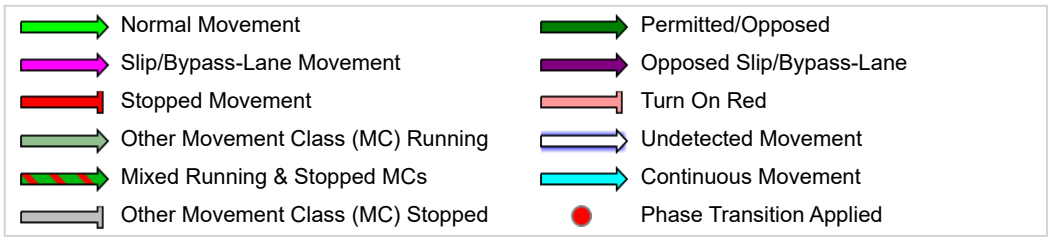
Phase	A	D	E	G
Phase Change Time (sec)	0	44	65	94
Green Time (sec)	35	12	20	17
Phase Time (sec)	44	21	29	26
Phase Split	37%	18%	24%	22%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_PM.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Op1 (Site Folder: 2032 Option 1 + Upgrade PM)]

Network: N101 [2032 Option 1 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	116	1.8	116	1.8	0.620	43.5	LOS D	10.8	77.1	0.95	0.85	0.95	29.0
3	R2	556	2.1	556	2.1	0.620	44.5	LOS D	10.8	77.1	0.96	0.85	0.96	28.7
Approach		672	2.0	671	2.0	0.620	44.3	LOS D	10.8	77.1	0.95	0.85	0.95	28.7
East: Sefton Road														
4	L2	849	0.9	849	0.9	* 0.832	17.3	LOS B	12.3	86.4	0.80	0.85	0.82	38.7
5	T1	84	2.5	84	2.5	* 0.837	54.1	LOS D	2.9	20.6	0.76	0.78	1.26	31.8
Approach		934	1.0	934	1.0	0.837	20.6	LOS B	12.3	86.4	0.80	0.84	0.86	37.4
West: Sefton Road														
11	T1	56	1.9	56	1.9	0.052	12.6	LOS A	0.9	6.3	0.48	0.37	0.48	42.6
12	R2	97	2.2	97	2.2	* 0.530	34.6	LOS C	1.8	13.0	0.99	0.77	0.99	25.8
Approach		153	2.1	153	2.1	0.530	26.6	LOS B	1.8	13.0	0.80	0.62	0.80	32.7
All Vehicles		1758	1.5	1758	1.5	0.837	30.2	LOS C	12.3	86.4	0.86	0.83	0.89	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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
West: Sefton Road											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.6	0.98

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Op1 (Site Folder: 2032 Option 1 + Upgrade PM)]

Network: N101 [2032 Option 1 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

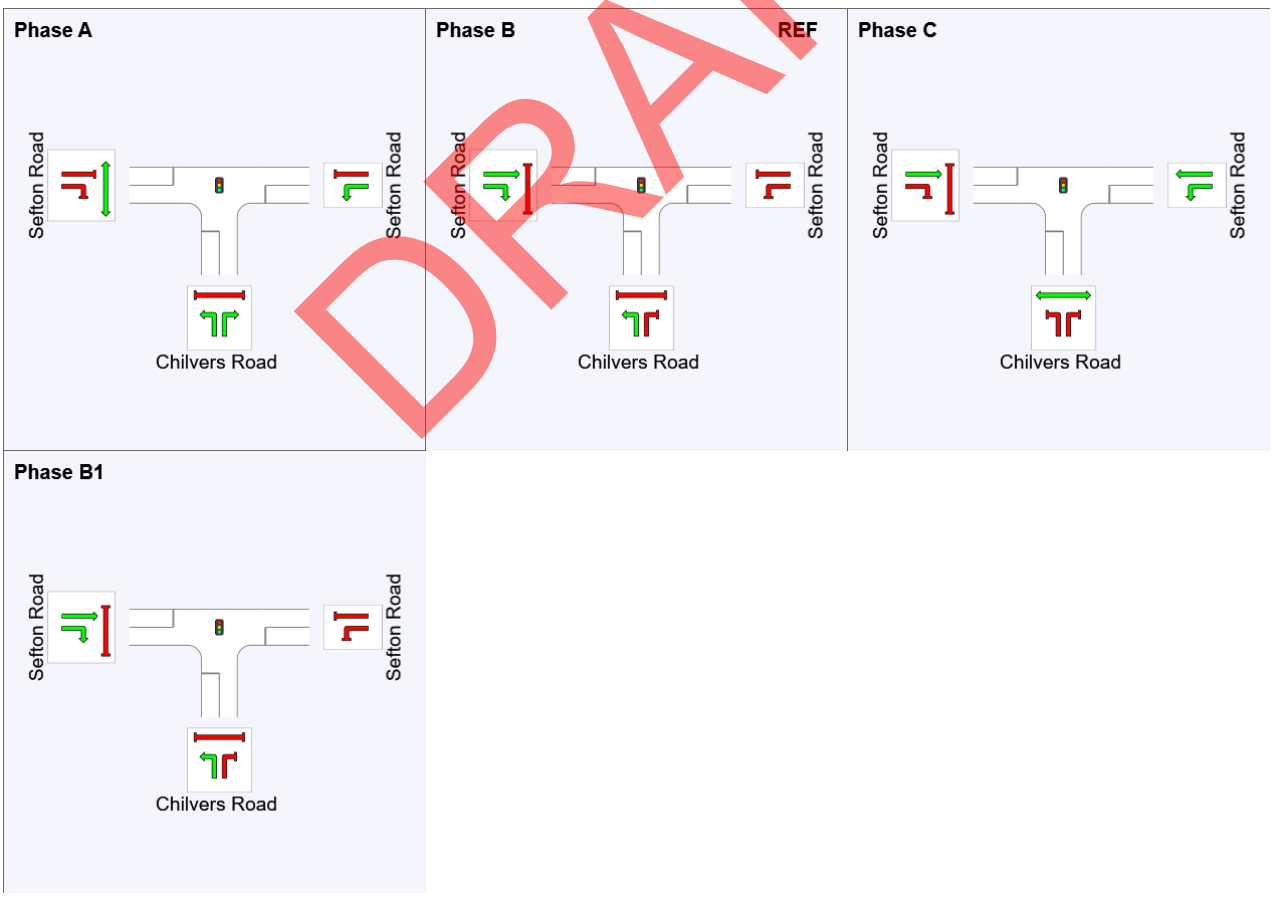
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase B
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

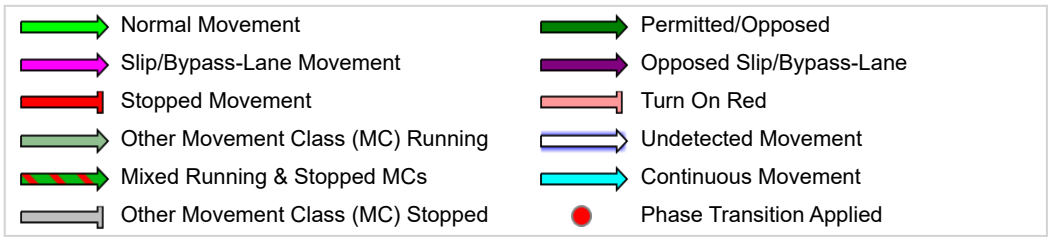
Phase	A	B	C	B1
Phase Change Time (sec)	76	0	15	61
Green Time (sec)	35	6	37	6
Phase Time (sec)	44	15	46	15
Phase Split	37%	13%	38%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_PM.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Op1 (Site Folder: 2032 Option 1 + Upgrade PM)] Network: N101 [2032 Option 1 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	283	4.8	283	4.8	0.666	22.9	LOS B	17.5	127.2	0.69	0.71	0.69	40.8
2	T1	1978	4.7	1978	4.7	* 0.666	17.4	LOS B	18.5	134.8	0.71	0.67	0.71	52.1
Approach		2261	4.7	2261	4.7	0.666	18.0	LOS B	18.5	134.8	0.71	0.68	0.71	51.1
North: Pennant Hills Road.														
8	T1	2035	3.3	2035	3.3	0.463	5.5	LOS A	8.9	64.1	0.39	0.36	0.39	63.3
9	R2	216	4.9	216	4.9	* 1.002	111.4	LOS F	11.4	83.1	1.00	1.10	1.72	13.5
Approach		2251	3.5	2251	3.5	1.002	15.6	LOS B	11.4	83.1	0.45	0.43	0.52	53.2
West: Duffy Avenue														
10	L2	144	9.5	144	9.5	0.259	38.4	LOS C	4.0	30.1	0.78	0.76	0.78	30.0
12	R2	188	3.4	188	3.4	* 0.683	60.6	LOS E	6.9	49.7	1.00	0.84	1.04	24.5
Approach		333	6.0	333	6.0	0.683	51.0	LOS D	6.9	49.7	0.91	0.80	0.93	26.6
All Vehicles		4844	4.2	4844	4.2	1.002	19.2	LOS B	18.5	134.8	0.60	0.57	0.64	49.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	56.8	LOS E	0.2	0.2	0.95	0.95	230.7	226.1	0.98
West: Duffy Avenue											
P4	Full	53	56.8	LOS E	0.2	0.2	0.95	0.95	219.8	211.9	0.96
All Pedestrians		105	56.8	LOS E	0.2	0.2	0.95	0.95	225.2	219.0	0.97

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Op1 (Site Folder: 2032 Option 1 + Upgrade PM)] Network: N101 [2032 Option 1 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

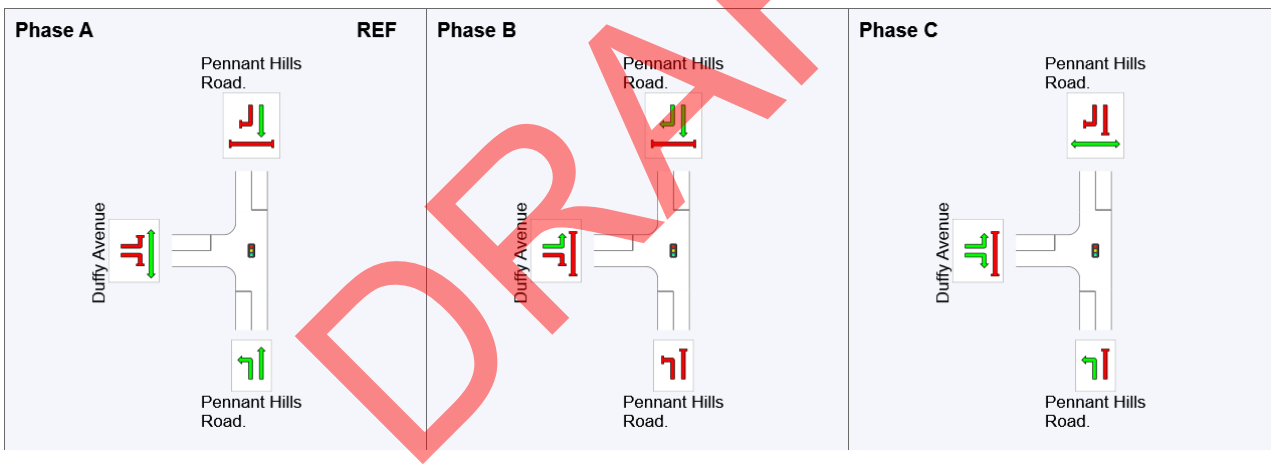
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	79	100
Green Time (sec)	75	15	19
Phase Time (sec)	81	21	23
Phase Split	65%	17%	18%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road - Op 1 (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	58	1.8	58	1.8	0.171	6.7	LOS A	0.5	3.3	0.70	0.66	0.70	37.1
2	T1	53	0.0	53	0.0	0.171	6.4	LOS A	0.5	3.3	0.70	0.66	0.70	37.6
3	R2	23	0.0	23	0.0	0.171	9.6	LOS A	0.5	3.3	0.70	0.66	0.70	34.7
Approach		134	0.8	134	0.8	0.171	7.1	LOS A	0.5	3.3	0.70	0.66	0.70	37.1
East: Duffy Avenue														
4	L2	6	0.0	6	0.0	0.409	3.3	LOS A	1.2	8.7	0.33	0.51	0.33	38.4
5	T1	192	4.4	186	4.4	0.409	3.0	LOS A	1.2	8.7	0.33	0.51	0.33	38.7
6	R2	335	2.5	325	2.5	0.409	6.2	LOS A	1.2	8.7	0.33	0.51	0.33	38.7
Approach		533	3.2	518 N1	3.2	0.409	5.0	LOS A	1.2	8.7	0.33	0.51	0.33	38.7
North: Quarter Sessions Road														
7	L2	349	0.6	349	0.6	0.444	5.5	LOS A	1.4	9.7	0.70	0.67	0.70	35.7
8	T1	42	0.0	42	0.0	0.444	5.2	LOS A	1.4	9.7	0.70	0.67	0.70	38.2
9	R2	11	0.0	11	0.0	0.444	8.3	LOS A	1.4	9.7	0.70	0.67	0.70	38.2
Approach		402	0.5	402	0.5	0.444	5.5	LOS A	1.4	9.7	0.70	0.67	0.70	36.2
West: Duffy Avenue														
10	L2	11	10.0	11	10.0	0.326	5.8	LOS A	0.9	6.2	0.63	0.63	0.63	37.6
11	T1	252	1.3	252	1.3	0.326	5.2	LOS A	0.9	6.2	0.63	0.63	0.63	35.7
12	R2	32	10.0	32	10.0	0.326	8.6	LOS A	0.9	6.2	0.63	0.63	0.63	38.1
Approach		294	2.5	294	2.5	0.326	5.6	LOS A	0.9	6.2	0.63	0.63	0.63	36.2
All Vehicles		1362	2.0	1347 N1	2.0	0.444	5.5	LOS A	1.4	9.7	0.54	0.60	0.54	37.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
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 SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Op 1 (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	121	0.9	121	0.9	* 1.052	128.8	LOS F	34.0	240.7	1.00	1.50	1.83	11.3
22	T1	451	1.6	451	1.6	1.052	124.4	LOS F	34.0	240.7	1.00	1.50	1.83	11.3
23b	R3	73	7.2	73	7.2	0.256	49.7	LOS D	2.2	16.2	0.90	0.76	0.90	21.5
Approach		644	2.1	644	2.1	1.052	116.8	LOS F	34.0	240.7	0.99	1.42	1.72	11.9
East: Duffy Avenue														
4b	L3	111	1.0	111	1.0	0.291	42.4	LOS C	3.5	24.5	0.85	0.77	0.85	29.3
5	T1	252	5.0	252	5.0	1.010	99.8	LOS F	12.1	88.2	0.99	1.30	1.74	9.2
6a	R1	126	2.5	126	2.5	0.703	61.2	LOS E	4.5	32.1	1.00	0.85	1.11	13.7
Approach		488	3.4	488	3.4	1.010	76.8	LOS F	12.1	88.2	0.96	1.06	1.37	14.4
NorthWest: Chilvers Road														
27a	L1	104	3.0	104	3.0	0.509	41.3	LOS C	8.5	60.5	0.94	0.81	0.94	19.4
28	T1	452	0.7	452	0.7	0.509	38.9	LOS C	8.6	60.2	0.95	0.81	0.95	30.3
29b	R3	305	1.0	305	1.0	* 1.036	102.4	LOS F	15.8	111.7	1.00	1.15	1.66	9.8
Approach		861	1.1	861	1.1	1.036	61.7	LOS E	15.8	111.7	0.97	0.93	1.20	20.7
West: Duffy Avenue														
10b	L3	263	1.2	263	1.2	0.417	33.2	LOS C	6.6	46.5	0.78	0.79	0.78	33.6
11	T1	260	0.8	260	0.8	* 1.047	124.6	LOS F	14.7	103.4	1.00	1.44	1.94	17.1
12a	R1	198	0.0	198	0.0	1.082	152.1	LOS F	12.2	85.4	1.00	1.46	2.15	19.8
Approach		721	0.7	721	0.7	1.082	98.8	LOS F	14.7	103.4	0.92	1.21	1.57	21.6
All Vehicles		2715	1.7	2715	1.7	1.082	87.3	LOS F	34.0	240.7	0.96	1.14	1.46	17.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
East: Duffy Avenue											
P2	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
NorthWest: Chilvers Road											
P7	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	221.4	220.5	1.00

West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
P4B	Slip/ Bypass	53	51.8	LOS E	0.2	0.2	0.95	0.95	208.9	204.3	0.98
All Pedestrians		263	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.5	0.99

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Op 1 (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

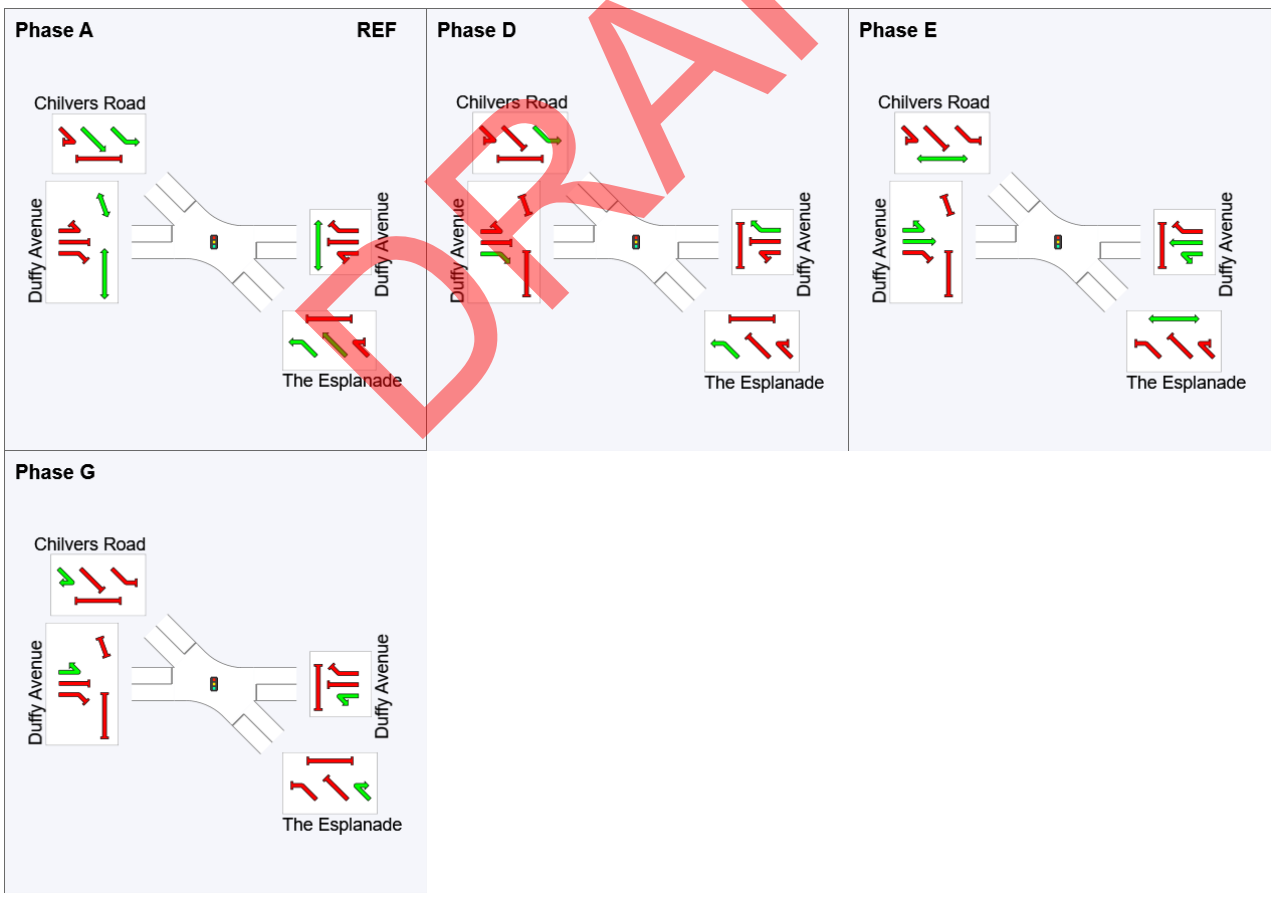
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

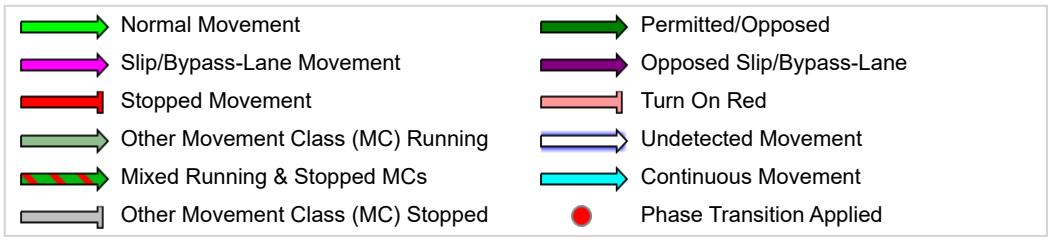
Phase	A	D	E	G
Phase Change Time (sec)	0	41	61	85
Green Time (sec)	32	11	15	21
Phase Time (sec)	41	20	24	30
Phase Split	36%	17%	21%	26%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Op 1 (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	121	1.7	118	1.7	0.744	47.1	LOS D	13.5	96.0	1.00	0.88	1.02	28.0
3	R2	718	1.6	699	1.6	* 0.744	48.3	LOS D	13.5	96.0	1.00	0.88	1.02	27.7
Approach		839	1.6	817 N1	1.6	0.744	48.1	LOS D	13.5	96.0	1.00	0.88	1.02	27.7
East: Sefton Road														
4	L2	726	1.0	726	1.0	* 0.732	15.0	LOS B	8.7	61.4	0.74	0.82	0.74	40.8
5	T1	74	2.9	74	2.9	0.545	32.6	LOS C	1.9	13.4	0.78	0.60	0.79	39.1
Approach		800	1.2	800	1.2	0.732	16.6	LOS B	8.7	61.4	0.75	0.80	0.75	40.5
West: Sefton Road														
11	T1	59	1.8	59	1.8	0.056	12.7	LOS A	0.9	6.5	0.49	0.38	0.49	42.6
12	R2	151	1.4	151	1.4	* 0.784	37.3	LOS C	3.0	21.3	1.00	0.88	1.20	24.9
Approach		209	1.5	209	1.5	0.784	30.4	LOS C	3.0	21.3	0.86	0.74	1.00	30.4
All Vehicles		1848	1.4	1826 N1	1.4	0.784	32.3	LOS C	13.5	96.0	0.87	0.83	0.90	31.5

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
West: Sefton Road											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.6	0.99

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Op 1 (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

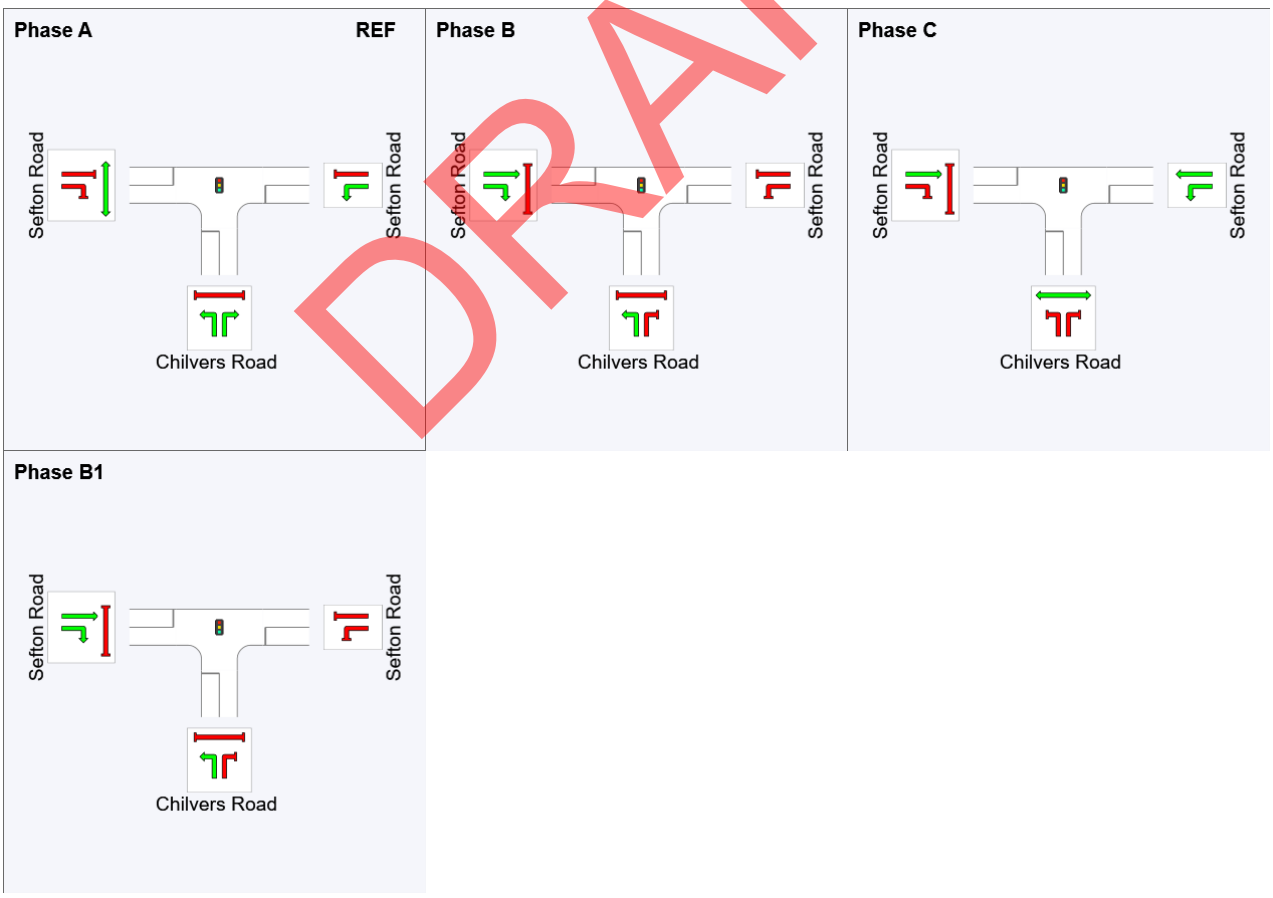
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

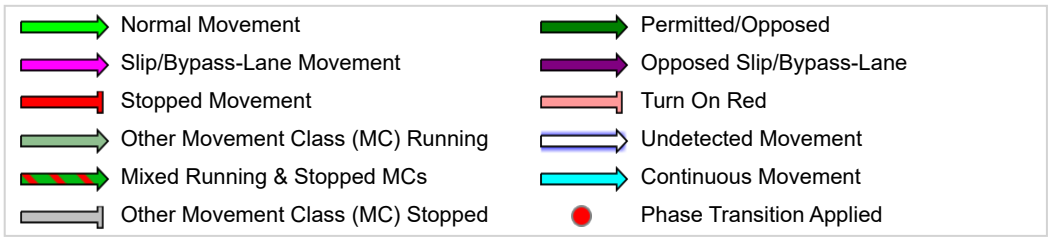
Phase	A	B	C	B1
Phase Change Time (sec)	0	43	58	100
Green Time (sec)	34	6	33	6
Phase Time (sec)	43	15	42	15
Phase Split	37%	13%	37%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Op 1 (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	252	5.4	252	5.4	0.721	24.2	LOS B	19.0	138.5	0.74	0.73	0.74	40.0
2	T1	2132	4.3	2132	4.3	* 0.721	18.7	LOS B	20.3	147.3	0.77	0.72	0.77	51.1
Approach		2383	4.5	2383	4.5	0.721	19.3	LOS B	20.3	147.3	0.77	0.72	0.77	50.3
North: Pennant Hills Road.														
8	T1	1937	3.5	1937	3.5	0.456	6.4	LOS A	8.8	63.8	0.42	0.39	0.42	62.4
9	R2	194	5.4	194	5.4	* 1.000	107.9	LOS F	9.8	71.9	1.00	1.10	1.76	13.9
Approach		2131	3.7	2131	3.7	1.000	15.6	LOS B	9.8	71.9	0.48	0.45	0.54	53.3
West: Duffy Avenue														
10	L2	197	7.0	192	7.1	0.334	37.5	LOS C	5.2	38.6	0.80	0.77	0.80	30.2
12	R2	229	2.8	223	2.8	* 0.736	58.6	LOS E	8.0	57.3	1.00	0.87	1.08	24.9
Approach		426	4.7	415 N1	4.8	0.736	48.9	LOS D	8.0	57.3	0.91	0.83	0.95	27.1
All Vehicles		4940	4.1	4929 N1	4.1	1.000	20.2	LOS B	20.3	147.3	0.65	0.61	0.69	48.5

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	228.2	226.1	0.99
West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	222.7	219.0	0.98

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Op 1 (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

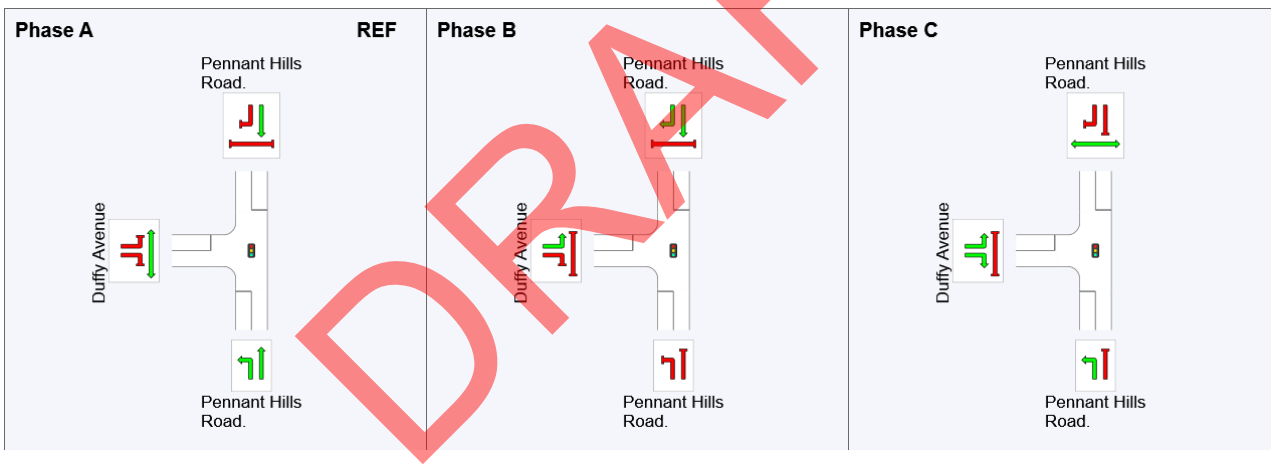
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

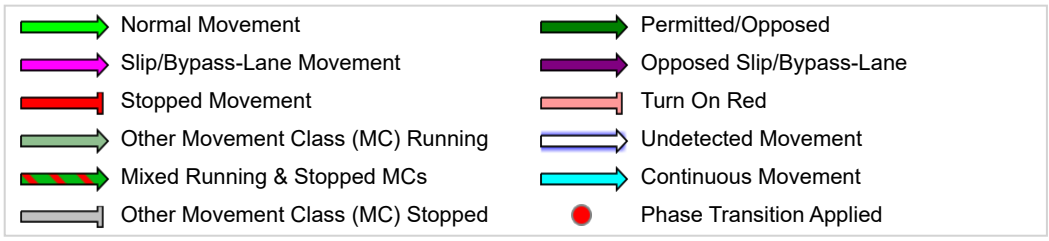
Phase	A	B	C
Phase Change Time (sec)	0	75	94
Green Time (sec)	70	13	20
Phase Time (sec)	76	19	25
Phase Split	63%	16%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road - Op2 (Site Folder: 2032 Option 2 + Upgrade PM)]

Network: N101 [2032 Option 2 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	38	2.8	38	2.8	0.118	6.5	LOS A	0.3	2.2	0.68	0.65	0.68	37.1
2	T1	27	0.0	27	0.0	0.118	6.2	LOS A	0.3	2.2	0.68	0.65	0.68	37.6
3	R2	26	0.0	26	0.0	0.118	9.3	LOS A	0.3	2.2	0.68	0.65	0.68	34.6
Approach		92	1.1	92	1.1	0.118	7.2	LOS A	0.3	2.2	0.68	0.65	0.68	36.8
East: Duffy Avenue														
4	L2	15	0.0	15	0.0	0.416	3.5	LOS A	1.2	8.6	0.36	0.50	0.36	38.4
5	T1	229	3.7	229	3.7	0.416	3.2	LOS A	1.2	8.6	0.36	0.50	0.36	38.8
6	R2	264	3.2	264	3.2	0.416	6.4	LOS A	1.2	8.6	0.36	0.50	0.36	38.8
Approach		508	3.3	508	3.3	0.416	4.9	LOS A	1.2	8.6	0.36	0.50	0.36	38.8
North: Quarter Sessions Road														
7	L2	167	1.3	167	1.3	0.244	4.7	LOS A	0.6	4.5	0.56	0.58	0.56	36.1
8	T1	39	0.0	39	0.0	0.244	4.4	LOS A	0.6	4.5	0.56	0.58	0.56	38.4
9	R2	23	0.0	23	0.0	0.244	7.5	LOS A	0.6	4.5	0.56	0.58	0.56	38.4
Approach		229	0.9	229	0.9	0.244	4.9	LOS A	0.6	4.5	0.56	0.58	0.56	37.0
West: Duffy Avenue														
10	L2	16	6.7	16	6.7	0.267	4.9	LOS A	0.7	4.8	0.55	0.57	0.55	37.8
11	T1	198	1.6	198	1.6	0.267	4.4	LOS A	0.7	4.8	0.55	0.57	0.55	35.9
12	R2	42	7.5	42	7.5	0.267	7.7	LOS A	0.7	4.8	0.55	0.57	0.55	38.3
Approach		256	2.9	256	2.9	0.267	5.0	LOS A	0.7	4.8	0.55	0.57	0.55	36.7
All Vehicles		1085	2.5	1085	2.5	0.416	5.1	LOS A	1.2	8.6	0.47	0.55	0.47	38.1

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Op2 (Site Folder: 2032 Option 2 + Upgrade PM)]

Network: N101 [2032 Option 2 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	181	0.6	181	0.6	0.885	55.7	LOS D	22.0	155.7	1.00	1.01	1.17	20.7
22	T1	383	1.9	383	1.9	* 0.885	51.5	LOS D	22.0	155.7	1.00	1.01	1.17	20.7
23b	R3	66	7.9	66	7.9	0.429	62.8	LOS E	2.3	17.5	0.98	0.77	0.98	18.7
Approach		631	2.2	631	2.2	0.885	53.9	LOS D	22.0	155.7	1.00	0.98	1.15	20.5
East: Duffy Avenue														
4b	L3	128	0.8	128	0.8	0.260	37.5	LOS C	3.6	25.3	0.78	0.76	0.78	30.7
5	T1	287	4.4	287	4.4	* 0.905	65.3	LOS E	11.5	83.6	0.99	1.09	1.34	12.8
6a	R1	102	3.1	102	3.1	0.595	62.2	LOS E	3.7	26.5	1.00	0.79	1.02	13.6
Approach		518	3.3	517 N1	3.3	0.905	57.8	LOS E	11.5	83.6	0.94	0.95	1.14	17.7
NorthWest: Chilvers Road														
27a	L1	89	3.5	89	3.5	0.558	38.9	LOS C	10.7	75.5	0.90	0.79	0.90	20.3
28	T1	618	0.5	618	0.5	0.558	35.6	LOS C	10.7	75.5	0.90	0.78	0.90	31.4
29b	R3	145	2.2	145	2.2	* 0.907	78.3	LOS F	5.9	41.9	1.00	0.94	1.28	12.2
Approach		853	1.1	853	1.1	0.907	43.2	LOS D	10.7	75.5	0.92	0.81	0.96	27.1
West: Duffy Avenue														
10b	L3	135	2.3	135	2.3	0.235	34.6	LOS C	3.4	24.1	0.74	0.75	0.74	33.1
11	T1	185	1.1	185	1.1	0.522	48.3	LOS D	6.1	43.0	0.95	0.78	0.95	28.8
12a	R1	158	0.0	158	0.0	* 0.901	74.6	LOS F	6.5	45.7	1.00	1.05	1.44	29.0
Approach		478	1.1	478	1.1	0.901	53.1	LOS D	6.5	45.7	0.91	0.86	1.05	29.8
All Vehicles		2479	1.8	2479	1.8	0.907	50.9	LOS D	22.0	155.7	0.94	0.89	1.06	24.5

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
East: Duffy Avenue											
P2	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
NorthWest: Chilvers Road											
P7	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	223.9	220.5	0.98

West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
P4B	Slip/ Bypass	53	54.3	LOS E	0.2	0.2	0.95	0.95	211.4	204.3	0.97
All Pedestrians		263	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.5	0.98

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Op2 (Site Folder: 2032 Option 2 + Upgrade PM)]

Network: N101 [2032 Option 2 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

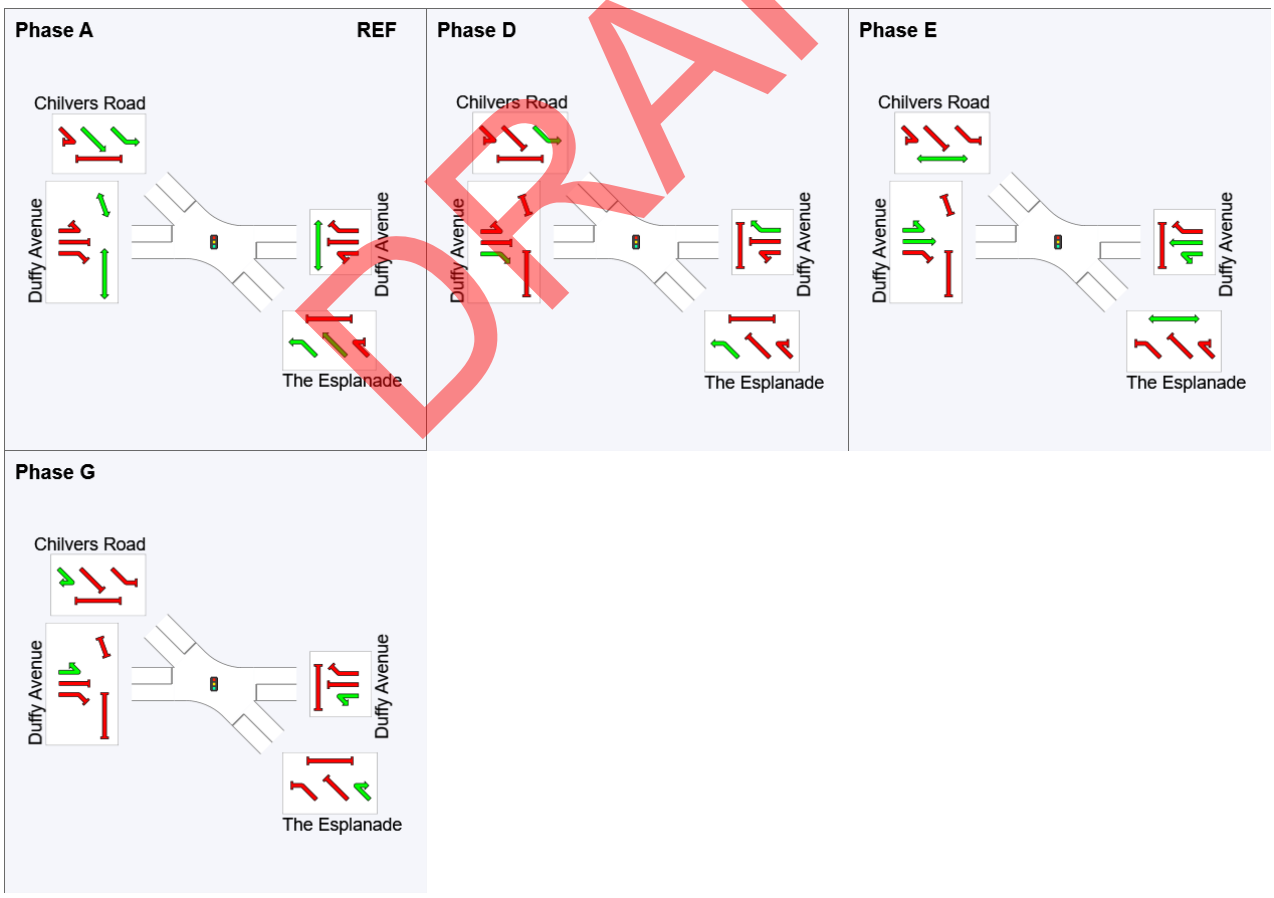
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

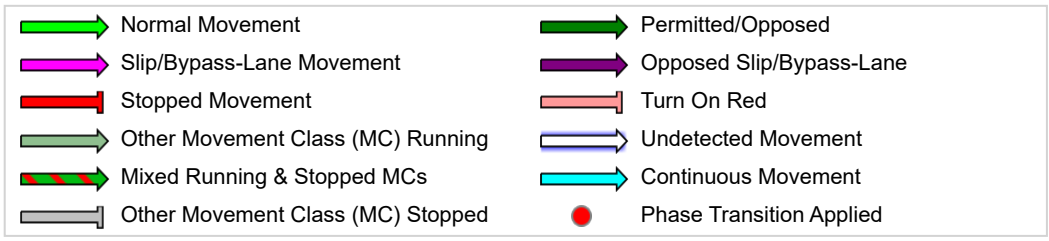
Phase	A	D	E	G
Phase Change Time (sec)	0	48	68	99
Green Time (sec)	39	11	22	12
Phase Time (sec)	48	20	31	21
Phase Split	40%	17%	26%	18%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Thursday, 21 July 2022 5:01:42 PM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_PM.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Copy - Conversion - Op2 (Site Folder: 2032 Option 2 + Upgrade PM)]

Network: N101 [2032 Option 2 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	106	2.0	106	2.0	0.719	50.3	LOS D	10.8	77.2	1.00	0.86	1.01	27.2
3	R2	518	2.2	518	2.2	0.719	51.0	LOS D	10.8	77.2	1.00	0.86	1.02	27.0
Approach		624	2.2	624	2.2	0.719	50.9	LOS D	10.8	77.2	1.00	0.86	1.02	27.1
East: Sefton Road														
4	L2	765	1.0	765	1.0	* 0.819	16.5	LOS B	10.3	73.0	0.74	0.82	0.76	39.3
5	T1	168	1.3	168	1.3	* 1.065	160.4	LOS F	11.8	83.8	1.00	1.36	2.18	16.3
Approach		934	1.0	934	1.0	1.065	42.5	LOS C	11.8	83.8	0.78	0.92	1.02	27.6
West: Sefton Road														
11	T1	96	1.1	96	1.1	0.080	9.7	LOS A	1.3	9.5	0.43	0.34	0.43	44.1
12	R2	95	2.2	95	2.2	* 0.518	35.2	LOS C	2.0	14.4	0.99	0.77	0.99	25.6
Approach		191	1.7	191	1.7	0.518	22.4	LOS B	2.0	14.4	0.71	0.56	0.71	35.6
All Vehicles		1748	1.5	1748	1.5	1.065	43.3	LOS D	11.8	83.8	0.85	0.86	0.98	28.1

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
West: Sefton Road											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.6	0.98

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Copy - Conversion - Op2 (Site Folder: 2032 Option 2 + Upgrade PM)]

Network: N101 [2032 Option 2 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

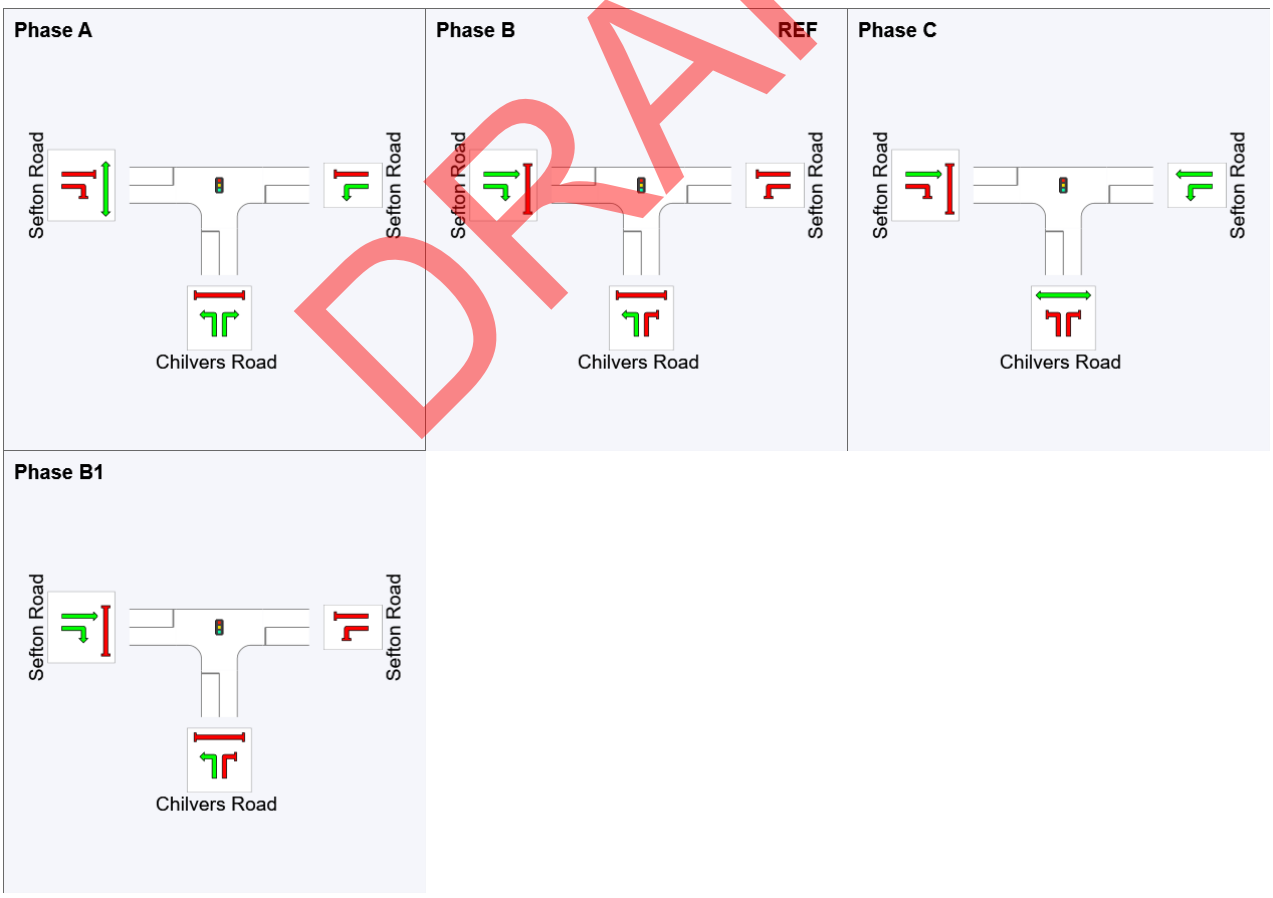
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase B
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

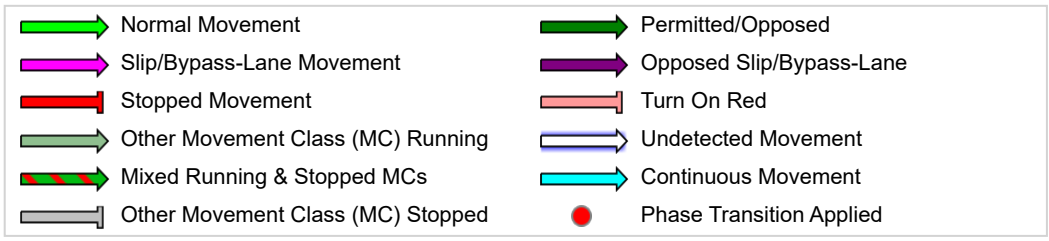
Phase	A	B	C	B1
Phase Change Time (sec)	83	0	15	68
Green Time (sec)	28	6	44	6
Phase Time (sec)	37	15	53	15
Phase Split	31%	13%	44%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Thursday, 21 July 2022 5:01:42 PM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_PM.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Op2 (Site Folder: 2032 Option 2 + Upgrade PM)]

Network: N101 [2032 Option 2 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	282	4.9	282	4.9	0.666	22.9	LOS B	17.5	127.1	0.69	0.71	0.69	40.9
2	T1	1978	4.7	1978	4.7	* 0.666	17.3	LOS B	18.5	134.7	0.71	0.67	0.71	52.1
Approach		2260	4.7	2260	4.7	0.666	18.0	LOS B	18.5	134.7	0.71	0.68	0.71	51.1
North: Pennant Hills Road.														
8	T1	2036	3.3	2036	3.3	0.463	5.5	LOS A	8.9	64.1	0.39	0.36	0.39	63.3
9	R2	216	4.9	216	4.9	* 1.002	111.4	LOS F	11.4	83.1	1.00	1.10	1.72	13.5
Approach		2252	3.5	2252	3.5	1.002	15.6	LOS B	11.4	83.1	0.45	0.43	0.52	53.2
West: Duffy Avenue														
10	L2	144	9.5	144	9.5	0.259	38.4	LOS C	4.0	30.1	0.78	0.76	0.78	30.0
12	R2	187	3.4	187	3.4	* 0.680	60.5	LOS E	6.9	49.4	1.00	0.84	1.03	24.5
Approach		332	6.0	332	6.0	0.680	50.9	LOS D	6.9	49.4	0.91	0.80	0.93	26.6
All Vehicles		4843	4.2	4843	4.2	1.002	19.2	LOS B	18.5	134.7	0.60	0.57	0.64	49.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	56.8	LOS E	0.2	0.2	0.95	0.95	230.7	226.1	0.98
West: Duffy Avenue											
P4	Full	53	56.8	LOS E	0.2	0.2	0.95	0.95	219.8	211.9	0.96
All Pedestrians		105	56.8	LOS E	0.2	0.2	0.95	0.95	225.2	219.0	0.97

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Op2 (Site Folder: 2032 Option 2 + Upgrade PM)] Network: N101 [2032 Option 2 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

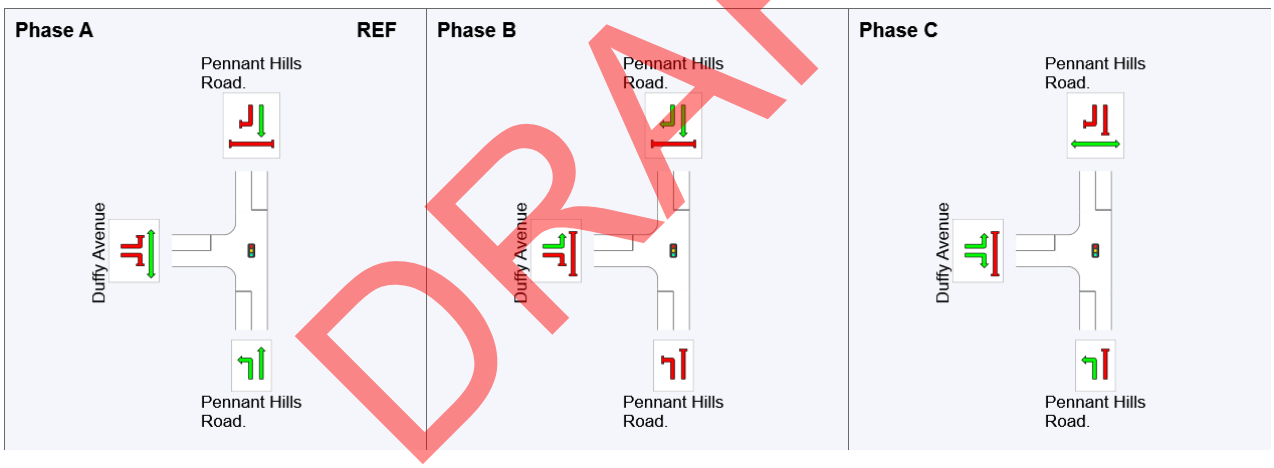
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	79	100
Green Time (sec)	75	15	19
Phase Time (sec)	81	21	23
Phase Split	65%	17%	18%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road - Op 2 (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	35	3.0	35	3.0	0.123	6.3	LOS A	0.3	2.3	0.67	0.64	0.67	37.2
2	T1	36	0.0	36	0.0	0.123	5.9	LOS A	0.3	2.3	0.67	0.64	0.67	37.7
3	R2	26	0.0	26	0.0	0.123	9.0	LOS A	0.3	2.3	0.67	0.64	0.67	34.9
Approach		97	1.1	97	1.1	0.123	6.9	LOS A	0.3	2.3	0.67	0.64	0.67	37.0
East: Duffy Avenue														
4	L2	13	0.0	13	0.0	0.407	3.8	LOS A	1.1	8.3	0.42	0.54	0.42	38.3
5	T1	200	4.2	200	4.2	0.407	3.6	LOS A	1.1	8.3	0.42	0.54	0.42	38.7
6	R2	249	3.4	249	3.4	0.407	6.7	LOS A	1.1	8.3	0.42	0.54	0.42	38.7
Approach		462	3.6	462	3.6	0.407	5.3	LOS A	1.1	8.3	0.42	0.54	0.42	38.7
North: Quarter Sessions Road														
7	L2	212	1.0	212	1.0	0.338	5.2	LOS A	0.9	6.7	0.64	0.64	0.64	35.7
8	T1	58	0.0	58	0.0	0.338	4.9	LOS A	0.9	6.7	0.64	0.64	0.64	38.2
9	R2	36	0.0	36	0.0	0.338	8.1	LOS A	0.9	6.7	0.64	0.64	0.64	38.2
Approach		305	0.7	305	0.7	0.338	5.5	LOS A	0.9	6.7	0.64	0.64	0.64	36.8
West: Duffy Avenue														
10	L2	15	7.1	15	7.1	0.306	4.9	LOS A	0.8	5.7	0.56	0.58	0.56	37.7
11	T1	231	1.4	231	1.4	0.306	4.5	LOS A	0.8	5.7	0.56	0.58	0.56	35.8
12	R2	48	6.5	48	6.5	0.306	7.8	LOS A	0.8	5.7	0.56	0.58	0.56	38.2
Approach		294	2.5	294	2.5	0.306	5.0	LOS A	0.8	5.7	0.56	0.58	0.56	36.6
All Vehicles		1158	2.4	1158	2.4	0.407	5.4	LOS A	1.1	8.3	0.53	0.58	0.53	37.9

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Op 2 (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	131	0.8	131	0.8	0.880	52.2	LOS D	21.6	153.1	1.00	1.01	1.17	21.6
22	T1	452	1.6	452	1.6	* 0.880	48.3	LOS D	21.6	153.1	1.00	1.01	1.17	21.6
23b	R3	73	7.2	73	7.2	0.598	64.7	LOS E	2.6	19.3	1.00	0.80	1.06	18.4
Approach		655	2.1	655	2.1	0.880	50.9	LOS D	21.6	153.1	1.00	0.99	1.15	21.2
East: Duffy Avenue														
4b	L3	107	1.0	107	1.0	0.247	39.4	LOS C	3.0	21.1	0.81	0.76	0.81	30.1
5	T1	245	5.2	245	5.2	0.857	59.0	LOS E	9.0	65.8	1.00	1.01	1.26	13.8
6a	R1	126	2.5	126	2.5	0.595	57.3	LOS E	4.3	30.7	1.00	0.80	1.00	14.4
Approach		479	3.5	479	3.5	0.857	54.2	LOS D	9.0	65.8	0.95	0.90	1.09	18.2
NorthWest: Chilvers Road														
27a	L1	119	2.7	119	2.7	0.477	34.5	LOS C	8.5	60.0	0.83	0.74	0.83	21.7
28	T1	514	0.6	514	0.6	0.477	31.6	LOS C	8.7	60.9	0.85	0.74	0.85	32.7
29b	R3	111	2.9	111	2.9	* 0.885	72.7	LOS F	4.3	31.0	1.00	0.96	1.39	12.9
Approach		743	1.3	743	1.3	0.885	38.2	LOS C	8.7	60.9	0.87	0.77	0.92	28.3
West: Duffy Avenue														
10b	L3	154	2.1	154	2.1	0.306	38.2	LOS C	4.0	28.7	0.80	0.77	0.80	32.0
11	T1	260	0.8	260	0.8	* 0.893	63.6	LOS E	10.2	71.7	1.00	1.07	1.34	25.4
12a	R1	191	0.0	191	0.0	* 0.882	68.4	LOS E	7.4	51.9	1.00	1.03	1.36	30.0
Approach		604	0.9	604	0.9	0.893	58.6	LOS E	10.2	71.7	0.95	0.98	1.21	28.5
All Vehicles		2481	1.8	2481	1.8	0.893	49.6	LOS D	21.6	153.1	0.94	0.90	1.09	25.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
East: Duffy Avenue											
P2	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
NorthWest: Chilvers Road											
P7	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	221.4	220.5	1.00

West: Duffy Avenue										
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
P4B	Slip/ Bypass	53	51.8	LOS E	0.2	0.2	0.95	0.95	208.9	204.3	0.98
All Pedestrians		263	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.5	0.99

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Op 2 (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

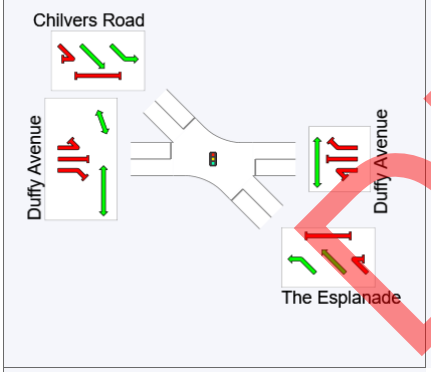
Phase Timing Summary

Phase	A	D	E	G
Phase Change Time (sec)	0	48	70	97
Green Time (sec)	39	13	18	9
Phase Time (sec)	48	22	27	18
Phase Split	42%	19%	23%	16%

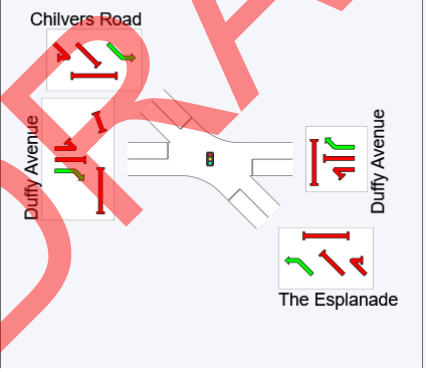
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

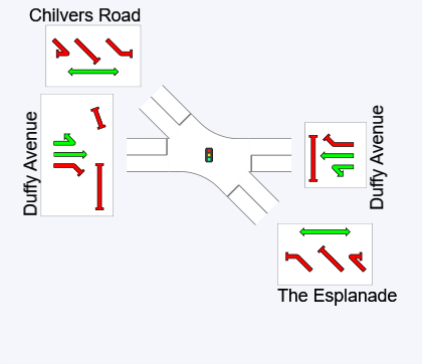
Phase A REF



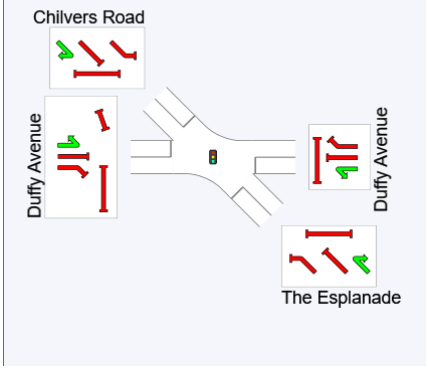
Phase D



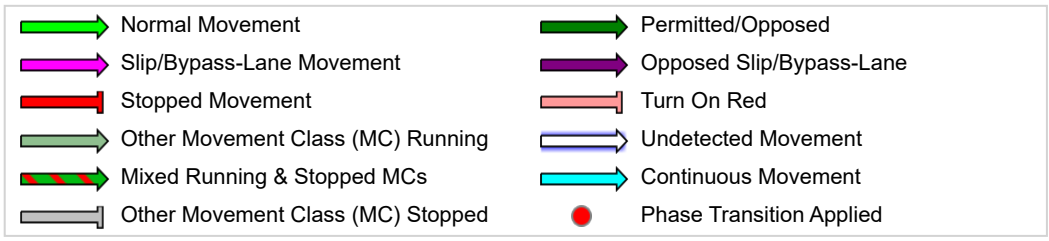
Phase E



Phase G



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Op 2 (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	114	1.9	114	1.9	0.906	70.4	LOS E	14.2	101.2	1.00	0.95	1.18	23.0
3	R2	621	1.9	621	1.9	0.906	71.2	LOS F	14.2	101.2	1.00	0.94	1.18	22.9
Approach		735	1.9	735	1.9	0.906	71.1	LOS F	14.2	101.2	1.00	0.95	1.18	22.9
East: Sefton Road														
4	L2	612	1.2	612	1.2	* 0.721	14.1	LOS A	6.7	47.5	0.67	0.78	0.67	41.6
5	T1	203	1.0	203	1.0	* 0.998	100.3	LOS F	9.6	68.1	0.75	1.05	1.62	22.7
Approach		815	1.2	815	1.2	0.998	35.6	LOS C	9.6	68.1	0.69	0.85	0.91	31.3
West: Sefton Road														
11	T1	158	0.7	158	0.7	0.130	9.2	LOS A	2.2	15.2	0.43	0.36	0.43	44.4
12	R2	141	1.5	141	1.5	* 0.736	36.6	LOS C	3.1	22.2	1.00	0.85	1.14	25.1
Approach		299	1.1	299	1.1	0.736	22.1	LOS B	3.1	22.2	0.70	0.59	0.76	35.9
All Vehicles		1848	1.4	1848	1.4	0.998	47.5	LOS D	14.2	101.2	0.82	0.85	0.99	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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
West: Sefton Road											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.6	0.99

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Op 2 (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

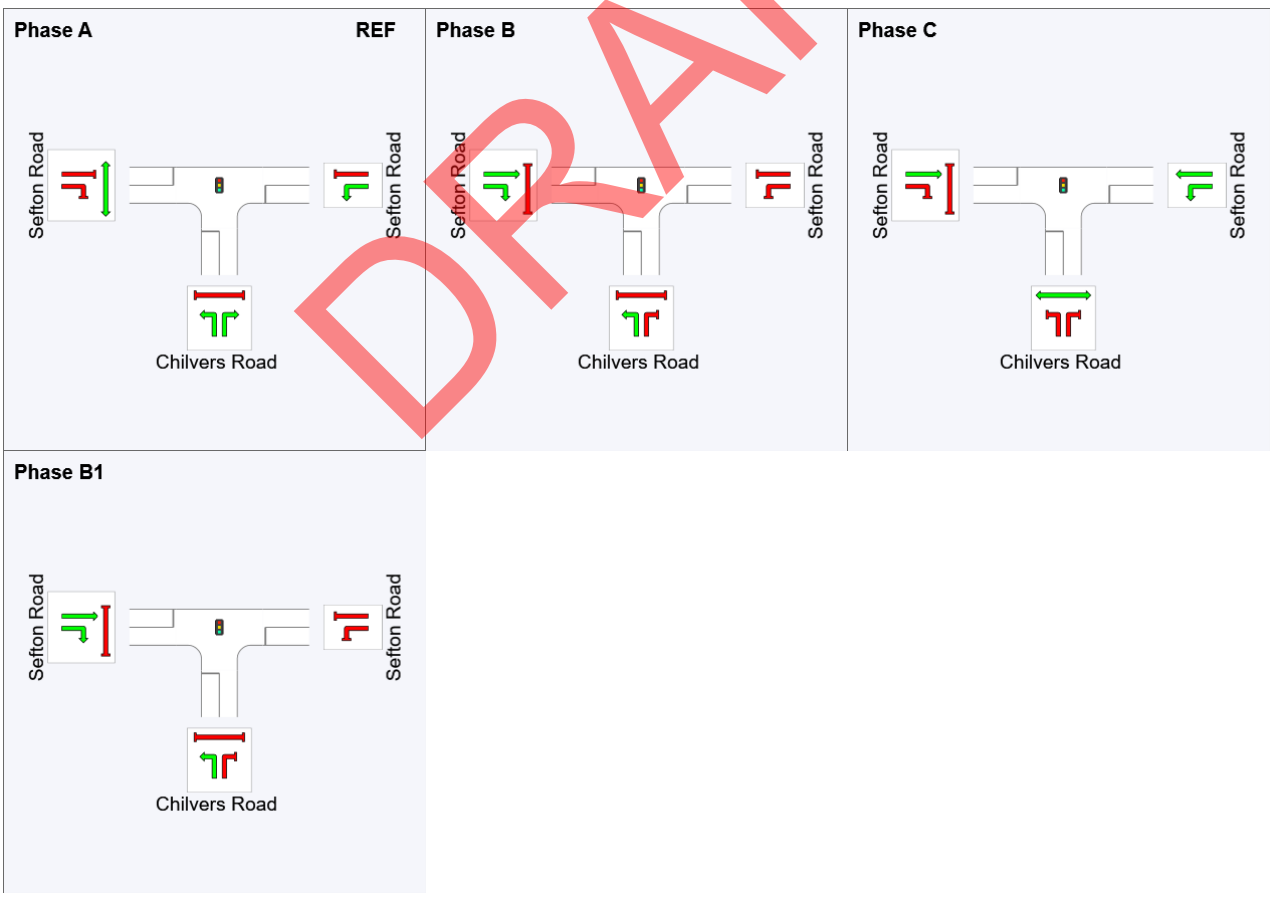
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

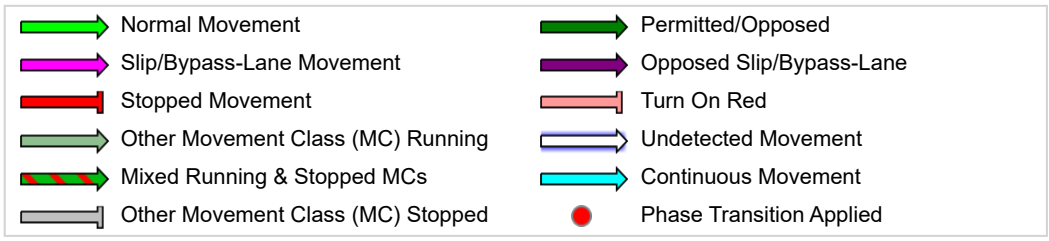
Phase	A	B	C	B1
Phase Change Time (sec)	0	34	49	100
Green Time (sec)	25	6	42	6
Phase Time (sec)	34	15	51	15
Phase Split	30%	13%	44%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Op 2 (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	251	5.5	251	5.5	0.721	24.2	LOS B	19.0	138.4	0.74	0.73	0.74	40.0
2	T1	2132	4.3	2132	4.3	* 0.721	18.7	LOS B	20.3	147.2	0.77	0.72	0.77	51.1
Approach		2382	4.5	2382	4.5	0.721	19.3	LOS B	20.3	147.2	0.77	0.72	0.77	50.3
North: Pennant Hills Road.														
8	T1	1936	3.5	1936	3.5	0.456	6.4	LOS A	8.8	63.7	0.42	0.39	0.42	62.4
9	R2	191	5.5	191	5.5	* 0.984	100.3	LOS F	9.3	67.9	1.00	1.08	1.70	14.7
Approach		2126	3.7	2126	3.7	0.984	14.8	LOS B	9.3	67.9	0.47	0.45	0.54	54.0
West: Duffy Avenue														
10	L2	201	6.8	201	6.8	0.349	37.7	LOS C	5.5	40.6	0.81	0.78	0.81	30.2
12	R2	236	2.7	236	2.7	* 0.776	60.3	LOS E	8.6	61.9	1.00	0.89	1.12	24.5
Approach		437	4.6	437	4.6	0.776	49.9	LOS D	8.6	61.9	0.91	0.84	0.98	26.8
All Vehicles		4945	4.1	4945	4.1	0.984	20.1	LOS B	20.3	147.2	0.65	0.61	0.69	48.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	228.2	226.1	0.99
West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	222.7	219.0	0.98

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Op 2 (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

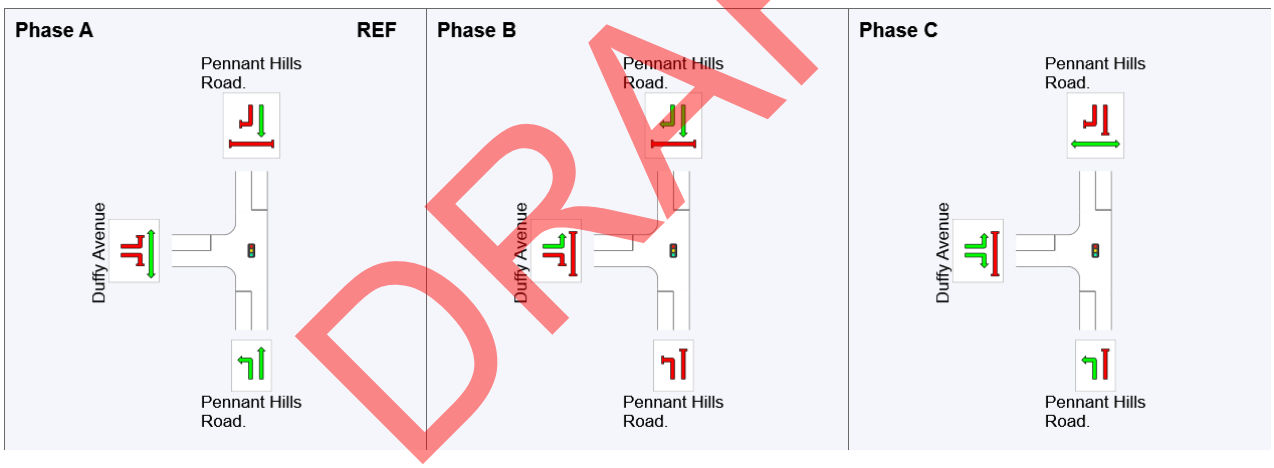
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

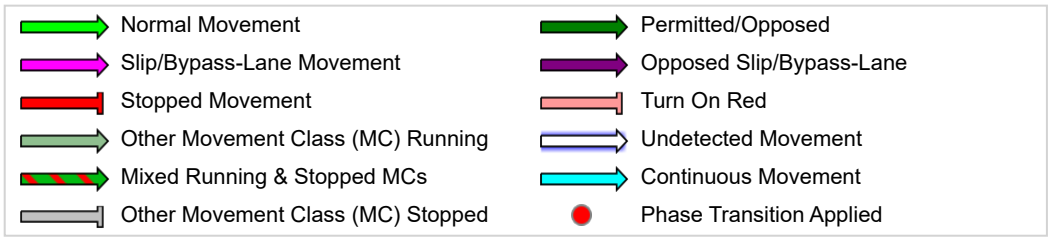
Phase	A	B	C
Phase Change Time (sec)	0	75	94
Green Time (sec)	70	13	20
Phase Time (sec)	76	19	25
Phase Split	63%	16%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road - Op3 (Site Folder: 2032 Option 3 + Upgrade PM)]

Network: N101 [2032 Option 3 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	41	2.6	41	2.6	0.126	7.0	LOS A	0.3	2.4	0.71	0.67	0.71	37.0
2	T1	32	0.0	32	0.0	0.126	6.7	LOS A	0.3	2.4	0.71	0.67	0.71	37.5
3	R2	21	0.0	21	0.0	0.126	9.8	LOS A	0.3	2.4	0.71	0.67	0.71	34.4
Approach		94	1.1	94	1.1	0.126	7.5	LOS A	0.3	2.4	0.71	0.67	0.71	36.8
East: Duffy Avenue														
4	L2	16	0.0	16	0.0	0.456	3.5	LOS A	1.4	9.9	0.37	0.51	0.37	38.4
5	T1	235	3.6	235	3.6	0.456	3.3	LOS A	1.4	9.9	0.37	0.51	0.37	38.7
6	R2	314	2.7	314	2.7	0.456	6.4	LOS A	1.4	9.9	0.37	0.51	0.37	38.7
Approach		564	3.0	564	3.0	0.456	5.0	LOS A	1.4	9.9	0.37	0.51	0.37	38.7
North: Quarter Sessions Road														
7	L2	182	1.2	182	1.2	0.255	4.7	LOS A	0.7	4.8	0.57	0.58	0.57	36.1
8	T1	40	0.0	40	0.0	0.255	4.4	LOS A	0.7	4.8	0.57	0.58	0.57	38.5
9	R2	17	0.0	17	0.0	0.255	7.5	LOS A	0.7	4.8	0.57	0.58	0.57	38.5
Approach		239	0.9	239	0.9	0.255	4.8	LOS A	0.7	4.8	0.57	0.58	0.57	37.0
West: Duffy Avenue														
10	L2	13	8.3	13	8.3	0.278	5.3	LOS A	0.7	5.1	0.59	0.60	0.59	37.6
11	T1	198	1.6	198	1.6	0.278	4.8	LOS A	0.7	5.1	0.59	0.60	0.59	35.7
12	R2	45	7.0	45	7.0	0.278	8.1	LOS A	0.7	5.1	0.59	0.60	0.59	38.2
Approach		256	2.9	256	2.9	0.278	5.4	LOS A	0.7	5.1	0.59	0.60	0.59	36.5
All Vehicles		1153	2.4	1152 N1	2.4	0.456	5.3	LOS A	1.4	9.9	0.49	0.56	0.49	38.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
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 SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Op3 (Site Folder: 2032 Option 3 + Upgrade PM)]

Network: N101 [2032 Option 3 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	174	0.6	174	0.6	* 0.945	72.7	LOS F	25.1	178.0	1.00	1.13	1.34	17.4
22	T1	383	1.9	383	1.9	0.945	68.4	LOS E	25.1	178.0	1.00	1.13	1.34	17.4
23b	R3	66	7.9	66	7.9	0.322	57.8	LOS E	2.2	16.6	0.95	0.76	0.95	19.7
Approach		623	2.2	623	2.2	0.945	68.5	LOS E	25.1	178.0	0.99	1.09	1.30	17.6
East: Duffy Avenue														
4b	L3	128	0.8	128	0.8	0.266	39.3	LOS C	3.8	26.7	0.80	0.76	0.80	30.1
5	T1	286	4.4	286	4.4	* 0.925	69.7	LOS E	11.8	85.5	0.99	1.12	1.39	12.2
6a	R1	102	3.1	102	3.1	0.595	62.2	LOS E	3.7	26.5	1.00	0.79	1.02	13.6
Approach		517	3.3	516 N1	3.3	0.925	60.7	LOS E	11.8	85.5	0.95	0.97	1.17	17.2
NorthWest: Chilvers Road														
27a	L1	91	3.5	91	3.5	0.608	41.7	LOS C	11.1	78.3	0.92	0.81	0.92	19.4
28	T1	621	0.5	621	0.5	0.608	38.4	LOS C	11.1	78.3	0.92	0.80	0.92	30.5
29b	R3	200	1.6	200	1.6	* 0.933	80.6	LOS F	8.3	58.8	1.00	0.97	1.31	11.9
Approach		912	1.0	912	1.0	0.933	48.0	LOS D	11.1	78.3	0.94	0.83	1.00	25.4
West: Duffy Avenue														
10b	L3	153	2.1	153	2.1	0.248	32.7	LOS C	3.7	26.4	0.72	0.75	0.72	33.7
11	T1	186	1.1	186	1.1	0.550	49.4	LOS D	6.2	43.8	0.96	0.79	0.96	28.5
12a	R1	157	0.0	157	0.0	0.895	73.9	LOS F	6.4	45.1	1.00	1.04	1.42	29.1
Approach		496	1.1	496	1.1	0.895	52.0	LOS D	6.4	45.1	0.90	0.86	1.03	30.0
All Vehicles		2547	1.8	2547	1.8	0.945	56.4	LOS D	25.1	178.0	0.95	0.93	1.12	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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
East: Duffy Avenue											
P2	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
NorthWest: Chilvers Road											
P7	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	223.9	220.5	0.98

West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
P4B	Slip/ Bypass	53	54.3	LOS E	0.2	0.2	0.95	0.95	211.4	204.3	0.97
All Pedestrians		263	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.5	0.98

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Op3 (Site Folder: 2032 Option 3 + Upgrade PM)]

Network: N101 [2032 Option 3 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

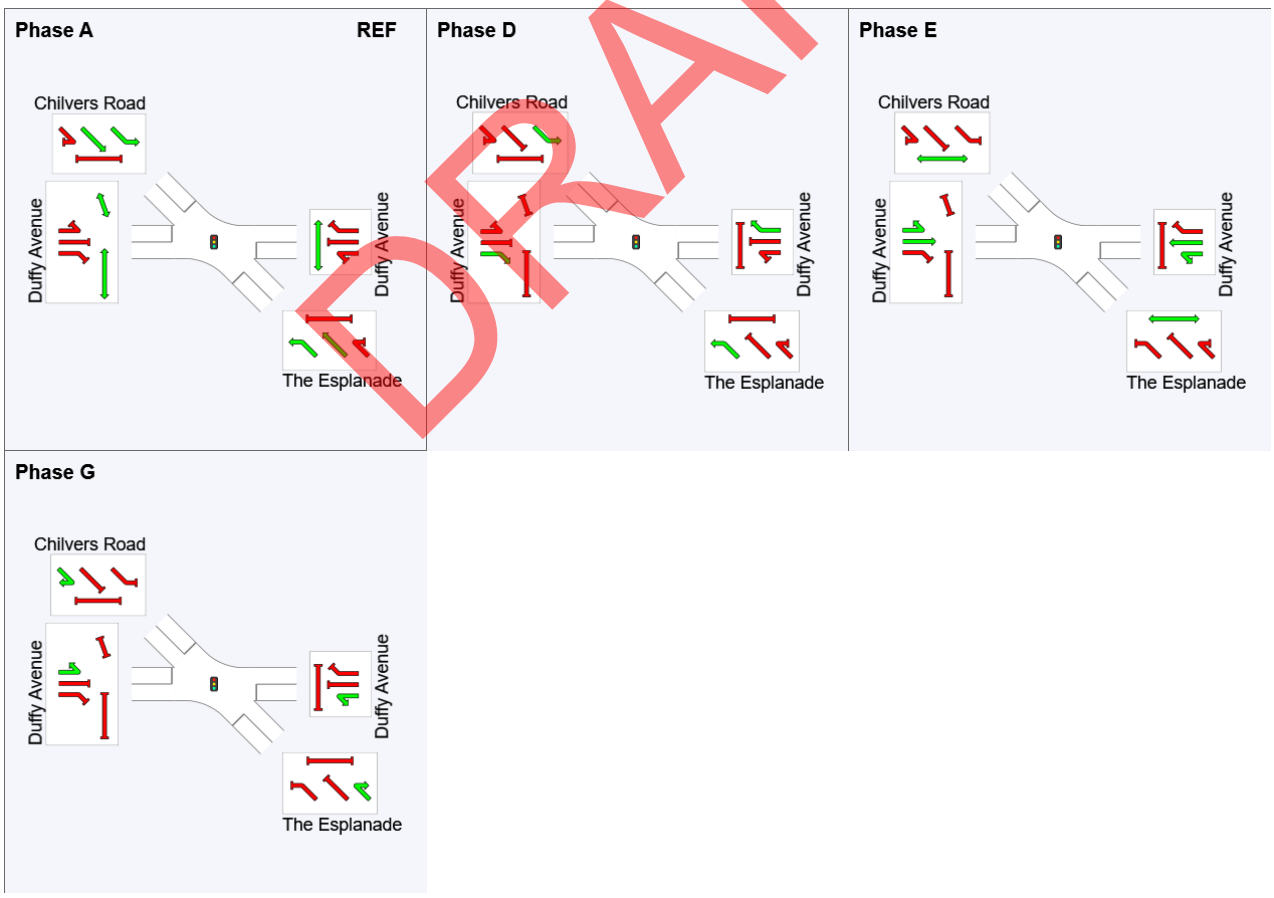
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

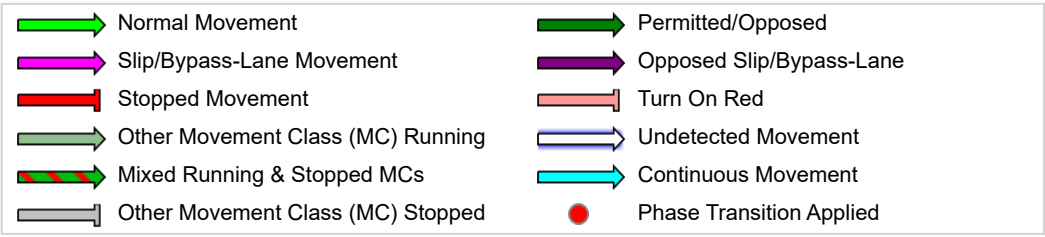
Phase	A	D	E	G
Phase Change Time (sec)	0	45	65	95
Green Time (sec)	36	11	21	16
Phase Time (sec)	45	20	30	25
Phase Split	38%	17%	25%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Op3 (Site Folder: 2032 Option 3 + Upgrade PM)]

Network: N101 [2032 Option 3 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	119	1.8	119	1.8	0.689	47.5	LOS D	10.8	77.1	0.98	0.85	0.98	27.9
3	R2	523	2.2	523	2.2	0.689	48.5	LOS D	10.8	77.1	0.99	0.85	0.99	27.6
Approach		642	2.1	642	2.1	0.689	48.3	LOS D	10.8	77.1	0.99	0.85	0.99	27.7
East: Sefton Road														
4	L2	815	0.9	815	0.9	* 0.829	17.2	LOS B	11.5	81.4	0.77	0.84	0.80	38.8
5	T1	121	1.7	121	1.7	* 1.001	125.0	LOS F	7.4	52.6	1.00	1.20	1.99	19.7
Approach		936	1.0	936	1.0	1.001	31.1	LOS C	11.5	81.4	0.80	0.89	0.95	31.8
West: Sefton Road														
11	T1	91	1.2	91	1.2	0.078	10.5	LOS A	1.3	9.4	0.44	0.36	0.44	43.7
12	R2	101	2.1	101	2.1	* 0.552	35.1	LOS C	2.1	14.9	0.99	0.77	0.99	25.7
Approach		192	1.6	192	1.6	0.552	23.5	LOS B	2.1	14.9	0.73	0.58	0.73	34.9
All Vehicles		1769	1.5	1769	1.5	1.001	36.5	LOS C	11.5	81.4	0.86	0.84	0.94	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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
West: Sefton Road											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.6	0.98

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Op3 (Site Folder: 2032 Option 3 + Upgrade PM)]

Network: N101 [2032 Option 3 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

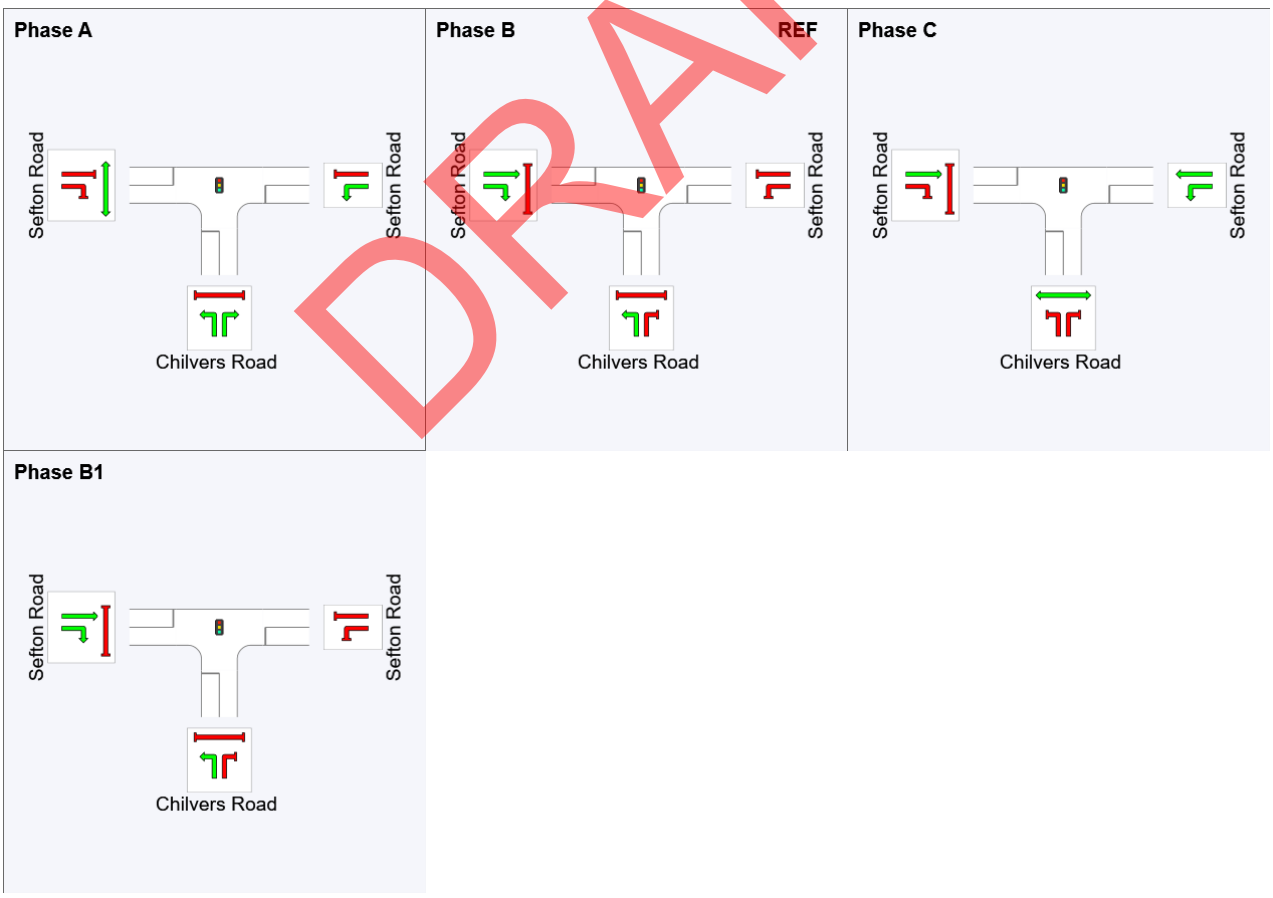
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase B
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

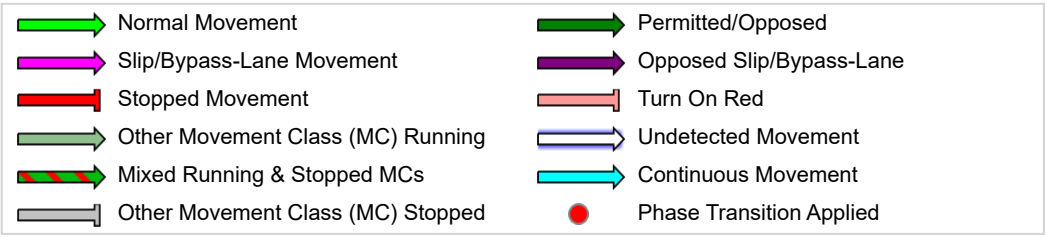
Phase	A	B	C	B1
Phase Change Time (sec)	81	0	15	66
Green Time (sec)	30	6	42	6
Phase Time (sec)	39	15	51	15
Phase Split	33%	13%	43%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Op3 (Site Folder: 2032 Option 3 + Upgrade PM)]

Network: N101 [2032 Option 3 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	282	4.9	282	4.9	0.666	22.9	LOS B	17.4	127.1	0.69	0.71	0.69	40.9
2	T1	1977	4.7	1977	4.7	* 0.666	17.3	LOS B	18.5	134.6	0.71	0.67	0.71	52.1
Approach		2259	4.7	2259	4.7	0.666	18.0	LOS B	18.5	134.6	0.71	0.68	0.71	51.1
North: Pennant Hills Road.														
8	T1	2036	3.3	2036	3.3	0.463	5.5	LOS A	8.9	64.1	0.39	0.36	0.39	63.3
9	R2	216	4.9	216	4.9	* 1.002	111.4	LOS F	11.4	83.1	1.00	1.10	1.72	13.5
Approach		2252	3.5	2252	3.5	1.002	15.6	LOS B	11.4	83.1	0.45	0.43	0.52	53.2
West: Duffy Avenue														
10	L2	144	9.5	144	9.5	0.259	38.4	LOS C	4.0	30.1	0.78	0.76	0.78	30.0
12	R2	187	3.4	187	3.4	* 0.680	60.5	LOS E	6.9	49.4	1.00	0.84	1.03	24.5
Approach		332	6.0	332	6.0	0.680	50.9	LOS D	6.9	49.4	0.91	0.80	0.93	26.6
All Vehicles		4842	4.2	4842	4.2	1.002	19.2	LOS B	18.5	134.6	0.60	0.57	0.64	49.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	56.8	LOS E	0.2	0.2	0.95	0.95	230.7	226.1	0.98
West: Duffy Avenue											
P4	Full	53	56.8	LOS E	0.2	0.2	0.95	0.95	219.8	211.9	0.96
All Pedestrians		105	56.8	LOS E	0.2	0.2	0.95	0.95	225.2	219.0	0.97

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Op3 (Site Folder: 2032 Option 3 + Upgrade PM)] Network: N101 [2032 Option 3 + Upgrade PM (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 125 seconds (Site User-Given Phase Times)

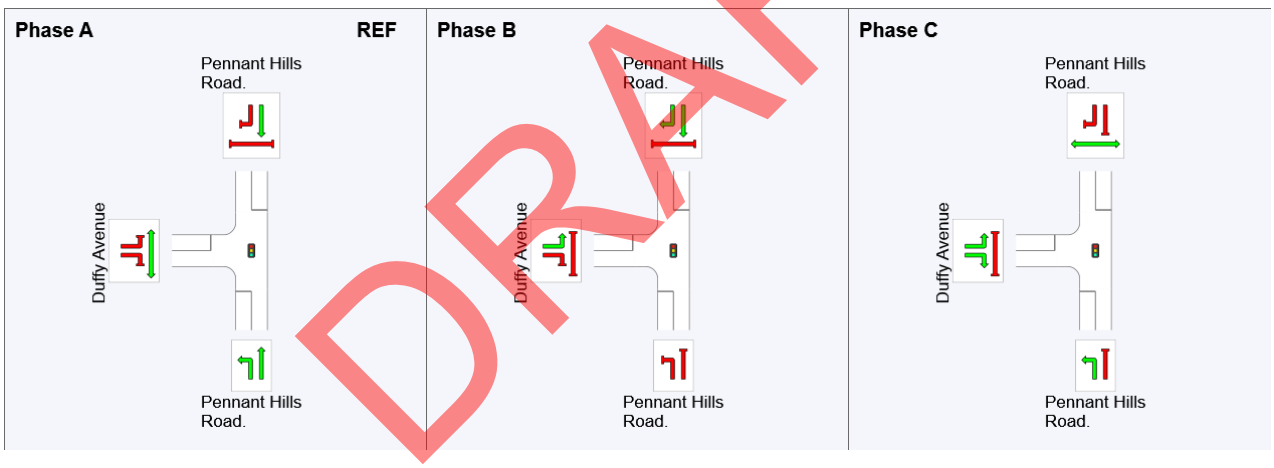
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	79	100
Green Time (sec)	75	15	19
Phase Time (sec)	81	21	23
Phase Split	65%	17%	18%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road - Op 3 (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	45	2.3	45	2.3	0.138	6.6	LOS A	0.4	2.6	0.69	0.66	0.69	37.1
2	T1	34	0.0	34	0.0	0.138	6.2	LOS A	0.4	2.6	0.69	0.66	0.69	37.6
3	R2	27	0.0	27	0.0	0.138	9.4	LOS A	0.4	2.6	0.69	0.66	0.69	34.7
Approach		106	1.0	106	1.0	0.138	7.2	LOS A	0.4	2.6	0.69	0.66	0.69	36.9
East: Duffy Avenue														
4	L2	13	0.0	13	0.0	0.435	3.6	LOS A	1.3	9.2	0.40	0.53	0.40	38.3
5	T1	214	3.9	214	3.9	0.435	3.4	LOS A	1.3	9.2	0.40	0.53	0.40	38.7
6	R2	291	2.9	291	2.9	0.435	6.6	LOS A	1.3	9.2	0.40	0.53	0.40	38.7
Approach		517	3.3	517	3.3	0.435	5.2	LOS A	1.3	9.2	0.40	0.53	0.40	38.7
North: Quarter Sessions Road														
7	L2	252	0.8	252	0.8	0.360	5.3	LOS A	1.0	7.3	0.65	0.64	0.65	35.8
8	T1	61	0.0	61	0.0	0.360	5.0	LOS A	1.0	7.3	0.65	0.64	0.65	38.3
9	R2	11	0.0	11	0.0	0.360	8.2	LOS A	1.0	7.3	0.65	0.64	0.65	38.3
Approach		323	0.7	323	0.7	0.360	5.3	LOS A	1.0	7.3	0.65	0.64	0.65	36.6
West: Duffy Avenue														
10	L2	11	10.0	11	10.0	0.316	5.3	LOS A	0.8	5.9	0.60	0.61	0.60	37.6
11	T1	235	1.3	235	1.3	0.316	4.8	LOS A	0.8	5.9	0.60	0.61	0.60	35.7
12	R2	48	6.5	48	6.5	0.316	8.1	LOS A	0.8	5.9	0.60	0.61	0.60	38.2
Approach		294	2.5	294	2.5	0.316	5.3	LOS A	0.8	5.9	0.60	0.61	0.60	36.4
All Vehicles		1240	2.2	1240	2.2	0.435	5.4	LOS A	1.3	9.2	0.54	0.59	0.54	37.8

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Op 3 (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	117	0.9	117	0.9	0.933	66.2	LOS E	24.1	170.6	1.00	1.12	1.31	18.6
22	T1	453	1.6	453	1.6	* 0.933	62.1	LOS E	24.1	170.6	1.00	1.12	1.31	18.6
23b	R3	73	7.2	73	7.2	0.414	58.8	LOS E	2.4	18.0	0.97	0.77	0.97	19.5
Approach		642	2.1	642	2.1	0.933	62.5	LOS E	24.1	170.6	1.00	1.08	1.27	18.7
East: Duffy Avenue														
4b	L3	106	1.0	106	1.0	0.240	37.7	LOS C	2.6	18.4	0.70	0.73	0.70	30.6
5	T1	241	5.2	241	5.2	0.834	55.4	LOS D	8.5	62.2	0.99	0.94	1.16	14.5
6a	R1	126	2.5	126	2.5	0.644	59.1	LOS E	4.4	31.2	1.00	0.82	1.05	14.1
Approach		474	3.6	474	3.6	0.834	52.4	LOS D	8.5	62.2	0.93	0.86	1.03	18.6
NorthWest: Chilvers Road														
27a	L1	119	2.7	119	2.7	0.510	37.0	LOS C	8.9	63.2	0.88	0.78	0.88	20.8
28	T1	506	0.6	506	0.6	0.510	34.2	LOS C	9.0	63.3	0.89	0.77	0.89	31.8
29b	R3	176	1.8	176	1.8	* 0.968	91.1	LOS F	8.0	57.1	1.00	1.13	1.68	10.9
Approach		801	1.2	801	1.2	0.968	47.1	LOS D	9.0	63.3	0.91	0.85	1.06	25.1
West: Duffy Avenue														
10b	L3	193	1.6	193	1.6	0.344	35.7	LOS C	4.9	34.8	0.79	0.78	0.79	32.8
11	T1	260	0.8	260	0.8	* 0.912	66.7	LOS E	10.5	73.8	1.00	1.10	1.40	24.8
12a	R1	193	0.0	193	0.0	* 0.966	85.9	LOS F	8.6	60.0	1.00	1.19	1.64	27.2
Approach		645	0.8	645	0.8	0.966	63.2	LOS E	10.5	73.8	0.94	1.03	1.29	27.5
All Vehicles		2562	1.8	2562	1.8	0.968	56.0	LOS D	24.1	170.6	0.94	0.96	1.16	23.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
East: Duffy Avenue											
P2	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
NorthWest: Chilvers Road											
P7	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	221.4	220.5	1.00

West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
P4B	Slip/ Bypass	53	51.8	LOS E	0.2	0.2	0.95	0.95	208.9	204.3	0.98
All Pedestrians		263	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.5	0.99

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road - Op 3 (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

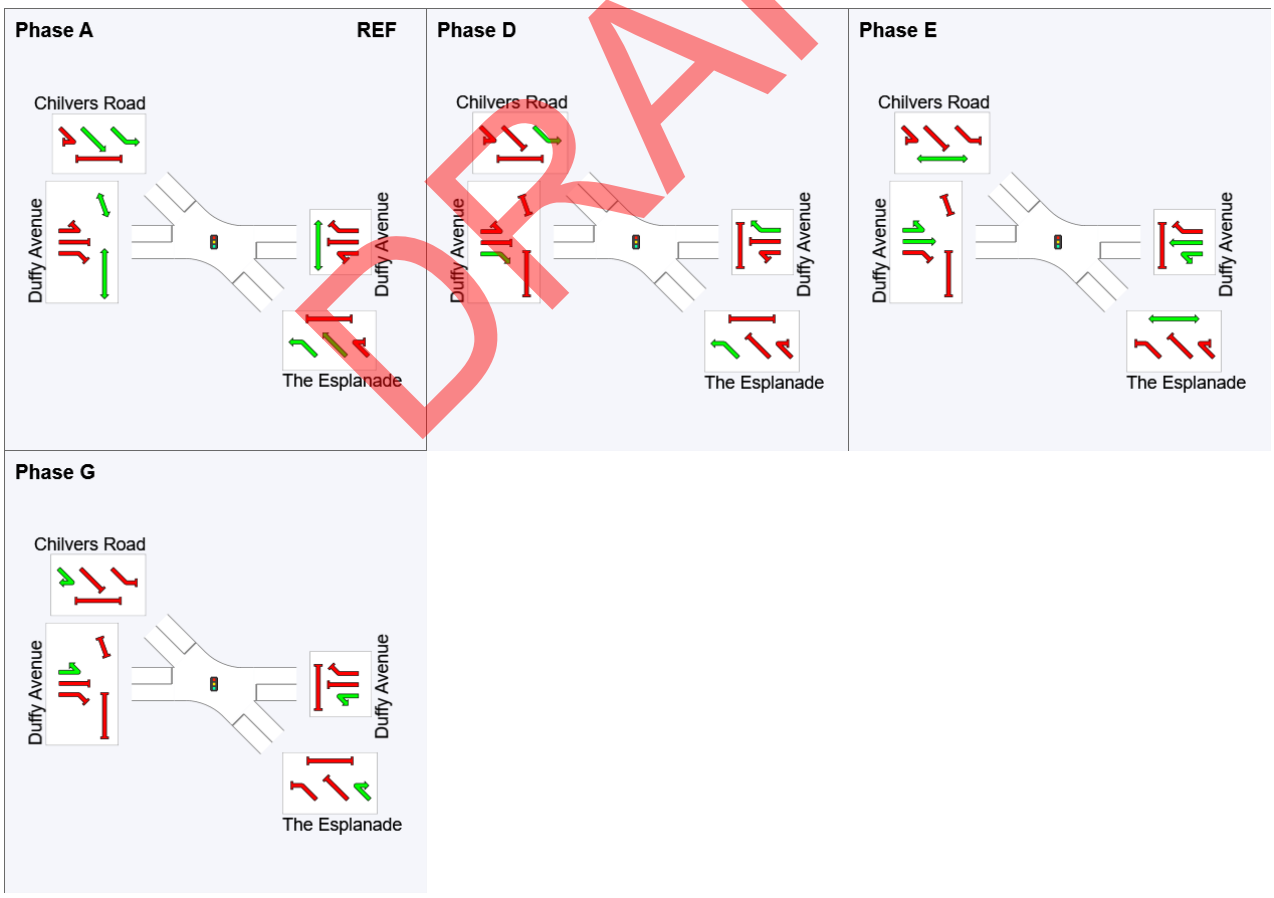
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

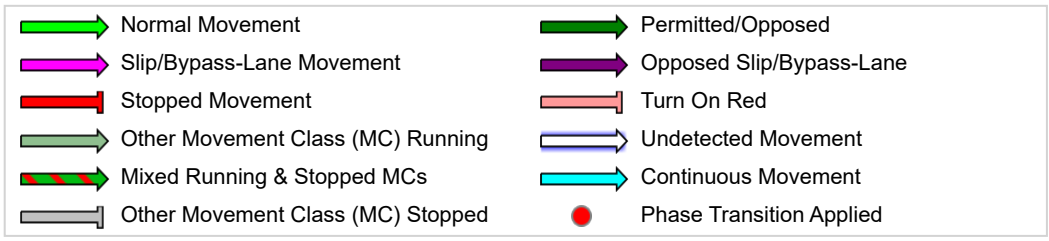
Phase	A	D	E	G
Phase Change Time (sec)	0	45	66	93
Green Time (sec)	36	12	18	13
Phase Time (sec)	45	21	27	22
Phase Split	39%	18%	23%	19%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Copy - Conversion - Op 3 (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	122	1.7	122	1.7	* 0.953	78.8	LOS F	16.1	114.3	1.00	1.00	1.29	21.7
3	R2	652	1.8	652	1.8	0.953	79.5	LOS F	16.1	114.3	1.00	1.00	1.29	21.6
Approach		774	1.8	774	1.8	0.953	79.4	LOS F	16.1	114.3	1.00	1.00	1.29	21.6
East: Sefton Road														
4	L2	647	1.1	647	1.1	0.730	14.4	LOS A	7.3	51.8	0.69	0.79	0.69	41.4
5	T1	169	1.2	169	1.2	* 0.943	74.8	LOS F	6.9	48.5	0.74	0.93	1.42	26.9
Approach		817	1.2	817	1.2	0.943	26.9	LOS B	7.3	51.8	0.70	0.82	0.84	35.0
West: Sefton Road														
11	T1	128	0.8	128	0.8	0.106	9.0	LOS A	1.7	12.1	0.42	0.35	0.42	44.5
12	R2	162	1.3	162	1.3	0.844	41.1	LOS C	3.9	27.6	1.00	0.93	1.30	23.7
Approach		291	1.1	291	1.1	0.844	26.9	LOS B	3.9	27.6	0.75	0.67	0.91	33.2
All Vehicles		1881	1.4	1881	1.4	0.953	48.5	LOS D	16.1	114.3	0.83	0.87	1.04	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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
West: Sefton Road											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.6	0.99

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Copy - Conversion - Op 3 (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

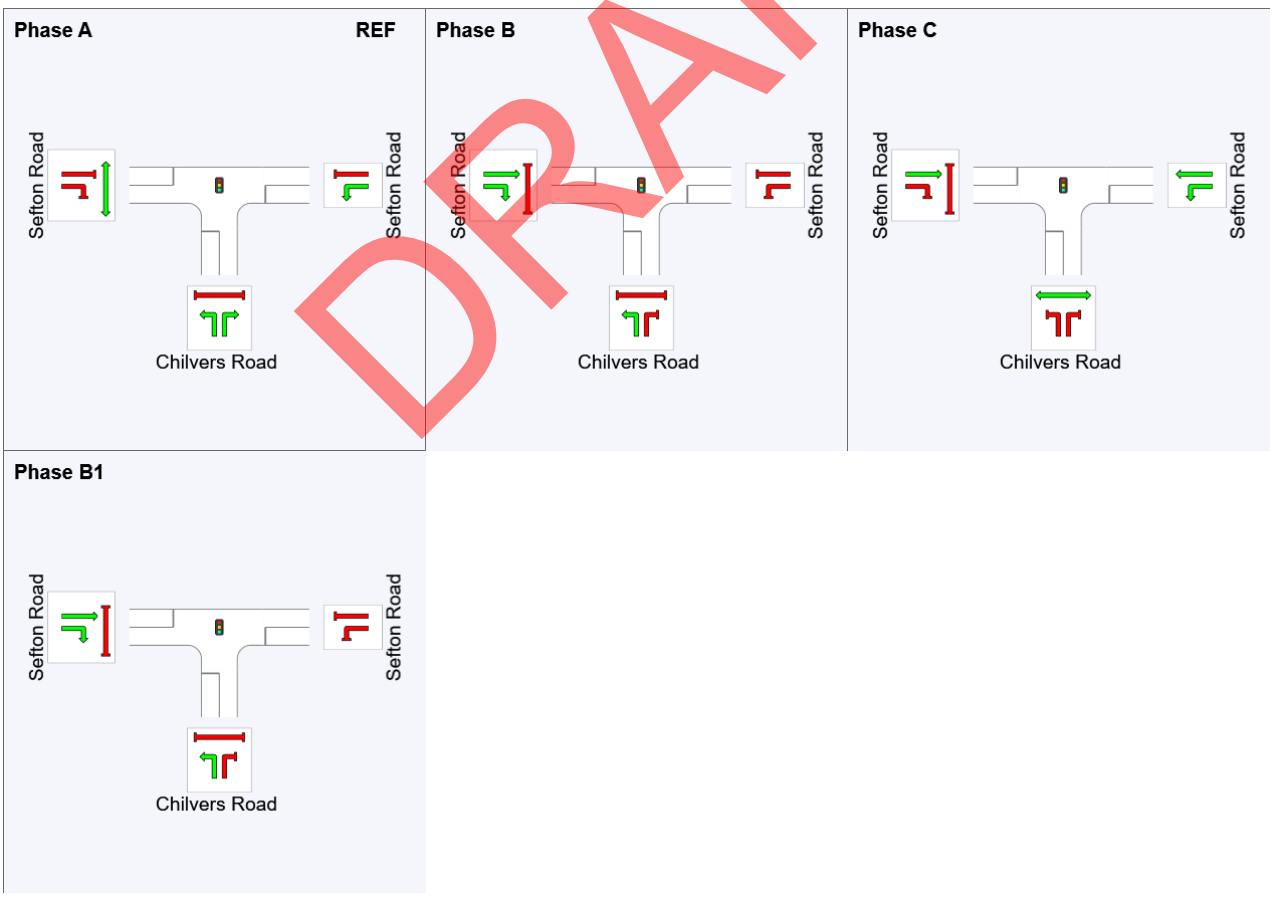
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

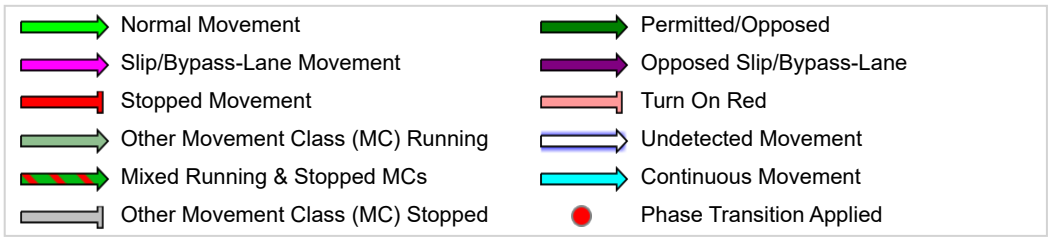
Phase	A	B	C	B1
Phase Change Time (sec)	0	34	49	100
Green Time (sec)	25	6	42	6
Phase Time (sec)	34	15	51	15
Phase Split	30%	13%	44%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Op 3 (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	251	5.5	251	5.5	0.782	28.1	LOS B	20.5	149.4	0.83	0.80	0.83	36.9
2	T1	2132	4.3	2132	4.3	* 0.782	22.3	LOS B	21.6	157.1	0.86	0.79	0.86	48.7
Approach		2382	4.5	2382	4.5	0.782	22.9	LOS B	21.6	157.1	0.85	0.79	0.85	47.8
North: Pennant Hills Road.														
8	T1	1936	3.5	1936	3.5	0.463	6.7	LOS A	8.9	63.8	0.44	0.40	0.44	62.1
9	R2	191	5.5	191	5.5	* 0.766	62.4	LOS E	6.8	49.8	1.00	0.87	1.14	21.0
Approach		2126	3.7	2126	3.7	0.766	11.6	LOS A	8.9	63.8	0.49	0.44	0.50	56.7
West: Duffy Avenue														
10	L2	201	6.8	201	6.8	0.318	24.1	LOS B	3.7	27.1	0.56	0.70	0.56	35.1
12	R2	237	2.7	237	2.7	* 0.787	37.7	LOS C	7.1	51.1	0.89	0.82	0.93	30.2
Approach		438	4.6	438	4.6	0.787	31.5	LOS C	7.1	51.1	0.74	0.76	0.76	32.3
All Vehicles		4946	4.1	4946	4.1	0.787	18.8	LOS B	21.6	157.1	0.69	0.64	0.70	49.4

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	225.7	226.1	1.00
West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	220.2	219.0	0.99

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road. - Op 3 (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

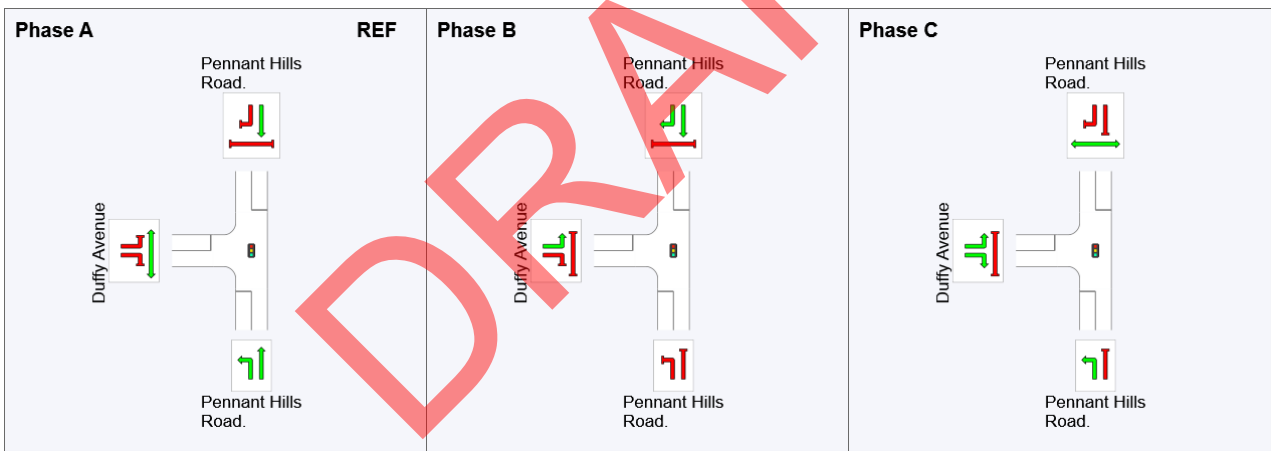
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	3	71	93
Green Time (sec)	62	16	19
Phase Time (sec)	68	22	25
Phase Split	59%	19%	22%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road (Site Folder: Base WE)]

Network: N101 [Base WE (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	27	3.8	27	3.8	0.090	5.2	LOS A	0.2	1.6	0.56	0.59	0.56	37.3
2	T1	13	0.0	13	0.0	0.090	4.8	LOS A	0.2	1.6	0.56	0.59	0.56	37.8
3	R2	41	0.0	41	0.0	0.090	8.0	LOS A	0.2	1.6	0.56	0.59	0.56	35.1
Approach		81	1.3	81	1.3	0.090	6.5	LOS A	0.2	1.6	0.56	0.59	0.56	36.6
East: Duffy Avenue														
4	L2	16	0.0	16	0.0	0.274	2.8	LOS A	0.7	5.0	0.20	0.44	0.20	38.7
5	T1	205	4.1	205	4.1	0.274	2.6	LOS A	0.7	5.0	0.20	0.44	0.20	39.1
6	R2	146	5.8	146	5.8	0.274	5.8	LOS A	0.7	5.0	0.20	0.44	0.20	39.1
Approach		367	4.6	367	4.6	0.274	3.9	LOS A	0.7	5.0	0.20	0.44	0.20	39.1
North: Quarter Sessions Road														
7	L2	149	1.4	149	1.4	0.192	4.9	LOS A	0.5	3.3	0.57	0.59	0.57	36.0
8	T1	12	0.0	12	0.0	0.192	4.6	LOS A	0.5	3.3	0.57	0.59	0.57	38.4
9	R2	13	0.0	13	0.0	0.192	7.8	LOS A	0.5	3.3	0.57	0.59	0.57	38.4
Approach		174	1.2	174	1.2	0.192	5.1	LOS A	0.5	3.3	0.57	0.59	0.57	36.6
West: Duffy Avenue														
10	L2	15	7.1	15	7.1	0.263	4.1	LOS A	0.6	4.6	0.43	0.47	0.43	38.1
11	T1	248	1.3	248	1.3	0.263	3.6	LOS A	0.6	4.6	0.43	0.47	0.43	36.5
12	R2	20	15.8	20	15.8	0.263	7.0	LOS A	0.6	4.6	0.43	0.47	0.43	38.6
Approach		283	2.6	283	2.6	0.263	3.9	LOS A	0.6	4.6	0.43	0.47	0.43	36.9
All Vehicles		905	3.0	905	3.0	0.274	4.4	LOS A	0.7	5.0	0.37	0.49	0.37	38.1

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: Base WE)]

Network: N101 [Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	92	1.1	92	1.1	* 0.859	51.6	LOS D	16.5	117.6	1.00	1.00	1.17	21.6
22	T1	380	1.9	380	1.9	0.859	48.0	LOS D	16.5	117.6	1.00	1.00	1.17	21.6
23b	R3	57	9.3	57	9.3	0.340	56.5	LOS E	1.8	13.7	0.96	0.76	0.96	19.9
Approach		528	2.6	528	2.6	0.859	49.5	LOS D	16.5	117.6	1.00	0.98	1.15	21.4
East: Duffy Avenue														
4b	L3	92	1.1	92	1.1	0.839	59.4	LOS E	9.2	67.1	1.00	1.00	1.23	25.6
5	T1	167	7.5	167	7.5	* 0.839	54.2	LOS D	9.2	67.1	1.00	1.00	1.23	14.5
6a	R1	81	3.9	81	3.9	0.369	52.9	LOS D	2.5	18.4	0.96	0.76	0.96	15.2
Approach		340	5.0	340	5.0	0.839	55.3	LOS D	9.2	67.1	0.99	0.94	1.17	18.6
NorthWest: Chilvers Road														
27a	L1	93	3.4	93	3.4	0.497	39.0	LOS C	7.6	53.7	0.88	0.77	0.88	20.2
28	T1	456	0.7	456	0.7	0.497	35.3	LOS C	7.6	53.7	0.88	0.76	0.88	31.4
29b	R3	155	2.0	155	2.0	* 0.884	70.2	LOS E	5.9	42.0	1.00	1.01	1.43	13.2
Approach		703	1.3	703	1.3	0.884	43.5	LOS D	7.6	53.7	0.91	0.81	1.01	26.3
West: Duffy Avenue														
10b	L3	201	1.6	201	1.6	0.353	33.9	LOS C	4.9	34.7	0.78	0.78	0.78	33.3
11	T1	207	1.0	207	1.0	0.620	46.4	LOS D	6.5	45.6	0.98	0.81	0.98	29.3
12a	R1	161	0.0	161	0.0	0.713	56.9	LOS E	5.4	37.9	1.00	0.87	1.10	32.1
Approach		569	0.9	569	0.9	0.713	45.0	LOS D	6.5	45.6	0.92	0.81	0.94	31.5
All Vehicles		2141	2.1	2141	2.1	0.884	47.2	LOS D	16.5	117.6	0.95	0.87	1.05	25.9

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	216.3	217.2	1.00
East: Duffy Avenue											
P2	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	212.3	211.9	1.00
NorthWest: Chilvers Road											
P7	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	218.9	220.5	1.01
West: Duffy Avenue											

P4	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	214.8	215.2	1.00
P4B	Slip/ Bypass	53	49.3	LOS E	0.2	0.2	0.95	0.95	206.4	204.3	0.99
All Pedestrians		263	49.3	LOS E	0.2	0.2	0.95	0.95	213.7	213.8	1.00

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

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: Base WE)]

Network: N101 [Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

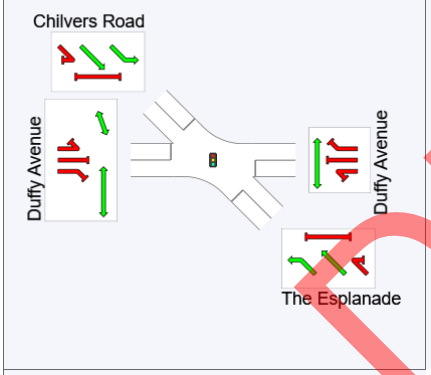
Phase Timing Summary

Phase	A	D	E	G
Phase Change Time (sec)	0	40	62	90
Green Time (sec)	31	13	19	12
Phase Time (sec)	40	22	27	21
Phase Split	36%	20%	25%	19%

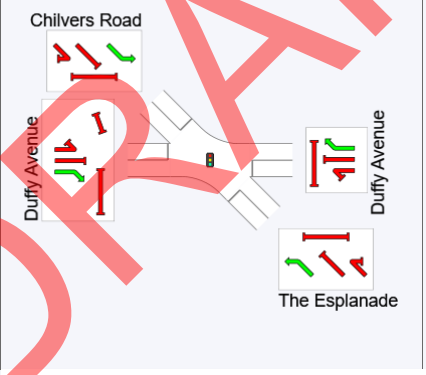
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

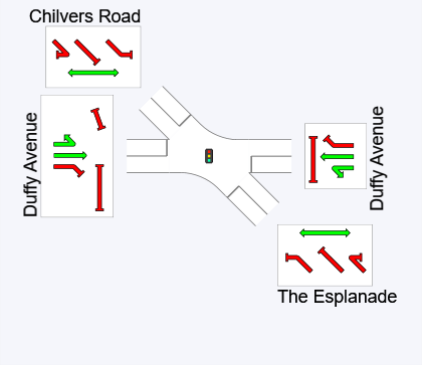
Phase A **REF**



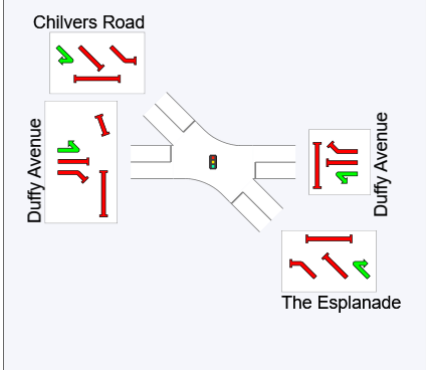
Phase D



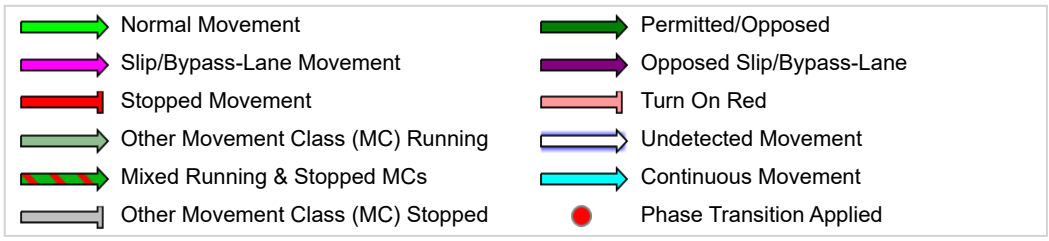
Phase E



Phase G



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Thursday, 21 July 2022 3:57:14 PM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 14 [Chilvers Road / Sefton Road (Site Folder: Base WE)]

Network: N101 [Base WE (Network Folder: General)]

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

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	79	2.7	79	2.7	0.357	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
3	R2	574	2.0	574	2.0	0.357	4.7	LOS A	0.0	0.0	0.00	0.53	0.00	45.8
Approach		653	2.1	653	2.1	0.357	4.7	NA	0.0	0.0	0.00	0.53	0.00	45.8
East: Sefton Road														
4	L2	631	1.2	631	1.2	0.342	5.9	LOS A	0.0	0.0	0.00	0.53	0.00	50.9
5	T1	53	4.0	53	4.0	0.066	7.4	LOS A	0.1	0.7	0.53	0.69	0.53	52.3
Approach		683	1.4	683	1.4	0.342	6.0	LOS A	0.1	0.7	0.04	0.54	0.04	51.1
West: Sefton Road														
11	T1	60	1.8	60	1.8	0.339	7.4	LOS A	0.6	3.9	0.70	0.90	0.88	42.1
12	R2	82	2.6	82	2.6	0.339	17.7	LOS B	0.6	3.9	0.70	0.90	0.88	36.7
Approach		142	2.2	142	2.2	0.339	13.3	LOS A	0.6	3.9	0.70	0.90	0.88	39.7
All Vehicles		1478	1.8	1478	1.8	0.357	6.1	NA	0.6	3.9	0.09	0.57	0.10	46.9

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

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: Base WE)]

Network: N101 [Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	226	6.0	226	6.0	0.700	26.1	LOS B	17.2	125.6	0.77	0.75	0.77	38.5
2	T1	1936	4.8	1936	4.8	* 0.700	20.1	LOS B	18.1	131.7	0.79	0.73	0.79	50.2
Approach		2162	4.9	2162	4.9	0.700	20.7	LOS B	18.1	131.7	0.79	0.73	0.79	49.3
North: Pennant Hills Road.														
8	T1	1713	3.9	1713	3.9	0.421	7.1	LOS A	7.9	57.0	0.44	0.40	0.44	61.6
9	R2	135	7.8	135	7.8	* 0.678	62.5	LOS E	4.7	35.2	1.00	0.83	1.08	21.0
Approach		1847	4.2	1847	4.2	0.678	11.2	LOS A	7.9	57.0	0.48	0.43	0.49	57.3
West: Duffy Avenue														
10	L2	164	8.3	164	8.3	0.269	33.6	LOS C	4.0	30.3	0.76	0.76	0.76	31.5
12	R2	225	2.8	225	2.8	* 0.678	53.3	LOS D	7.4	53.4	0.99	0.84	1.01	26.1
Approach		389	5.1	389	5.1	0.678	45.0	LOS D	7.4	53.4	0.89	0.81	0.91	28.1
All Vehicles		4399	4.6	4399	4.6	0.700	18.9	LOS B	18.1	131.7	0.67	0.61	0.67	49.5

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	225.7	226.1	1.00
West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	220.2	219.0	0.99

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: Base WE)]

Network: N101 [Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

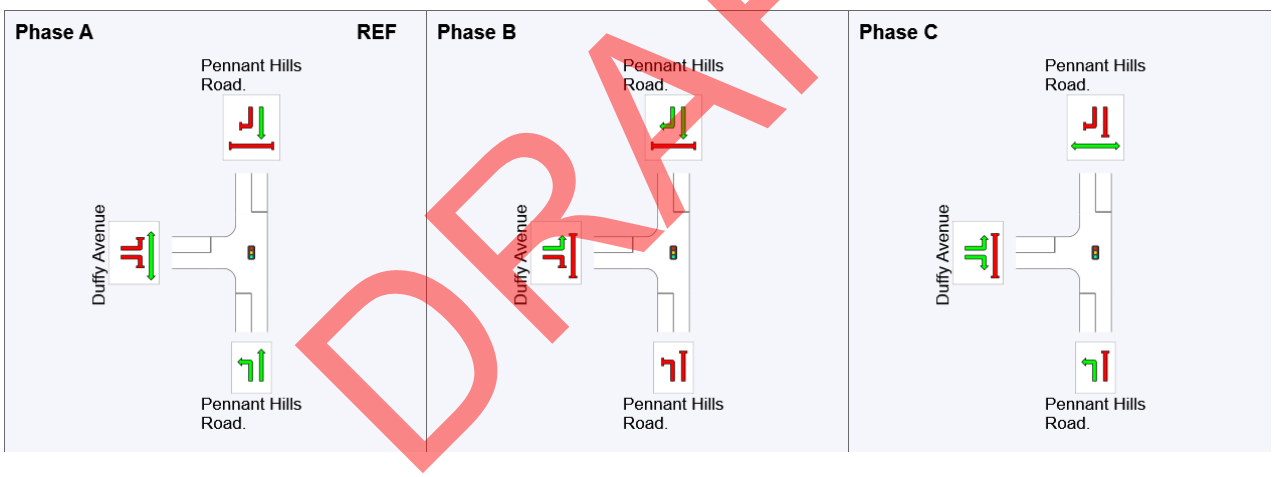
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	69	88
Green Time (sec)	63	13	21
Phase Time (sec)	69	19	27
Phase Split	60%	17%	23%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	55	1.9	55	1.9	0.124	5.5	LOS A	0.3	2.3	0.60	0.59	0.60	37.5
2	T1	29	0.0	29	0.0	0.124	5.1	LOS A	0.3	2.3	0.60	0.59	0.60	38.0
3	R2	24	0.0	24	0.0	0.124	8.3	LOS A	0.3	2.3	0.60	0.59	0.60	35.4
Approach		108	1.0	108	1.0	0.124	6.0	LOS A	0.3	2.3	0.60	0.59	0.60	37.4
East: Duffy Avenue														
4	L2	8	0.0	8	0.0	0.306	3.0	LOS A	0.8	5.7	0.26	0.46	0.26	38.6
5	T1	206	4.1	201	4.0	0.306	2.8	LOS A	0.8	5.7	0.26	0.46	0.26	38.9
6	R2	187	4.5	183	4.4	0.306	6.0	LOS A	0.8	5.7	0.26	0.46	0.26	38.9
Approach		402	4.2	392 N1	4.1	0.306	4.3	LOS A	0.8	5.7	0.26	0.46	0.26	38.9
North: Quarter Sessions Road														
7	L2	181	1.2	181	1.2	0.240	5.0	LOS A	0.6	4.4	0.59	0.61	0.59	36.0
8	T1	25	0.0	25	0.0	0.240	4.7	LOS A	0.6	4.4	0.59	0.61	0.59	38.4
9	R2	11	0.0	11	0.0	0.240	7.9	LOS A	0.6	4.4	0.59	0.61	0.59	38.4
Approach		217	1.0	217	1.0	0.240	5.1	LOS A	0.6	4.4	0.59	0.61	0.59	36.6
West: Duffy Avenue														
10	L2	11	10.0	11	10.0	0.284	4.4	LOS A	0.7	5.1	0.48	0.51	0.48	37.9
11	T1	253	1.3	253	1.3	0.284	3.9	LOS A	0.7	5.1	0.48	0.51	0.48	36.2
12	R2	32	10.0	32	10.0	0.284	7.2	LOS A	0.7	5.1	0.48	0.51	0.48	38.5
Approach		295	2.5	295	2.5	0.284	4.3	LOS A	0.7	5.1	0.48	0.51	0.48	36.7
All Vehicles		1022	2.7	1012 N1	2.7	0.306	4.6	LOS A	0.8	5.7	0.43	0.52	0.43	38.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
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 SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	111	1.0	111	1.0	* 1.024	107.8	LOS F	30.0	212.9	1.00	1.42	1.72	13.0
22	T1	453	1.6	453	1.6	1.024	104.2	LOS F	30.0	212.9	1.00	1.42	1.72	13.0
23b	R3	73	7.2	73	7.2	0.429	57.1	LOS E	2.3	17.4	0.98	0.77	0.98	19.8
Approach		636	2.2	636	2.2	1.024	99.4	LOS F	30.0	212.9	1.00	1.35	1.63	13.5
East: Duffy Avenue														
4b	L3	108	1.0	108	1.0	* 1.046	129.0	LOS F	17.6	127.8	1.00	1.51	1.96	15.8
5	T1	203	6.2	203	6.2	1.046	124.0	LOS F	17.6	127.8	1.00	1.51	1.96	7.6
6a	R1	125	2.5	125	2.5	0.564	54.3	LOS D	4.0	28.9	0.99	0.79	0.99	14.9
Approach		437	3.9	437	3.9	1.046	105.2	LOS F	17.6	127.8	1.00	1.30	1.68	11.5
NorthWest: Chilvers Road														
27a	L1	117	2.7	117	2.7	0.563	40.7	LOS C	9.3	65.9	0.95	0.82	0.95	19.7
28	T1	506	0.6	506	0.6	0.563	38.0	LOS C	9.3	65.5	0.96	0.83	0.96	30.6
29b	R3	169	1.9	169	1.9	0.968	71.4	LOS F	6.8	48.5	1.00	1.03	1.47	13.1
Approach		793	1.2	793	1.2	0.968	45.5	LOS D	9.3	65.9	0.97	0.87	1.07	25.6
West: Duffy Avenue														
10b	L3	193	1.6	193	1.6	0.338	33.8	LOS C	4.7	33.0	0.78	0.77	0.78	33.4
11	T1	231	0.9	231	0.9	0.688	47.7	LOS D	7.4	52.0	0.99	0.85	1.03	29.0
12a	R1	182	0.0	182	0.0	0.806	60.2	LOS E	6.4	44.8	1.00	0.94	1.22	31.4
Approach		605	0.9	605	0.9	0.806	47.0	LOS D	7.4	52.0	0.93	0.85	1.01	31.1
All Vehicles		2471	1.8	2471	1.8	1.046	70.3	LOS E	30.0	212.9	0.97	1.06	1.31	20.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	216.3	217.2	1.00
East: Duffy Avenue											
P2	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	212.3	211.9	1.00
NorthWest: Chilvers Road											
P7	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	218.9	220.5	1.01

West: Duffy Avenue											
P4	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	214.8	215.2	1.00
P4B	Slip/ Bypass	53	49.3	LOS E	0.2	0.2	0.95	0.95	206.4	204.3	0.99
All Pedestrians		263	49.3	LOS E	0.2	0.2	0.95	0.95	213.7	213.8	1.00

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

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

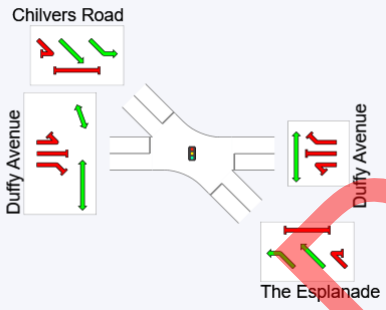
Phase Timing Summary

Phase	A	D	E	G
Phase Change Time (sec)	0	40	62	90
Green Time (sec)	31	13	19	12
Phase Time (sec)	40	22	27	21
Phase Split	36%	20%	25%	19%

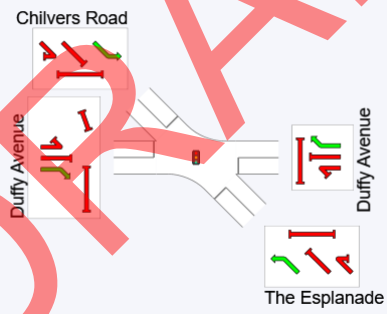
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

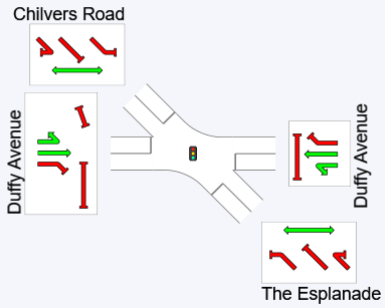
Phase A REF



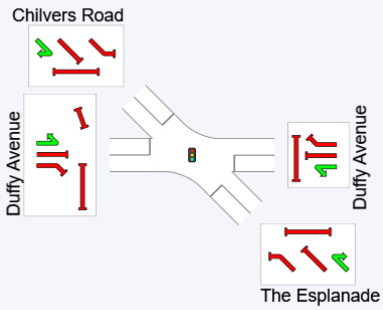
Phase D



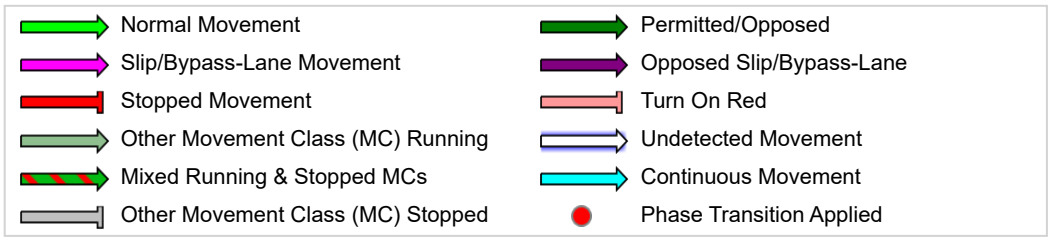
Phase E



Phase G



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Thursday, 21 July 2022 3:57:20 PM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Conversion (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	121	1.7	119	1.7	0.700	45.5	LOS D	11.9	84.8	1.00	0.87	1.00	28.4
3	R2	646	1.8	637	1.8	* 0.700	48.5	LOS D	11.9	84.8	1.00	0.87	1.00	27.6
Approach		767	1.8	757 N1	1.8	0.700	48.0	LOS D	11.9	84.8	1.00	0.87	1.00	27.8
East: Sefton Road														
4	L2	649	1.1	649	1.1	* 0.688	14.8	LOS B	7.3	51.6	0.72	0.80	0.72	41.0
5	T1	82	2.6	82	2.6	0.629	34.6	LOS C	2.1	15.3	0.80	0.65	0.90	38.3
Approach		732	1.3	732	1.3	0.688	17.0	LOS B	7.3	51.6	0.73	0.79	0.74	40.4
West: Sefton Road														
11	T1	59	1.8	59	1.8	0.056	12.3	LOS A	0.9	6.3	0.49	0.39	0.49	42.8
12	R2	151	1.4	151	1.4	* 0.750	34.8	LOS C	2.8	20.1	1.00	0.86	1.16	25.8
Approach		209	1.5	209	1.5	0.750	28.5	LOS B	2.8	20.1	0.86	0.73	0.97	31.2
All Vehicles		1708	1.5	1698 N1	1.5	0.750	32.3	LOS C	11.9	84.8	0.87	0.82	0.89	31.6

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	216.3	217.2	1.00
West: Sefton Road											
P4	Full	53	49.3	LOS E	0.2	0.2	0.95	0.95	212.3	211.9	1.00
All Pedestrians		105	49.3	LOS E	0.2	0.2	0.95	0.95	214.3	214.6	1.00

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

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Conversion (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 110 seconds (Network User-Given Cycle Time)

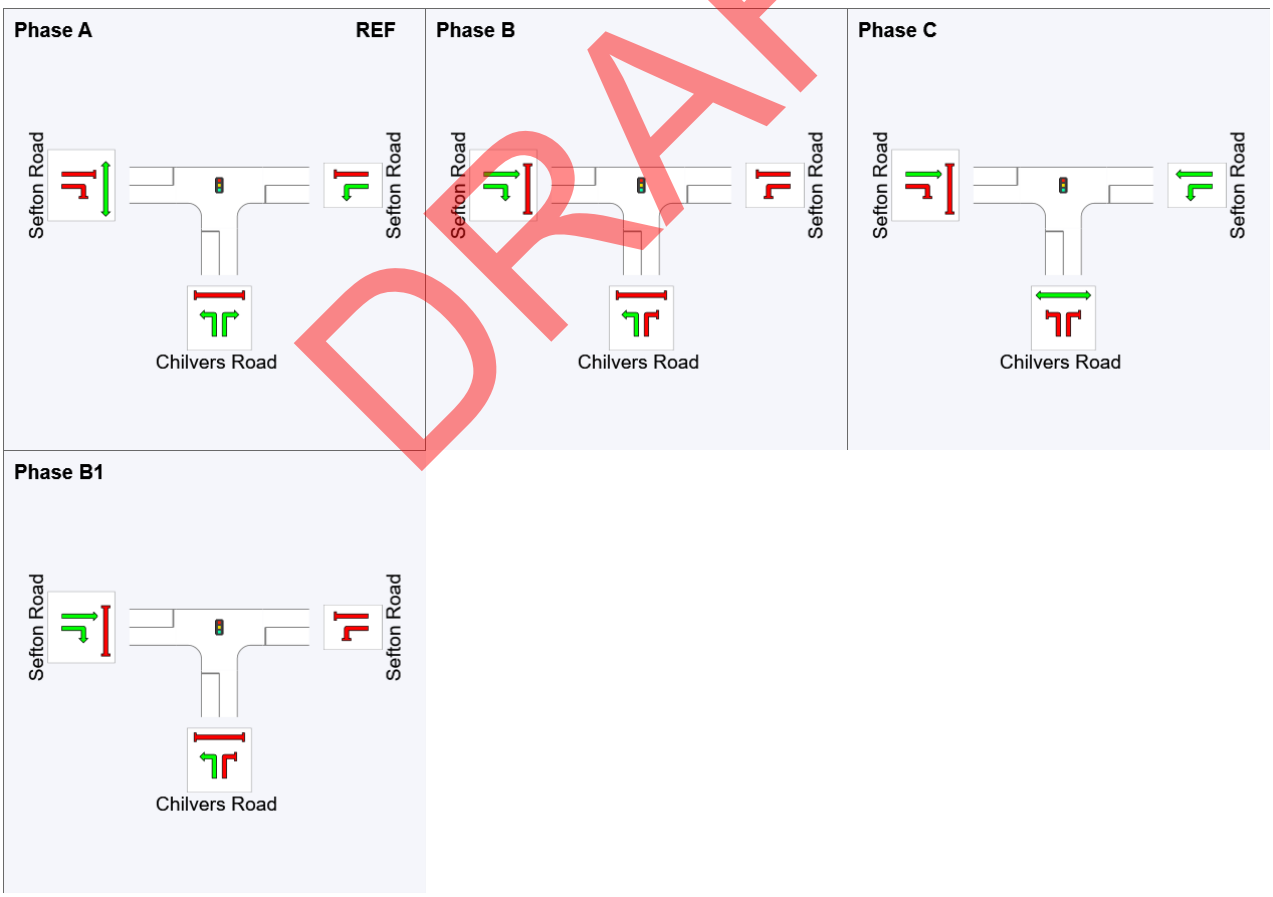
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

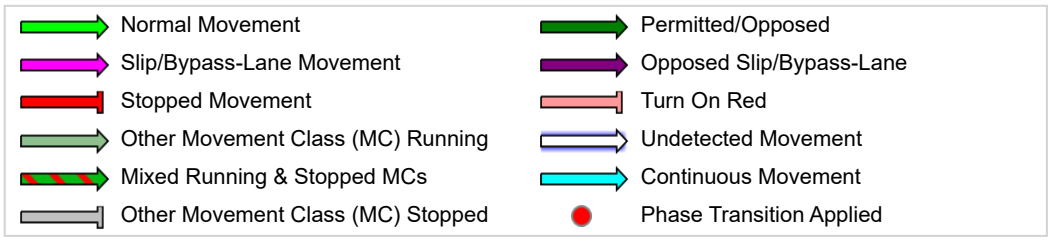
Phase	A	B	C	B1
Phase Change Time (sec)	0	41	56	95
Green Time (sec)	32	6	30	6
Phase Time (sec)	41	15	39	15
Phase Split	37%	14%	35%	14%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Thursday, 21 July 2022 3:57:20 PM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	231	5.9	231	5.9	0.715	24.1	LOS B	18.7	136.6	0.74	0.73	0.74	40.3
2	T1	2132	4.3	2132	4.3	* 0.715	18.6	LOS B	20.0	145.1	0.77	0.72	0.77	51.2
Approach		2362	4.5	2362	4.5	0.715	19.2	LOS B	20.0	145.1	0.76	0.72	0.76	50.5
North: Pennant Hills Road.														
8	T1	1936	3.5	1936	3.5	0.456	6.4	LOS A	8.8	63.7	0.42	0.39	0.42	62.4
9	R2	172	6.1	172	6.1	* 0.890	76.2	LOS F	7.1	52.0	1.00	0.96	1.40	18.2
Approach		2107	3.7	2107	3.7	0.890	12.1	LOS A	8.8	63.7	0.47	0.43	0.50	56.4
West: Duffy Avenue														
10	L2	185	7.4	185	7.4	0.323	37.4	LOS C	5.0	37.2	0.80	0.77	0.80	30.3
12	R2	220	2.9	220	2.9	* 0.725	58.3	LOS E	7.8	56.2	1.00	0.86	1.07	25.0
Approach		405	4.9	405	4.9	0.725	48.7	LOS D	7.8	56.2	0.91	0.82	0.95	27.1
All Vehicles		4875	4.2	4875	4.2	0.890	18.5	LOS B	20.0	145.1	0.65	0.60	0.67	49.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	228.2	226.1	0.99
West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	222.7	219.0	0.98

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: 2032 Base WE)]

Network: N101 [2032 Base WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

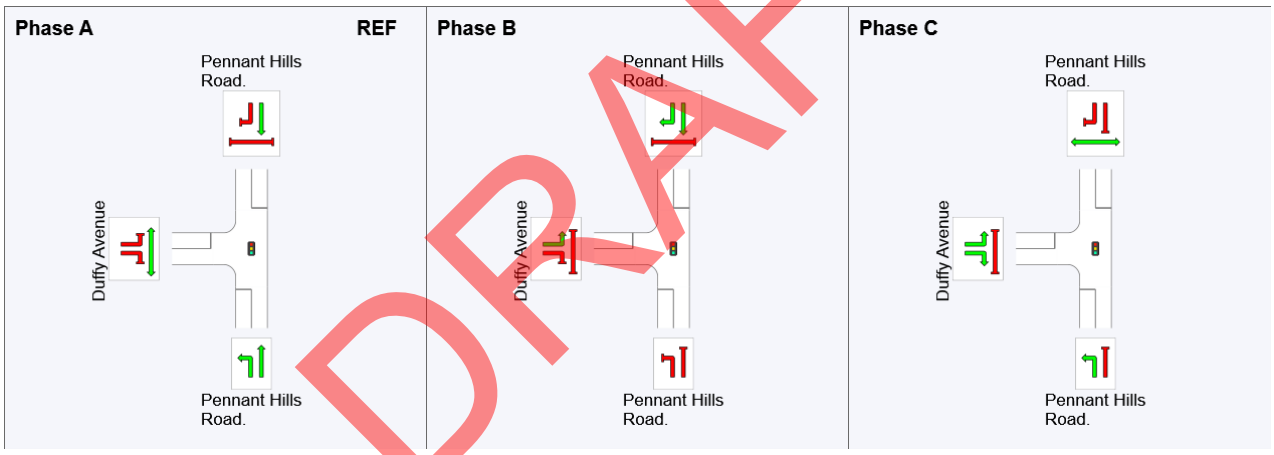
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

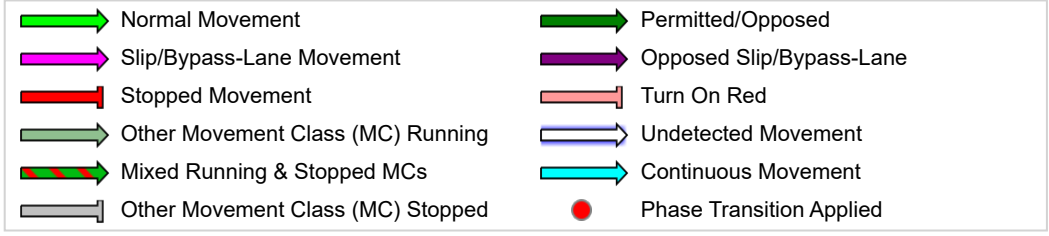
Phase	A	B	C
Phase Change Time (sec)	0	75	94
Green Time (sec)	70	13	20
Phase Time (sec)	76	19	25
Phase Split	63%	16%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	55	1.9	55	1.9	0.125	5.6	LOS A	0.3	2.3	0.60	0.60	0.60	37.5
2	T1	29	0.0	29	0.0	0.125	5.2	LOS A	0.3	2.3	0.60	0.60	0.60	38.0
3	R2	24	0.0	24	0.0	0.125	8.4	LOS A	0.3	2.3	0.60	0.60	0.60	35.4
Approach		108	1.0	108	1.0	0.125	6.1	LOS A	0.3	2.3	0.60	0.60	0.60	37.4
East: Duffy Avenue														
4	L2	8	0.0	8	0.0	0.313	3.0	LOS A	0.8	5.9	0.26	0.46	0.26	38.6
5	T1	206	4.1	206	4.1	0.313	2.8	LOS A	0.8	5.9	0.26	0.46	0.26	38.9
6	R2	187	4.5	187	4.5	0.313	6.0	LOS A	0.8	5.9	0.26	0.46	0.26	38.9
Approach		402	4.2	402	4.2	0.313	4.3	LOS A	0.8	5.9	0.26	0.46	0.26	38.9
North: Quarter Sessions Road														
7	L2	181	1.2	181	1.2	0.240	5.0	LOS A	0.6	4.4	0.59	0.61	0.59	36.0
8	T1	25	0.0	25	0.0	0.240	4.7	LOS A	0.6	4.4	0.59	0.61	0.59	38.4
9	R2	11	0.0	11	0.0	0.240	7.9	LOS A	0.6	4.4	0.59	0.61	0.59	38.4
Approach		217	1.0	217	1.0	0.240	5.1	LOS A	0.6	4.4	0.59	0.61	0.59	36.6
West: Duffy Avenue														
10	L2	11	10.0	11	10.0	0.286	4.5	LOS A	0.7	5.1	0.48	0.51	0.48	37.9
11	T1	253	1.3	253	1.3	0.286	3.9	LOS A	0.7	5.1	0.48	0.51	0.48	36.2
12	R2	32	10.0	32	10.0	0.286	7.3	LOS A	0.7	5.1	0.48	0.51	0.48	38.5
Approach		295	2.5	295	2.5	0.286	4.3	LOS A	0.7	5.1	0.48	0.51	0.48	36.7
All Vehicles		1022	2.7	1022	2.7	0.313	4.7	LOS A	0.8	5.9	0.43	0.52	0.43	38.0

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	111	1.0	111	1.0	0.875	52.2	LOS D	20.8	147.2	1.00	1.01	1.16	21.6
22	T1	453	1.6	453	1.6	* 0.875	48.2	LOS D	20.8	147.2	1.00	1.01	1.16	21.6
23b	R3	73	7.2	73	7.2	0.384	57.5	LOS E	2.4	17.8	0.96	0.77	0.96	19.7
Approach		636	2.2	636	2.2	0.875	50.0	LOS D	20.8	147.2	1.00	0.98	1.14	21.4
East: Duffy Avenue														
4b	L3	108	1.0	108	1.0	0.236	36.8	LOS C	2.8	19.9	0.78	0.75	0.78	30.8
5	T1	203	6.2	203	6.2	0.820	58.6	LOS E	7.4	54.4	1.00	0.96	1.21	13.9
6a	R1	125	2.5	125	2.5	0.639	59.0	LOS E	4.3	31.0	1.00	0.82	1.04	14.1
Approach		437	3.9	437	3.9	0.820	53.3	LOS D	7.4	54.4	0.94	0.87	1.06	18.7
NorthWest: Chilvers Road														
27a	L1	117	2.7	117	2.7	0.482	35.2	LOS C	8.6	61.2	0.86	0.76	0.86	21.4
28	T1	506	0.6	506	0.6	0.482	32.4	LOS C	8.8	61.8	0.87	0.76	0.87	32.4
29b	R3	169	1.9	169	1.9	* 0.867	60.5	LOS E	6.2	44.2	1.00	0.91	1.20	14.7
Approach		793	1.2	793	1.2	0.867	38.8	LOS C	8.8	61.8	0.90	0.79	0.94	27.6
West: Duffy Avenue														
10b	L3	193	1.6	193	1.6	0.363	37.4	LOS C	5.0	35.8	0.81	0.78	0.81	32.3
11	T1	231	0.9	231	0.9	* 0.912	68.1	LOS E	9.3	65.7	1.00	1.09	1.42	24.6
12a	R1	182	0.0	182	0.0	* 0.913	73.1	LOS F	7.4	51.5	1.00	1.08	1.46	29.2
Approach		605	0.9	605	0.9	0.913	59.8	LOS E	9.3	65.7	0.94	0.99	1.24	28.2
All Vehicles		2471	1.8	2471	1.8	0.913	49.4	LOS D	20.8	147.2	0.94	0.90	1.08	25.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
East: Duffy Avenue											
P2	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
NorthWest: Chilvers Road											
P7	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	221.4	220.5	1.00

West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
P4B	Slip/ Bypass	53	51.8	LOS E	0.2	0.2	0.95	0.95	208.9	204.3	0.98
All Pedestrians		263	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.5	0.99

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

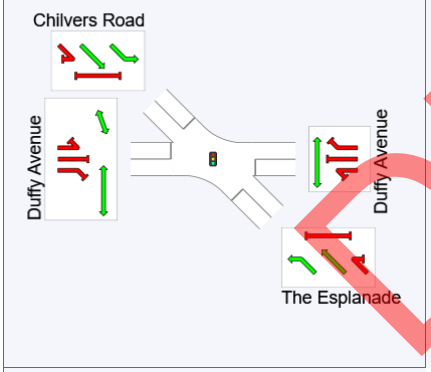
Phase Timing Summary

Phase	A	D	E	G
Phase Change Time (sec)	0	47	68	92
Green Time (sec)	38	12	15	14
Phase Time (sec)	47	21	24	23
Phase Split	41%	18%	21%	20%

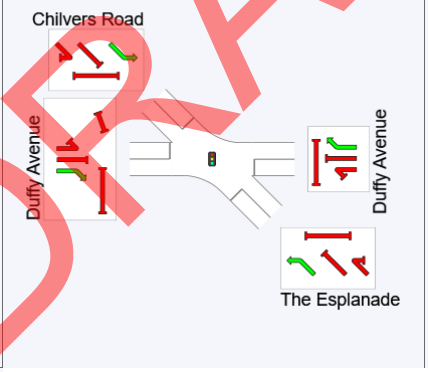
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

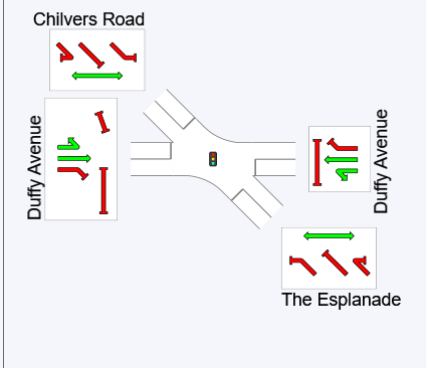
Phase A REF



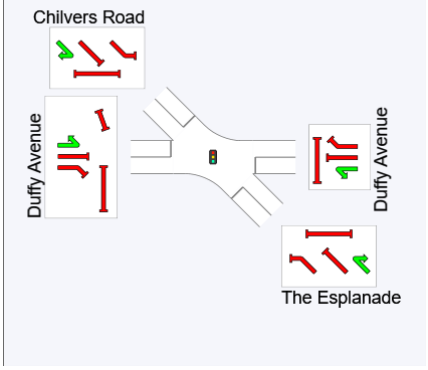
Phase D



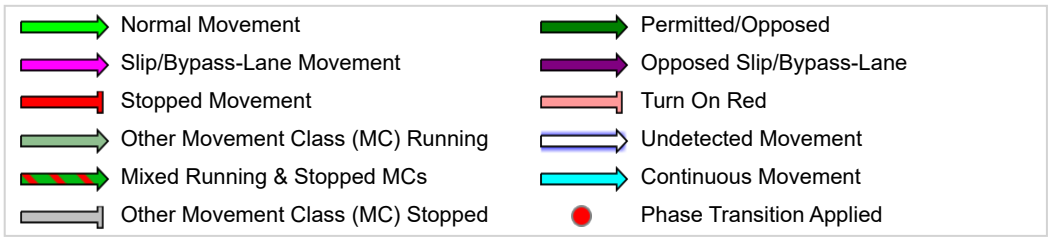
Phase E



Phase G



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Thursday, 21 July 2022 10:07:44 AM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Conversion (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	121	1.7	121	1.7	0.699	45.9	LOS D	12.5	88.7	1.00	0.87	1.00	28.3
3	R2	646	1.8	646	1.8	* 0.699	47.1	LOS D	12.5	88.7	1.00	0.87	1.00	28.0
Approach		767	1.8	767	1.8	0.699	46.9	LOS D	12.5	88.7	1.00	0.87	1.00	28.0
East: Sefton Road														
4	L2	649	1.1	649	1.1	* 0.687	15.1	LOS B	7.9	55.6	0.72	0.80	0.72	40.7
5	T1	82	2.6	82	2.6	0.690	38.8	LOS C	2.3	16.6	0.80	0.69	0.99	36.7
Approach		732	1.3	732	1.3	0.690	17.8	LOS B	7.9	55.6	0.73	0.79	0.75	39.8
West: Sefton Road														
11	T1	59	1.8	59	1.8	0.056	12.7	LOS A	0.9	6.5	0.49	0.38	0.49	42.6
12	R2	151	1.4	151	1.4	* 0.672	33.6	LOS C	2.9	20.2	1.00	0.82	1.06	26.2
Approach		209	1.5	209	1.5	0.672	27.7	LOS B	2.9	20.2	0.86	0.70	0.90	31.5
All Vehicles		1708	1.5	1708	1.5	0.699	32.1	LOS C	12.5	88.7	0.87	0.81	0.88	31.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
West: Sefton Road											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.6	0.99

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Conversion (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

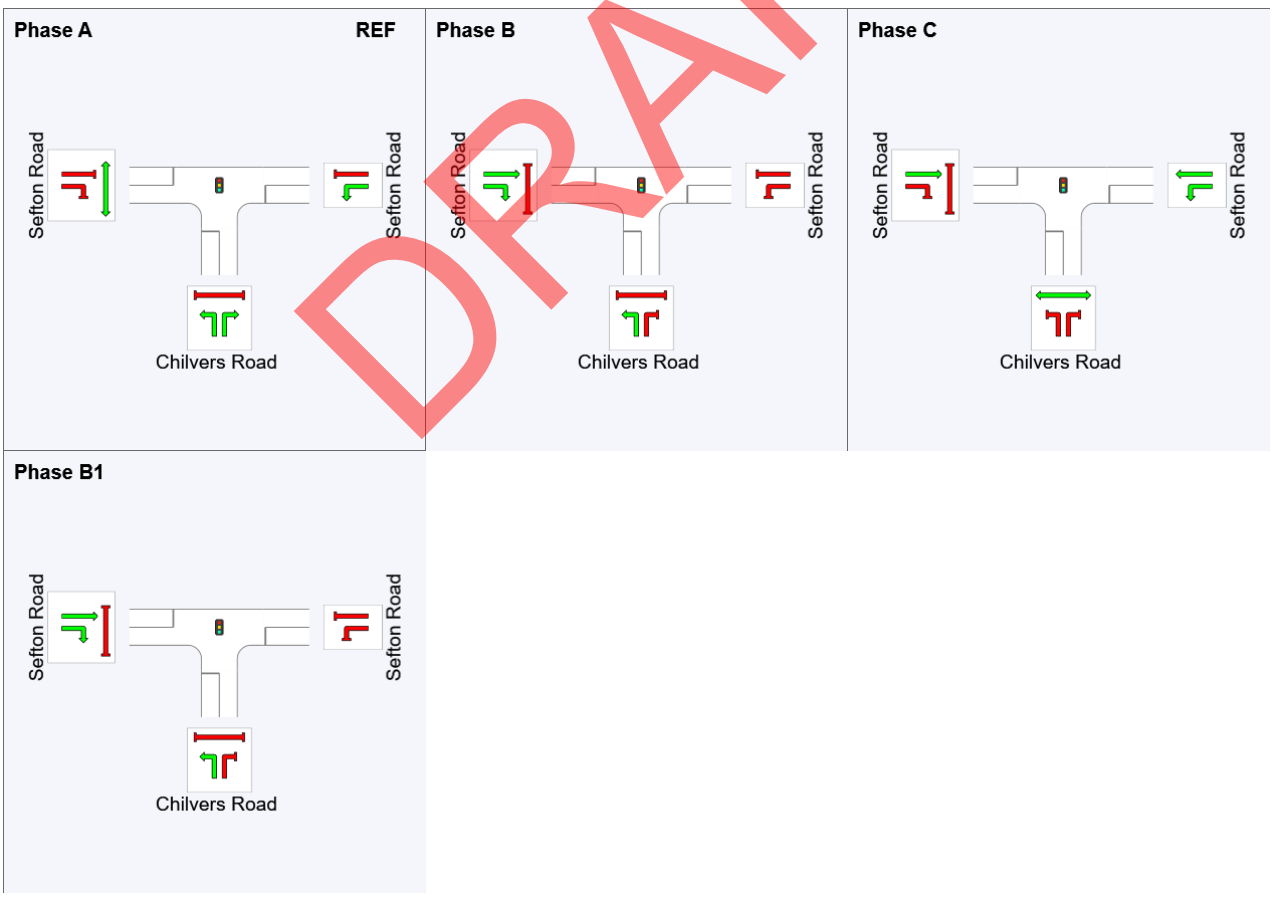
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

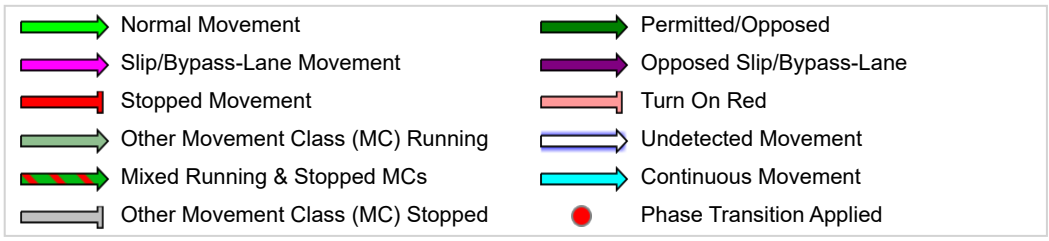
Phase	A	B	C	B1
Phase Change Time (sec)	0	43	58	98
Green Time (sec)	34	6	31	8
Phase Time (sec)	43	15	40	17
Phase Split	37%	13%	35%	15%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Thursday, 21 July 2022 10:07:44 AM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	231	5.9	231	5.9	0.715	24.1	LOS B	18.7	136.6	0.74	0.73	0.74	40.3
2	T1	2132	4.3	2132	4.3	* 0.715	18.6	LOS B	20.0	145.1	0.77	0.72	0.77	51.2
Approach		2362	4.5	2362	4.5	0.715	19.2	LOS B	20.0	145.1	0.76	0.72	0.76	50.5
North: Pennant Hills Road.														
8	T1	1936	3.5	1936	3.5	0.456	6.4	LOS A	8.8	63.7	0.42	0.39	0.42	62.4
9	R2	172	6.1	172	6.1	* 0.890	76.2	LOS F	7.1	52.0	1.00	0.96	1.40	18.2
Approach		2107	3.7	2107	3.7	0.890	12.1	LOS A	8.8	63.7	0.47	0.43	0.50	56.4
West: Duffy Avenue														
10	L2	185	7.4	185	7.4	0.323	37.4	LOS C	5.0	37.2	0.80	0.77	0.80	30.3
12	R2	220	2.9	220	2.9	* 0.725	58.3	LOS E	7.8	56.2	1.00	0.86	1.07	25.0
Approach		405	4.9	405	4.9	0.725	48.7	LOS D	7.8	56.2	0.91	0.82	0.95	27.1
All Vehicles		4875	4.2	4875	4.2	0.890	18.5	LOS B	20.0	145.1	0.65	0.60	0.67	49.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	228.2	226.1	0.99
West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	222.7	219.0	0.98

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: 2032 Base + Upgrade WE)]

Network: N101 [2032 Base + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

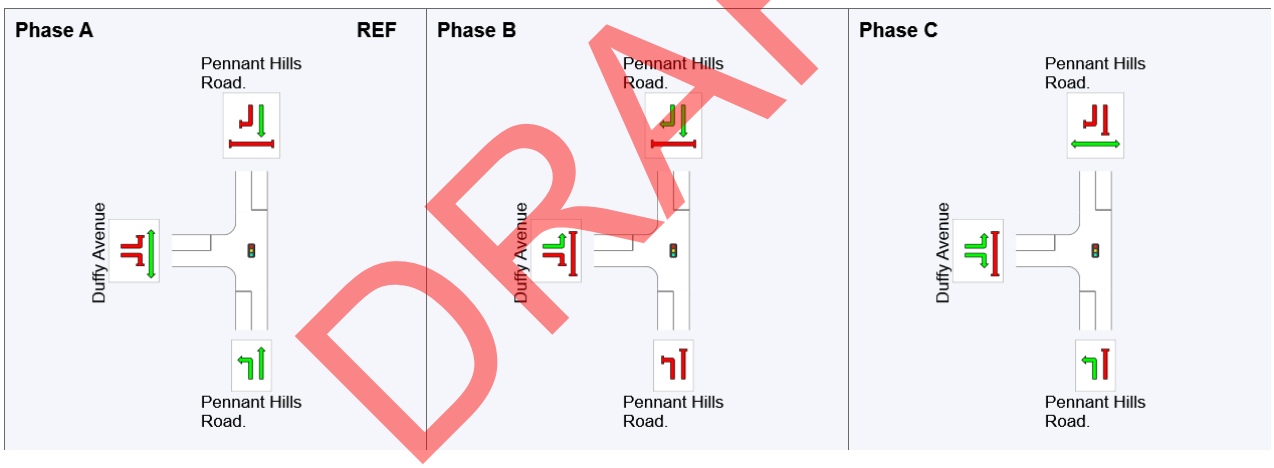
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

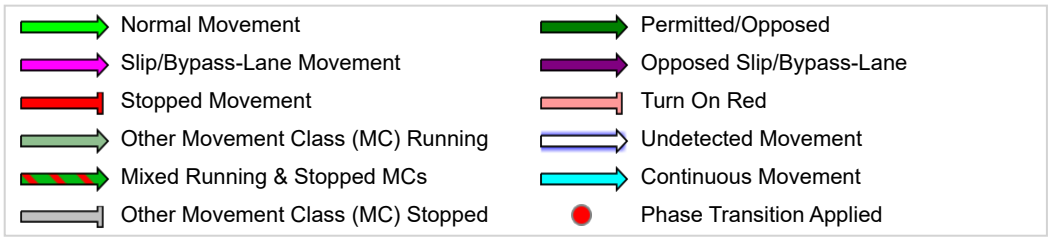
Phase	A	B	C
Phase Change Time (sec)	0	75	94
Green Time (sec)	70	13	20
Phase Time (sec)	76	19	25
Phase Split	63%	16%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	58	1.8	58	1.8	0.171	6.7	LOS A	0.5	3.3	0.70	0.66	0.70	37.1
2	T1	53	0.0	53	0.0	0.171	6.4	LOS A	0.5	3.3	0.70	0.66	0.70	37.6
3	R2	23	0.0	23	0.0	0.171	9.6	LOS A	0.5	3.3	0.70	0.66	0.70	34.7
Approach		134	0.8	134	0.8	0.171	7.1	LOS A	0.5	3.3	0.70	0.66	0.70	37.1
East: Duffy Avenue														
4	L2	6	0.0	6	0.0	0.409	3.3	LOS A	1.2	8.7	0.33	0.51	0.33	38.4
5	T1	192	4.4	186	4.4	0.409	3.0	LOS A	1.2	8.7	0.33	0.51	0.33	38.7
6	R2	335	2.5	325	2.5	0.409	6.2	LOS A	1.2	8.7	0.33	0.51	0.33	38.7
Approach		533	3.2	518 N1	3.2	0.409	5.0	LOS A	1.2	8.7	0.33	0.51	0.33	38.7
North: Quarter Sessions Road														
7	L2	349	0.6	349	0.6	0.444	5.5	LOS A	1.4	9.7	0.70	0.67	0.70	35.7
8	T1	42	0.0	42	0.0	0.444	5.2	LOS A	1.4	9.7	0.70	0.67	0.70	38.2
9	R2	11	0.0	11	0.0	0.444	8.3	LOS A	1.4	9.7	0.70	0.67	0.70	38.2
Approach		402	0.5	402	0.5	0.444	5.5	LOS A	1.4	9.7	0.70	0.67	0.70	36.2
West: Duffy Avenue														
10	L2	11	10.0	11	10.0	0.326	5.8	LOS A	0.9	6.2	0.63	0.63	0.63	37.6
11	T1	252	1.3	252	1.3	0.326	5.2	LOS A	0.9	6.2	0.63	0.63	0.63	35.7
12	R2	32	10.0	32	10.0	0.326	8.6	LOS A	0.9	6.2	0.63	0.63	0.63	38.1
Approach		294	2.5	294	2.5	0.326	5.6	LOS A	0.9	6.2	0.63	0.63	0.63	36.2
All Vehicles		1362	2.0	1347 N1	2.0	0.444	5.5	LOS A	1.4	9.7	0.54	0.60	0.54	37.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
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 SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	121	0.9	121	0.9	* 1.052	128.8	LOS F	34.0	240.7	1.00	1.50	1.83	11.3
22	T1	451	1.6	451	1.6	1.052	124.4	LOS F	34.0	240.7	1.00	1.50	1.83	11.3
23b	R3	73	7.2	73	7.2	0.256	49.7	LOS D	2.2	16.2	0.90	0.76	0.90	21.5
Approach		644	2.1	644	2.1	1.052	116.8	LOS F	34.0	240.7	0.99	1.42	1.72	11.9
East: Duffy Avenue														
4b	L3	111	1.0	111	1.0	0.291	42.4	LOS C	3.5	24.5	0.85	0.77	0.85	29.3
5	T1	252	5.0	252	5.0	1.010	99.8	LOS F	12.1	88.2	0.99	1.30	1.74	9.2
6a	R1	126	2.5	126	2.5	0.703	61.2	LOS E	4.5	32.1	1.00	0.85	1.11	13.7
Approach		488	3.4	488	3.4	1.010	76.8	LOS F	12.1	88.2	0.96	1.06	1.37	14.4
NorthWest: Chilvers Road														
27a	L1	104	3.0	104	3.0	0.509	41.3	LOS C	8.5	60.5	0.94	0.81	0.94	19.4
28	T1	452	0.7	452	0.7	0.509	38.9	LOS C	8.6	60.2	0.95	0.81	0.95	30.3
29b	R3	305	1.0	305	1.0	* 1.036	102.4	LOS F	15.8	111.7	1.00	1.15	1.66	9.8
Approach		861	1.1	861	1.1	1.036	61.7	LOS E	15.8	111.7	0.97	0.93	1.20	20.7
West: Duffy Avenue														
10b	L3	263	1.2	263	1.2	0.417	33.2	LOS C	6.6	46.5	0.78	0.79	0.78	33.6
11	T1	260	0.8	260	0.8	* 1.047	124.6	LOS F	14.7	103.4	1.00	1.44	1.94	17.1
12a	R1	198	0.0	198	0.0	1.082	152.1	LOS F	12.2	85.4	1.00	1.46	2.15	19.8
Approach		721	0.7	721	0.7	1.082	98.8	LOS F	14.7	103.4	0.92	1.21	1.57	21.6
All Vehicles		2715	1.7	2715	1.7	1.082	87.3	LOS F	34.0	240.7	0.96	1.14	1.46	17.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
East: Duffy Avenue											
P2	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
NorthWest: Chilvers Road											
P7	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	221.4	220.5	1.00

West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
P4B	Slip/ Bypass	53	51.8	LOS E	0.2	0.2	0.95	0.95	208.9	204.3	0.98
All Pedestrians		263	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.5	0.99

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

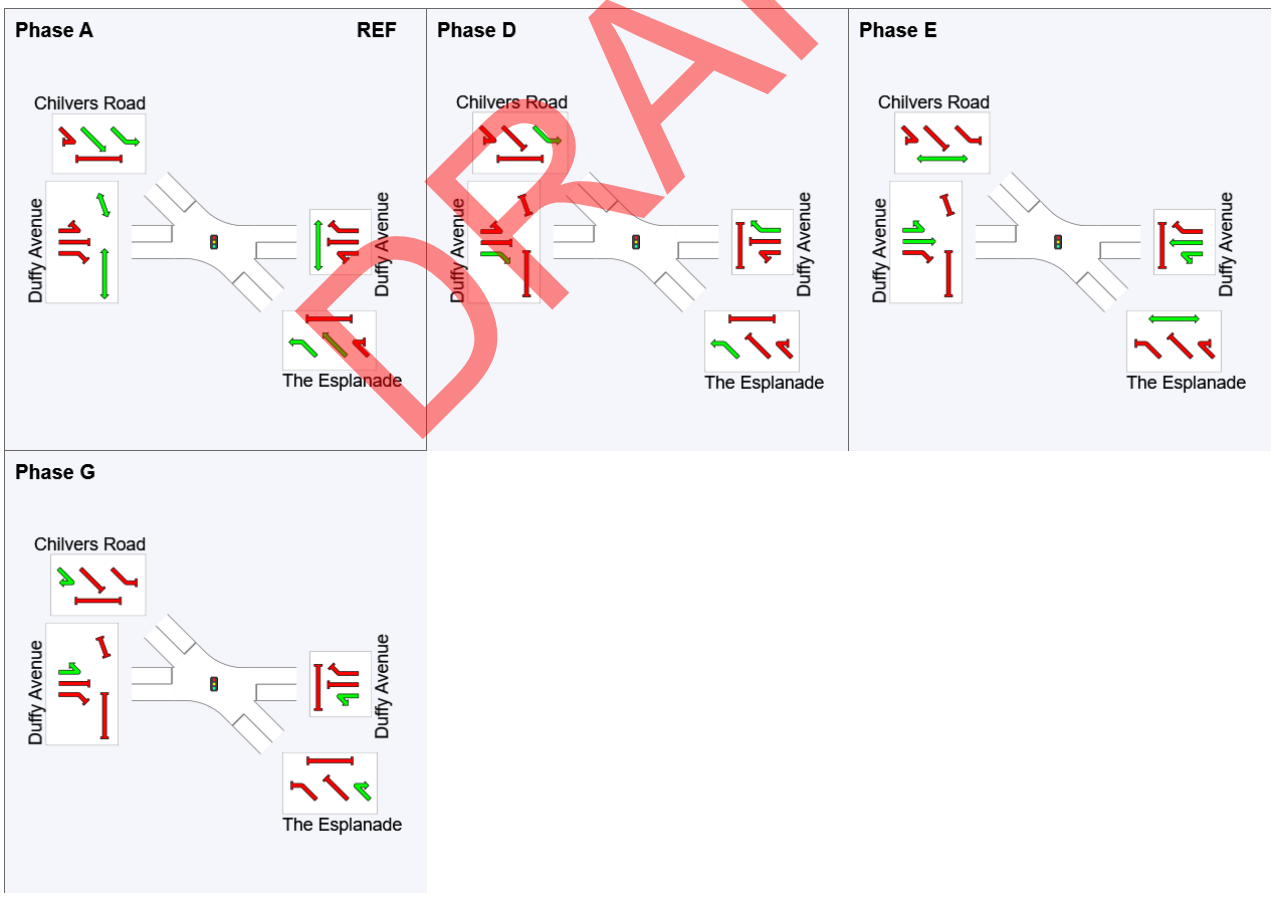
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

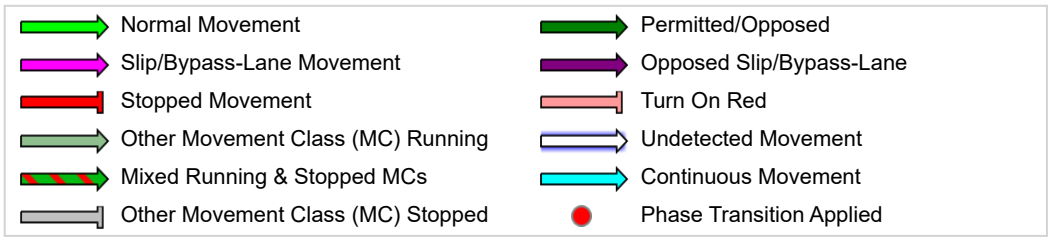
Phase	A	D	E	G
Phase Change Time (sec)	0	41	61	85
Green Time (sec)	32	11	15	21
Phase Time (sec)	41	20	24	30
Phase Split	36%	17%	21%	26%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Monday, 22 August 2022 12:24:25 PM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Conversion (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	121	1.7	118	1.7	0.744	47.1	LOS D	13.5	96.0	1.00	0.88	1.02	28.0
3	R2	718	1.6	699	1.6	* 0.744	48.3	LOS D	13.5	96.0	1.00	0.88	1.02	27.7
Approach		839	1.6	817 N1	1.6	0.744	48.1	LOS D	13.5	96.0	1.00	0.88	1.02	27.7
East: Sefton Road														
4	L2	726	1.0	726	1.0	* 0.732	15.0	LOS B	8.7	61.4	0.74	0.82	0.74	40.8
5	T1	74	2.9	74	2.9	0.545	32.6	LOS C	1.9	13.4	0.78	0.60	0.79	39.1
Approach		800	1.2	800	1.2	0.732	16.6	LOS B	8.7	61.4	0.75	0.80	0.75	40.5
West: Sefton Road														
11	T1	59	1.8	59	1.8	0.056	12.7	LOS A	0.9	6.5	0.49	0.38	0.49	42.6
12	R2	151	1.4	151	1.4	* 0.784	37.3	LOS C	3.0	21.3	1.00	0.88	1.20	24.9
Approach		209	1.5	209	1.5	0.784	30.4	LOS C	3.0	21.3	0.86	0.74	1.00	30.4
All Vehicles		1848	1.4	1826 N1	1.4	0.784	32.3	LOS C	13.5	96.0	0.87	0.83	0.90	31.5

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
West: Sefton Road											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.6	0.99

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Conversion (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

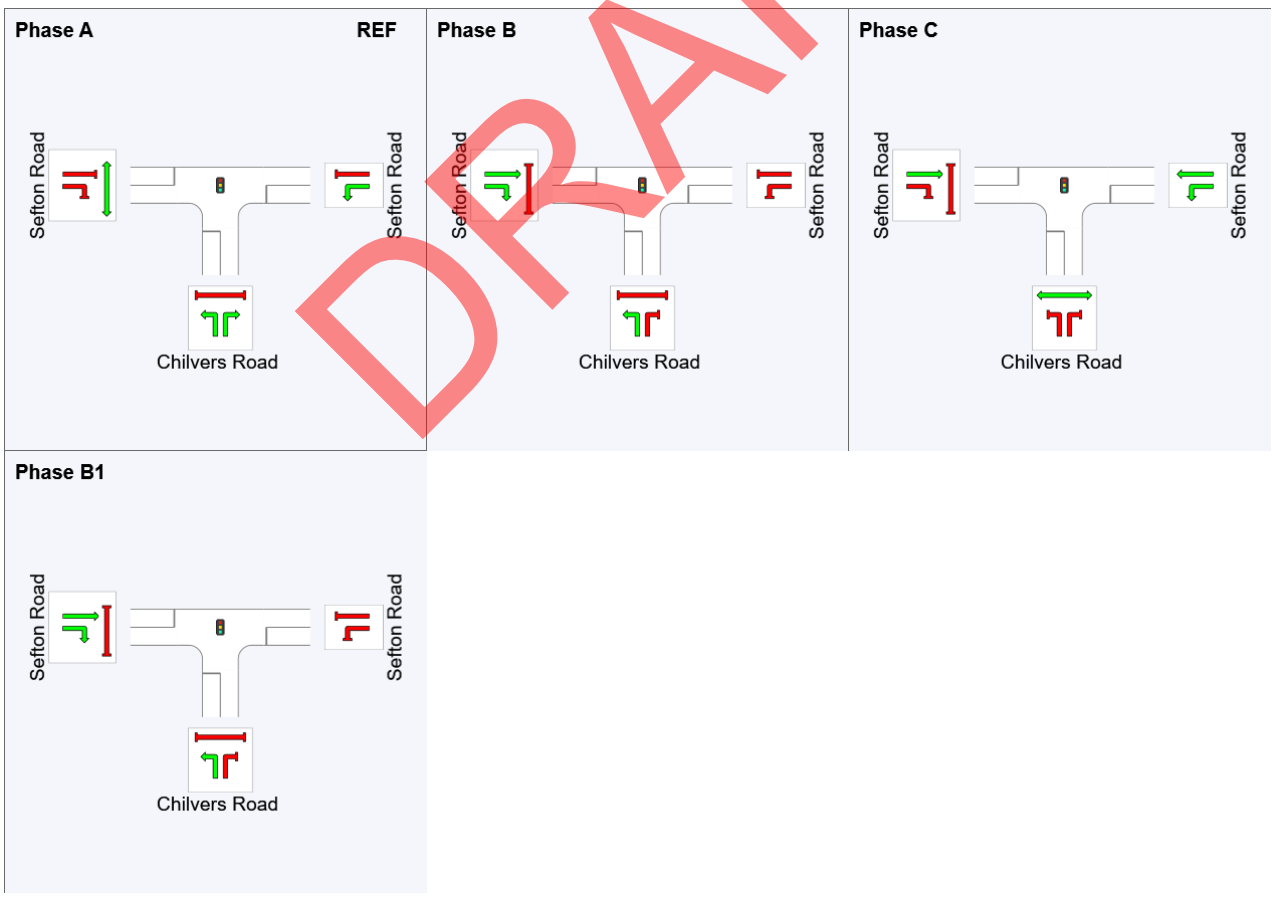
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

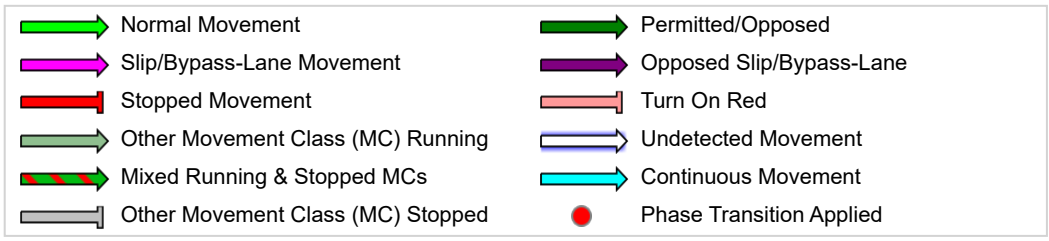
Phase	A	B	C	B1
Phase Change Time (sec)	0	43	58	100
Green Time (sec)	34	6	33	6
Phase Time (sec)	43	15	42	15
Phase Split	37%	13%	37%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Monday, 22 August 2022 12:24:25 PM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	252	5.4	252	5.4	0.721	24.2	LOS B	19.0	138.5	0.74	0.73	0.74	40.0
2	T1	2132	4.3	2132	4.3	* 0.721	18.7	LOS B	20.3	147.3	0.77	0.72	0.77	51.1
Approach		2383	4.5	2383	4.5	0.721	19.3	LOS B	20.3	147.3	0.77	0.72	0.77	50.3
North: Pennant Hills Road.														
8	T1	1937	3.5	1937	3.5	0.456	6.4	LOS A	8.8	63.8	0.42	0.39	0.42	62.4
9	R2	194	5.4	194	5.4	* 1.000	107.9	LOS F	9.8	71.9	1.00	1.10	1.76	13.9
Approach		2131	3.7	2131	3.7	1.000	15.6	LOS B	9.8	71.9	0.48	0.45	0.54	53.3
West: Duffy Avenue														
10	L2	197	7.0	192	7.1	0.334	37.5	LOS C	5.2	38.6	0.80	0.77	0.80	30.2
12	R2	229	2.8	223	2.8	* 0.736	58.6	LOS E	8.0	57.3	1.00	0.87	1.08	24.9
Approach		426	4.7	415 N1	4.8	0.736	48.9	LOS D	8.0	57.3	0.91	0.83	0.95	27.1
All Vehicles		4940	4.1	4929 N1	4.1	1.000	20.2	LOS B	20.3	147.3	0.65	0.61	0.69	48.5

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

* Critical Movement (Signal Timing)
N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	228.2	226.1	0.99
West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	222.7	219.0	0.98

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: 2032 Option 1 + Upgrade WE)]

Network: N101 [2032 Option 1 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

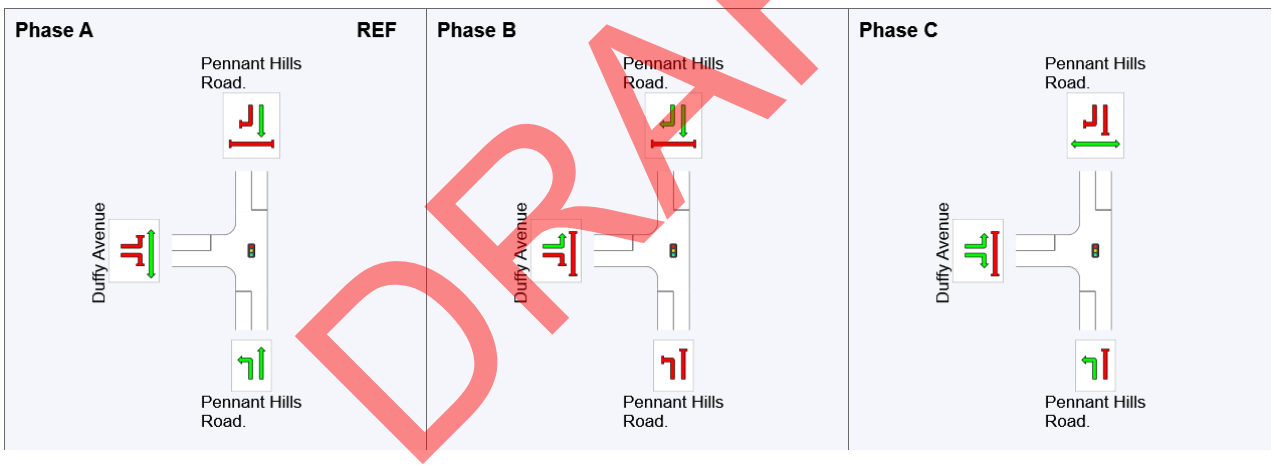
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

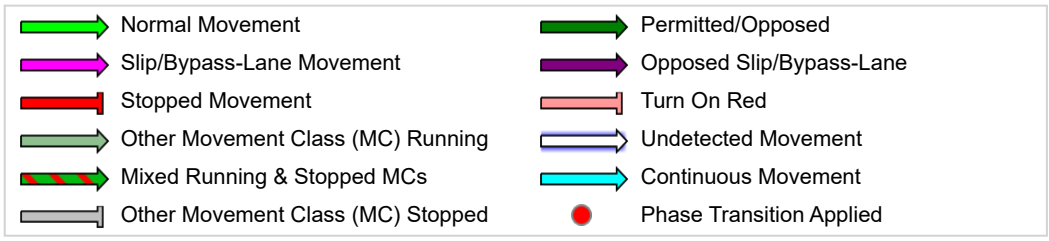
Phase	A	B	C
Phase Change Time (sec)	0	75	94
Green Time (sec)	70	13	20
Phase Time (sec)	76	19	25
Phase Split	63%	16%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	35	3.0	35	3.0	0.123	6.3	LOS A	0.3	2.3	0.67	0.64	0.67	37.2
2	T1	36	0.0	36	0.0	0.123	5.9	LOS A	0.3	2.3	0.67	0.64	0.67	37.7
3	R2	26	0.0	26	0.0	0.123	9.0	LOS A	0.3	2.3	0.67	0.64	0.67	34.9
Approach		97	1.1	97	1.1	0.123	6.9	LOS A	0.3	2.3	0.67	0.64	0.67	37.0
East: Duffy Avenue														
4	L2	13	0.0	13	0.0	0.407	3.8	LOS A	1.1	8.3	0.42	0.54	0.42	38.3
5	T1	200	4.2	200	4.2	0.407	3.6	LOS A	1.1	8.3	0.42	0.54	0.42	38.7
6	R2	249	3.4	249	3.4	0.407	6.7	LOS A	1.1	8.3	0.42	0.54	0.42	38.7
Approach		462	3.6	462	3.6	0.407	5.3	LOS A	1.1	8.3	0.42	0.54	0.42	38.7
North: Quarter Sessions Road														
7	L2	212	1.0	212	1.0	0.338	5.2	LOS A	0.9	6.7	0.64	0.64	0.64	35.7
8	T1	58	0.0	58	0.0	0.338	4.9	LOS A	0.9	6.7	0.64	0.64	0.64	38.2
9	R2	36	0.0	36	0.0	0.338	8.1	LOS A	0.9	6.7	0.64	0.64	0.64	38.2
Approach		305	0.7	305	0.7	0.338	5.5	LOS A	0.9	6.7	0.64	0.64	0.64	36.8
West: Duffy Avenue														
10	L2	15	7.1	15	7.1	0.306	4.9	LOS A	0.8	5.7	0.56	0.58	0.56	37.7
11	T1	231	1.4	231	1.4	0.306	4.5	LOS A	0.8	5.7	0.56	0.58	0.56	35.8
12	R2	48	6.5	48	6.5	0.306	7.8	LOS A	0.8	5.7	0.56	0.58	0.56	38.2
Approach		294	2.5	294	2.5	0.306	5.0	LOS A	0.8	5.7	0.56	0.58	0.56	36.6
All Vehicles		1158	2.4	1158	2.4	0.407	5.4	LOS A	1.1	8.3	0.53	0.58	0.53	37.9

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	131	0.8	131	0.8	0.880	52.2	LOS D	21.6	153.1	1.00	1.01	1.17	21.6
22	T1	452	1.6	452	1.6	* 0.880	48.3	LOS D	21.6	153.1	1.00	1.01	1.17	21.6
23b	R3	73	7.2	73	7.2	0.598	64.7	LOS E	2.6	19.3	1.00	0.80	1.06	18.4
Approach		655	2.1	655	2.1	0.880	50.9	LOS D	21.6	153.1	1.00	0.99	1.15	21.2
East: Duffy Avenue														
4b	L3	107	1.0	107	1.0	0.247	39.4	LOS C	3.0	21.1	0.81	0.76	0.81	30.1
5	T1	245	5.2	245	5.2	0.857	59.0	LOS E	9.0	65.8	1.00	1.01	1.26	13.8
6a	R1	126	2.5	126	2.5	0.595	57.3	LOS E	4.3	30.7	1.00	0.80	1.00	14.4
Approach		479	3.5	479	3.5	0.857	54.2	LOS D	9.0	65.8	0.95	0.90	1.09	18.2
NorthWest: Chilvers Road														
27a	L1	119	2.7	119	2.7	0.477	34.5	LOS C	8.5	60.0	0.83	0.74	0.83	21.7
28	T1	514	0.6	514	0.6	0.477	31.6	LOS C	8.7	60.9	0.85	0.74	0.85	32.7
29b	R3	111	2.9	111	2.9	* 0.885	72.7	LOS F	4.3	31.0	1.00	0.96	1.39	12.9
Approach		743	1.3	743	1.3	0.885	38.2	LOS C	8.7	60.9	0.87	0.77	0.92	28.3
West: Duffy Avenue														
10b	L3	154	2.1	154	2.1	0.306	38.2	LOS C	4.0	28.7	0.80	0.77	0.80	32.0
11	T1	260	0.8	260	0.8	* 0.893	63.6	LOS E	10.2	71.7	1.00	1.07	1.34	25.4
12a	R1	191	0.0	191	0.0	* 0.882	68.4	LOS E	7.4	51.9	1.00	1.03	1.36	30.0
Approach		604	0.9	604	0.9	0.893	58.6	LOS E	10.2	71.7	0.95	0.98	1.21	28.5
All Vehicles		2481	1.8	2481	1.8	0.893	49.6	LOS D	21.6	153.1	0.94	0.90	1.09	25.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
East: Duffy Avenue											
P2	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
NorthWest: Chilvers Road											
P7	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	221.4	220.5	1.00

West: Duffy Avenue											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	217.3	215.2	0.99
P4B	Slip/ Bypass	53	51.8	LOS E	0.2	0.2	0.95	0.95	208.9	204.3	0.98
All Pedestrians		263	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.5	0.99

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

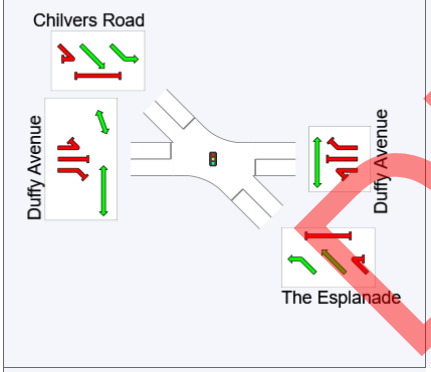
Phase Timing Summary

Phase	A	D	E	G
Phase Change Time (sec)	0	48	70	97
Green Time (sec)	39	13	18	9
Phase Time (sec)	48	22	27	18
Phase Split	42%	19%	23%	16%

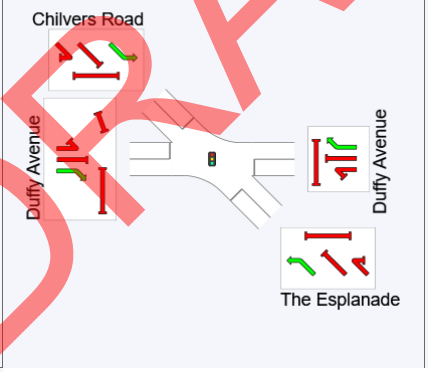
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

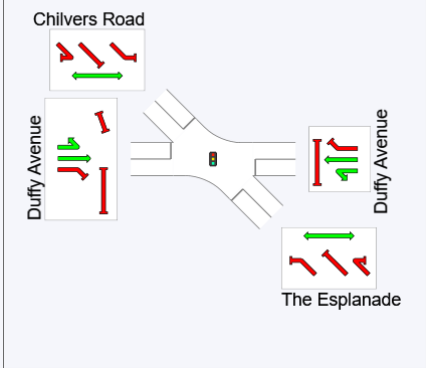
Phase A REF



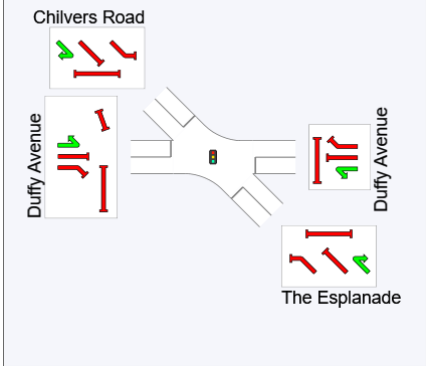
Phase D



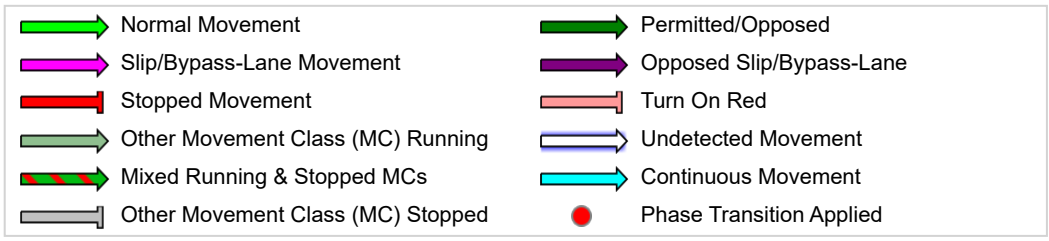
Phase E



Phase G



REF: Reference Phase
VAR: Variable Phase



Organisation: TRANSPORT FOR NSW | Licence: NETWORK / Enterprise | Processed: Tuesday, 23 August 2022 2:24:00 PM
Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Conversion (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	114	1.9	114	1.9	0.906	70.4	LOS E	14.2	101.2	1.00	0.95	1.18	23.0
3	R2	621	1.9	621	1.9	0.906	71.2	LOS F	14.2	101.2	1.00	0.94	1.18	22.9
Approach		735	1.9	735	1.9	0.906	71.1	LOS F	14.2	101.2	1.00	0.95	1.18	22.9
East: Sefton Road														
4	L2	612	1.2	612	1.2	* 0.721	14.1	LOS A	6.7	47.5	0.67	0.78	0.67	41.6
5	T1	203	1.0	203	1.0	* 0.998	100.3	LOS F	9.6	68.1	0.75	1.05	1.62	22.7
Approach		815	1.2	815	1.2	0.998	35.6	LOS C	9.6	68.1	0.69	0.85	0.91	31.3
West: Sefton Road														
11	T1	158	0.7	158	0.7	0.130	9.2	LOS A	2.2	15.2	0.43	0.36	0.43	44.4
12	R2	141	1.5	141	1.5	* 0.736	36.6	LOS C	3.1	22.2	1.00	0.85	1.14	25.1
Approach		299	1.1	299	1.1	0.736	22.1	LOS B	3.1	22.2	0.70	0.59	0.76	35.9
All Vehicles		1848	1.4	1848	1.4	0.998	47.5	LOS D	14.2	101.2	0.82	0.85	0.99	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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	218.8	217.2	0.99
West: Sefton Road											
P4	Full	53	51.8	LOS E	0.2	0.2	0.95	0.95	214.8	211.9	0.99
All Pedestrians		105	51.8	LOS E	0.2	0.2	0.95	0.95	216.8	214.6	0.99

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Conversion (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 115 seconds (Network User-Given Cycle Time)

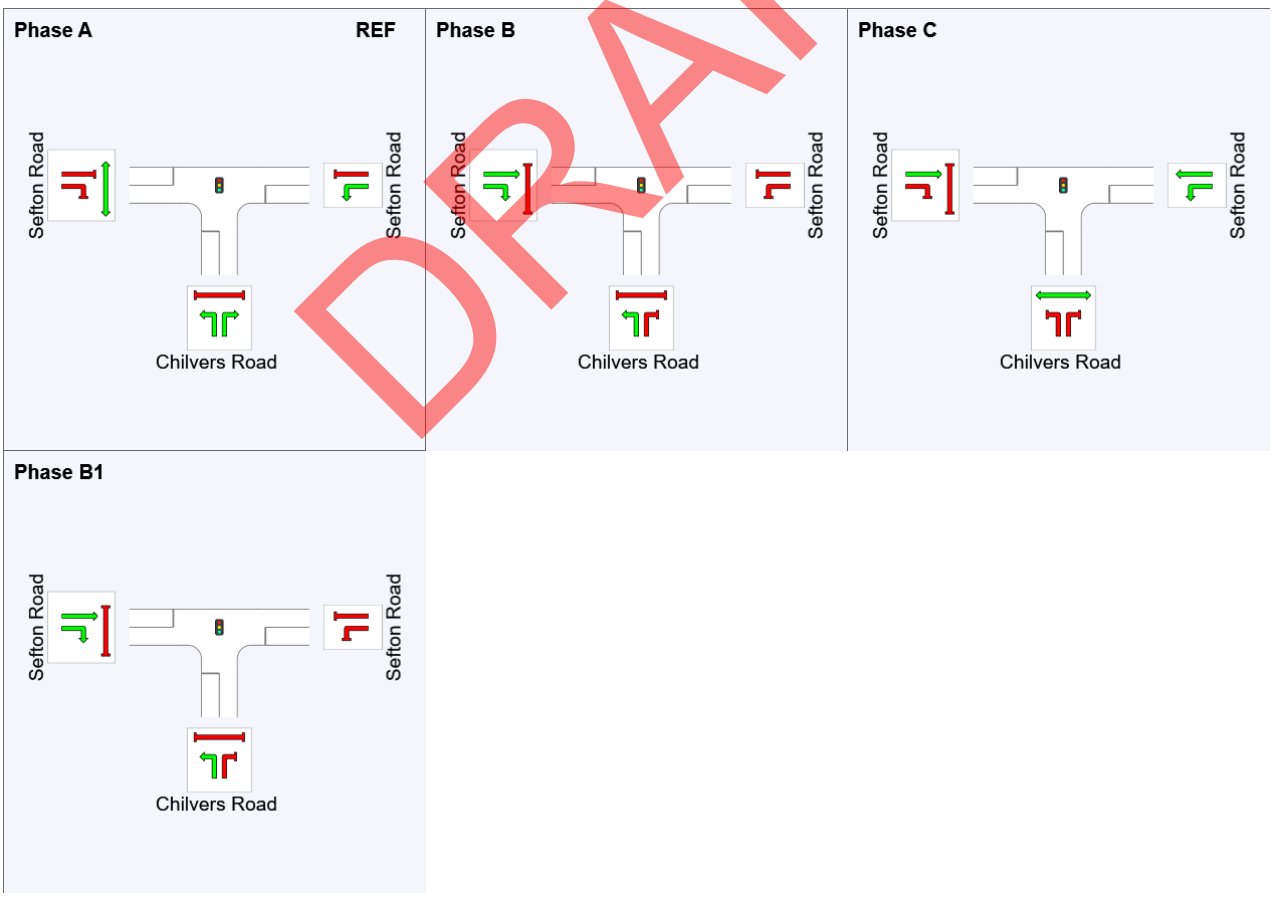
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

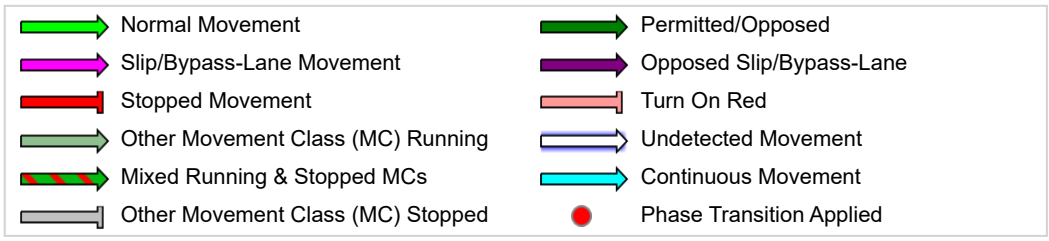
Phase	A	B	C	B1
Phase Change Time (sec)	0	34	49	100
Green Time (sec)	25	6	42	6
Phase Time (sec)	34	15	51	15
Phase Split	30%	13%	44%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	251	5.5	251	5.5	0.721	24.2	LOS B	19.0	138.4	0.74	0.73	0.74	40.0
2	T1	2132	4.3	2132	4.3	* 0.721	18.7	LOS B	20.3	147.2	0.77	0.72	0.77	51.1
Approach		2382	4.5	2382	4.5	0.721	19.3	LOS B	20.3	147.2	0.77	0.72	0.77	50.3
North: Pennant Hills Road.														
8	T1	1936	3.5	1936	3.5	0.456	6.4	LOS A	8.8	63.7	0.42	0.39	0.42	62.4
9	R2	191	5.5	191	5.5	* 0.984	100.3	LOS F	9.3	67.9	1.00	1.08	1.70	14.7
Approach		2126	3.7	2126	3.7	0.984	14.8	LOS B	9.3	67.9	0.47	0.45	0.54	54.0
West: Duffy Avenue														
10	L2	201	6.8	201	6.8	0.349	37.7	LOS C	5.5	40.6	0.81	0.78	0.81	30.2
12	R2	236	2.7	236	2.7	* 0.776	60.3	LOS E	8.6	61.9	1.00	0.89	1.12	24.5
Approach		437	4.6	437	4.6	0.776	49.9	LOS D	8.6	61.9	0.91	0.84	0.98	26.8
All Vehicles		4945	4.1	4945	4.1	0.984	20.1	LOS B	20.3	147.2	0.65	0.61	0.69	48.6

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	228.2	226.1	0.99
West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	222.7	219.0	0.98

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: 2032 Option 2 + Upgrade WE)]

Network: N101 [2032 Option 2 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

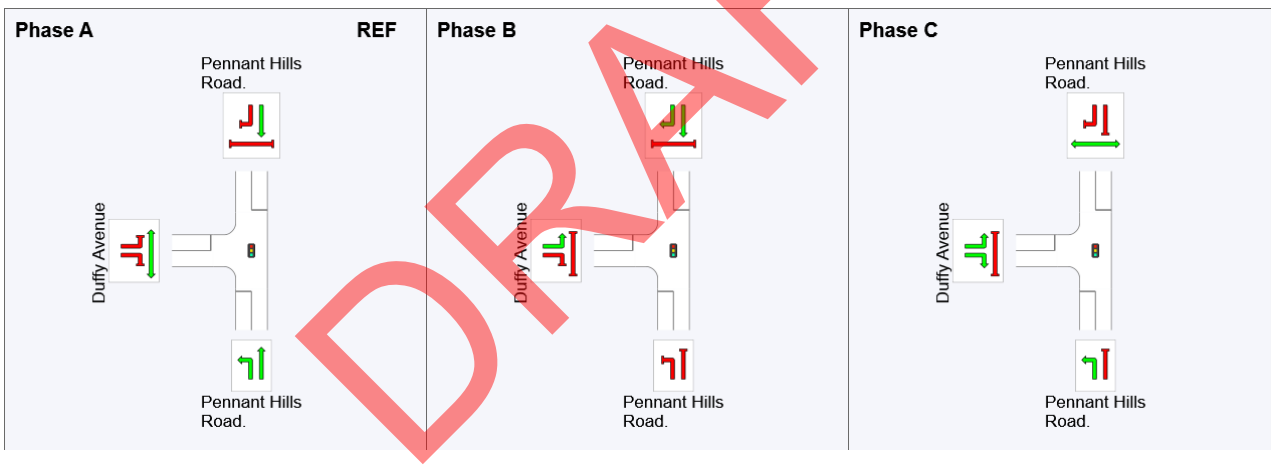
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

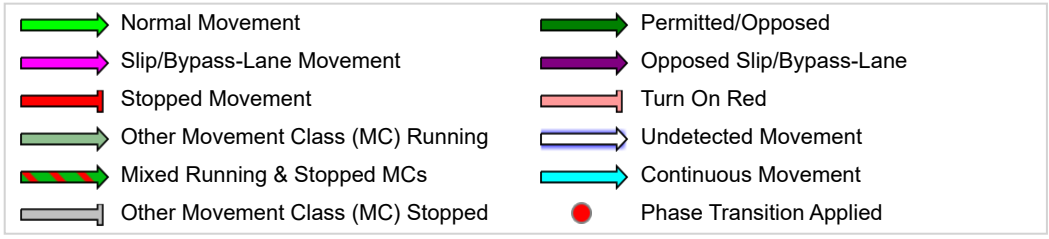
Phase	A	B	C
Phase Change Time (sec)	0	75	94
Green Time (sec)	70	13	20
Phase Time (sec)	76	19	25
Phase Split	63%	16%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	45	2.3	45	2.3	0.138	6.6	LOS A	0.4	2.6	0.69	0.66	0.69	37.1
2	T1	34	0.0	34	0.0	0.138	6.2	LOS A	0.4	2.6	0.69	0.66	0.69	37.6
3	R2	27	0.0	27	0.0	0.138	9.4	LOS A	0.4	2.6	0.69	0.66	0.69	34.7
Approach		106	1.0	106	1.0	0.138	7.2	LOS A	0.4	2.6	0.69	0.66	0.69	36.9
East: Duffy Avenue														
4	L2	13	0.0	13	0.0	0.435	3.6	LOS A	1.3	9.2	0.40	0.53	0.40	38.3
5	T1	214	3.9	214	3.9	0.435	3.4	LOS A	1.3	9.2	0.40	0.53	0.40	38.7
6	R2	291	2.9	291	2.9	0.435	6.6	LOS A	1.3	9.2	0.40	0.53	0.40	38.7
Approach		517	3.3	517	3.3	0.435	5.2	LOS A	1.3	9.2	0.40	0.53	0.40	38.7
North: Quarter Sessions Road														
7	L2	252	0.8	252	0.8	0.360	5.3	LOS A	1.0	7.3	0.65	0.64	0.65	35.8
8	T1	61	0.0	61	0.0	0.360	5.0	LOS A	1.0	7.3	0.65	0.64	0.65	38.3
9	R2	11	0.0	11	0.0	0.360	8.2	LOS A	1.0	7.3	0.65	0.64	0.65	38.3
Approach		323	0.7	323	0.7	0.360	5.3	LOS A	1.0	7.3	0.65	0.64	0.65	36.6
West: Duffy Avenue														
10	L2	11	10.0	11	10.0	0.315	5.3	LOS A	0.8	5.9	0.60	0.61	0.60	37.6
11	T1	235	1.3	235	1.3	0.315	4.8	LOS A	0.8	5.9	0.60	0.61	0.60	35.7
12	R2	48	6.5	48	6.5	0.315	8.1	LOS A	0.8	5.9	0.60	0.61	0.60	38.2
Approach		294	2.5	294	2.5	0.315	5.3	LOS A	0.8	5.9	0.60	0.61	0.60	36.4
All Vehicles		1240	2.2	1240	2.2	0.435	5.4	LOS A	1.3	9.2	0.54	0.59	0.54	37.8

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	117	0.9	117	0.9	* 0.923	64.8	LOS E	24.3	171.9	1.00	1.09	1.27	18.8
22	T1	453	1.6	453	1.6	0.923	60.7	LOS E	24.3	171.9	1.00	1.09	1.27	18.8
23b	R3	73	7.2	73	7.2	0.401	60.4	LOS E	2.5	18.7	0.97	0.77	0.97	19.2
Approach		642	2.1	642	2.1	0.923	61.4	LOS E	24.3	171.9	1.00	1.05	1.23	18.9
East: Duffy Avenue														
4b	L3	106	1.0	106	1.0	0.243	40.3	LOS D	3.1	22.1	0.80	0.76	0.80	29.8
5	T1	241	5.2	241	5.2	0.845	58.0	LOS E	8.9	65.4	0.99	0.95	1.17	14.0
6a	R1	126	2.5	126	2.5	0.621	60.5	LOS E	4.5	32.1	1.00	0.81	1.02	13.8
Approach		474	3.6	474	3.6	0.845	54.7	LOS D	8.9	65.4	0.95	0.87	1.05	18.1
NorthWest: Chilvers Road														
27a	L1	119	2.7	119	2.7	0.504	38.1	LOS D	9.0	64.0	0.85	0.76	0.85	20.4
28	T1	506	0.6	506	0.6	0.504	35.3	LOS D	9.2	64.9	0.87	0.76	0.87	31.5
29b	R3	176	1.8	176	1.8	* 0.938	84.4	LOS F	7.8	55.7	1.00	1.07	1.55	11.5
Approach		801	1.2	801	1.2	0.938	46.5	LOS D	9.2	64.9	0.90	0.83	1.02	25.3
West: Duffy Avenue														
10b	L3	193	1.6	193	1.6	0.342	36.7	LOS D	5.1	36.2	0.78	0.78	0.78	32.5
11	T1	260	0.8	260	0.8	* 0.954	79.6	LOS E	11.7	82.6	1.00	1.19	1.52	22.6
12a	R1	193	0.0	193	0.0	0.930	78.6	LOS E	8.3	58.1	1.00	1.11	1.49	28.3
Approach		645	0.8	645	0.8	0.954	66.5	LOS E	11.7	82.6	0.94	1.04	1.29	26.9
All Vehicles		2562	1.8	2562	1.8	0.954	56.8	LOS E	24.3	171.9	0.94	0.95	1.15	23.3

Site Level of Service (LOS) Method: Delay (SIDRA). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
East: Duffy Avenue											
P2	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
NorthWest: Chilvers Road											
P7	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	223.9	220.5	0.98

West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
P4B	Slip/ Bypass	53	54.3	LOS E	0.2	0.2	0.95	0.95	211.4	204.3	0.97
All Pedestrians		263	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.5	0.98

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

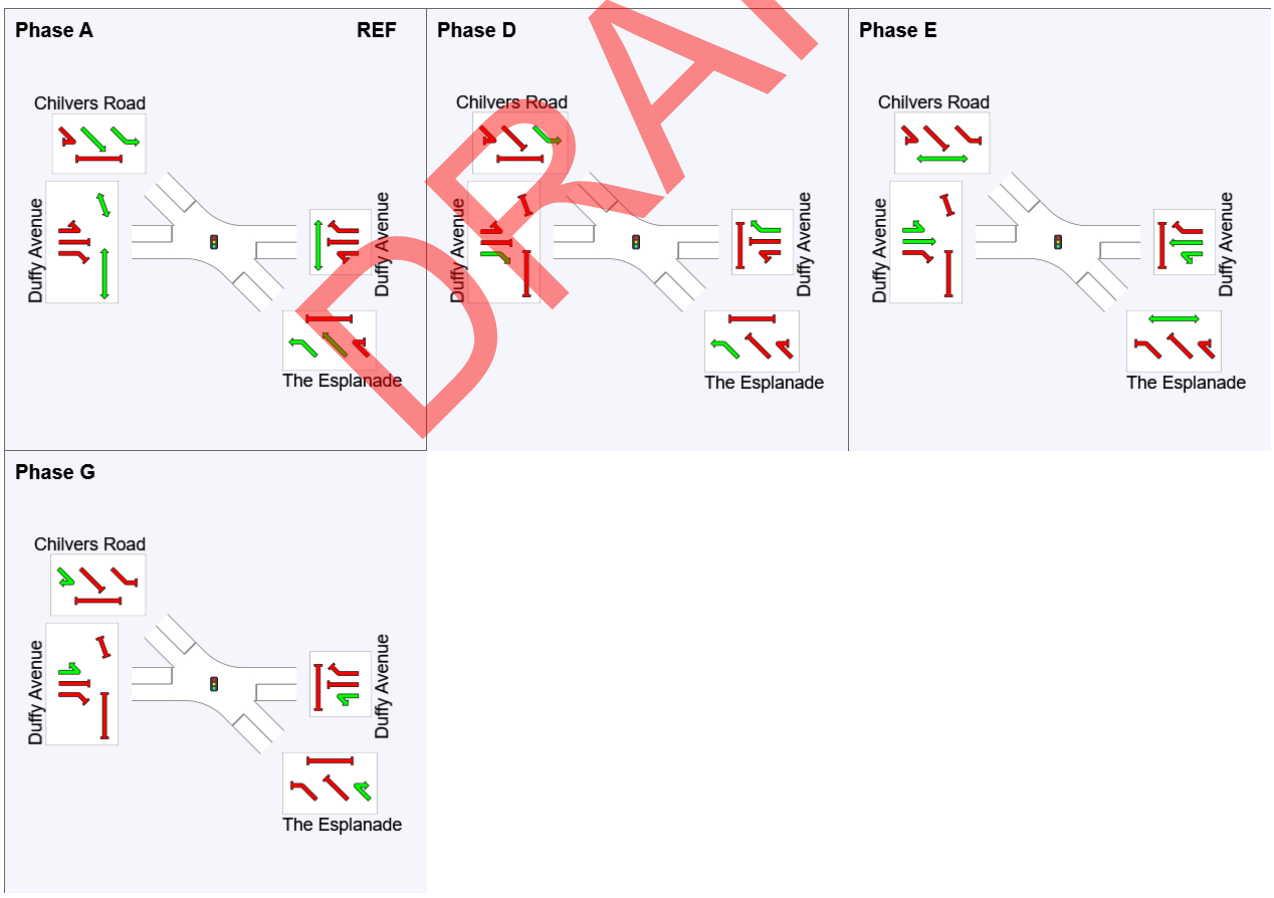
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

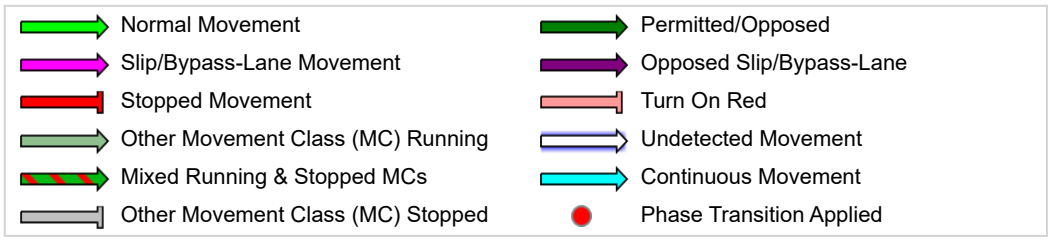
Phase	A	D	E	G
Phase Change Time (sec)	0	47	69	97
Green Time (sec)	38	13	19	14
Phase Time (sec)	47	22	28	23
Phase Split	39%	18%	23%	19%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Conversion (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	122	1.7	122	1.7	0.957	82.5	LOS F	16.8	119.5	1.00	1.00	1.29	21.1
3	R2	652	1.8	652	1.8	0.957	83.2	LOS F	16.8	119.5	1.00	1.00	1.29	21.0
Approach		774	1.8	774	1.8	0.957	83.1	LOS F	16.8	119.5	1.00	1.00	1.29	21.0
East: Sefton Road														
4	L2	647	1.1	647	1.1	* 0.735	14.0	LOS B	7.3	51.7	0.66	0.79	0.66	41.7
5	T1	203	1.0	203	1.0	* 0.998	102.6	LOS F	9.9	69.9	0.73	1.03	1.57	22.4
Approach		851	1.1	851	1.1	0.998	35.2	LOS D	9.9	69.9	0.68	0.84	0.88	31.3
West: Sefton Road														
11	T1	128	0.8	128	0.8	0.105	9.1	LOS A	1.8	12.4	0.42	0.34	0.42	44.5
12	R2	162	1.3	162	1.3	* 0.881	46.8	LOS D	4.3	30.4	1.00	0.97	1.38	22.1
Approach		291	1.1	291	1.1	0.881	30.1	LOS C	4.3	30.4	0.74	0.69	0.95	31.9
All Vehicles		1915	1.4	1915	1.4	0.998	53.8	LOS D	16.8	119.5	0.82	0.88	1.06	25.6

Site Level of Service (LOS) Method: Delay (SIDRA). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
West: Sefton Road											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.6	0.98

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Conversion (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

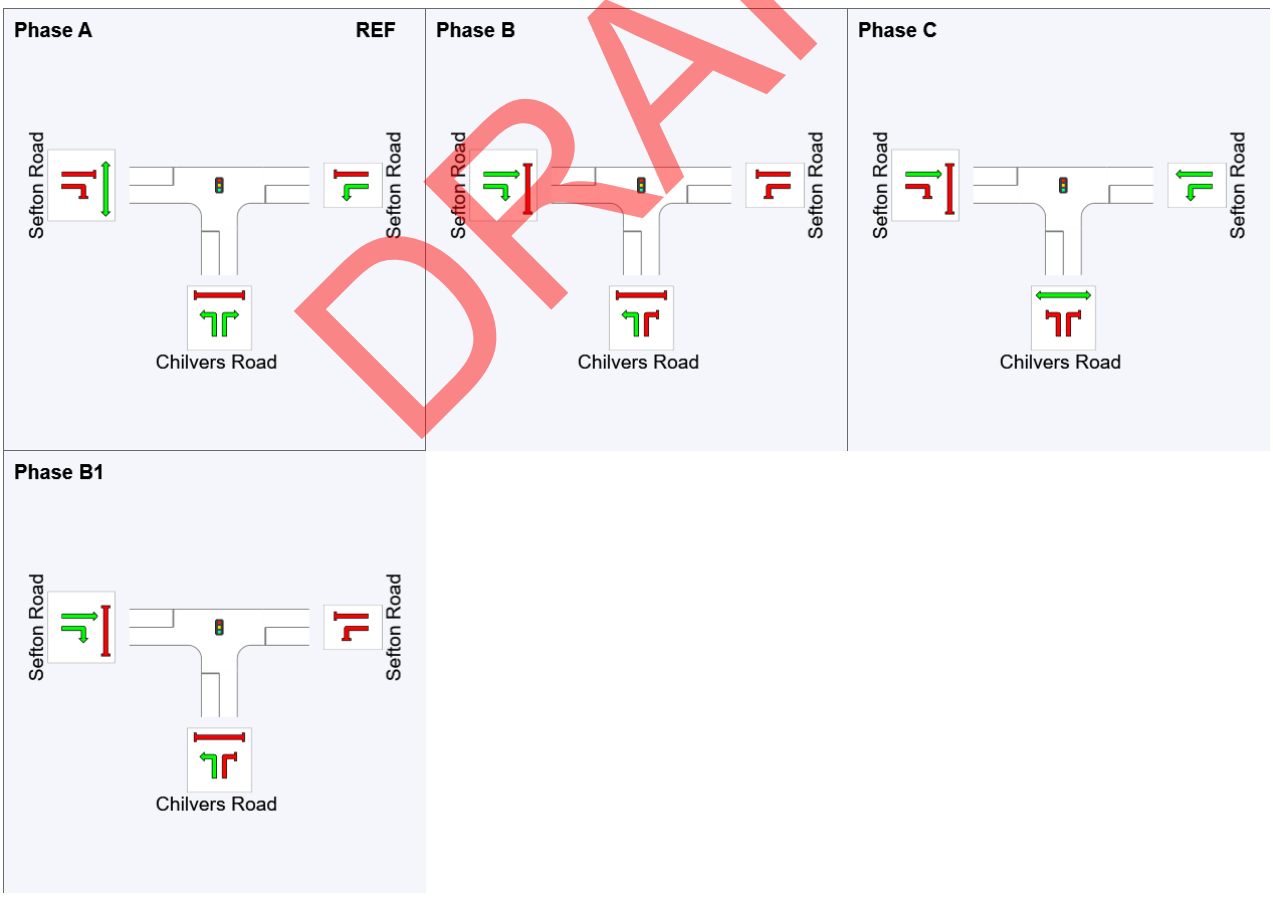
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

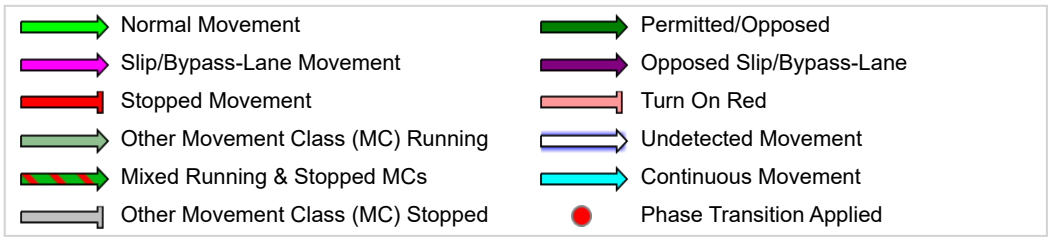
Phase	A	B	C	B1
Phase Change Time (sec)	0	35	50	105
Green Time (sec)	26	6	46	6
Phase Time (sec)	35	15	55	15
Phase Split	29%	13%	46%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	251	5.5	251	5.5	0.721	24.2	LOS C	19.0	138.4	0.74	0.73	0.74	40.0
2	T1	2132	4.3	2132	4.3	* 0.721	18.7	LOS B	20.3	147.2	0.77	0.72	0.77	51.1
Approach		2382	4.5	2382	4.5	0.721	19.3	LOS B	20.3	147.2	0.77	0.72	0.77	50.3
North: Pennant Hills Road.														
8	T1	1936	3.5	1936	3.5	0.456	6.4	LOS A	8.8	63.7	0.42	0.39	0.42	62.4
9	R2	191	5.5	191	5.5	* 0.984	100.3	LOS F	9.3	67.9	1.00	1.08	1.70	14.7
Approach		2126	3.7	2126	3.7	0.984	14.8	LOS B	9.3	67.9	0.47	0.45	0.54	54.0
West: Duffy Avenue														
10	L2	201	6.8	201	6.8	0.349	26.1	LOS C	3.9	29.0	0.58	0.71	0.58	34.3
12	R2	237	2.7	237	2.7	* 0.780	41.8	LOS D	7.6	54.3	0.91	0.82	0.94	29.0
Approach		438	4.6	438	4.6	0.780	34.6	LOS C	7.6	54.3	0.76	0.77	0.78	31.2
All Vehicles		4946	4.1	4946	4.1	0.984	18.7	LOS B	20.3	147.2	0.64	0.61	0.67	49.5

Site Level of Service (LOS) Method: Delay (SIDRA). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	228.2	226.1	0.99
West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	222.7	219.0	0.98

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: 2032 Option 3 + Upgrade WE)]

Network: N101 [2032 Option 3 + Upgrade WE (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Site User-Given Phase Times)

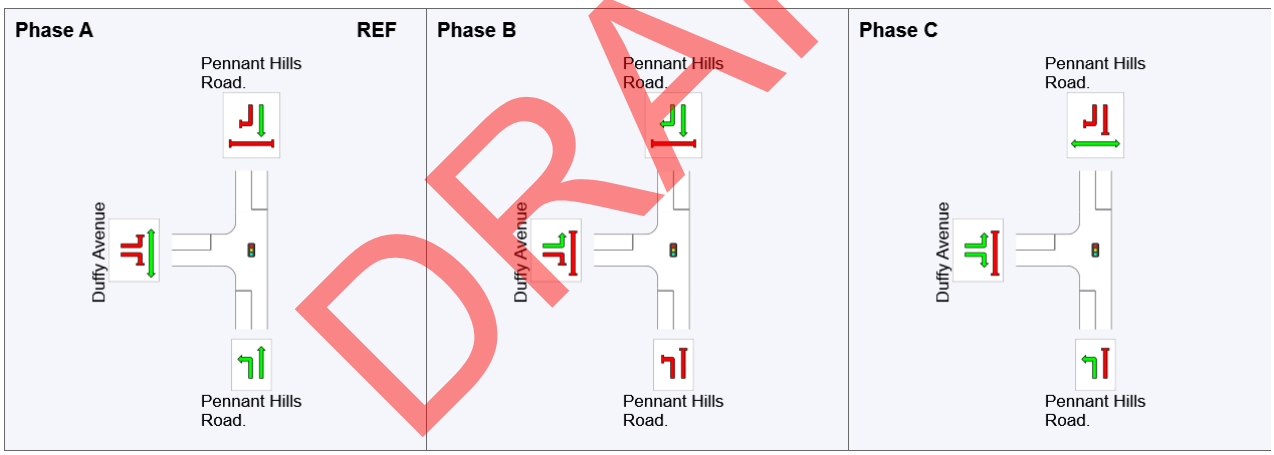
Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	4	79	98
Green Time (sec)	70	13	20
Phase Time (sec)	76	19	25
Phase Split	63%	16%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

MOVEMENT SUMMARY

Site: 5 [Duffy Avenue / Quarter Sessions Road (Site Folder: 2032 Option 3 + Upgrade WE + Park Traffic)]

Network: N101 [2032 Option 3 + Upgrade WE + Park Traffic (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Quarter Sessions Road														
1	L2	45	2.3	45	2.3	0.145	7.1	LOS A	0.4	2.8	0.72	0.68	0.72	36.9
2	T1	34	0.0	34	0.0	0.145	6.7	LOS A	0.4	2.8	0.72	0.68	0.72	37.4
3	R2	27	0.0	27	0.0	0.145	9.9	LOS A	0.4	2.8	0.72	0.68	0.72	34.3
Approach		106	1.0	106	1.0	0.145	7.7	LOS A	0.4	2.8	0.72	0.68	0.72	36.7
East: Duffy Avenue														
4	L2	13	0.0	13	0.0	0.474	3.7	LOS A	1.5	10.6	0.42	0.53	0.42	38.3
5	T1	214	3.9	214	3.9	0.474	3.5	LOS A	1.5	10.6	0.42	0.53	0.42	38.7
6	R2	341	2.5	341	2.5	0.474	6.6	LOS A	1.5	10.6	0.42	0.53	0.42	38.6
Approach		567	3.0	567	3.0	0.474	5.4	LOS A	1.5	10.6	0.42	0.53	0.42	38.6
North: Quarter Sessions Road														
7	L2	302	0.7	302	0.7	0.416	5.4	LOS A	1.3	8.8	0.69	0.66	0.69	35.7
8	T1	61	0.0	61	0.0	0.416	5.1	LOS A	1.3	8.8	0.69	0.66	0.69	38.2
9	R2	11	0.0	11	0.0	0.416	8.3	LOS A	1.3	8.8	0.69	0.66	0.69	38.2
Approach		374	0.6	374	0.6	0.416	5.5	LOS A	1.3	8.8	0.69	0.66	0.69	36.5
West: Duffy Avenue														
10	L2	11	10.0	11	10.0	0.329	5.8	LOS A	0.9	6.3	0.64	0.64	0.64	37.5
11	T1	235	1.3	235	1.3	0.329	5.2	LOS A	0.9	6.3	0.64	0.64	0.64	35.5
12	R2	48	6.5	48	6.5	0.329	8.5	LOS A	0.9	6.3	0.64	0.64	0.64	38.1
Approach		294	2.5	294	2.5	0.329	5.8	LOS A	0.9	6.3	0.64	0.64	0.64	36.3
All Vehicles		1341	2.0	1341	2.0	0.474	5.7	LOS A	1.5	10.6	0.56	0.61	0.56	37.8

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

MOVEMENT SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: 2032 Option 3 + Upgrade WE + Park Traffic)]

Network: N101 [2032 Option 3 + Upgrade WE + Park Traffic (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: The Esplanade														
21a	L1	128	0.8	128	0.8	* 0.966	80.4	LOS F	27.8	197.1	1.00	1.19	1.41	16.3
22	T1	453	1.6	453	1.6	0.966	76.3	LOS E	27.8	197.1	1.00	1.19	1.41	16.3
23b	R3	73	7.2	73	7.2	0.374	59.2	LOS E	2.5	18.4	0.96	0.77	0.96	19.4
Approach		654	2.1	654	2.1	0.966	75.2	LOS E	27.8	197.1	1.00	1.14	1.36	16.6
East: Duffy Avenue														
4b	L3	106	1.0	106	1.0	0.265	42.3	LOS D	3.1	21.7	0.76	0.74	0.76	29.3
5	T1	261	4.8	261	4.8	0.923	66.4	LOS E	10.3	75.2	0.99	1.06	1.32	12.7
6a	R1	126	2.5	126	2.5	0.621	60.5	LOS E	4.5	32.1	1.00	0.81	1.02	13.8
Approach		494	3.4	494	3.4	0.923	59.7	LOS E	10.3	75.2	0.94	0.93	1.12	17.0
NorthWest: Chilvers Road														
27a	L1	119	2.7	119	2.7	0.518	39.0	LOS D	9.3	66.0	0.88	0.78	0.88	20.1
28	T1	506	0.6	506	0.6	0.518	36.2	LOS D	9.4	66.1	0.89	0.77	0.89	31.2
29b	R3	195	1.6	195	1.6	* 0.969	93.9	LOS F	9.3	65.8	1.00	1.11	1.64	10.6
Approach		820	1.2	820	1.2	0.969	50.3	LOS D	9.4	66.1	0.92	0.86	1.07	24.2
West: Duffy Avenue														
10b	L3	212	1.5	212	1.5	0.367	36.4	LOS D	5.6	39.7	0.79	0.78	0.79	32.6
11	T1	280	0.8	280	0.8	* 0.982	90.5	LOS F	13.6	95.6	1.00	1.26	1.61	21.1
12a	R1	204	0.0	204	0.0	0.986	96.7	LOS F	9.9	69.4	1.00	1.23	1.69	25.7
Approach		696	0.8	696	0.8	0.986	75.9	LOS E	13.6	95.6	0.93	1.11	1.38	25.2
All Vehicles		2663	1.7	2663	1.7	0.986	64.8	LOS E	27.8	197.1	0.95	1.00	1.23	21.6

Site Level of Service (LOS) Method: Delay (SIDRA). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: The Esplanade											
P5	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
East: Duffy Avenue											
P2	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
NorthWest: Chilvers Road											
P7	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	223.9	220.5	0.98

West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	219.8	215.2	0.98
P4B	Slip/ Bypass	53	54.3	LOS E	0.2	0.2	0.95	0.95	211.4	204.3	0.97
All Pedestrians		263	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.5	0.98

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.

PHASING SUMMARY

Site: 10 [Duffy Avenue / The Esplanade / Chilvers Road (Site Folder: 2032 Option 3 + Upgrade WE + Park Traffic)]

Network: N101 [2032 Option 3 + Upgrade WE + Park Traffic (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

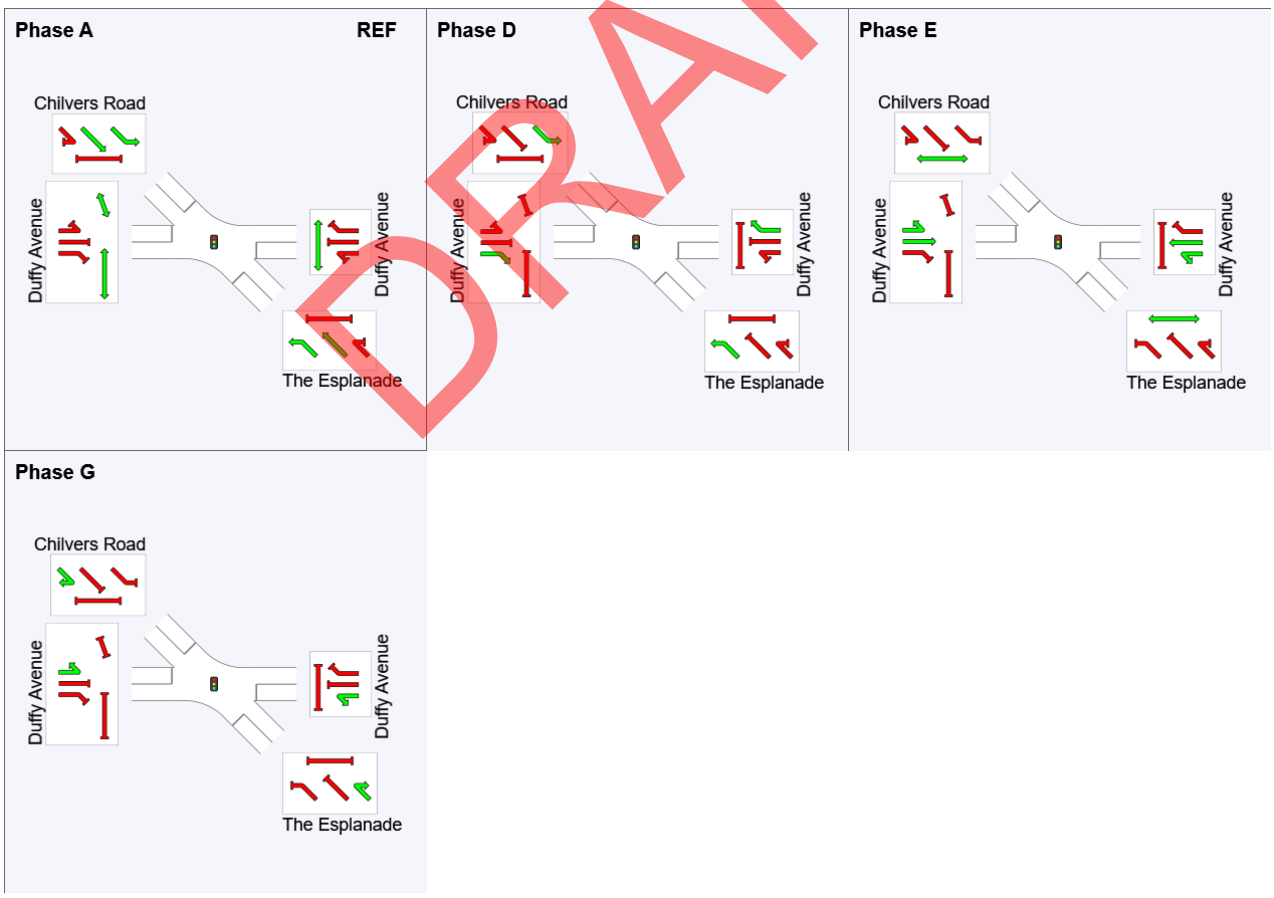
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, D, E, G
Output Phase Sequence: A, D, E, G

Phase Timing Summary

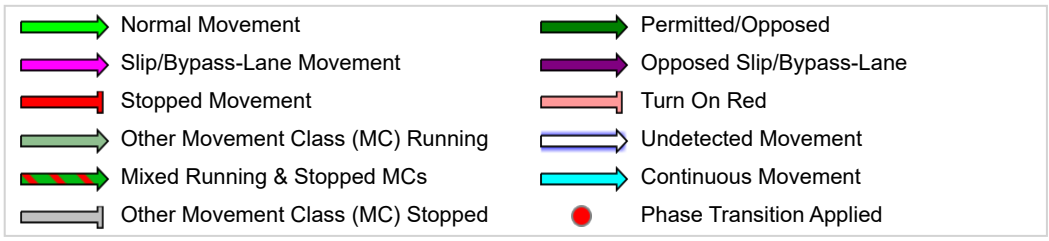
Phase	A	D	E	G
Phase Change Time (sec)	0	46	68	96
Green Time (sec)	37	13	19	15
Phase Time (sec)	46	22	28	24
Phase Split	38%	18%	23%	20%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Copy - Conversion (Site Folder: 2032 Option 3 + Upgrade WE + Park Traffic)]

Network: N101 [2032 Option 3 + Upgrade WE + Park Traffic (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Chilvers Road														
1	L2	122	1.7	122	1.7	* 0.945	78.2	LOS E	16.8	119.2	1.00	0.98	1.25	21.8
3	R2	671	1.7	671	1.7	0.945	79.5	LOS E	16.8	119.2	1.00	0.98	1.25	21.6
Approach		793	1.7	793	1.7	0.945	79.3	LOS E	16.8	119.2	1.00	0.98	1.25	21.6
East: Sefton Road														
4	L2	666	1.1	666	1.1	0.727	14.2	LOS B	7.6	53.9	0.67	0.79	0.67	41.6
5	T1	169	1.2	169	1.2	* 0.949	79.6	LOS E	7.2	50.9	0.73	0.92	1.42	26.0
Approach		836	1.1	836	1.1	0.949	27.4	LOS C	7.6	53.9	0.68	0.82	0.82	34.7
West: Sefton Road														
11	T1	128	0.8	128	0.8	0.106	9.5	LOS A	1.8	12.7	0.43	0.35	0.43	44.3
12	R2	162	1.3	162	1.3	0.881	46.1	LOS D	4.2	30.0	1.00	0.96	1.38	22.3
Approach		291	1.1	291	1.1	0.881	29.9	LOS C	4.2	30.0	0.75	0.69	0.96	32.0
All Vehicles		1919	1.4	1919	1.4	0.949	49.2	LOS D	16.8	119.2	0.82	0.87	1.02	26.6

Site Level of Service (LOS) Method: Delay (SIDRA). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chilvers Road											
P1	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	221.3	217.2	0.98
West: Sefton Road											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	219.3	214.6	0.98

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.

PHASING SUMMARY

Site: 14v [Chilvers Road / Sefton Road - Copy - Conversion (Site Folder: 2032 Option 3 + Upgrade WE + Park Traffic)]

Network: N101 [2032 Option 3 + Upgrade WE + Park Traffic (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

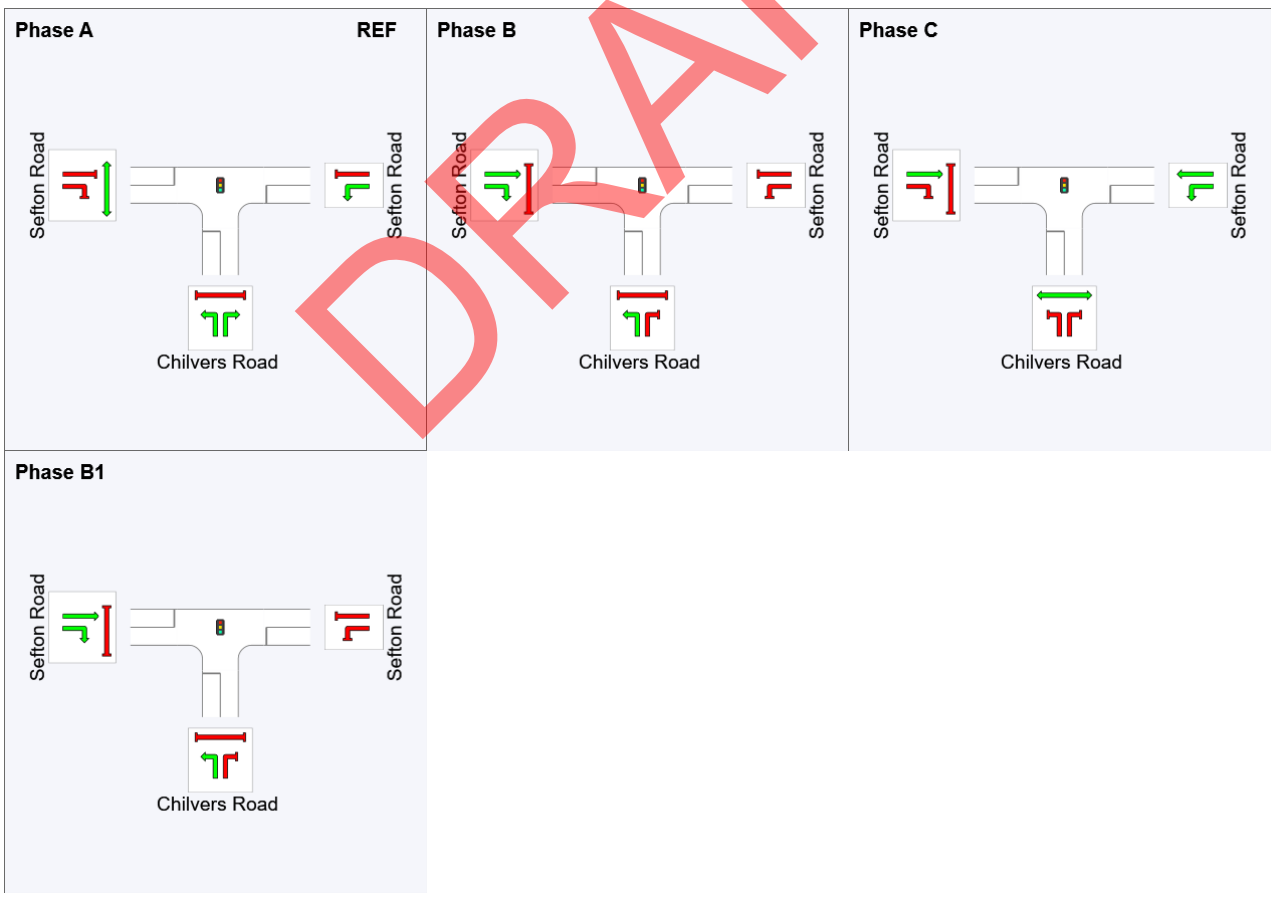
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C, B1
Output Phase Sequence: A, B, C, B1

Phase Timing Summary

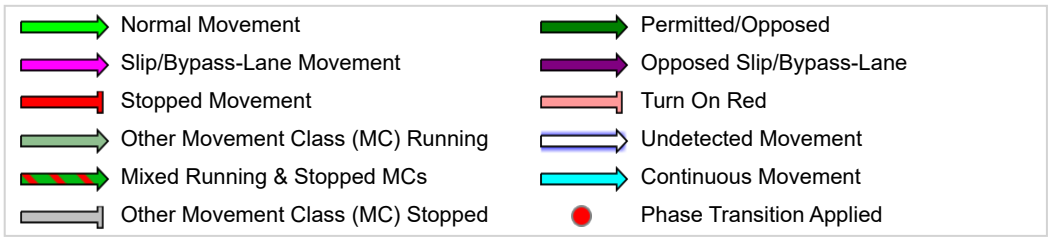
Phase	A	B	C	B1
Phase Change Time (sec)	0	36	51	105
Green Time (sec)	27	6	45	6
Phase Time (sec)	36	15	54	15
Phase Split	30%	13%	45%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: P:\P5524 Westleigh Park Traffic Impact and Access Study\Technical\Models\SIDRA\P5524.001S Westleigh Park Traffic Impact and Access Study model_WE.sip9

MOVEMENT SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: 2032 Option 3 + Upgrade WE + Park Traffic)]

Network: N101 [2032 Option 3 + Upgrade WE + Park Traffic (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pennant Hills Road.														
1	L2	261	5.2	261	5.2	0.794	29.7	LOS C	21.8	158.7	0.85	0.81	0.85	35.7
2	T1	2132	4.3	2132	4.3	* 0.794	23.9	LOS C	23.0	167.1	0.87	0.81	0.87	47.7
Approach		2393	4.4	2393	4.4	0.794	24.5	LOS C	23.0	167.1	0.87	0.81	0.87	46.8
North: Pennant Hills Road.														
8	T1	1936	3.5	1936	3.5	0.467	7.2	LOS A	9.4	67.9	0.45	0.41	0.45	61.5
9	R2	200	5.3	200	5.3	* 0.789	65.3	LOS E	7.5	54.8	1.00	0.88	1.16	20.3
Approach		2136	3.6	2136	3.6	0.789	12.7	LOS B	9.4	67.9	0.50	0.45	0.52	55.8
West: Duffy Avenue														
10	L2	211	6.5	211	6.5	0.323	23.9	LOS C	3.9	28.6	0.55	0.70	0.55	35.2
12	R2	247	2.6	247	2.6	* 0.775	38.8	LOS D	7.7	54.8	0.88	0.81	0.91	29.9
Approach		458	4.4	458	4.4	0.775	31.9	LOS C	7.7	54.8	0.73	0.76	0.74	32.1
All Vehicles		4986	4.1	4986	4.1	0.794	20.1	LOS C	23.0	167.1	0.70	0.65	0.71	48.4

Site Level of Service (LOS) Method: Delay (SIDRA). 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
North: Pennant Hills Road.											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	228.2	226.1	0.99
West: Duffy Avenue											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	217.3	211.9	0.98
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	222.7	219.0	0.98

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.

PHASING SUMMARY

Site: 11 [Duffy Avenue / Pennant Hills Road (Site Folder: 2032 Option 3 + Upgrade WE + Park Traffic)]

Network: N101 [2032 Option 3 + Upgrade WE + Park Traffic (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

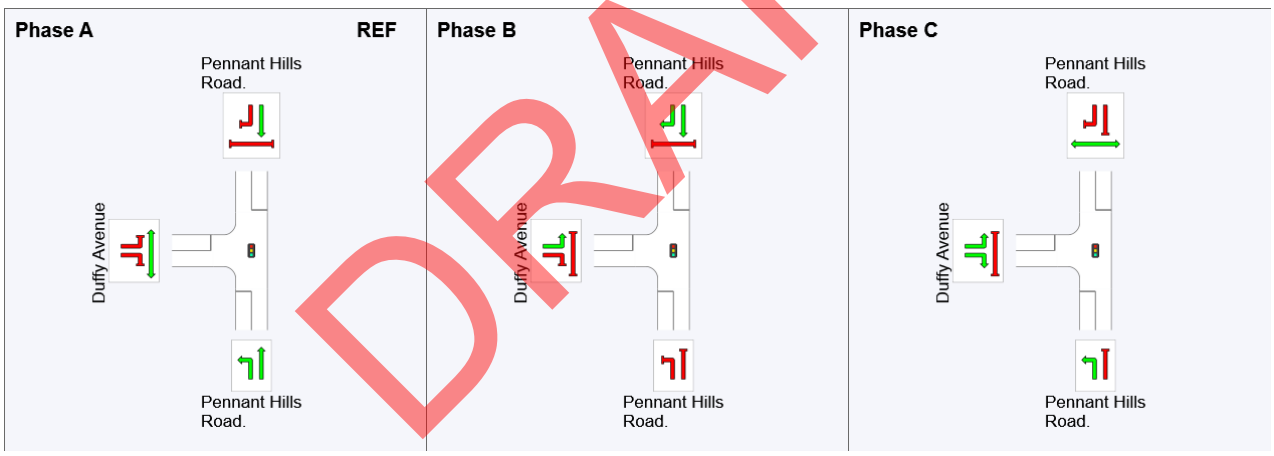
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	3	73	96
Green Time (sec)	64	17	21
Phase Time (sec)	70	23	27
Phase Split	58%	19%	23%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied