

Appendix 11

Traffic Impact Assessment – Aug 2019

Traffic Impact Assessment

Planning Proposal
33-43 Phillip Street, St Marys

Ref: 0196r05
29/08/2019

Development Control

Project No: 0196

Project: 33-43 Phillip Street, St Marys – Traffic Impact Assessment

Client: Haben Property Fund Pty Ltd.

File Reference: 0196r05 PP Addendum TIA_Station Plaza, St Marys

Revision History

Revision	Date	Details	Author	Approved by
1	28/08/2019	Issue 1	A. Rasouli	T. Lewis

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1 Introduction

1.1 Overview

Ason Group has been engaged by Haben Property Fund Pty Ltd to prepare a Traffic Impact Assessment (TIA) to support a Planning Proposal that includes residential, commercial and retail mixed-use development at 33-43 Phillip Street, St Marys (Site). The Site is located within the Penrith City Council (Council) local government area (LGA). A location plan which shows the Site in appreciation of the existing road network is presented in **Figure 1**.

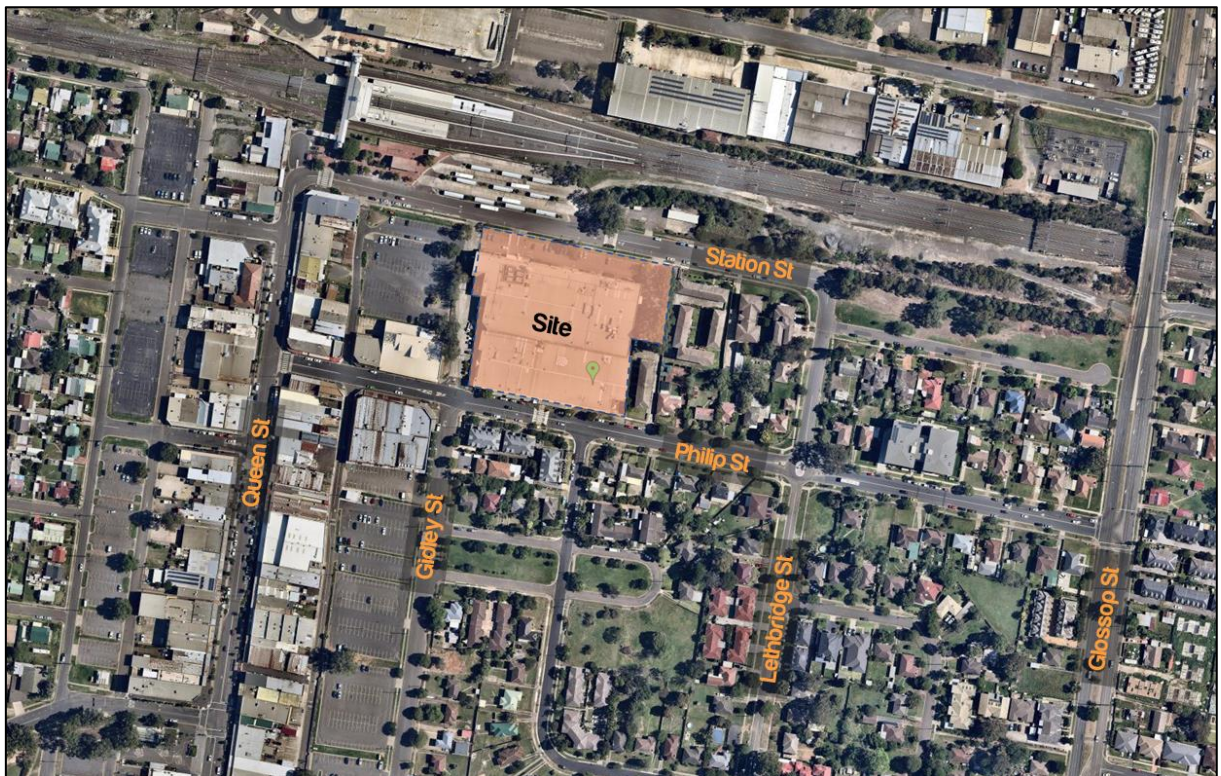


Figure 1: Location Plan

1.2 Objective

The intended outcome of this planning proposal is to amend the current Floor-Space-Ratio (FSR) controls applicable to the Site under PLEP 2010 to achieve the following development scenarios:

- A mix of residential, retail and commercial land uses on the Site, and
- Amendment to the FSR from 3.5:1 to permit a base FSR of 5.5:1.

For the purpose of assessing the implications of the proposal – including a high-level assessment of traffic impacts – indicative development yield has been provided to Ason Group which will be discussed in Section 2 of this TIA. This report has been prepared to assess the traffic implications of the proposal, identify potential impacts to the local traffic and transport environment and identify means by which any such impacts can be appropriately mitigated or managed.

Ultimately, the outcome of this TIA has been adopted in assisting with preparation of a Voluntary Planning Agreement (VPA) offer by the Haben Property Fund Pty Ltd to ascertain that the Planning Proposal could be progressed to exhibition regardless of any potential future regional upgrades on the surrounding road network.

1.3 Background

St Marys Town Centre is being investigated for significant land-use changes, FSR uplifts and employment and residential opportunities as a result of infrastructure investment (rail). Accordingly, the Government is intending to undertake a detailed review of the traffic implications for the Town Centre in a microsimulation platform (the Aimsun model) which is likely to be available in Mid-2020.

Ason Group prepared a detailed TIA in September 2016 based on an earlier design iteration (for an FSR of 8:1) and an addendum TIA in January 2018 to support the proposal. This report seeks to update those earlier studies into a consolidated study to support the planning proposal.

As part of the Gateway determination (Condition 1(a)) and Council's June 2018 report, a meeting was held on 31 October 2018 between the Project Team, Roads and Maritime Services (RMS) and Council. It was established in the meeting that additional SIDRA network modelling was required – prior to completion of the Aimsun model – and as part of addressing planned growth for the Town Centre and North South Rail Link (NSRL) in the earlier stages, to identify local traffic implications, multi-modal impacts and the requirement of any state and regional infrastructure upgrades at 10 key intersections in the area.

Accordingly, Ason Group completed the following tasks:

- **Town Centre SIDRA Modelling and Transport Impact Assessment** – SIDRA network modelling of “Future Base” scenarios were undertaken on the basis of the traffic volumes obtained from RMS strategic model as well as Council's land-use plan for 34 precincts at St Marys Town Centre.
- **The Planning Proposal Impact Assessment** – SIDRA network modelling of the same set of intersections for “Future Base plus Planning Proposal” scenarios were undertaken having regard for the traffic volumes produced from the Planning Proposal indicative yield to establish a comparative traffic assessment exercise. This generally demonstrated that necessary precinct-

wide upgrades would provide sufficient spare capacity to accommodate the longer-term traffic associated with additional uplift sought for the subject site.

The above two studies were completed and the relevant reports submitted to Council for review as part of their Planning Proposal assessment in February 2019. Following submission of the reports, a meeting was held at the Council's offices on 02 July 2019 to discuss the outcome of the studies.

Key outcomes of that meeting can be summarised as follows:

- Council agreed with the VPA to include an offer for upgrading the Phillip Street / Blair Avenue and proposed Site access to be converted into a signalised intersection,
- Council requested further SIDRA modelling to understand the traffic impact of the proposal onto the following two key local intersections when considering the development in isolation, without considering any other future uplifts or any upgrades to the existing infrastructure and for an interim modelling scenario (Existing + Development):
 - Phillip Street / Glossop Street, and
 - Phillip Street / Queen Street.
- Modelled scenarios, were to include:
 - Baseline scenario – 2018 surveys,
 - Opening year base (assumed to be 2025) – 2018 base scenario + 2% p.a. growth over 7 years,
 - Opening year base + Planning Proposal, and
 - 10 year after completion of the project – 2035 base (applying 2% p.a.) + Planning Proposal.
- The outcome of that modelling forming the basis for any future VPA before approving the proposal to proceed for an exhibition.

Further to the above-mentioned meeting a tele-conference was held between Ason Group and the Council of which sets out the required scope of works subject for this TIA which are outlined as follows.

1.4 Reference Documents

In the preparation of this report, reference is made to the following documents:

- Ason Group, Preliminary Transport Assessment – St Marys Town Centre – Future Baseline Traffic Modelling, dated 19 February 2019 (P0196r03v1),
- Ason Group, Planning Proposal TIA, 33-43 Phillip Street, St Marys, dated 19 February 2019 (P0196404v2),
- Ason Group, Planning Proposal TIA, AG Station Street, St Marys, Issue VI, 2016,
- Penrith Local Environmental Plan 2010 (LEP 2010)
- Penrith Development Control Plans 2014 (DCP 2014);
- RMS (formerly RTA) Guide to Traffic Generating Developments, 2002 (RMS Guide);
- RMS Technical Direction 2013/04a – Guide to Traffic Generating Developments; Updated traffic surveys (TDT 2013/04a).
- Penrith City Council, Planning Proposal To increase the maximum permissible building height and floor space for development on 33-43 Phillip Street, St Marys, dated June 2018 (Planning Proposal).

2 Planning Proposal

Haben Property Fund Pty Ltd is proposing to redevelop the Station Plaza Shopping Centre as a gateway mixed-use development strategically located at the northern end of the St Marys Town Centre. The redevelopment of the Site will provide a mix of apartments, upgraded retail facilities and commercial floor space together with opportunities to activate streets and increase pedestrian connectivity within the Town Centre, improving both the safety and amenity of the St Marys train station precinct. Redevelopment of the Site will act as a key catalyst for the ongoing revitalisation of the Town Centre and will:

- Reinforce the St Mary's Town Centre as the secondary centre for the Penrith local government area consistent with the St Marys Town Centre Strategy and Master plan;
- Support the increased use of existing public transport infrastructure by locating additional residents and businesses in close proximity to an existing railway station;
- Deliver improved built form outcomes and improvements to the public domain;
- Provide a diversity of housing and retail opportunities close to the station;
- Create an activated, lively, safe and accessible pedestrian environment to encourage the ongoing development of the town centre as a vibrant 24/7 destination.
- Provision of a signalised intersection at the existing intersection of Phillip Street / Blair Avenue to form the future vehicular access for the proposal.

2.1 Planning Controls

Subject site is currently zoned as B4 (Mixed Use) with a maximum building height of 32 metres and a FSR of 3.5:1. The planning proposal seeks to make the following changes to existing planning controls for the area, summarised in the table below.

Table 1: Summary of Changes to Planning Controls

Control	Existing	Proposed
Floor-space-ratio (FSR)	3.5:1	5.5:1

2.2 Indicative Yield

As a result of the above, preliminary urban design analysis has identified the following indicative development yield:

- 584 residential units
- 2,210 m² of office GFA,
- 1,165 m² of retail – speciality shop GFA, and
- 4,500 m² of retail – supermarket GFA.

3 Existing Conditions

3.1 Site Description

The site has a street address of 33-43 Phillip Street, St Marys and is legally described as Lot 7 in DP734738.

Currently, the Site is zoned B4 Mixed Use under the PLEP 2010 and occupied by a retail development with a major supermarket chain (Coles) serving as the 'anchor' tenancy. It has an approximate gross leasable floor area (GLFA) of 7,800m² associated with the existing shopping centre, including a 3,800m² supermarket. The total site area of the lot is around 11,805m².

Phillip Street forms the southern site frontage and provides the primary pedestrian entry to the site. Station Street forms the northern site frontage which provides the primary vehicular access point to the undercover parking facilities. The eastern site boundary is formed by residential developments. A Council carpark lies to the west of the site, containing approximately 139 parking spaces. A Site plan is presented in **Figure 2**.



Figure 2: Site Location

3.2 Surrounding Road Network

3.2.1 Road Hierarchy

The broader road network surrounding the site — as shown in **Figure 3** — provides connectivity in all directions through arterial, sub-arterial and local / collector roads.

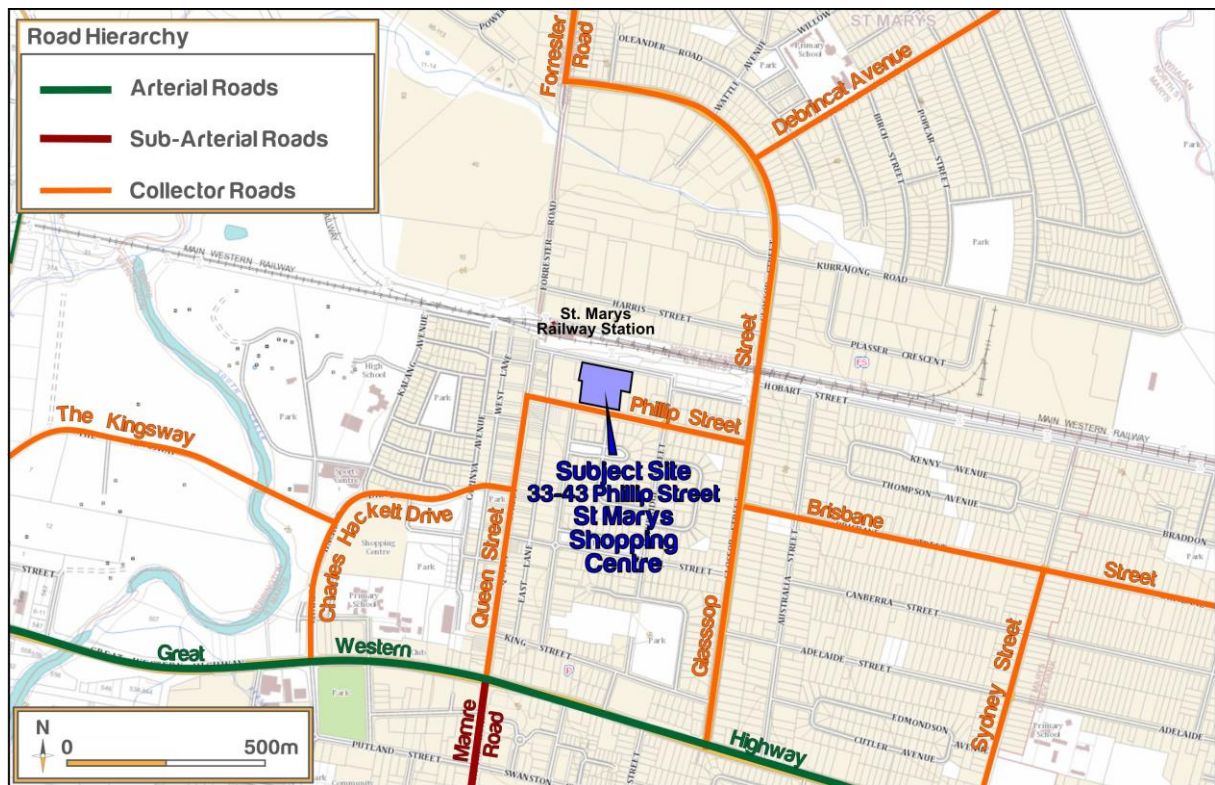


Figure 3: Surrounding Road Network

With reference to **Figure 3**, the key roads influenced by the Proposal and considered within this traffic study include:

Great Western Highway – an RMS classified State Road (SH 5) that runs in an east-west direction parallel to the M4 Western Motorway. The road provides a key arterial road link between Parramatta to the east and Penrith to the west. The road generally carries 3 lanes of traffic in each direction within a divided carriageway and is subject to a 60 km/h speed limit within the study area. The Great Western Highway intersects with Queen Street and Mamre Road to the southwest of the site, in the form of a signalised intersection.

Mamre Road – an RMS State Road (MR 536) that generally runs in a north-south direction between Elizabeth Drive to the south and St Marys to the north. The road generally carries 2 lanes of traffic in each direction and is subject to a 60 km/h speed limit on the approach to the Great Western Highway. Mamre Road intersects with the Great Western Highway towards the southwest corner of the site, in

the form of a major signalised intersection. The road provides a key arterial access route to the Western Sydney Employment Area to the south.

Glossop Street – an unclassified Regional Road (RR 7167) that generally runs in a north-south direction between Forrester Road to the north and the Great Western Highway to the south. The road provides a key local collector road connection over the railway line and generally carries 2 lanes of traffic in each direction. It is subject to a 60 km/h speed limit on the approach to the Phillip Street signalised T-junction.

Phillip Street – a local collector road providing an east-west link between Queen Street and Glossop Street. The road runs along the southern boundary of the site, generally carries 2 lanes for both directions and is subject to a 50 km/h speed limit. Parking restrictions apply along the majority of Phillip Street and along the site's frontage with "1P: 8.30am-6.00pm, Mon-Fri; 8.30am-12.30pm, Sat" restrictions in operation.

Queen Street – a local collector road, which runs along the length of the St Marys town centre and connects to the arterial road network at the Great Western Highway to the south. The road generally carries a single lane of traffic in each direction in addition to kerbside parking. Parking restrictions apply along the majority of Queen Street with "1P: 8.30am-6.00pm, Mon-Fri; 8.30am-12.30pm, Sat" restrictions in operation. Queen Street is considered a High Pedestrian Activity Area and is therefore subject to 40 km/h posted speed limits.

Station Street – a local road which runs in an east-west direction along the site's northern frontage and parallel to the train line. Station Street provides access to the local bus interchange to the north of the site. It connects with Queen Street and a significant portion of the street forms part of the High Pedestrian Activity Area subject to 40km/h posted speed limits that generally applies within the St Marys town centre. Unrestricted on-street parking is available along the eastern portion of the street.

3.2.2 Traffic Volumes on Surrounding Roads

In order to determine local traffic flows, updated traffic surveys were undertaken in December 2018 at the following key intersections for the morning and evening peak periods:

- Glossop Street / Phillip Street, and
- Queen Street / Phillip Street.

The following figures present the existing configuration of these two intersections as well as their modelled layout in SIDRA platform.

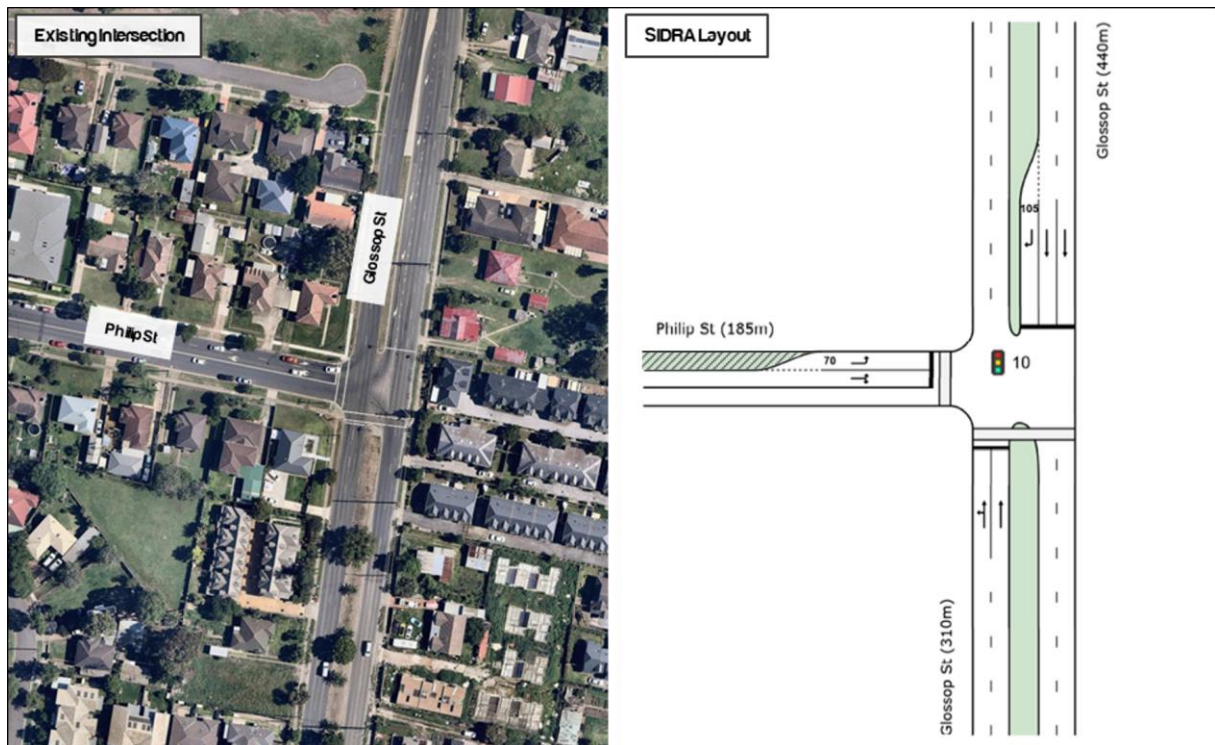


Figure 4: Glossop Street / Phillip Street intersection – Existing Configuration



Figure 5: Queen Street / Phillip Street intersection – Existing Configuration

These intersections have been selected in consultation with Council as they represent the locations which have potential to primarily be impacted by the Proposal. Peak hour volumes surveyed are summarised in **Figure 6**.



Figure 6: Morning and Afternoon Peak Hour Traffic Volumes – 2018 Surveyed Volumes

3.2.3 Road Network Performance

Results of the 'Existing Scenario' SIDRA analysis is summarised in **Table 2**. Relevant SIDRA outputs and intersection layouts are attached to this report at **Appendix A** providing further details regarding individual lanes.

Table 2: Existing Intersection Performance

Intersection	Scenario	Period	Overall Intersection Performance			Worst Movement Performance			
			DoS	Ave Delay	Ave LOS	Worst Movement	Approach Delay	Queue Distance (m)	LoS
Queen St / Phillip St	2018 Baseline	AM	0.18	2.7	A	East - R2	8.8	4.8	A
		PM	0.253	3.2	A	East - R2	10.9	7.5	A
Glossop St / Phillip St	2018 Baseline	AM	0.807	12.5	A	West - R2	46.6	18.4	D
		PM	0.616	17.1	B	West - R2	48.8	47.1	D

The results demonstrate that the key intersections in this vicinity operate with acceptable delays and overall Level of Service (LoS) during the road network AM and PM peak hours under the 2018 baseline scenario. It can be seen the 'worst movement performance' outputs that the right turn out from Phillip Street into Glossop Street currently operates at 'LoS' D during AM and PM peak hours — an acceptable performance.

4 Public & Active Transport

The study area and in particular the Site which is the subject of the Planning Proposal lies opposite the St Marys Interchange along Station Street, serviced by train (T1 Western Line) and numerous bus routes. A summary of the public transport options available near the Site is provided in **Figure 7**.

4.1.1 Bus services

St Marys is located in 'Region 1' of the NSW Government Bus Contract System, serviced by Busways. Region 1 includes Penrith, Richmond, Mount Druitt, St Marys, Blacktown and Rouse Hill. A summary of the bus routes servicing the area and typical bus service intervals are provided in below table.

Table 3: Bus Service Intervals

Route Number	Service Description	Weekday			Saturday	Sunday
		AM Peak Hour	Off-Peak Hour	PM Peak Hour		
745	St Marys to Castle Hill via Stanhope Gardens	30 min	60 min	30 min	120 min	-
758	Mt Druitt to St Marys via Tregear and Shalvey	15 min	30 min	15 min	30 min	60 min
759	Mt Druitt to St Marys via Ropes Crossing	30 min	60 min	30 min	60 min	60 min
770	Mt Druitt to Penrith via St Marys	30 min	30 min	30 min	60 min	60 min
771	Mt Druitt to Penrith via Colyton	30 min	30 min	30 min	60 min	60 min
774	Mt Druitt to Penrith via Nepean Hospital	30 min	30 min	30 min	60 min	60 min
775	Mt Druitt to Penrith via Erskine Park	30 min	30 min	30 min	60 min	60 min
776	Mt Druitt to Penrith via St Clare	30 min	30 min	30 min	60 min	60 min
779	St Marys to Erskine Park Industrial Area	30 min	-	30 min	-	-
781	St Marys to Penrith via Glenmore Park	40 min	-	-	-	-
782	St Marys to Penrith via Werrington	30 min	60 min	30 min	60 min	60 min

The *Integrated Public Transport Service Planning Guidelines* (TfNSW, 2013) states that bus services influence the travel mode choices of sites located within 400 metres (approximately 5 minutes' walk) of a bus stop. In this regard, the Site is highly accessible by bus where it is anticipated that residents within the catchment areas would use these services to travel to the Site.

Regardless of the above statement and according to the liaison undertaken with the Council we understand that the Council does not accept any concession to the trip rates suggested for the future traffic modelling scenarios and analysis (at least at this point of time).

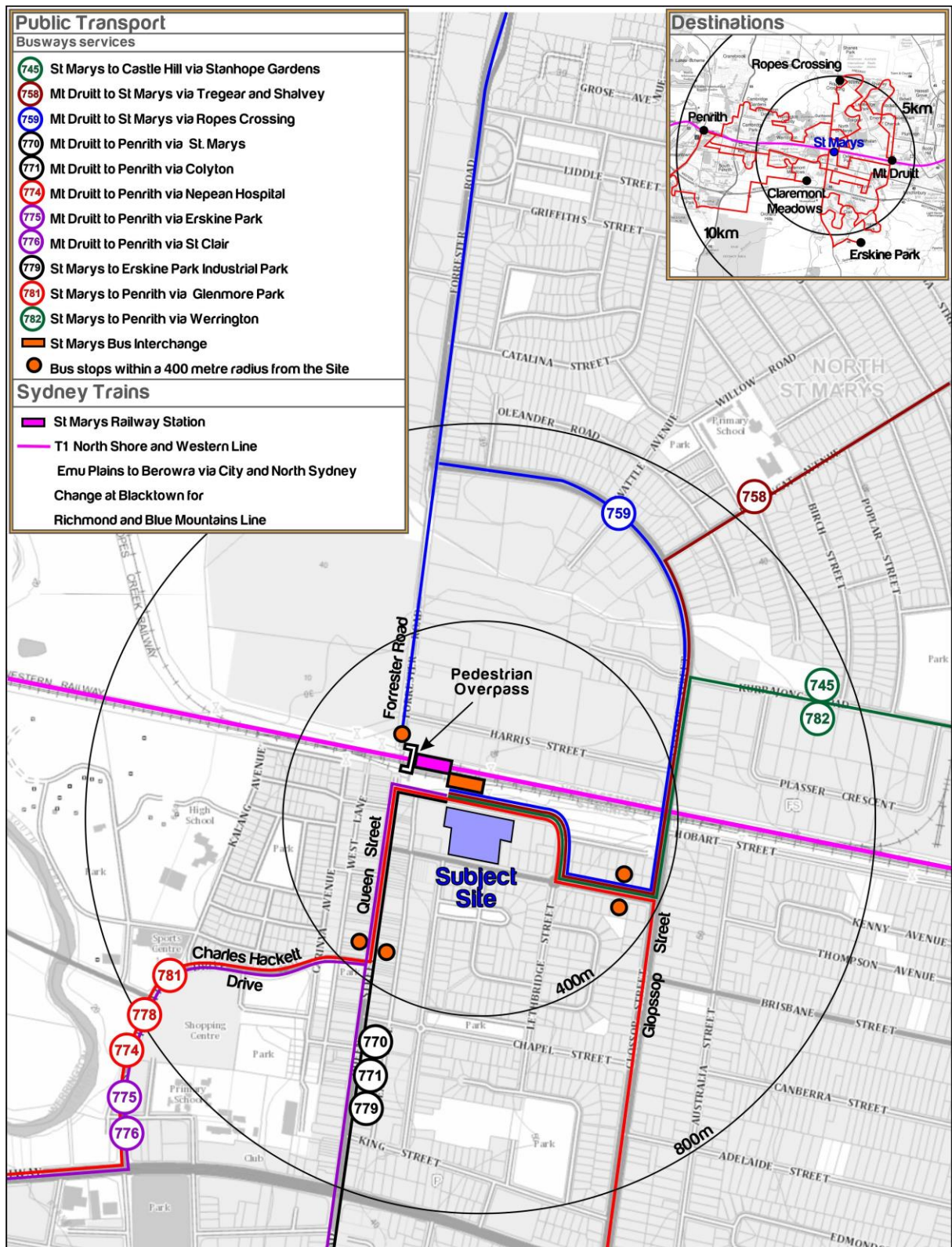


Figure 7: Public Transport Routes

4.1.2 Rail services

The Site is located within 150m of St Marys railway station, which is currently serviced by the T1 North Shore, Northern and Western Line, as shown in **Figure 8**.



Figure 8: Sydney Trains Suburban Network Map

This service provides frequent trains to key centres including Penrith (approx. 10 minutes), Parramatta (approximately 30 minutes) and the Sydney CBD. Connections to Intercity train services are available at Penrith and Parramatta with further connections to services to Liverpool and Campbelltown provided from Granville. **Table 4** summarises the peak hour train frequencies servicing the station.

Table 4: Train Frequencies

Station / Line	To City	From City	Total
<i>St Marys Station - via Western Line</i>			
Morning Peak Hour (7-8am)	8	3	11
Off Peak Hour	4	4	8
Afternoon Peak Hour (5-6PM)	4	4	8

As demonstrated above, the Site is within close walking distance of St Marys train station at which frequent train services would provide access for future residents, employees, visitors and customers.

4.2 Active Transport

4.2.1 Pedestrians

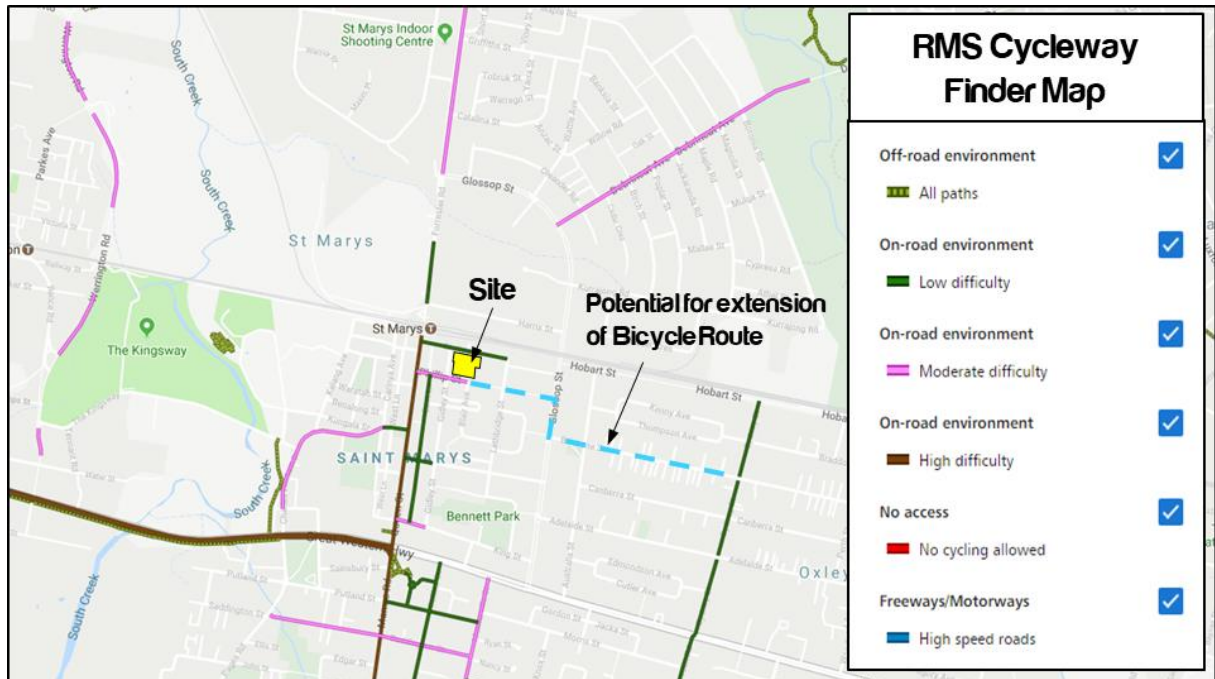
The existing site is highly accessible for pedestrians with relatively flat topography, well-defined routes and pedestrian crossing facilities to key points of interest within the town centre. Footpaths are provided within the local area along both sides of Station Street, Queen Street and Phillip Street. Improvements to footpaths, lighting and landscaping are currently being undertaken by Council within the St Marys town centre. Pedestrian crossing facilities are provided along these routes in the form of raised pedestrian crossings, which prioritises pedestrian movements over vehicular movements, providing convenient access to and from the site. **Figure 9** shows the Phillip Street frontage of the Site which is facilitated with a raised pedestrian crossing.



Figure 9: Site frontage at Phillip Street

4.2.2 Cyclists

RMS Cycleway Finder Map for the area around the Site is presented in **Figure 10**. Low to moderately difficult on-road bicycle facilities are available next to the Site, particularly for cyclists travelling to / from the south-western direction. To the east, there are potential opportunities available to extend existing bicycle routes on Sydney Street at Oxley Park towards the Site through Brisbane Street and Phillip Street.



5 Parking Requirements

It is noteworthy that car parking demand and supply analysis is a matter for the DA stage of the project when the final land-use and development yield are better defined. Accordingly, the information provided in this section is general advice.

5.1 Relevant Parking Requirements

Clause 10.5.1 of the Penrith DCP 2014 requires car parking to be provided at the rates outlined in below table for the land uses envisaged for the Site under this planning proposal.

Table 5: Penrith Council DCP Parking Rates

Land Use	Type	Parking Requirement
Residential	1 Bedroom	1 space / dwelling
	2 Bedroom	1 space / dwelling
	3 (or more) Bedroom	2 spaces / dwelling
	Residential Visitors	1 space / 5 units, (or part thereof)
Business and Office Premises	Office	1 space / 60m ² GFA
Retail Premises	Speciality Shop	1 space / 30m ² GFA
Retail Premises	Supermarket	Supermarkets require parking to be provided at a rate of 1 space per 10m ² of floor area that is to be used for retailing activities. However, this requirement is assumed to apply only outside of the Penrith City Centre and St Marys Town Centre localities.

5.2 SEPP 65 Requirements

Having regard for the proximity of the site to St Marys Station, the minimum car parking requirement provisions of SEPP 65 would apply to any future development of the site and supersede any minimum requirement imposed by Council. Accordingly, the *RMS Guide to Traffic Generating Developments* (RMS Guide) parking rates for high density residential development would be considered to supersede the minimum parking rates outlined by Council above. This is relevant in the context of a development strategy whereby provision of car parking at the minimum rates may be sought to encourage, as far as practicable, the use of other (non-car) forms of transport. SEPP 65 does not specify any minimum parking requirements in relation to non-residential uses.

Table 6: SEPP 65 Minimum Residential Parking Requirements

Land Use	Type	Parking Requirement
Residential	1 Bedroom	0.6 spaces / dwelling
	2 Bedroom	0.9 spaces / dwelling
	3 (or more) Bedroom	1.4 spaces / dwelling
	Residential Visitors	1 space / 5 units

Note: Parking rates based on RMS Guide rates for high density residential development within a sub-regional centre.

In summary, the Site is well served by public transport in the form of close proximity to both rail and bus services. Accordingly, reduced parking provision rates would be considered suitable for a development in this location. Notwithstanding, it is expected that adequate parking is expected to be provided on-site to satisfy the proposed development demand and thus final parking numbers can be determined as part of the subsequent DA.

6 Traffic Modelling Assumptions

6.1 Adopted Background Traffic Growth

A background traffic growth rate of 2% p.a. has been adopted for the surrounding road network as per the advice provided by the Council.

6.2 Modelling Scenarios

As requested by Council, the following modelling scenarios have been investigated as part of this study:

- Opening Year – 2025 (Future Baseline), and
- 10 years post completion – 2035.

Applying a 2% traffic growth p.a. onto the surrounding road network on the existing surveyed traffic volumes results in the following adopted baseline traffic volumes for 2025 and 2035 scenarios.



Figure 11 : 2025 Traffic Profile – Without Planning Proposal



Figure 12 : 2035 Traffic Profile – Without Planning Proposal

6.3 Intersection Performance

SIDRA analysis has been undertaken for the 2025 and 2035 traffic scenarios WITHOUT considering the Planning Proposal to establish relevant baseline performance. The results of the SIDRA analysis are outlined in below tables.

Table 6: SIDRA Outcome – 2025 & 2035 Baseline (without Planning Proposal)

Intersection	Scenario	Period	Overall Intersection Performance			Worst Movement Performance			
			DoS	Ave Delay	Ave LOS	Worst Movement	Approach Delay	Queue Distance (m)	LoS
Queen St / Phillip St	2025 Baseline	AM	0.211	2.8	A	East - R2	10.0	5.8	A
		PM	0.300	3.4	A	East - R2	13.1	9.4	A
	2035 Baseline	AM	0.265	3.1	A	East - R2	12.6	7.7	A
		PM	0.411	4.1	A	East - R2	18.9	17.1	A
Glossop St / Phillip St	2025 Baseline	AM	1.046	22.9	B	North - R2	117.4	233.3	F
		PM	0.771	19	B	West - R2	49.7	55	D
	2025 Base w / Modified Phasing	AM	0.866	23	B	West - R2	42.3	18.8	C
		PM	0.8	21.5	B	West - R2	48.2	53.8	D
	2035 Baseline	AM	1.059	65.3	E	North - R2	122.9	267	F
		PM	0.935	29.2	C	North - R2	67.2	175.4	E

Review of the SIDRA result of the 2025 and 2035 baseline scenarios suggest as follows:

- Queen Street / Phillip Street intersection will have no capacity or delay issues and continues operating at LoS A.
- In reviewing the worst approach performance, it has been established that the right turn from Glossop Street into Phillip Street is likely to operate at a LoS “F” in 2025 with excessive delays and queues during AM peak hour. This matter has been resolved through change in phasing / timing input options in SIDRA to optimise the intersection performance. Therefore additional civil works to upgrade the intersection is not deemed necessary. Accordingly, a revised baseline scenario for 2025 has been introduced – with amended phasing and timing assumptions – which alleviates the right turn issue as well as significant improvements to the queues at this approach.
- The revised 2025 base has been adopted for simulation of the 2035 baseline with background growth (2% p.a.) and as can be concluded from the above table that the changes to the phasing and timing is NOT sufficient to fully accommodate the additional background growth traffic and additional civil works are likely required to accompany the changes to the signal input data.
- The additional upgrades to the infrastructure to accommodate the background traffic as well as the Proposal will be discussed further in the following sections.

Detailed SIDRA results are provided in **Appendix A**.

7 Traffic Impacts

Traffic impacts of the proposal at the key intersections has been assessed for the modelling scenario and in accordance with the net traffic generation estimation expected from the redevelopment on the existing infrastructure.

7.1 Traffic Generation Rates

Traffic generation analysis has adopted the rates stipulated by and agreed with Council. Accordingly, the following rates have been applied to the indicative yield discussed in Section 2.2.

Table 7: Traffic Generation Rates

Land Use	2025		2035	
	AM	PM	AM	PM
Residential ¹	0.33 trips per unit	0.33 trips per unit	0.26 trips per unit	0.26 trips per unit
Office ²	1.6 trips per 100m ² GFA	1.2 trips per 100m ² GFA	1.6 trips per 100m ² GFA	1.2 trips per 100m ² GFA
Retail – Speciality Shop ³	28 trips per 1,000m ² GLFA	56 trips per 1,000m ² GLFA	28 trips per 1,000m ² GLFA	56 trips per 1,000m ² GLFA
Retail – Supermarket ⁴	69 trips per 1,000m ² GLFA	138 trips per 1,000m ² GLFA	69 trips per 1,000m ² GLFA	138 trips per 1,000m ² GLFA

Notes: 1) Council's recommended trip rate for high density residential flat buildings.

2) Sourced from RMS Technical Direction.

3) The PM peak traffic rate has been sourced from RMS Guides for Speciality Shops. The AM rate is conservatively assumed to be 50% of the PM.

4) The PM peak traffic rate has been sourced from RMS Guides for Supermarkets. The AM rate is conservatively assumed to be 50% of the PM.

7.2 Development Traffic Generation

7.2.1 Existing Traffic Generation

Existing shopping centre has a total floor area of some 7,800m² GFA, including 3,800m² of supermarket floor area. Application of the traffic generation rates outlined above to these floor areas results in a total existing traffic volume of up to 562 vehicles per hour during peak periods, as summarised in below table.

Table 8: Traffic Generation - Existing

Land Use	Area (GFA - m ²) ¹	AM Peak			PM Peak		
		Two-way Volume	IN	OUT	Two-way Volume	IN	OUT
Supermarket	3,800	197	99	98	394	197	197
Speciality Shop	4,000	84	42	42	168	84	84
Total		281	141	140	562	281	281

Note: 1) GLFA is assumed to be 0.75*GFA.

2) In & out movements estimated having regard for a (50% / 50% I inbound/outbound) assumption for retail developments.

7.2.2 Planning Proposal Traffic Generation

Application of the adopted traffic generation rates to the proposed indicative yield under consideration would result in the following traffic generation as outlined in **Table 9**.

Table 9: Traffic Generation - Proposed (FSR 5.5:1)

Land use	Units / Area (GFA) ¹		2025		2035	
			AM	PM	AM	PM
Residential	584	units	193	193	152	152
Commercial	2,210	m ²	35	27	35	27
Retail – Specialty Shops	1,615	m ²	45	90	45	90
Retail – Supermarket	4,500	m ²	311	621	311	621
Total			584	931	543	890

Note: 1) GLFA is assumed to be 0.75*GFA

From the above, it is noted that the Proposal's traffic generation reduced from 2025 to 2035 on account of the Penrith Council's required residential trip rates reducing over time whilst the development yield and other trip rate assumptions remain the same. This reflects expected increased availability of local transport options and services in the immediate locality.

7.2.3 Net Increase

From comparison between Table 9 (proposed traffic generation) and Table 8 (existing site traffic generation), it can be seen that the proposal (with an FSR of 5.5:1) has the potential to increase traffic volumes on the surrounding road network by:

- 2025 303 veh/hr during AM & 369 veh/hr during PM; and
- 2035 262 veh/hr during AM and 328 veh/hr during PM.

7.3 Traffic Distribution

Distribution of the traffic has been undertaken having regard for the following traditional in and out percentages for relevant land uses:

- Residential AM (20% / 80% I In / Out) & PM (80% / 20% I In / Out),
- Commercial AM (80% / 20% I In / Out) & PM (20% / 80% I In / Out), and
- Retail AM (50% / 50% I In / Out) & PM (50% / 50% I In / Out).

7.4 Traffic Assignment

RMS has previously provided us with the EMME output for a fixed demand traffic assignment for zone 5018 which caters for the St Marys town centre. The fixed demand traffic assignment (traditionally known as select link analysis) shows the traffic arriving and departing from the selected zone in the model regardless of the traffic of any other zones. Accordingly, the resultant hourly traffic movements distributed onto the key intersections for 2025 and 2035 are presented in below figures. Since the inbound and outbound are based on detailed review of the EMME outputs provided by RMS this accounts for a sophisticated and robust strategic level traffic assessment and represents a more realistic future travel pattern for the travellers to/from the town centre zone and therefore it has been adopted to ensure the analysis undertaken as part of this study are in line with RMS model outcomes.



Figure 13: 2025 Traffic Profile – Planning Proposal Only



Figure 14: 2035 Traffic Profile – Planning Proposal Only

7.5 Intersection Operation (With Planning Proposal)

Future performance of the key intersections having regard for the additional traffic identified above is summarised in this section.

7.5.1 Phillip Street / Queen Street Intersection

Results of the 2025 and 2035 modelling scenarios are presented in **Table 10**.

Table 10: Phillip Street / Queen Street-No Improvements (Existing Intersection Configuration)

Scenario	Period	Overall Intersection Performance			Worst Movement Performance			
		DoS	Ave Delay	Ave LOS	Worst Movement	Approach Delay	Queue Distance (m)	LoS
2025 Baseline	AM	0.211	2.8	A	East - R2	10.0	5.8	A
	PM	0.300	3.4	A	East - R2	13.1	9.4	A
2025 Project Case	AM	0.262	3.1	A	East - R2	11.7	8.4	A
	PM	0.385	4.0	A	East - R2	17.7	14.0	B
2035 Baseline	AM	0.265	3.1	A	East - R2	12.6	7.7	A
	PM	0.411	4.1	A	East - R2	18.9	17.1	A
2035 Project Case	AM	0.316	3.3	B	East - R2	14.7	10.3	B
	PM	0.498	4.9	B	East - R2	25.2	25.3	B

It can be seen from the above table that the intersection of Queen Street / Phillip Street does not require any additional upgrades and can accommodate the future background traffic as well as the Planning Proposal traffic with no issues.

Accordingly, no additional civil works are required at this intersection as a result of the Proposal.

7.5.2 Phillip Street / Glossop Street Intersection

As discussed before, the 2025 modified baseline (with amended phasing and timing) has been adopted for the assessment of the future project cases. Results of the 2025 and 2035 modelling scenarios are therefore presented in **Table 11**.

Table 11: Phillip Street / Glossop Street-No Improvements (Existing Intersection Configuration)

Scenario	Period	Overall Intersection Performance			Worst Movement Performance			
		DoS	Ave Delay	Ave LOS	Worst Movement	Approach Delay	Queue Distance (m)	LoS
2025 Base w/ Modified Phasing	AM	0.866	23	B	West - R2	42.3	18.8	C
	PM	0.8	21.5	B	West - R2	48.2	53.8	D
2025 Project Case	AM	0.876	24.2	B	West - R2	41.4	35.9	C
	PM	0.828	23.6	B	West - R2	51.0	70.6	D
2035 Baseline	AM	1.059	65.3	E	North - R2	122.9	267	F
	PM	0.935	29.2	C	North - R2	67.2	175.4	E
2035 Project Case	AM	1.122	74.2	F	North - R2	170.2	342.7	F
	PM	1.064	40.2	C	North - R2	133.2	294.2	F

According to the above table the following conclusions are noteworthy:

- Modified phasing and timing envisaged for the 2025 baseline (as discussed before) can accommodate both the background and the development traffic without any need for physical upgrades at the signal by the opening year. More importantly, the LoS for the project case does not change as a result of the additional traffic from the Proposal when compared to the 2025 base.
- Results from the 2035 assessment indicate that background network growth has caused the intersection to operate at or beyond capacity, impacting traffic flows through the intersection. Introduction of development traffic only further exacerbates modelled delays and the overall LoS.
- Therefore, it appears that additional impact mitigations are required in longer term (2035) to accommodate the proposed traffic at this signal.

7.6 Impact Mitigation (2035 Project Case)

Potential upgrade options to mitigate the impacts in 2035 have been investigated with further 'options testing' using SIDRA. Given the limitations of any additional upgrades on the Glossop Street approaches, with minimum verge widths on both sides, narrow central median and proximity to the rail bridge at north, mitigation measures were primarily investigated on the Phillip Street approach to the intersection.

Accordingly, signal phasings have initially been adjusted to partially improve the north and southbound approaches along Glossop Street, with upgrades to Phillip Street to alleviate issues in the western approach. As such, the identified civil works include an additional short right turn, necessitating an overall widening of the carriageway to implement this change. It is expected that parking restriction would also apply along the southern (westbound) kerbline for the length of localised widening for

additional right turn bay. For context, a copy of the additional upgrades is shown in figure below, highlighted in yellow.

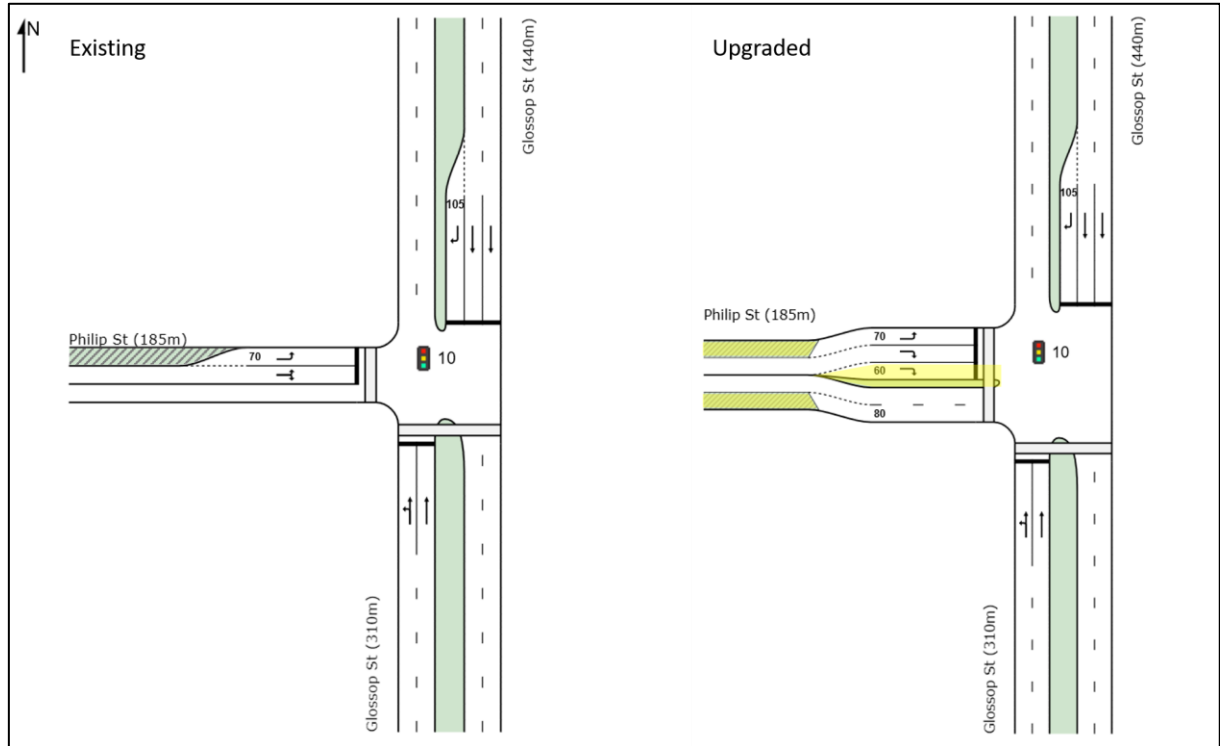


Figure 15: Existing (2018) and Recommended 2035 Signalised Intersection Layouts

Full results of the SIDRA modelling including the lane and phasing summaries for the 2035 scenarios are attached in **Appendix A** with a brief summary of the improvements outlined in below.

Table 12: Phillip Street / Glossop Street – Modified Intersection

Scenario	Period	Overall Intersection Performance			Worst Movement Performance			
		DoS	Ave Delay	Ave LOS	Worst Movement	Approach Delay	Queue Distance (m)	LoS
2035 Project Case	AM	1.122	74.2	F	North - R2	170.2	342.7	F
	PM	1.064	40.2	C	North - R2	133.2	294.2	F
2035 Project Case w / Modification	AM	0.937	33.5	C	West - R2	59.3	25.2	E
	PM	0.924	29.2	C	West - R2	69.8	50.9	E

As indicated in the above table, the additional upgrades to the signal has resulted in the following advantages:

- Significant improvement of signal average delays and degree of saturations,
- Improvement in LoS at worst approach from 'F' to 'E' with significant decrease in delays and queues.

Hence it is considered that the identified upgrades will not only accommodate the background traffic it will also cater for the Planning Proposal associated traffic.

With respect to the feasibility of the additional upgrades at this signal it is noted that Ason Group has undertaken some preliminary measurements at the intersection, and it is understood that the additional one lane can be accommodated within the existing road reservation. This may have implication of reduced verges from the existing situation and would be reviewed in further details by civil engineers / road designers. The outcome of this modelling as well as the above recommended upgrades have been discussed with Council in a meeting on 15th August 2019 at which the feasibility of upgrades at Phillip Street / Glossop Street were discussed. Following the meeting, Council has indicated a preference for any upgrades at the intersection of Chapel Street / Glossop Street which already has a wider road reserve. Council has prepared an indicative concept for the upgrade which is presented in **Figure 16**.

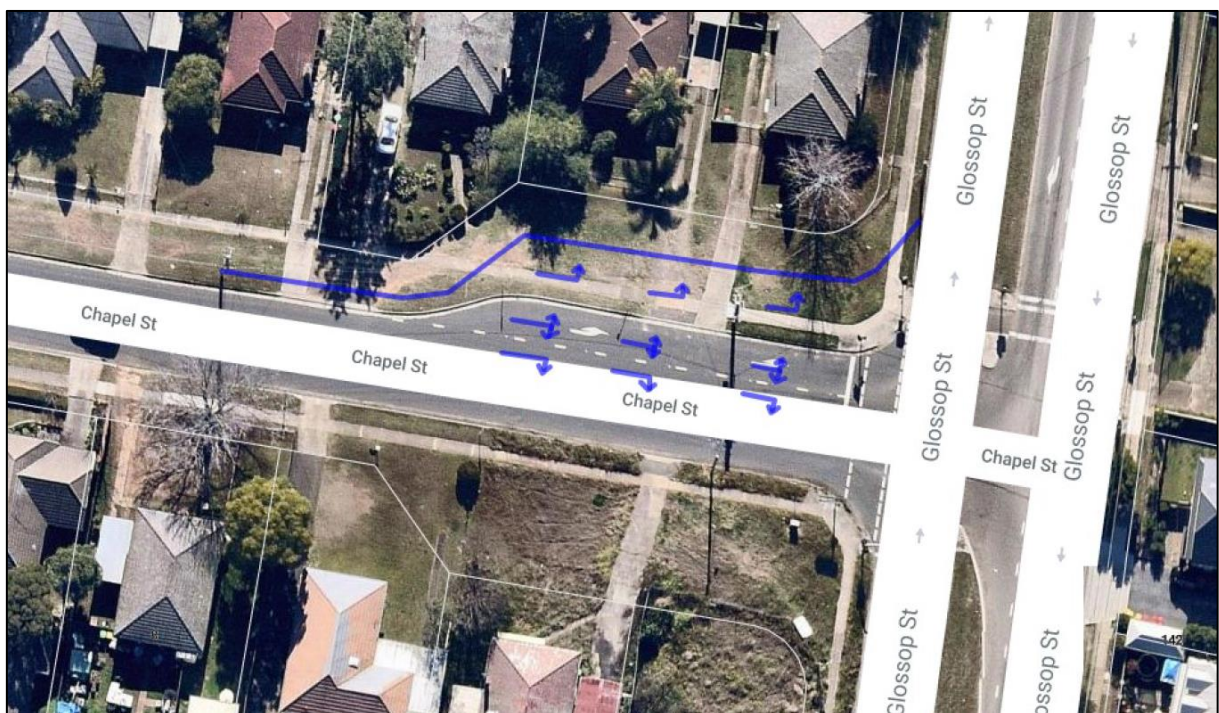


Figure 16: Council Recommended Upgrade Works at Chapel St / Glossop St

Additional traffic modelling including SIDRA intersection assessment of this intersection has not been undertaken, being outside the scope of the current study. However, it is noted that traffic volumes at that location are generally lower than occur at the Phillip Street intersection and, accordingly; expected to also provide sufficient capacity increase to satisfactorily address any increased traffic as a result of the proposal.

7.7 VPA Commitments

As a result of the above, it is the Applicant's intention to entering into a VPA with Penrith City Council in relation to the design, costs and works associated with:

- Traffic signals at the Blair Ave / Phillip St / site access intersection, and
- Capacity improvements at the Chapel Street / Glossop Street intersection to accommodate creation of an additional right hand turn lane (as depicted in Figure 16).

7.8 Precinct Wide Road Upgrades

The above has been identified to reasonably address impacts associated with the future redevelopment of the subject site.

However, Council is in the process of undertaking a precinct-wide traffic and transport study for the entire St Marys Town Centre. Accordingly, the final long-term package of works to the surrounding network—as a result of broader uplift within the Town Centre—will be determined by that study and separate to any impacts associated with the subject proposal which has made satisfactory arrangements for its own traffic.

8 Conclusion

The key findings of this Traffic Impact Assessment are:

- Ason Group has been engaged by Haben Property Fund Pty Ltd to prepare a Traffic Impact Assessment (TIA) to support a Planning Proposal that includes residential, commercial and retail mixed-use development at 33-43 Phillip Street, St Marys (Site). The site forms part of the St Marys Town Centre and is located within the Penrith City Council (Council) local government area (LGA).
- The planning proposal seeks the following changes to controls:

Control	Existing	Proposed
Floor-space-ratio (FSR)	3.5:1	5.5:1

- Locating development within close proximity to public transport services is sound transport planning and has been shown to reduce reliance on the use of private vehicles, particularly for commuter trips. The site is located in close proximity to St Marys Station and a bus interchange and is therefore consistent with these transport planning objectives.
- Reduced car parking provisions would be considered appropriate for a development in this location to further encourage the use of these public transport services and limit increased car usage by future residents and staff. Notwithstanding, car parking provision are considered a detailed matter that can be addressed as part of subsequent Development Application submissions.
- Key intersections in this vicinity of the site and included in this study include:
 - Phillip Street / Queen Street, and
 - Phillip Street / Glossop Street.
- The above key intersections operate with spare capacity and acceptable overall delays and LoS during critical weekday morning and evening peak periods.
- A shopping centre known as the Station Plaza is already in operation on the site — estimated to generate a total of 281 and 562 vehicular trips on the surrounding road network respectively during weekday morning and evening peak periods.
- Subject to the proposed changes to FSR, an indicative development yield has been developed to allow assessment of the Proposal and is likely to generate the following vehicular trips in 7 years and 17 years' time horizons:

Period	Existing	Proposal		Net Change	
	2018	2025	2035	2025	2035
AM Peak	281	584	543	+ 303	+ 262
PM Peak	562	931	890	+369	+ 328

- The net increase of vehicular trips has been distributed onto the surrounding road network to examine the performance of the Planning Proposal on the key intersections during 2025 (assumed to be the opening year) and 2035 (10 years post completion). A 2% p.a. background growth has also been assumed for the roads on Council's direction.
- Resultant network performance is summarised below. Detailed output for all movements are included in the SIDRA output reports, including in Appendix A.

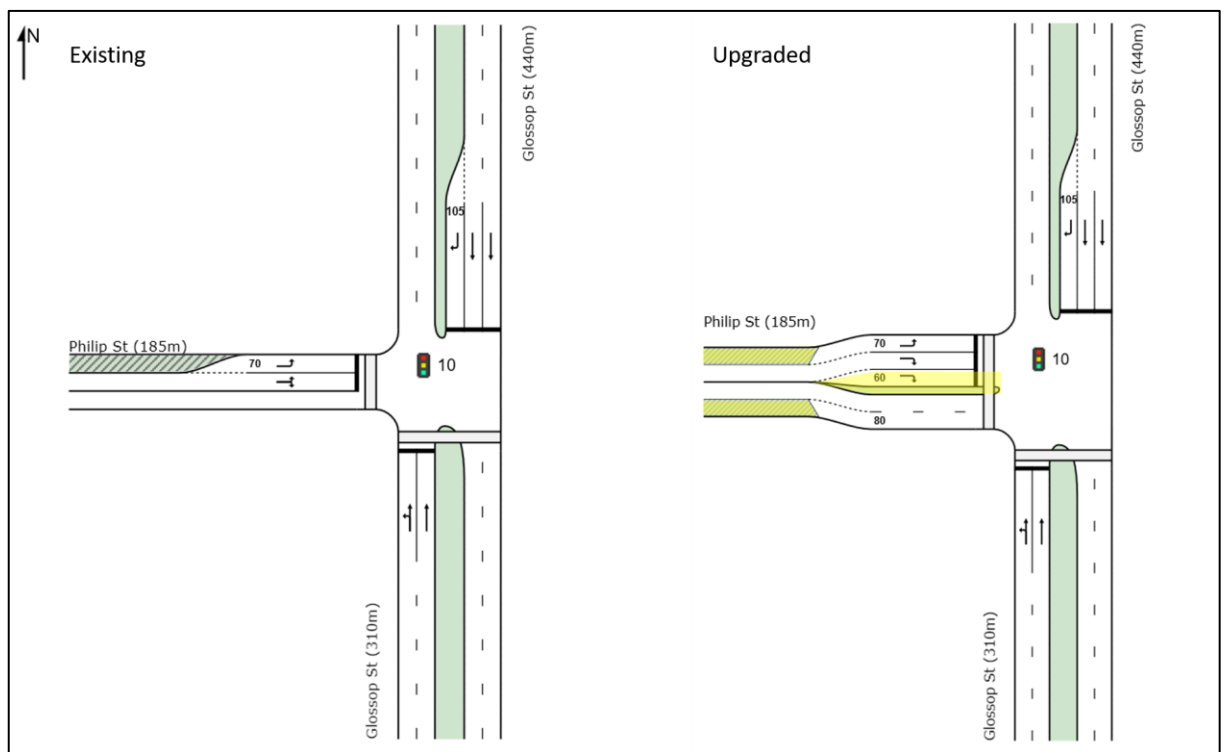
Phillip Street / Queen Street

Scenario	Period	Overall Intersection Performance		
		DoS	Ave Delay	Ave LOS
2025 Baseline	AM	0.211	2.8	A
	PM	0.300	3.4	A
2025 Project Case	AM	0.262	3.1	A
	PM	0.385	4.0	A
2035 Baseline	AM	0.265	3.1	A
	PM	0.411	4.1	A
2035 Project Case	AM	0.316	3.3	B
	PM	0.498	4.9	B

Phillip Street / Glossop Street

Scenario	Period	Overall Intersection Performance		
		DoS	Ave Delay	Ave LOS
2025 Base w/ Modified Phasing	AM	0.866	23	B
	PM	0.8	21.5	B
2025 Project Case	AM	0.876	24.2	B
	PM	0.828	23.6	B
2035 Baseline	AM	1.059	65.3	E
	PM	0.935	29.2	C
2035 Project Case	AM	1.122	74.2	F
	PM	1.064	40.2	C
2035 Project Case w / Modification	AM	0.937	33.5	C
	PM	0.924	29.2	C

- Results of the SIDRA analysis suggests as follows:
 - The Queen Street / Phillip Street intersection will be able to cater for the background traffic growth and future development traffic associated with the site with no additional upgrades required for either 2025 or 2035 scenarios.
 - Modified phasing and timing is recommended at Phillip Street / Glossop Street in this TIA to optimise the intersection performance in response to 2025 baseline traffic conditions. This change can accommodate both the background and the development traffic without any need for physical upgrades at the signals by the opening year.
 - Results from the 2035 assessment indicate that background network growth is likely to cause the intersection to operate at or beyond capacity, impacting traffic flows through the intersection. Introduction of development traffic only further exacerbates modelled delays and the overall LoS.
- Accordingly, additional upgrades at the signalised intersection of Phillip Street / Glossop Street, including an additional short right turn lane and parking restrictions on the Phillip Street approach has been demonstrated to address intersection performance.



However, such a change may necessitate localised road carriageway widening to implement.

- In the event that the upgrades cannot physically be achieved at the Phillip Street / Glossop Street intersection – due to limited available road reservation at the intersection – then an alternative

upgrade option may be available at the existing signalised intersection of Chapel Street / Glossop Street; site boundaries being setback from the carriageway at that location.

- On this basis, Council has prepared a schematic potential upgrades at Chapel Street / Glossop Street—design and funding for which is included in the Voluntary Planning Agreement (VPA) intended to be entered into by Haben Property Fund Pty Ltd and Penrith City Council in lieu of a suitable precinct-wide contributions plan being available. That VPA offer also includes provision of traffic signals at the site access which is to form an intersection with Blair Avenue / Phillip Street.

In summary, the planning proposal is considered supportable on transport planning grounds. The traffic impacts of the development can be accommodated by the surrounding road network and therefore considered acceptable.

Appendix A

SDIRA Results

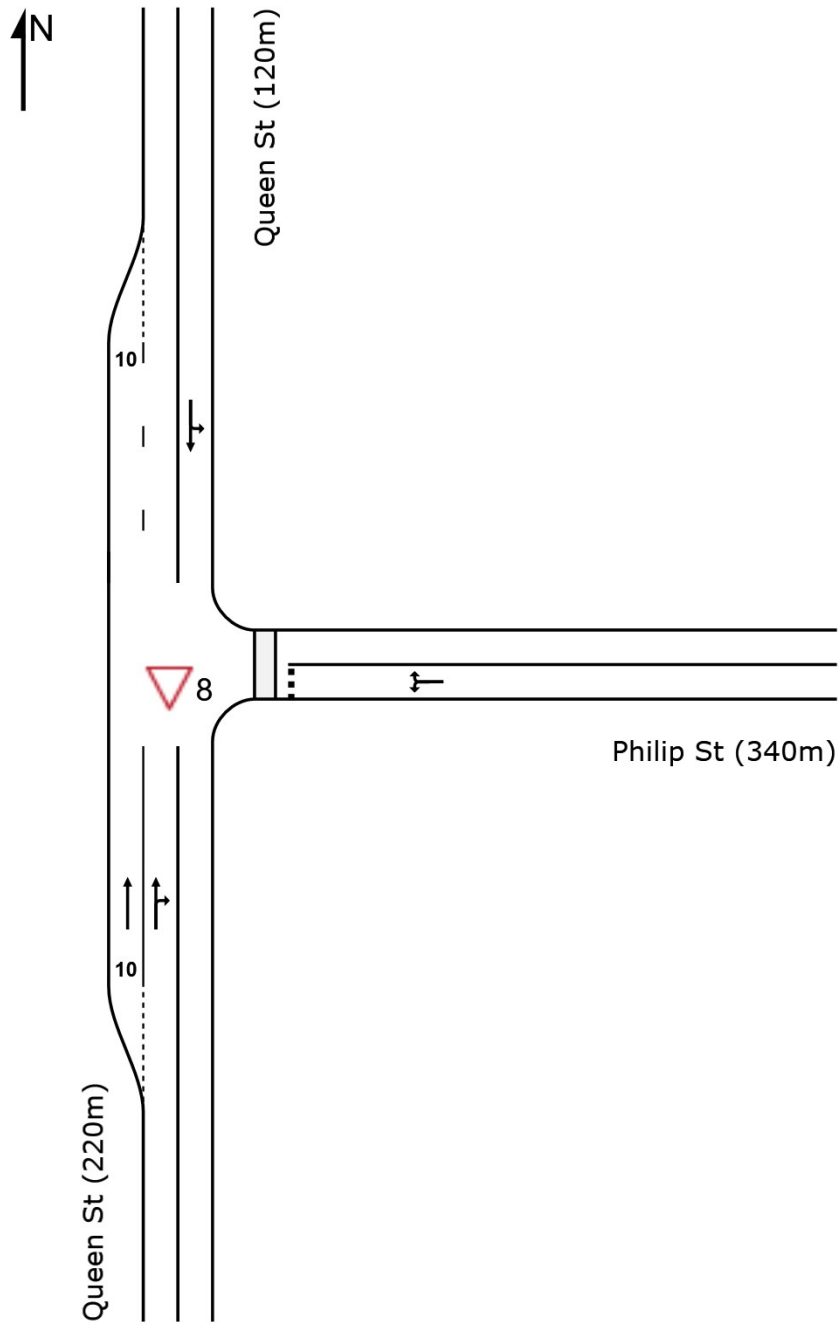
Appendix A1

Existing

SITE LAYOUT

▽ Site: 8 [[2018 Baseline AM] Queen x Philip]

Queen Street x Philip Street
scenario 1: 2018 Traffic (surveyed)
Road Condition: Existing 2018
Site Category: 3 leg priority-controlled
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ Site: 8 [[2018 Baseline AM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Queen St (220m)												
2	T1	157	11.4	0.180	0.5	LOS A	0.9	6.8	0.22	0.22	0.22	37.4
3	R2	185	1.7	0.180	4.5	LOS A	0.9	6.8	0.37	0.38	0.37	36.9
Approach		342	6.2	0.180	2.7	NA	0.9	6.8	0.30	0.30	0.30	37.1
East: Philip St (340m)												
4	L2	178	1.2	0.160	4.2	LOS A	0.7	4.8	0.33	0.52	0.33	36.8
6	R2	16	6.7	0.160	8.8	LOS A	0.7	4.8	0.33	0.52	0.33	35.6
Approach		194	1.6	0.160	4.5	LOS A	0.7	4.8	0.33	0.52	0.33	36.8
North: Queen St (120m)												
7	L2	40	7.9	0.113	3.7	LOS A	0.3	2.2	0.07	0.10	0.07	39.3
8	T1	145	15.9	0.113	0.1	LOS A	0.3	2.2	0.07	0.10	0.07	38.7
Approach		185	14.2	0.113	0.8	NA	0.3	2.2	0.07	0.10	0.07	38.9
All Vehicles		721	7.0	0.180	2.7	NA	0.9	6.8	0.25	0.31	0.25	37.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

LANE SUMMARY

▽ Site: 8 [[2018 Baseline AM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Queen St (220m)													
Lane 1	66	11.4	1815	0.036	20 ⁶	0.0	LOS A	0.0	0.0	Short	10	0.0	NA
Lane 2	277	4.9	1533	0.180	100	3.3	LOS A	0.9	6.8	Full	220	0.0	0.0
Approach	342	6.2		0.180		2.7	NA	0.9	6.8				
East: Philip St (340m)													
Lane 1	194	1.6	1212	0.160	100	4.5	LOS A	0.7	4.8	Full	340	0.0	0.0
Approach	194	1.6		0.160		4.5	LOS A	0.7	4.8				
North: Queen St (120m)													
Lane 1	185	14.2	1645	0.113	100	0.8	LOS A	0.3	2.2	Full	120	0.0	0.0
Approach	185	14.2		0.113		0.8	NA	0.3	2.2				
Intersection	721	7.0		0.180		2.7	NA	0.9	6.8				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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 lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

⁶ Lane under-utilisation due to downstream effects

MOVEMENT SUMMARY

▽ Site: 8 [[2018 Baseline PM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Queen St (220m)												
2	T1	159	13.9	0.253	0.5	LOS A	1.4	9.8	0.19	0.21	0.19	37.7
3	R2	298	1.1	0.253	4.7	LOS A	1.4	9.8	0.43	0.48	0.43	36.5
Approach		457	5.5	0.253	3.3	NA	1.4	9.8	0.35	0.39	0.35	36.8
East: Philip St (340m)												
4	L2	232	1.4	0.244	4.3	LOS A	1.1	7.5	0.39	0.56	0.39	36.6
6	R2	33	0.0	0.244	10.9	LOS A	1.1	7.5	0.39	0.56	0.39	35.4
Approach		264	1.2	0.244	5.1	LOS A	1.1	7.5	0.39	0.56	0.39	36.5
North: Queen St (120m)												
7	L2	49	6.4	0.133	3.7	LOS A	0.4	2.7	0.07	0.10	0.07	39.3
8	T1	173	11.0	0.133	0.1	LOS A	0.4	2.7	0.07	0.10	0.07	38.7
Approach		222	10.0	0.133	0.9	NA	0.4	2.7	0.07	0.10	0.07	38.8
All Vehicles		943	5.4	0.253	3.2	NA	1.4	9.8	0.29	0.37	0.29	37.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

LANE SUMMARY

▽ Site: 8 [[2018 Baseline PM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Queen St (220m)													
Lane 1	91	13.9	1788	0.051	20 ⁶	0.0	LOS A	0.0	0.0	Short	10	0.0	NA
Lane 2	366	3.5	1445	0.253	100	4.1	LOS A	1.4	9.8	Full	220	0.0	0.0
Approach	457	5.5		0.253		3.3	NA	1.4	9.8				
East: Philip St (340m)													
Lane 1	264	1.2	1082	0.244	100	5.1	LOS A	1.1	7.5	Full	340	0.0	0.0
Approach	264	1.2		0.244		5.1	LOS A	1.1	7.5				
North: Queen St (120m)													
Lane 1	222	10.0	1675	0.133	100	0.9	LOS A	0.4	2.7	Full	120	0.0	0.0
Approach	222	10.0		0.133		0.9	NA	0.4	2.7				
Intersection	943	5.4		0.253		3.2	NA	1.4	9.8				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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 lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

6 Lane under-utilisation due to downstream effects

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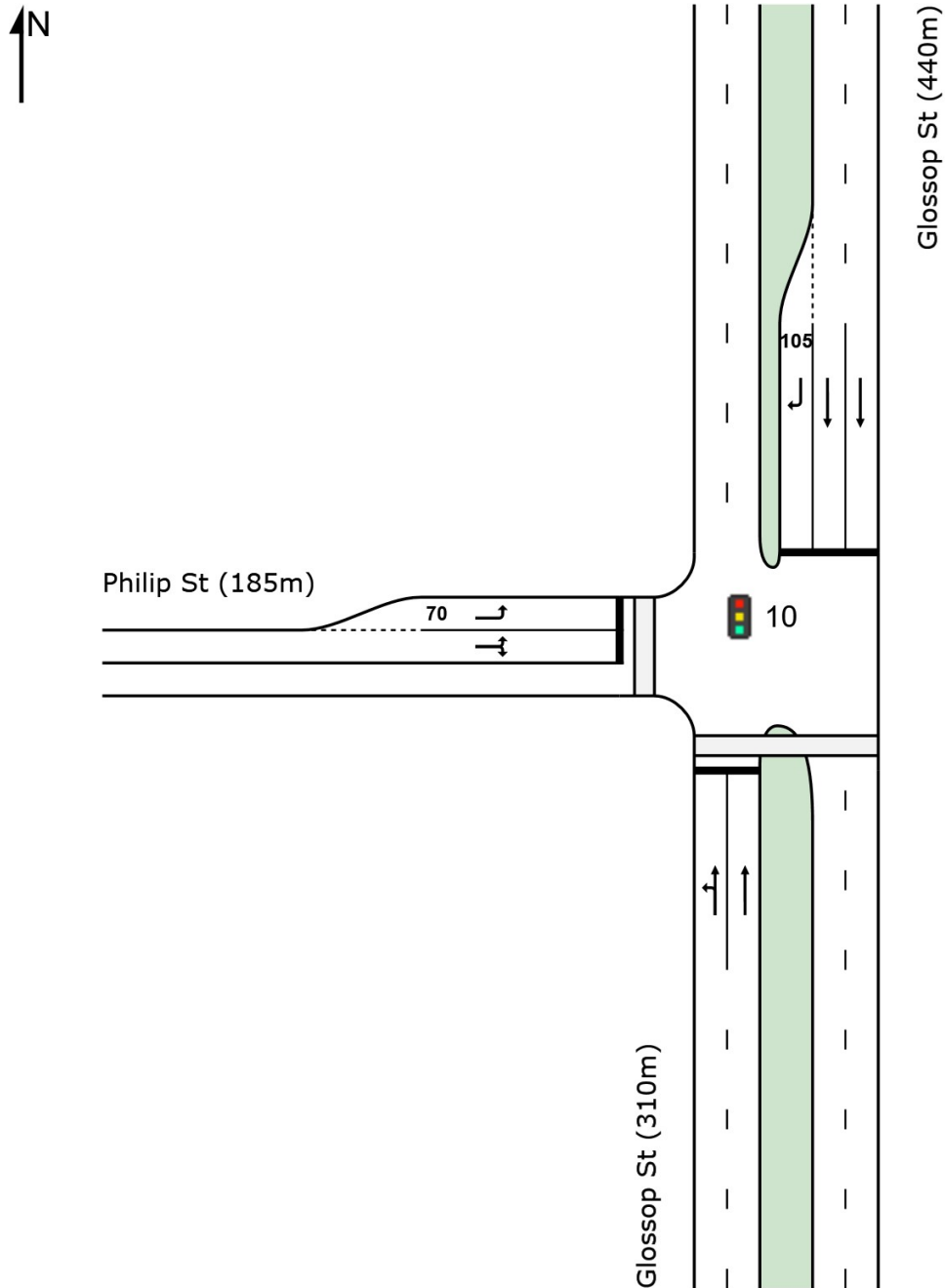
Organisation: ASON GROUP PTY LTD | Processed: Tuesday, 6 August 2019 11:06:47 AM

Project: C:\Users\MatthewTangonan\Desktop\IP0196 Queen x Phillip.sip8

SITE LAYOUT

 **Site: 10** **[[2018 Existing Base AM] Glossop x Philip]**

Glossop Street x Philip Street
scenario 1: 2018 Traffic (surveyed)
Road Condition: Existing 2018
Site Category: 3 leg Signalised
Signals - Fixed Time Isolated



LANE SUMMARY

Site: 10 [[2018 Existing Base AM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	546	11.3	1131	0.483	100	9.0	LOS A	11.3	87.1	Full	310	0.0	0.0
Lane 2	545	11.9	1129	0.483	100	9.2	LOS A	12.1	93.2	Full	310	0.0	0.0
Approach	1091	11.6		0.483		9.1	LOS A	12.1	93.2				
North: Glossop St (440m)													
Lane 1	486	15.0	1401	0.347	100	2.8	LOS A	5.8	45.7	Full	440	0.0	0.0
Lane 2	486	15.0	1401	0.347	100	2.8	LOS A	5.8	45.7	Full	440	0.0	0.0
Lane 3	323	3.6	401	0.807	100	35.7	LOS C	14.8	106.5	Short	105	0.0	NA
Approach	1295	12.1		0.807		11.0	LOS A	14.8	106.5				
West: Philip St (185m)													
Lane 1	191	5.4	484	0.396	100	32.3	LOS C	6.6	48.3	Short	70	0.0	NA
Lane 2	57	11.4	144	0.396	100	46.6	LOS D	2.4	18.4	Full	185	0.0	0.0
Approach	248	6.8		0.396		35.6	LOS C	6.6	48.3				
Intersection	2634	11.4		0.807		12.5	LOS A	14.8	106.5				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

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Organisation: ASON GROUP PTY LTD | Processed: Monday, 5 August 2019 10:54:56 AM

Project: C:\Users\MatthewTangonan\Desktop\IP0196 Glossop x Phillip.sip8

PHASING SUMMARY

Site: 10 [[2018 Existing Base AM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS

Reference Phase: Phase A

Input Phase Sequence: A, B, C

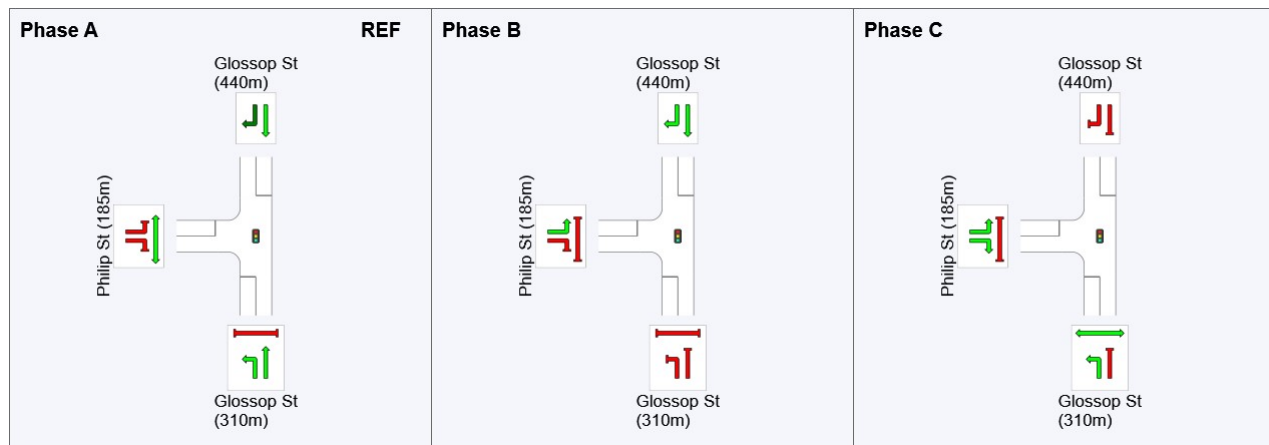
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	56	70
Green Time (sec)	53	8	9
Phase Time (sec)	59	14	12
Phase Split	69%	16%	14%

See the Phase Information section in the Detailed Output 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, 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

LANE SUMMARY

Site: 10 [[2018 Existing Base PM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 99 seconds (Site User-Given Phase Times)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue	Lane	Lane	Cap.	Prob.	
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	517	8.9	928	0.557	100	17.6	LOS B	16.3	123.1	Full	310	0.0	0.0
Lane 2	518	9.0	930	0.557	100	18.1	LOS B	17.1	129.3	Full	310	0.0	0.0
Approach	1036	8.9		0.557		17.8	LOS B	17.1	129.3				
North: Glossop St (440m)													
Lane 1	621	6.7	1340	0.463	100	6.3	LOS A	12.5	92.6	Full	440	0.0	0.0
Lane 2	621	6.7	1340	0.463	100	6.3	LOS A	12.5	92.6	Full	440	0.0	0.0
Lane 3	279	4.5	453	0.616	100	31.4	LOS C	11.5	83.7	Short	105	0.0	NA
Approach	1521	6.3		0.616		10.9	LOS A	12.5	92.6				
West: Philip St (185m)													
Lane 1	352	4.2	692	0.508	93 ⁵	29.8	LOS C	13.0	94.4	Short	70	0.0	NA
Lane 2	138	5.3	253	0.545	100	48.8	LOS D	6.4	47.1	Full	185	0.0	0.0
Approach	489	4.5		0.545		35.1	LOS C	13.0	94.4				
Intersection	3046	6.9		0.616		17.1	LOS B	17.1	129.3				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

5 Lane under-utilisation found by the program

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Organisation: ASON GROUP PTY LTD | Processed: Monday, 5 August 2019 10:54:57 AM

Project: C:\Users\MatthewTangonan\Desktop\P0196 Glossop x Phillip.sip8

PHASING SUMMARY

Site: 10 [[2018 Existing Base PM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 99 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS

Reference Phase: Phase A

Input Phase Sequence: A, B, C

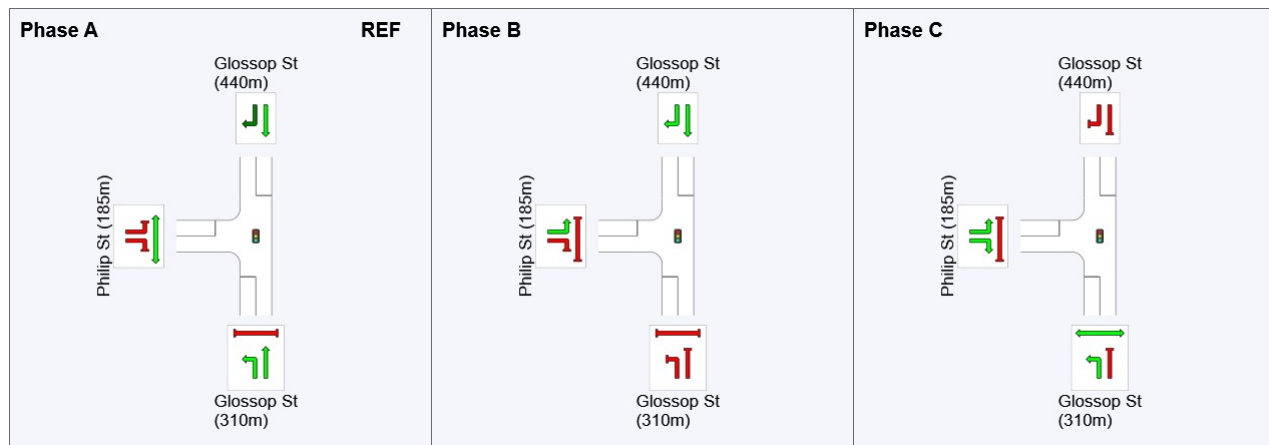
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	55	76
Green Time (sec)	50	15	17
Phase Time (sec)	56	21	22
Phase Split	57%	21%	22%

See the Phase Information section in the Detailed Output 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, 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

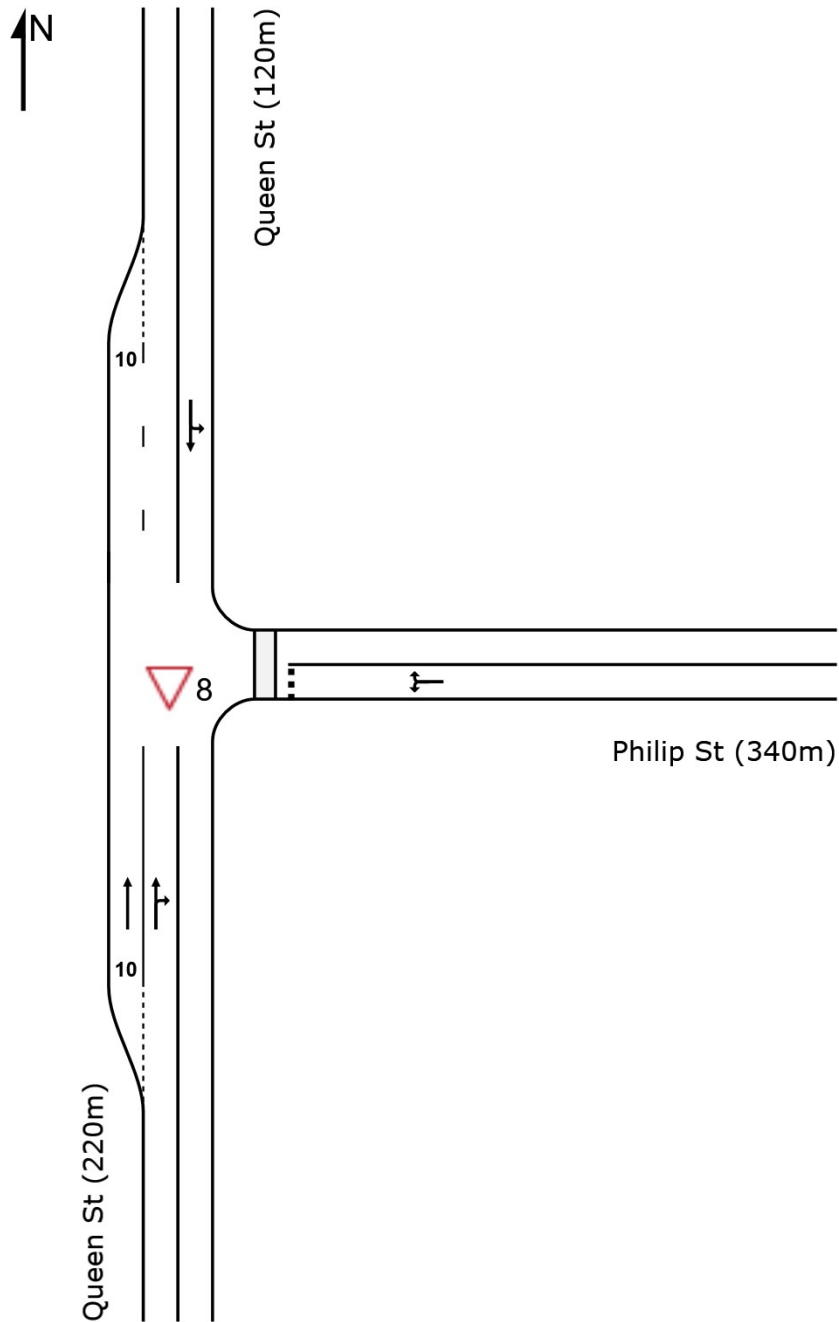
Appendix A2

2025 Scenarios

SITE LAYOUT

▽ Site: 8 [[2025 Baseline AM] Queen x Philip]

Queen Street x Philip Street
scenario 1: 2018 Traffic (surveyed)
Road Condition: Existing 2018
Site Category: 3 leg priority-controlled
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ Site: 8 [[2025 Baseline AM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Queen St (220m)												
2	T1	181	11.6	0.211	0.6	LOS A	1.1	8.1	0.23	0.23	0.23	37.3
3	R2	213	1.5	0.211	4.7	LOS A	1.1	8.1	0.41	0.39	0.41	36.8
Approach		394	6.1	0.211	2.8	NA	1.1	8.1	0.33	0.31	0.33	37.0
East: Philip St (340m)												
4	L2	204	1.0	0.190	4.3	LOS A	0.8	5.8	0.36	0.54	0.36	36.8
6	R2	18	5.9	0.190	10.0	LOS A	0.8	5.8	0.36	0.54	0.36	35.5
Approach		222	1.4	0.190	4.7	LOS A	0.8	5.8	0.36	0.54	0.36	36.7
North: Queen St (120m)												
7	L2	45	7.0	0.128	3.7	LOS A	0.3	2.5	0.07	0.10	0.07	39.3
8	T1	166	15.8	0.128	0.1	LOS A	0.3	2.5	0.07	0.10	0.07	38.7
Approach		212	13.9	0.128	0.8	NA	0.3	2.5	0.07	0.10	0.07	38.9
All Vehicles		827	6.9	0.211	2.8	NA	1.1	8.1	0.27	0.32	0.27	37.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

LANE SUMMARY

▽ Site: 8 [[2025 Baseline AM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of	Queue	Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Queen St (220m)													
Lane 1	76	11.6	1813	0.042	20 ⁶	0.0	LOS A	0.0	0.0	Short	10	0.0	NA
Lane 2	317	4.8	1504	0.211	100	3.5	LOS A	1.1	8.1	Full	220	0.0	0.0
Approach	394	6.1		0.211		2.8	NA	1.1	8.1				
East: Philip St (340m)													
Lane 1	222	1.4	1169	0.190	100	4.7	LOS A	0.8	5.8	Full	340	0.0	0.0
Approach	222	1.4		0.190		4.7	LOS A	0.8	5.8				
North: Queen St (120m)													
Lane 1	212	13.9	1650	0.128	100	0.8	LOS A	0.3	2.5	Full	120	0.0	0.0
Approach	212	13.9		0.128		0.8	NA	0.3	2.5				
Intersection	827	6.9		0.211		2.8	NA	1.1	8.1				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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 lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

⁶ Lane under-utilisation due to downstream effects

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Organisation: ASON GROUP PTY LTD | Processed: Tuesday, 6 August 2019 11:06:47 AM

Project: C:\Users\MatthewTangonan\Desktop\IP0196 Queen x Phillip.sip8

MOVEMENT SUMMARY

▽ Site: 8 [[2025 Baseline PM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Queen St (220m)												
2	T1	182	13.9	0.298	0.6	LOS A	1.6	11.9	0.20	0.21	0.20	37.7
3	R2	342	0.9	0.298	5.0	LOS A	1.6	11.9	0.47	0.51	0.47	36.4
Approach		524	5.4	0.298	3.5	NA	1.6	11.9	0.38	0.41	0.38	36.7
East: Philip St (340m)												
4	L2	265	1.2	0.300	4.5	LOS A	1.3	9.4	0.43	0.58	0.43	36.3
6	R2	38	0.0	0.300	13.1	LOS A	1.3	9.4	0.43	0.58	0.43	35.1
Approach		303	1.0	0.300	5.6	LOS A	1.3	9.4	0.43	0.58	0.43	36.2
North: Queen St (120m)												
7	L2	57	5.6	0.152	3.7	LOS A	0.4	3.1	0.07	0.10	0.07	39.3
8	T1	199	11.1	0.152	0.1	LOS A	0.4	3.1	0.07	0.10	0.07	38.7
Approach		256	9.9	0.152	0.9	NA	0.4	3.1	0.07	0.10	0.07	38.8
All Vehicles		1083	5.2	0.300	3.4	NA	1.6	11.9	0.32	0.39	0.32	36.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

LANE SUMMARY

▽ Site: 8 [[2025 Baseline PM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Queen St (220m)													
Lane 1	107	13.9	1789	0.060	20 ⁶	0.0	LOS A	0.0	0.0	Short	10	0.0	NA
Lane 2	418	3.3	1400	0.298	100	4.3	LOS A	1.6	11.9	Full	220	0.0	0.0
Approach	524	5.4		0.298		3.5	NA	1.6	11.9				
East: Philip St (340m)													
Lane 1	303	1.0	1012	0.300	100	5.6	LOS A	1.3	9.4	Full	340	0.0	0.0
Approach	303	1.0		0.300		5.6	LOS A	1.3	9.4				
North: Queen St (120m)													
Lane 1	256	9.9	1678	0.152	100	0.9	LOS A	0.4	3.1	Full	120	0.0	0.0
Approach	256	9.9		0.152		0.9	NA	0.4	3.1				
Intersection	1083	5.2		0.300		3.4	NA	1.6	11.9				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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 lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

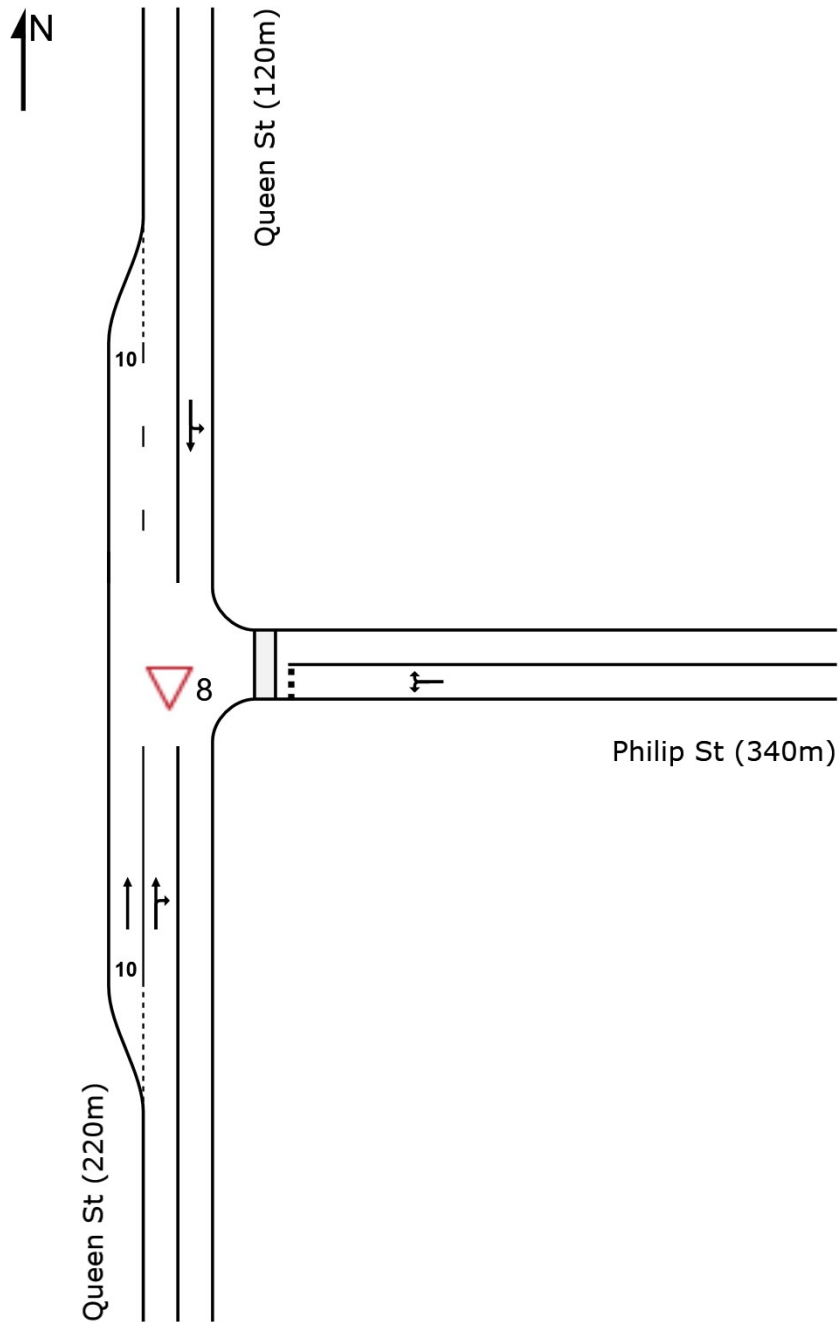
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

⁶ Lane under-utilisation due to downstream effects

SITE LAYOUT

▽ Site: 8 [[2025 Project AM] Queen x Philip]

Queen Street x Philip Street
scenario 1: 2018 Traffic (surveyed)
Road Condition: Existing 2018
Site Category: 3 leg priority-controlled
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ Site: 8 [[2025 Project AM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Queen St (220m)												
2	T1	181	11.6	0.248	0.6	LOS A	1.3	9.7	0.21	0.22	0.21	37.4
3	R2	275	1.1	0.248	4.7	LOS A	1.3	9.7	0.42	0.44	0.42	36.6
Approach		456	5.3	0.248	3.1	NA	1.3	9.7	0.34	0.35	0.34	36.9
East: Philip St (340m)												
4	L2	296	0.7	0.262	4.3	LOS A	1.2	8.4	0.38	0.54	0.38	36.7
6	R2	18	5.9	0.262	11.7	LOS A	1.2	8.4	0.38	0.54	0.38	35.5
Approach		314	1.0	0.262	4.8	LOS A	1.2	8.4	0.38	0.54	0.38	36.7
North: Queen St (120m)												
7	L2	45	7.0	0.128	3.7	LOS A	0.3	2.5	0.07	0.10	0.07	39.3
8	T1	166	15.8	0.128	0.1	LOS A	0.3	2.5	0.07	0.10	0.07	38.7
Approach		212	13.9	0.128	0.8	NA	0.3	2.5	0.07	0.10	0.07	38.9
All Vehicles		981	5.8	0.262	3.1	NA	1.3	9.7	0.29	0.36	0.29	37.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

LANE SUMMARY

▽ Site: 8 [[2025 Project AM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of	Queue	Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Queen St (220m)													
Lane 1	90	11.6	1813	0.050	20 ⁶	0.0	LOS A	0.0	0.0	Short	10	0.0	NA
Lane 2	366	3.8	1476	0.248	100	3.8	LOS A	1.3	9.7	Full	220	0.0	0.0
Approach	456	5.3		0.248		3.1	NA	1.3	9.7				
East: Philip St (340m)													
Lane 1	314	1.0	1196	0.262	100	4.8	LOS A	1.2	8.4	Full	340	0.0	0.0
Approach	314	1.0		0.262		4.8	LOS A	1.2	8.4				
North: Queen St (120m)													
Lane 1	212	13.9	1650	0.128	100	0.8	LOS A	0.3	2.5	Full	120	0.0	0.0
Approach	212	13.9		0.128		0.8	NA	0.3	2.5				
Intersection	981	5.8		0.262		3.1	NA	1.3	9.7				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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 lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

⁶ Lane under-utilisation due to downstream effects

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Organisation: ASON GROUP PTY LTD | Processed: Tuesday, 6 August 2019 11:06:48 AM

Project: C:\Users\MatthewTangonan\Desktop\IP0196 Queen x Phillip.sip8

MOVEMENT SUMMARY

▽ Site: 8 [[2025 Project PM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Queen St (220m)												
2	T1	182	13.9	0.385	0.4	LOS A	2.4	17.2	0.12	0.15	0.13	38.5
3	R2	481	0.7	0.385	5.2	LOS A	2.4	17.2	0.51	0.60	0.54	36.1
Approach		663	4.3	0.385	3.9	NA	2.4	17.2	0.40	0.47	0.43	36.5
East: Philip St (340m)												
4	L2	329	1.0	0.374	4.8	LOS A	2.0	14.0	0.46	0.62	0.51	36.0
6	R2	38	0.0	0.374	17.7	LOS B	2.0	14.0	0.46	0.62	0.51	34.6
Approach		367	0.9	0.374	6.2	LOS A	2.0	14.0	0.46	0.62	0.51	35.8
North: Queen St (120m)												
7	L2	57	5.6	0.152	3.7	LOS A	0.4	3.1	0.07	0.10	0.07	39.3
8	T1	199	11.1	0.152	0.1	LOS A	0.4	3.1	0.07	0.10	0.07	38.7
Approach		256	9.9	0.152	0.9	NA	0.4	3.1	0.07	0.10	0.07	38.8
All Vehicles		1286	4.4	0.385	4.0	NA	2.4	17.2	0.35	0.44	0.38	36.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

LANE SUMMARY

▽ Site: 8 [[2025 Project PM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Queen St (220m)													
Lane 1	138	13.9	1789	0.077	20 ⁶	0.0	LOS A	0.0	0.0	Short	10	0.0	NA
Lane 2	526	1.8	1366	0.385	100	4.9	LOS A	2.4	17.2	Full	220	0.0	0.0
Approach	663	4.3		0.385		3.9	NA	2.4	17.2				
East: Philip St (340m)													
Lane 1	367	0.9	981	0.374	100	6.2	LOS A	2.0	14.0	Full	340	0.0	0.0
Approach	367	0.9		0.374		6.2	LOS A	2.0	14.0				
North: Queen St (120m)													
Lane 1	256	9.9	1678	0.152	100	0.9	LOS A	0.4	3.1	Full	120	0.0	0.0
Approach	256	9.9		0.152		0.9	NA	0.4	3.1				
Intersection	1286	4.4		0.385		4.0	NA	2.4	17.2				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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 lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

⁶ Lane under-utilisation due to downstream effects

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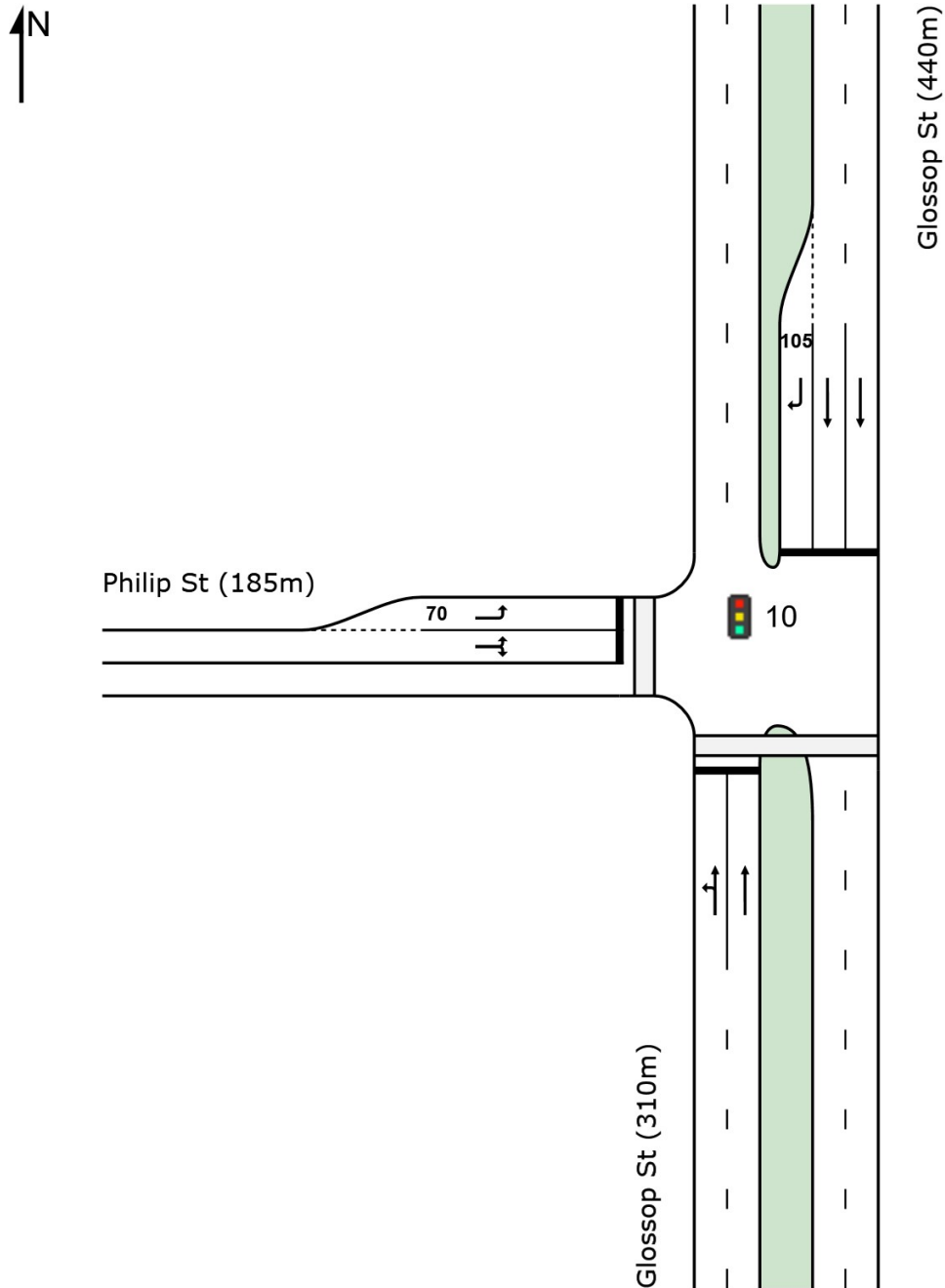
Organisation: ASON GROUP PTY LTD | Processed: Tuesday, 6 August 2019 11:06:49 AM

Project: C:\Users\MatthewTangonan\Desktop\IP0196 Queen x Phillip.sip8

SITE LAYOUT

 **Site: 10** **[[2018 Existing Base AM] Glossop x Philip]**

Glossop Street x Philip Street
scenario 1: 2018 Traffic (surveyed)
Road Condition: Existing 2018
Site Category: 3 leg Signalised
Signals - Fixed Time Isolated



LANE SUMMARY

Site: 10 [[2025 Baseline AM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 2: 2018 Traffic (surveyed) + 2% P.A Growth
 Road Condition: Existing 2018
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	627	11.3	1131	0.554	100	9.5	LOS A	13.8	106.3	Full	310	0.0	0.0
Lane 2	626	11.9	1129	0.554	100	9.8	LOS A	14.8	114.4	Full	310	0.0	0.0
Approach	1253	11.6		0.554		9.7	LOS A	14.8	114.4				
North: Glossop St (440m)													
Lane 1	558	15.0	1401	0.399	100	3.0	LOS A	7.1	55.7	Full	440	0.0	0.0
Lane 2	558	15.0	1401	0.399	100	3.0	LOS A	7.1	55.7	Full	440	0.0	0.0
Lane 3	372	3.7	355	1.046	100	117.4	LOS F	32.3	233.3	Short	105	0.0	NA
Approach	1488	12.2		1.046		31.5	LOS C	32.3	233.3				
West: Philip St (185m)													
Lane 1	220	5.2	485	0.454	100	32.9	LOS C	7.7	56.5	Short	70	0.0	NA
Lane 2	65	11.6	143	0.454	100	46.9	LOS D	2.8	21.2	Full	185	0.0	0.0
Approach	285	6.6		0.454		36.1	LOS C	7.7	56.5				
Intersection	3026	11.4		1.046		22.9	LOS B	32.3	233.3				

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

PHASING SUMMARY

Site: 10 [[2025 Baseline AM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 2: 2018 Traffic (surveyed) + 2% P.A Growth
 Road Condition: Existing 2018
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS

Reference Phase: Phase A

Input Phase Sequence: A, B, C

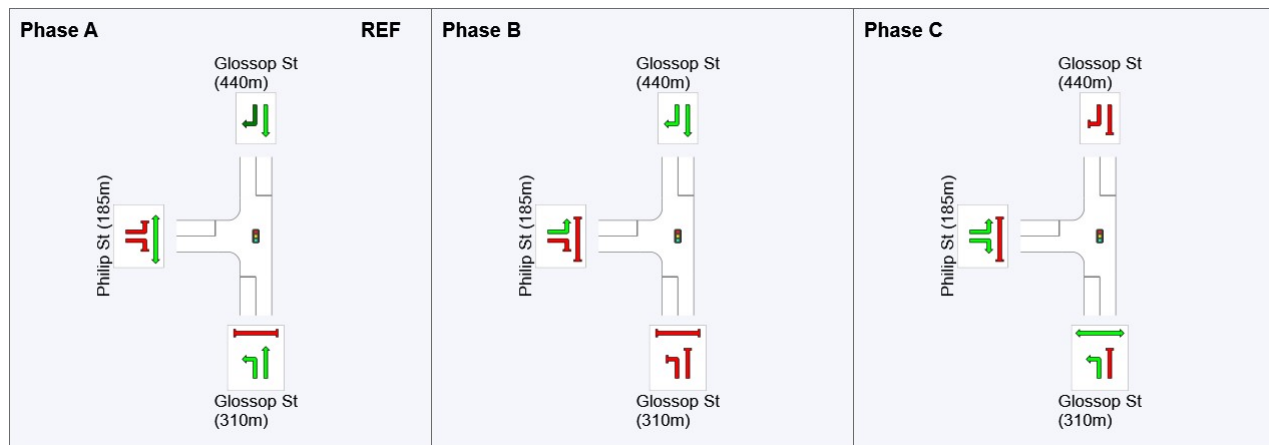
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	56	70
Green Time (sec)	53	8	9
Phase Time (sec)	59	14	12
Phase Split	69%	16%	14%









See the Phase Information section in the Detailed Output 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, 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

LANE SUMMARY

Site: 10 [[2025 Baseline PM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 2: 2018 Traffic (surveyed) + 2% P.A Growth
 Road Condition: Existing 2018
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 99 seconds (Site User-Given Phase Times)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	594	8.9	928	0.640	100	18.6	LOS B	19.8	149.4	Full	310	0.0	0.0
Lane 2	596	9.0	930	0.640	100	19.2	LOS B	20.9	157.8	Full	310	0.0	0.0
Approach	1189	8.9		0.640		18.9	LOS B	20.9	157.8				
North: Glossop St (440m)													
Lane 1	714	6.7	1340	0.533	100	6.8	LOS A	15.5	115.0	Full	440	0.0	0.0
Lane 2	714	6.7	1340	0.533	100	6.8	LOS A	15.5	115.0	Full	440	0.0	0.0
Lane 3	321	4.6	417	0.771	100	44.3	LOS D	14.8	108.0	Short	105	0.0	NA
Approach	1748	6.3		0.771		13.7	LOS A	15.5	115.0				
West: Philip St (185m)													
Lane 1	404	4.2	692	0.584	94 ⁵	30.7	LOS C	15.5	112.7	Short	70	0.0	NA
Lane 2	158	5.3	253	0.624	100	49.7	LOS D	7.5	55.0	Full	185	0.0	0.0
Approach	562	4.5		0.624		36.1	LOS C	15.5	112.7				
Intersection	3500	6.9		0.771		19.0	LOS B	20.9	157.8				

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

5 Lane under-utilisation found by the program

PHASING SUMMARY

Site: 10 [[2025 Baseline PM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 2: 2018 Traffic (surveyed) + 2% P.A Growth
 Road Condition: Existing 2018
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 99 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS

Reference Phase: Phase A

Input Phase Sequence: A, B, C

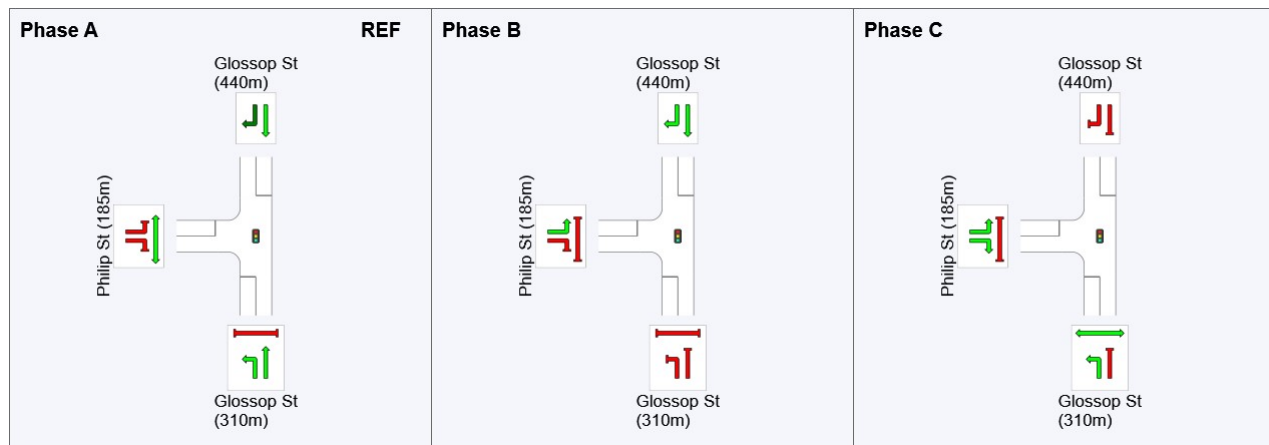
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	55	76
Green Time (sec)	50	15	17
Phase Time (sec)	56	21	22
Phase Split	57%	21%	22%

See the Phase Information section in the Detailed Output 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, 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

LANE SUMMARY

 **Site: 10** **[[2025 Base w/ modified phasing AM] Glossop x Philip]**

Glossop Street x Philip Street
 scenario 3: 2018 Traffic (surveyed) + 2% P.A Growth
 Road Condition: Modified Signal Phasing
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Cycle Time)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	625	11.3	722	0.866	100	34.0	LOS C	27.4	210.3	Full	310	0.0	0.0
Lane 2	627	11.9	724	0.866	100	34.3	LOS C	28.4	219.3	Full	310	0.0	0.0
Approach	1253	11.6		0.866		34.1	LOS C	28.4	219.3				
North: Glossop St (440m)													
Lane 1	558	15.0	1254	0.445	100	5.7	LOS A	9.8	77.7	Full	440	0.0	0.0
Lane 2	558	15.0	1254	0.445	100	5.7	LOS A	9.8	77.7	Full	440	0.0	0.0
Lane 3	372	3.7	529	0.703	100	36.1	LOS C	12.5	89.9	Short	105	0.0	NA
Approach	1488	12.2		0.703		13.3	LOS A	12.5	89.9				
West: Philip St (185m)													
Lane 1	223	5.2	822	0.272	97 ⁵	19.9	LOS B	5.7	41.7	Short	70	0.0	NA
Lane 2	62	11.9	222	0.280	100	42.3	LOS C	2.4	18.8	Full	185	0.0	0.0
Approach	285	6.6		0.280		24.8	LOS B	5.7	41.7				
Intersection	3026	11.4		0.866		23.0	LOS B	28.4	219.3				

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

5 Lane under-utilisation found by the program

PHASING SUMMARY

 **Site: 10** **[[2025 Base w/ modified phasing AM] Glossop x Philip]**

Glossop Street x Philip Street
 scenario 3: 2018 Traffic (surveyed) + 2% P.A Growth
 Road Condition: Modified Signal Phasing
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Green Split Priority has been specified

Phase Sequence: SCATS - Copy

Reference Phase: Phase A

Input Phase Sequence: A, B, C

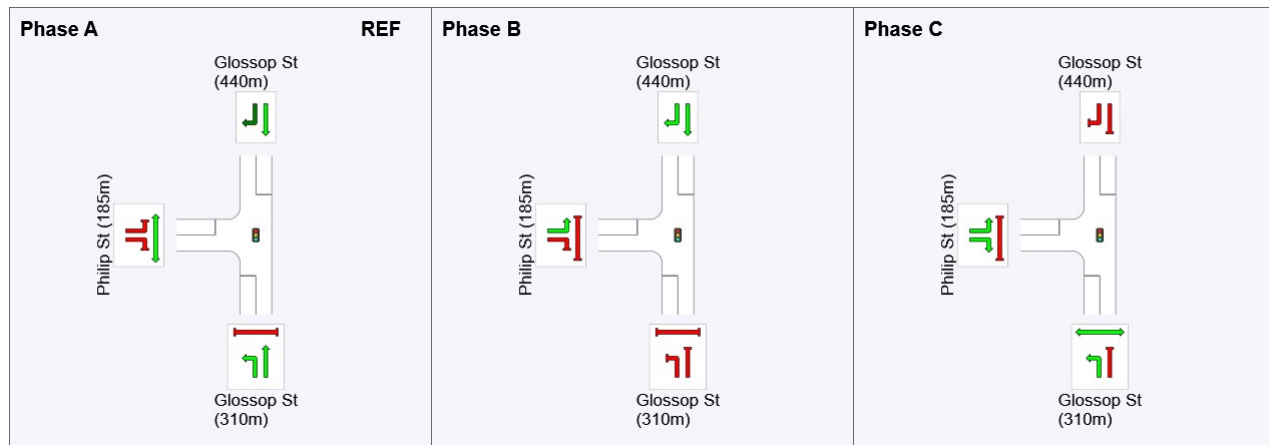
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	40	66
Green Time (sec)	34	20	13
Phase Time (sec)	40	26	19
Phase Split	47%	31%	22%

See the Phase Information section in the Detailed Output 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, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase



Project: C:\Users\MatthewTangonan\Desktop\P0196 Glossop x Phillip.sip8

LANE SUMMARY

 **Site: 10** **[[2025 Base w/ modified phasing PM] Glossop x Philip]**

Glossop Street x Philip Street
 scenario 3: 2018 Traffic (surveyed) + 2% P.A Growth
 Road Condition: Modified Signal Phasing
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 99 seconds (Site User-Given Phase Times)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	594	8.9	743	0.800	100	29.9	LOS C	25.7	193.3	Full	310	0.0	0.0
Lane 2	595	9.0	744	0.800	100	30.8	LOS C	26.8	202.3	Full	310	0.0	0.0
Approach	1189	8.9		0.800		30.3	LOS C	26.8	202.3				
North: Glossop St (440m)													
Lane 1	714	6.7	1321	0.540	100	7.3	LOS A	16.1	119.2	Full	440	0.0	0.0
Lane 2	714	6.7	1321	0.540	100	7.3	LOS A	16.1	119.2	Full	440	0.0	0.0
Lane 3	321	4.6	539	0.595	100	37.4	LOS C	12.2	88.8	Short	105	0.0	NA
Approach	1748	6.3		0.595		12.8	LOS A	16.1	119.2				
West: Philip St (185m)													
Lane 1	404	4.2	874	0.462	79 ⁵	22.7	LOS B	12.9	93.5	Short	70	0.0	NA
Lane 2	158	5.3	271	0.582	100	48.2	LOS D	7.4	53.8	Full	185	0.0	0.0
Approach	562	4.5		0.582		29.9	LOS C	12.9	93.5				
Intersection	3500	6.9		0.800		21.5	LOS B	26.8	202.3				

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

5 Lane under-utilisation found by the program

PHASING SUMMARY

 **Site: 10** **[[2025 Base w/ modified phasing PM] Glossop x Philip]**

Glossop Street x Philip Street
 scenario 3: 2018 Traffic (surveyed) + 2% P.A Growth
 Road Condition: Modified Signal Phasing
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 99 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS - Copy

Reference Phase: Phase A

Input Phase Sequence: A, B, C

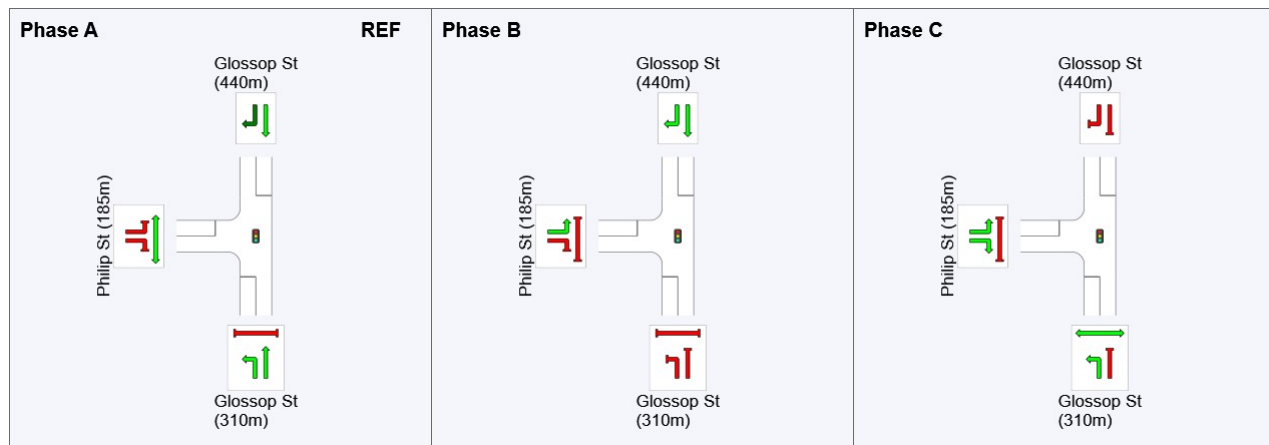
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	45	75
Green Time (sec)	40	24	18
Phase Time (sec)	46	30	23
Phase Split	46%	30%	23%













See the Phase Information section in the Detailed Output 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, 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

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Organisation: ASON GROUP PTY LTD | Processed: Tuesday, 6 August 2019 11:20:15 AM

Project: C:\Users\MatthewTangonan\Desktop\IP0196 Glossop x Phillip.sip8

LANE SUMMARY

Site: 10 [[2025 Project Case AM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 4: 2018 Traffic (surveyed) + 2% P.A Growth + Development
 Road Condition: Modified Signal Phasing
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	638	11.0	729	0.876	100	34.8	LOS C	28.3	216.8	Full	310	0.0	0.0
Lane 2	634	11.9	724	0.876	100	35.7	LOS C	29.4	227.0	Full	310	0.0	0.0
Approach	1273	11.4		0.876		35.3	LOS C	29.4	227.0				
North: Glossop St (440m)													
Lane 1	558	15.0	1254	0.445	100	5.7	LOS A	9.8	77.7	Full	440	0.0	0.0
Lane 2	558	15.0	1254	0.445	100	5.7	LOS A	9.8	77.7	Full	440	0.0	0.0
Lane 3	399	3.4	528	0.755	100	38.5	LOS C	13.9	100.3	Short	105	0.0	NA
Approach	1516	11.9		0.755		14.4	LOS A	13.9	100.3				
West: Philip St (185m)													
Lane 1	279	4.2	870	0.321	70 ⁵	19.1	LOS B	7.1	51.2	Short	70	0.0	NA
Lane 2	124	5.9	273	0.456	100	41.4	LOS C	4.9	35.9	Full	185	0.0	0.0
Approach	403	4.7		0.456		25.9	LOS B	7.1	51.2				
Intersection	3192	10.8		0.876		24.2	LOS B	29.4	227.0				

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

5 Lane under-utilisation found by the program

PHASING SUMMARY

 **Site: 10** [[2025 Project Case AM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 4: 2018 Traffic (surveyed) + 2% P.A Growth + Development
 Road Condition: Modified Signal Phasing
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS - Copy

Reference Phase: Phase A

Input Phase Sequence: A, B, C

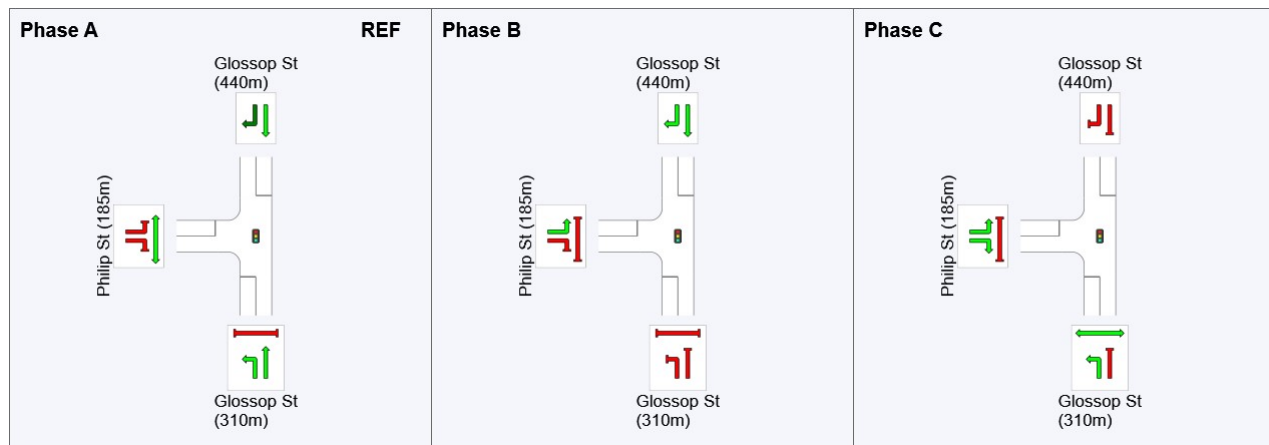
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	38	64
Green Time (sec)	34	20	15
Phase Time (sec)	40	26	19
Phase Split	47%	31%	22%













See the Phase Information section in the Detailed Output 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, 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

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Project: C:\Users\MatthewTangonan\Desktop\IP0196 Glossop x Phillip.sip8

LANE SUMMARY

 **Site: 10** [[2025 Project Case PM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 4: 2018 Traffic (surveyed) + 2% P.A Growth + Development
 Road Condition: Modified Signal Phasing
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 99 seconds (Site User-Given Phase Times)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	617	8.2	745	0.828	100	32.6	LOS C	28.0	209.7	Full	310	0.0	0.0
Lane 2	616	9.0	744	0.828	100	33.1	LOS C	29.1	219.7	Full	310	0.0	0.0
Approach	1233	8.6		0.828		32.9	LOS C	29.1	219.7				
North: Glossop St (440m)													
Lane 1	714	6.7	1321	0.540	100	7.3	LOS A	16.1	119.2	Full	440	0.0	0.0
Lane 2	714	6.7	1321	0.540	100	7.3	LOS A	16.1	119.2	Full	440	0.0	0.0
Lane 3	384	3.8	536	0.717	100	40.9	LOS C	15.0	108.4	Short	105	0.0	NA
Approach	1812	6.1		0.717		14.4	LOS A	16.1	119.2				
West: Philip St (185m)													
Lane 1	441	3.8	877	0.503	69 ⁵	23.2	LOS B	14.4	104.4	Short	70	0.0	NA
Lane 2	198	4.3	273	0.725	100	51.0	LOS D	9.7	70.6	Full	185	0.0	0.0
Approach	639	4.0		0.725		31.8	LOS C	14.4	104.4				
Intersection	3683	6.6		0.828		23.6	LOS B	29.1	219.7				

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

5 Lane under-utilisation found by the program

PHASING SUMMARY

 **Site: 10** [[2025 Project Case PM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 4: 2018 Traffic (surveyed) + 2% P.A Growth + Development
 Road Condition: Modified Signal Phasing
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 99 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS - Copy

Reference Phase: Phase A

Input Phase Sequence: A, B, C

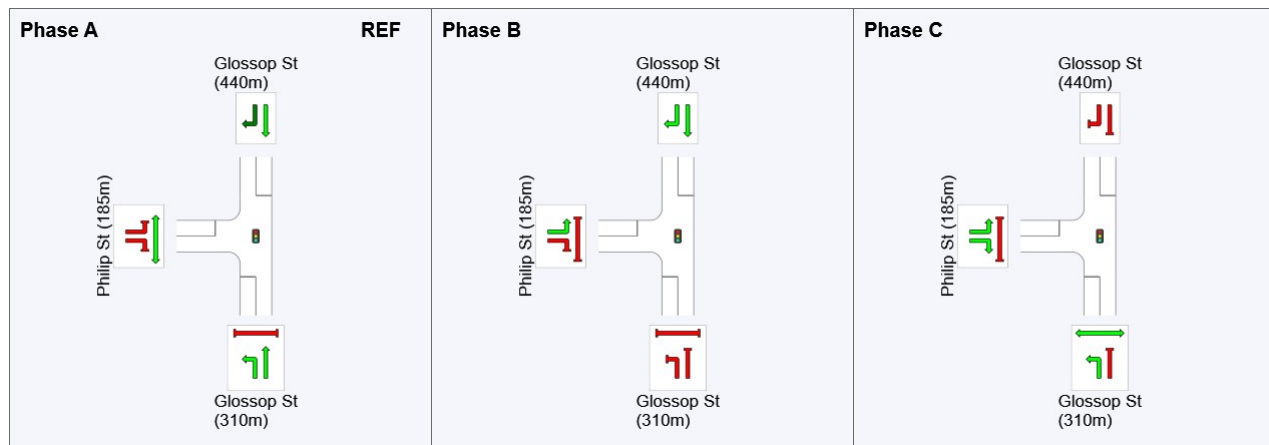
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	45	75
Green Time (sec)	40	24	18
Phase Time (sec)	46	30	23
Phase Split	46%	30%	23%













See the Phase Information section in the Detailed Output 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, 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

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Project: C:\Users\MatthewTangonan\Desktop\IP0196 Glossop x Phillip.sip8

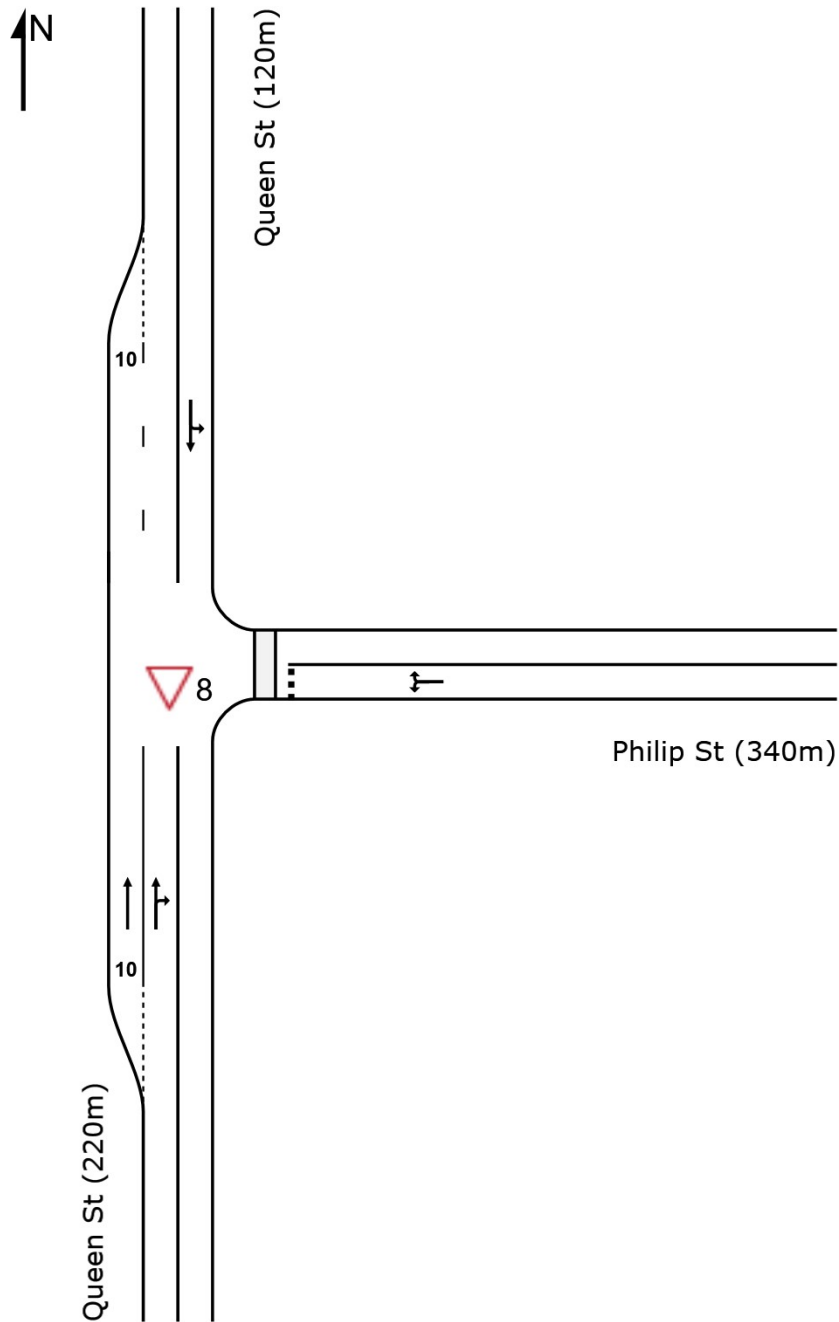
Appendix A3

2035 Scenarios

SITE LAYOUT

▽ Site: 8 [[2035 Baseline AM] Queen x Philip]

Queen Street x Philip Street
scenario 1: 2018 Traffic (surveyed)
Road Condition: Existing 2018
Site Category: 3 leg priority-controlled
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ Site: 8 [[2035 Baseline AM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Queen St (220m)												
2	T1	220	11.5	0.265	0.8	LOS A	1.5	10.7	0.26	0.24	0.26	37.2
3	R2	259	1.6	0.265	5.0	LOS A	1.5	10.7	0.46	0.42	0.46	36.7
Approach		479	6.2	0.265	3.1	NA	1.5	10.7	0.37	0.34	0.37	36.9
East: Philip St (340m)												
4	L2	249	1.3	0.250	4.5	LOS A	1.1	7.7	0.42	0.57	0.42	36.6
6	R2	22	4.8	0.250	12.6	LOS A	1.1	7.7	0.42	0.57	0.42	35.3
Approach		272	1.6	0.250	5.2	LOS A	1.1	7.7	0.42	0.57	0.42	36.5
North: Queen St (120m)												
7	L2	56	7.5	0.157	3.7	LOS A	0.4	3.2	0.07	0.10	0.07	39.3
8	T1	203	16.1	0.157	0.1	LOS A	0.4	3.2	0.07	0.10	0.07	38.7
Approach		259	14.2	0.157	0.9	NA	0.4	3.2	0.07	0.10	0.07	38.8
All Vehicles		1009	7.0	0.265	3.1	NA	1.5	10.7	0.31	0.34	0.31	37.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

LANE SUMMARY

▽ Site: 8 [[2035 Baseline AM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Queen St (220m)													
Lane 1	96	11.5	1815	0.053	20 ⁶	0.0	LOS A	0.0	0.0	Short	10	0.0	NA
Lane 2	383	4.8	1443	0.265	100	3.8	LOS A	1.5	10.7	Full	220	0.0	0.0
Approach	479	6.2		0.265		3.1	NA	1.5	10.7				
East: Philip St (340m)													
Lane 1	272	1.6	1087	0.250	100	5.2	LOS A	1.1	7.7	Full	340	0.0	0.0
Approach	272	1.6		0.250		5.2	LOS A	1.1	7.7				
North: Queen St (120m)													
Lane 1	259	14.2	1646	0.157	100	0.9	LOS A	0.4	3.2	Full	120	0.0	0.0
Approach	259	14.2		0.157		0.9	NA	0.4	3.2				
Intersection	1009	7.0		0.265		3.1	NA	1.5	10.7				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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 lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

6 Lane under-utilisation due to downstream effects

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Project: C:\Users\MatthewTangonan\Desktop\IP0196 Queen x Phillip.sip8

MOVEMENT SUMMARY

▽ Site: 8 [[2035 Baseline PM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Queen St (220m)												
2	T1	222	13.7	0.380	0.8	LOS A	2.5	18.2	0.21	0.23	0.24	37.6
3	R2	417	1.0	0.380	5.7	LOS A	2.5	18.2	0.55	0.60	0.61	36.1
Approach		639	5.4	0.380	4.0	NA	2.5	18.2	0.43	0.47	0.48	36.4
East: Philip St (340m)												
4	L2	324	1.3	0.411	5.5	LOS A	2.4	17.1	0.51	0.71	0.64	35.4
6	R2	45	0.0	0.411	18.9	LOS B	2.4	17.1	0.51	0.71	0.64	34.0
Approach		369	1.1	0.411	7.1	LOS A	2.4	17.1	0.51	0.71	0.64	35.2
North: Queen St (120m)												
7	L2	69	6.1	0.185	3.7	LOS A	0.5	3.9	0.08	0.10	0.08	39.3
8	T1	241	10.9	0.185	0.1	LOS A	0.5	3.9	0.08	0.10	0.08	38.7
Approach		311	9.8	0.185	0.9	NA	0.5	3.9	0.08	0.10	0.08	38.8
All Vehicles		1319	5.3	0.411	4.1	NA	2.5	18.2	0.37	0.45	0.43	36.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

LANE SUMMARY

▽ Site: 8 [[2035 Baseline PM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Queen St (220m)													
Lane 1	136	13.7	1790	0.076	20 ⁶	0.0	LOS A	0.0	0.0	Short	10	0.0	NA
Lane 2	503	3.2	1324	0.380	100	5.1	LOS A	2.5	18.2	Full	220	0.0	0.0
Approach	639	5.4		0.380		4.0	NA	2.5	18.2				
East: Philip St (340m)													
Lane 1	369	1.1	899	0.411	100	7.1	LOS A	2.4	17.1	Full	340	0.0	0.0
Approach	369	1.1		0.411		7.1	LOS A	2.4	17.1				
North: Queen St (120m)													
Lane 1	311	9.8	1676	0.185	100	0.9	LOS A	0.5	3.9	Full	120	0.0	0.0
Approach	311	9.8		0.185		0.9	NA	0.5	3.9				
Intersection	1319	5.3		0.411		4.1	NA	2.5	18.2				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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 lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

6 Lane under-utilisation due to downstream effects

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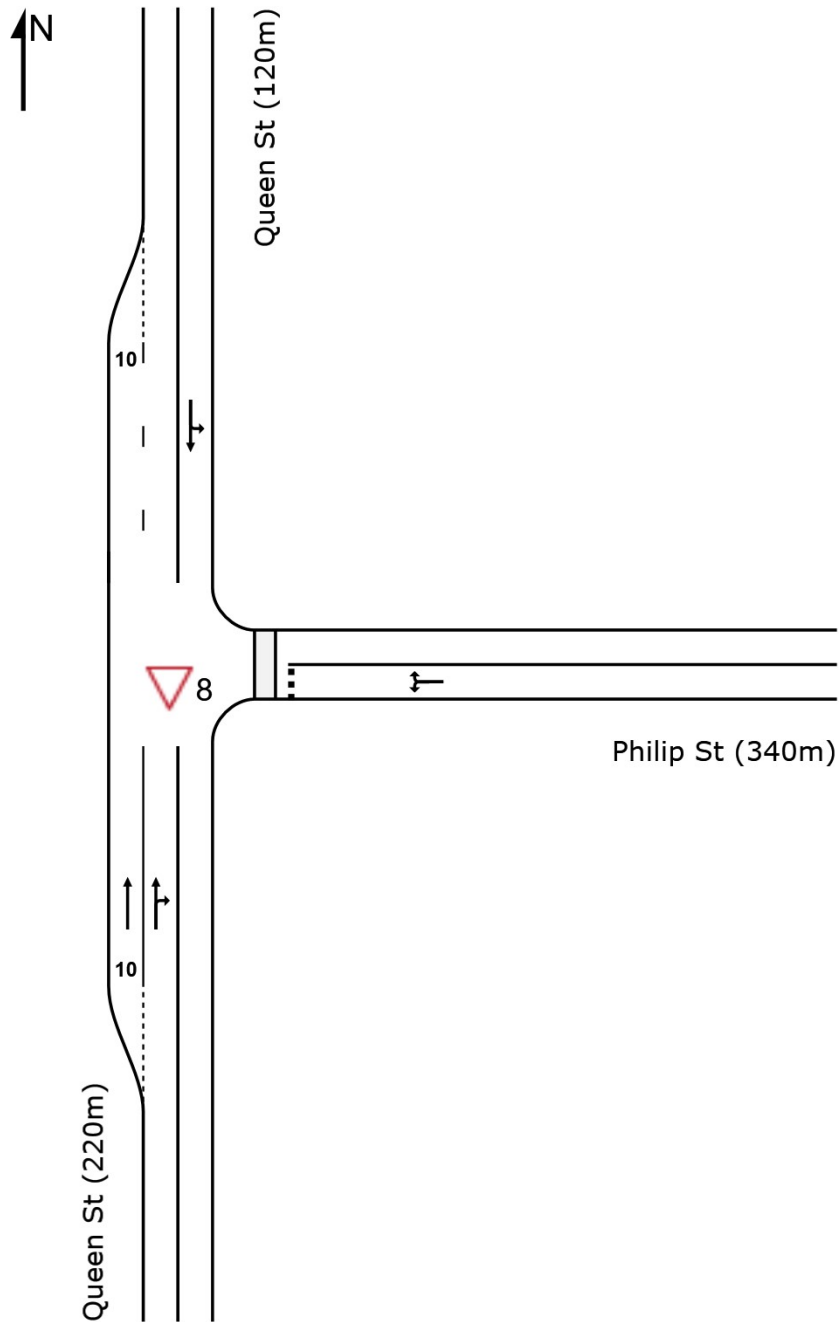
Organisation: ASON GROUP PTY LTD | Processed: Tuesday, 6 August 2019 12:06:44 PM

Project: C:\Users\MatthewTangonan\Desktop\IP0196 Queen x Phillip.sip8

SITE LAYOUT

▽ Site: 8 [[2035 Project AM] Queen x Philip]

Queen Street x Philip Street
scenario 1: 2018 Traffic (surveyed)
Road Condition: Existing 2018
Site Category: 3 leg priority-controlled
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

▽ Site: 8 [[2035 Project AM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Queen St (220m)												
2	T1	220	11.5	0.301	0.7	LOS A	1.7	12.3	0.24	0.24	0.24	37.3
3	R2	316	1.3	0.301	5.1	LOS A	1.7	12.3	0.48	0.47	0.48	36.5
Approach		536	5.5	0.301	3.3	NA	1.7	12.3	0.38	0.37	0.38	36.8
East: Philip St (340m)												
4	L2	327	1.0	0.316	4.6	LOS A	1.5	10.3	0.43	0.58	0.43	36.6
6	R2	22	4.8	0.316	14.7	LOS B	1.5	10.3	0.43	0.58	0.43	35.3
Approach		349	1.2	0.316	5.2	LOS A	1.5	10.3	0.43	0.58	0.43	36.5
North: Queen St (120m)												
7	L2	56	7.5	0.157	3.7	LOS A	0.4	3.2	0.07	0.10	0.07	39.3
8	T1	203	16.1	0.157	0.1	LOS A	0.4	3.2	0.07	0.10	0.07	38.7
Approach		259	14.2	0.157	0.9	NA	0.4	3.2	0.07	0.10	0.07	38.8
All Vehicles		1144	6.2	0.316	3.3	NA	1.7	12.3	0.33	0.37	0.33	37.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

LANE SUMMARY

▽ Site: 8 [[2035 Project AM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of	Queue	Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Queen St (220m)													
Lane 1	109	11.5	1815	0.060	20 ⁶	0.0	LOS A	0.0	0.0	Short	10	0.0	NA
Lane 2	427	4.0	1419	0.301	100	4.1	LOS A	1.7	12.3	Full	220	0.0	0.0
Approach	536	5.5		0.301		3.3	NA	1.7	12.3				
East: Philip St (340m)													
Lane 1	349	1.2	1106	0.316	100	5.2	LOS A	1.5	10.3	Full	340	0.0	0.0
Approach	349	1.2		0.316		5.2	LOS A	1.5	10.3				
North: Queen St (120m)													
Lane 1	259	14.2	1646	0.157	100	0.9	LOS A	0.4	3.2	Full	120	0.0	0.0
Approach	259	14.2		0.157		0.9	NA	0.4	3.2				
Intersection	1144	6.2		0.316		3.3	NA	1.7	12.3				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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 lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

⁶ Lane under-utilisation due to downstream effects

MOVEMENT SUMMARY

▽ Site: 8 [[2035 Project PM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Queen St (220m)												
2	T1	222	13.7	0.459	0.7	LOS A	3.7	26.0	0.15	0.18	0.19	38.1
3	R2	537	0.8	0.459	6.2	LOS A	3.7	26.0	0.58	0.70	0.72	35.6
Approach		759	4.6	0.459	4.6	NA	3.7	26.0	0.45	0.55	0.57	36.1
East: Philip St (340m)												
4	L2	385	1.1	0.498	6.3	LOS A	3.6	25.3	0.54	0.79	0.80	34.7
6	R2	45	0.0	0.498	25.2	LOS B	3.6	25.3	0.54	0.79	0.80	33.2
Approach		431	1.0	0.498	8.3	LOS A	3.6	25.3	0.54	0.79	0.80	34.5
North: Queen St (120m)												
7	L2	69	6.1	0.185	3.7	LOS A	0.5	3.9	0.08	0.10	0.08	39.3
8	T1	241	10.9	0.185	0.1	LOS A	0.5	3.9	0.08	0.10	0.08	38.7
Approach		311	9.8	0.185	0.9	NA	0.5	3.9	0.08	0.10	0.08	38.8
All Vehicles		1500	4.6	0.498	4.9	NA	3.7	26.0	0.40	0.53	0.53	36.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

LANE SUMMARY

▽ Site: 8 [[2035 Project PM] Queen x Philip]

Queen Street x Philip Street
 scenario 1: 2018 Traffic (surveyed)
 Road Condition: Existing 2018
 Site Category: 3 leg priority-controlled
 Giveway / Yield (Two-Way)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Queen St (220m)													
Lane 1	164	13.7	1790	0.092	20 ⁶	0.0	LOS A	0.0	0.0	Short	10	0.0	NA
Lane 2	595	2.0	1296	0.459	100	5.8	LOS A	3.7	26.0	Full	220	0.0	0.0
Approach	759	4.6		0.459		4.6	NA	3.7	26.0				
East: Philip St (340m)													
Lane 1	431	1.0	865	0.498	100	8.3	LOS A	3.6	25.3	Full	340	0.0	0.0
Approach	431	1.0		0.498		8.3	LOS A	3.6	25.3				
North: Queen St (120m)													
Lane 1	311	9.8	1676	0.185	100	0.9	LOS A	0.5	3.9	Full	120	0.0	0.0
Approach	311	9.8		0.185		0.9	NA	0.5	3.9				
Intersection	1500	4.6		0.498		4.9	NA	3.7	26.0				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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 lanes.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

⁶ Lane under-utilisation due to downstream effects

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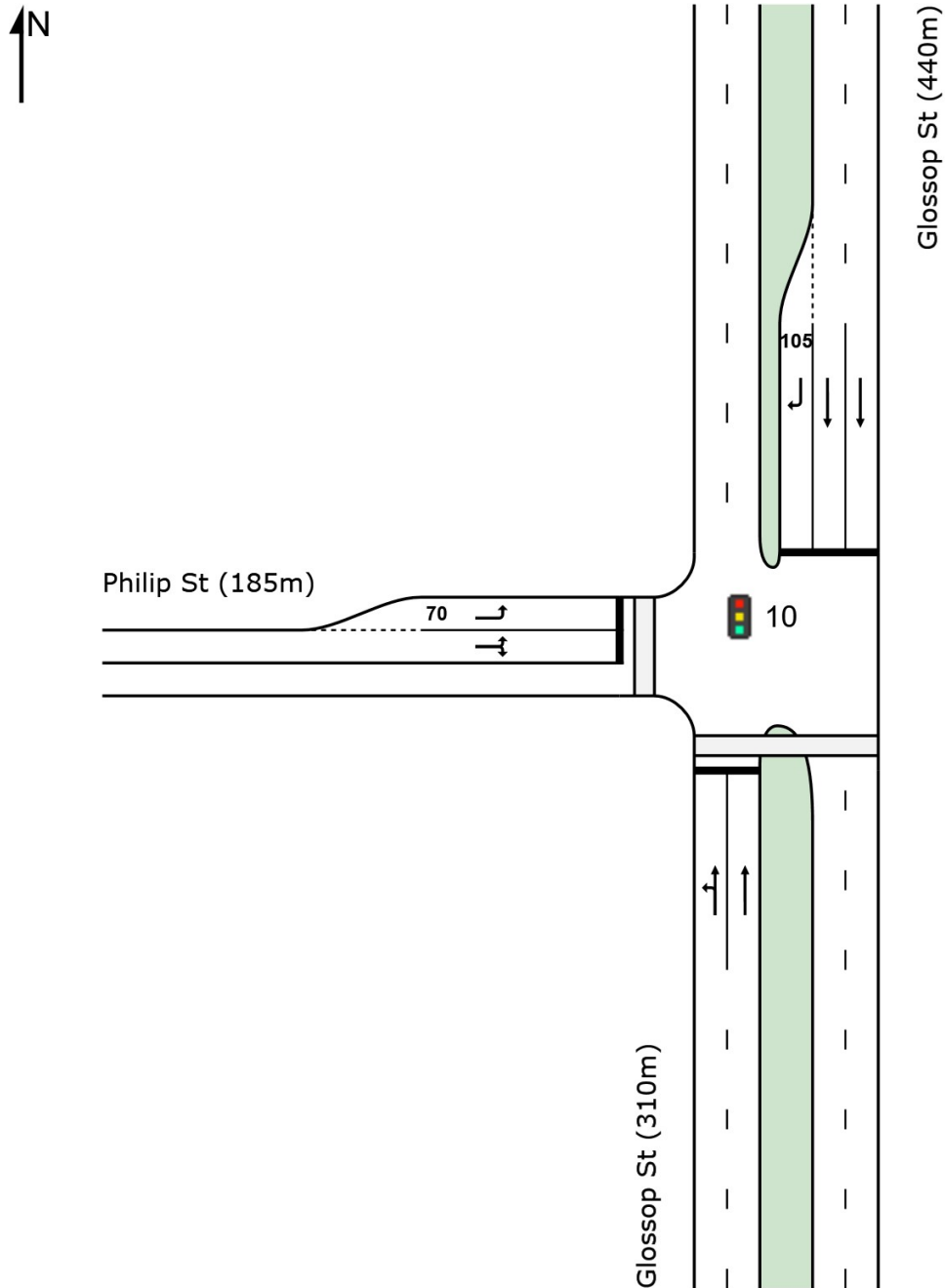
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Project: C:\Users\MatthewTangonan\Desktop\IP0196 Queen x Phillip.sip8

SITE LAYOUT

Site: 10 [[2035 Baseline AM] Glossop x Philip]

Glossop Street x Philip Street
scenario 5: 2018 Traffic (surveyed) + 2% P.A Growth
Road Condition: Modified Signal Phasing from 2025
Site Category: 3 leg Signalised
Signals - Fixed Time Isolated



LANE SUMMARY

Site: 10 [[2035 Baseline AM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 5: 2018 Traffic (surveyed) + 2% P.A Growth
 Road Condition: Modified Signal Phasing from 2025
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	765	11.3	727	1.052	100	110.5	LOS F	63.7	489.3	Full	310	0.0	46.9
Lane 2	762	11.8	724	1.052	100	109.8	LOS F	63.3	488.4	Full	310	0.0	46.7
Approach	1527	11.6		1.052		110.1	LOS F	63.7	489.3				
North: Glossop St (440m)													
Lane 1	680	14.9	1255	0.542	100	6.4	LOS A	13.3	105.1	Full	440	0.0	0.0
Lane 2	680	14.9	1255	0.542	100	6.4	LOS A	13.3	105.1	Full	440	0.0	0.0
Lane 3	452	3.5	426	1.059	100	122.9	LOS F	37.0	267.0	Short	105	0.0	NA
Approach	1812	12.1		1.059		35.4	LOS C	37.0	267.0				
West: Philip St (185m)													
Lane 1	265	5.4	863	0.307	100	19.0	LOS B	6.7	48.8	Short	70	0.0	NA
Lane 2	82	10.7	268	0.307	100	39.6	LOS C	3.1	23.9	Full	185	0.0	0.0
Approach	347	6.7		0.307		23.9	LOS B	6.7	48.8				
Intersection	3686	11.4		1.059		65.3	LOS E	63.7	489.3				

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

PHASING SUMMARY

Site: 10 [[2035 Baseline AM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 5: 2018 Traffic (surveyed) + 2% P.A Growth
 Road Condition: Modified Signal Phasing from 2025
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS - Copy

Reference Phase: Phase A

Input Phase Sequence: A, B, C

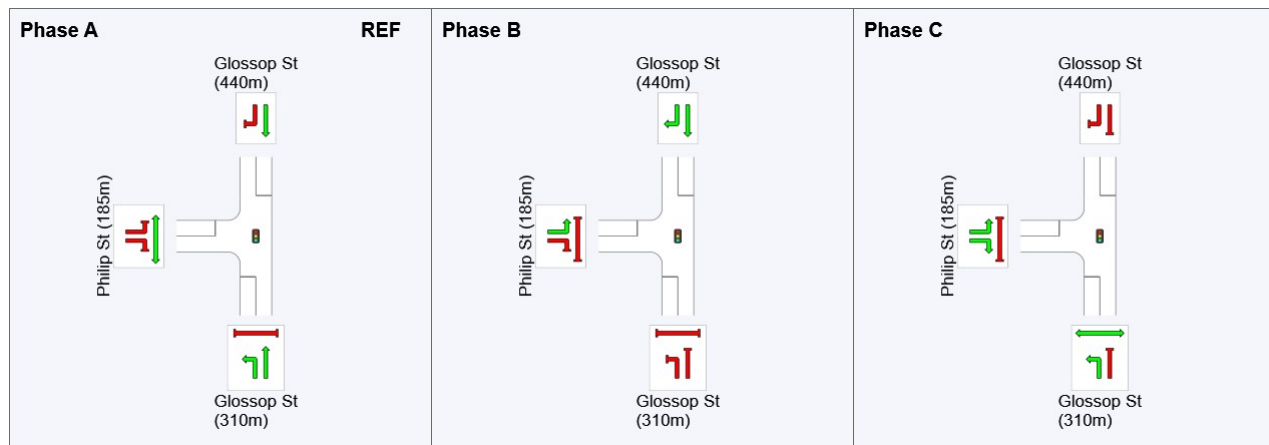
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	38	64
Green Time (sec)	34	20	15
Phase Time (sec)	40	26	19
Phase Split	47%	31%	22%

See the Phase Information section in the Detailed Output 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, 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

LANE SUMMARY

Site: 10 [[2035 Baseline PM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 5: 2018 Traffic (surveyed) + 2% P.A Growth
 Road Condition: Modified Signal Phasing from 2025
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 99 seconds (Site User-Given Phase Times)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	725	8.8	799	0.907	100	42.1	LOS C	39.1	294.2	Full	310	0.0	0.3
Lane 2	726	9.0	800	0.907	100	43.1	LOS D	40.8	307.7	Full	310	0.0	4.3
Approach	1451	8.9		0.907		42.6	LOS D	40.8	307.7				
North: Glossop St (440m)													
Lane 1	870	6.7	1359	0.640	100	7.3	LOS A	21.1	156.5	Full	440	0.0	0.0
Lane 2	870	6.7	1359	0.640	100	7.3	LOS A	21.1	156.5	Full	440	0.0	0.0
Lane 3	391	4.6	418	0.935	100	67.2	LOS E	24.1	175.4	Short	105	0.0	NA
Approach	2131	6.3		0.935		18.3	LOS B	24.1	175.4				
West: Philip St (185m)													
Lane 1	493	4.3	686 ¹	0.718	87 ⁵	26.4	LOS B	17.8	129.3	Short	70	0.0	NA
Lane 2	194	5.4	235	0.825	100	56.8	LOS E	10.2	75.0	Full	185	0.0	0.0
Approach	686	4.6		0.825		35.0	LOS C	17.8	129.3				
Intersection	4267	6.9		0.935		29.2	LOS C	40.8	307.7				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

- ¹ Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

- ⁵ Lane under-utilisation found by the program

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Organisation: ASON GROUP PTY LTD | Processed: Tuesday, 6 August 2019 12:16:16 PM

Project: C:\Users\MatthewTanganon\Desktop\IP0196 Glossop x Phillip.sip8

PHASING SUMMARY

Site: 10 [[2035 Baseline PM] Glossop x Philip]

Glossop Street x Philip Street

scenario 5: 2018 Traffic (surveyed) + 2% P.A Growth

Road Condition: Modified Signal Phasing from 2025

Site Category: 3 leg Signalised

Signals - Fixed Time Isolated Cycle Time = 99 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS - Copy

Reference Phase: Phase A

Input Phase Sequence: A, B, C

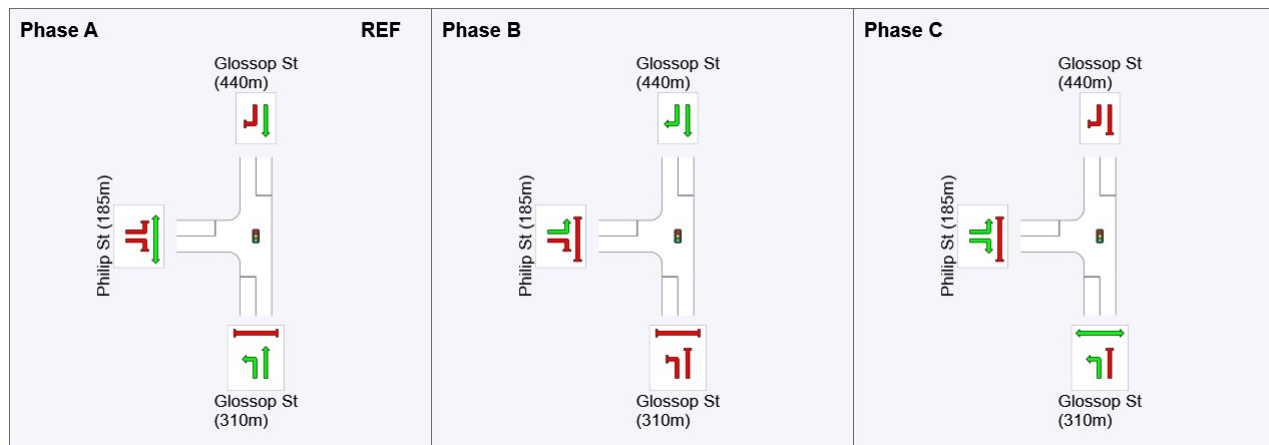
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	48	77
Green Time (sec)	43	23	16
Phase Time (sec)	49	29	21
Phase Split	49%	29%	21%









See the Phase Information section in the Detailed Output 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, 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

LANE SUMMARY

Site: 10 [[2035 Project Case AM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 6: 2018 Traffic (surveyed) + 2% P.A Growth + development
 Road Condition: Modified Signal Phasing from 2025
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	775	11.0	728	1.064	100	118.6	LOS F	66.9	512.8	Full	310	0.0	51.3
Lane 2	770	11.8	724	1.064	100	117.8	LOS F	66.4	512.1	Full	310	0.0	51.1
Approach	1545	11.4		1.064		118.2	LOS F	66.9	512.8				
North: Glossop St (440m)													
Lane 1	680	14.9	1255	0.542	100	6.4	LOS A	13.3	105.1	Full	440	0.0	0.0
Lane 2	680	14.9	1255	0.542	100	6.4	LOS A	13.3	105.1	Full	440	0.0	0.0
Lane 3	479	3.3	427	1.122	100	170.2	LOS F	47.6	342.7	Short	105	0.0	NA
Approach	1839	11.9		1.122		49.0	LOS D	47.6	342.7				
West: Philip St (185m)													
Lane 1	319	4.6	867	0.368	79 ⁵	19.5	LOS B	8.3	60.5	Short	70	0.0	NA
Lane 2	126	6.7	271	0.466	100	41.4	LOS C	5.0	36.8	Full	185	0.0	0.0
Approach	445	5.2		0.466		25.7	LOS B	8.3	60.5				
Intersection	3829	10.9		1.122		74.2	LOS F	66.9	512.8				

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

5 Lane under-utilisation found by the program

PHASING SUMMARY

 **Site: 10** [[2035 Project Case AM] Glossop x Philip]

Glossop Street x Philip Street

scenario 6: 2018 Traffic (surveyed) + 2% P.A Growth + development

Road Condition: Modified Signal Phasing from 2025

Site Category: 3 leg Signalised

Signals - Fixed Time Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS - Copy

Reference Phase: Phase A

Input Phase Sequence: A, B, C

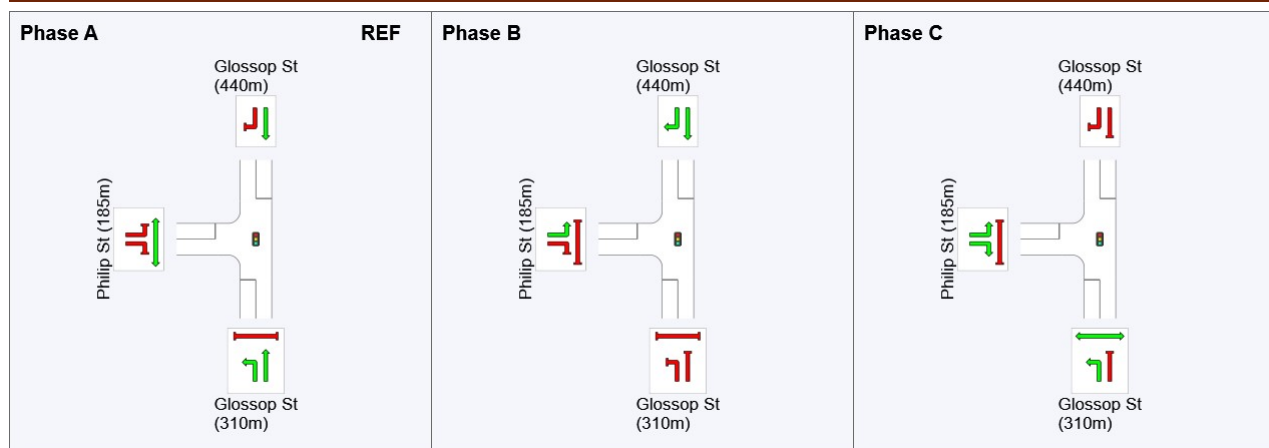
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	38	64
Green Time (sec)	34	20	15
Phase Time (sec)	40	26	19
Phase Split	47%	31%	22%










See the Phase Information section in the Detailed Output 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, 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

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Organisation: ASON GROUP PTY LTD | Processed: Tuesday, 6 August 2019 12:16:16 PM

Project: C:\Users\MatthewTangonan\Desktop\IP0196 Glossop x Phillip.sip8

LANE SUMMARY

Site: 10 [[2035 Project Case PM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 6: 2018 Traffic (surveyed) + 2% P.A Growth + development
 Road Condition: Modified Signal Phasing from 2025
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 99 seconds (Site User-Given Phase Times)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	744	8.4	800	0.929	100	48.3	LOS D	43.0	322.8	Full	310	0.0	8.7
Lane 2	744	9.0	800	0.929	100	49.0	LOS D	44.7	337.4	Full	310	0.0	12.7
Approach	1487	8.7		0.929		48.6	LOS D	44.7	337.4				
North: Glossop St (440m)													
Lane 1	870	6.7	1359	0.640	100	7.3	LOS A	21.1	156.5	Full	440	0.0	0.0
Lane 2	870	6.7	1359	0.640	100	7.3	LOS A	21.1	156.5	Full	440	0.0	0.0
Lane 3	446	4.0	419	1.064	100	133.2	LOS F	40.6	294.2	Short	105	0.0	NA
Approach	2186	6.2		1.064		33.0	LOS C	40.6	294.2				
West: Philip St (185m)													
Lane 1	529	4.0	679 ¹	0.780	81 ⁵	29.5	LOS C	20.9	151.4	Short	70	0.0	NA
Lane 2	228	4.6	236	0.967	100	79.7	LOS F	15.0	108.9	Full	185	0.0	0.0
Approach	758	4.2		0.967		44.7	LOS D	20.9	151.4				
Intersection	4432	6.7		1.064		40.2	LOS C	44.7	337.4				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

¹ Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

⁵ Lane under-utilisation found by the program

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Organisation: ASON GROUP PTY LTD | Processed: Tuesday, 6 August 2019 12:16:16 PM

Project: C:\Users\MatthewTangonan\Desktop\IP0196 Glossop x Phillip.sip8

PHASING SUMMARY

 **Site: 10** [[2035 Project Case PM] Glossop x Philip]

Glossop Street x Philip Street
 scenario 6: 2018 Traffic (surveyed) + 2% P.A Growth + development
 Road Condition: Modified Signal Phasing from 2025
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 99 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: SCATS - Copy

Reference Phase: Phase A

Input Phase Sequence: A, B, C

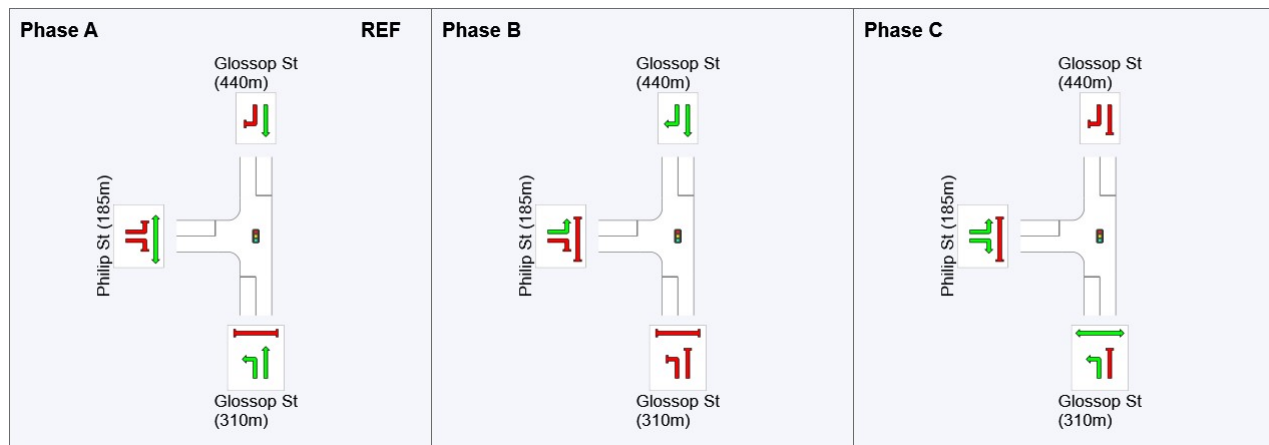
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	48	77
Green Time (sec)	43	23	16
Phase Time (sec)	49	29	21
Phase Split	49%	29%	21%













See the Phase Information section in the Detailed Output 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, 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

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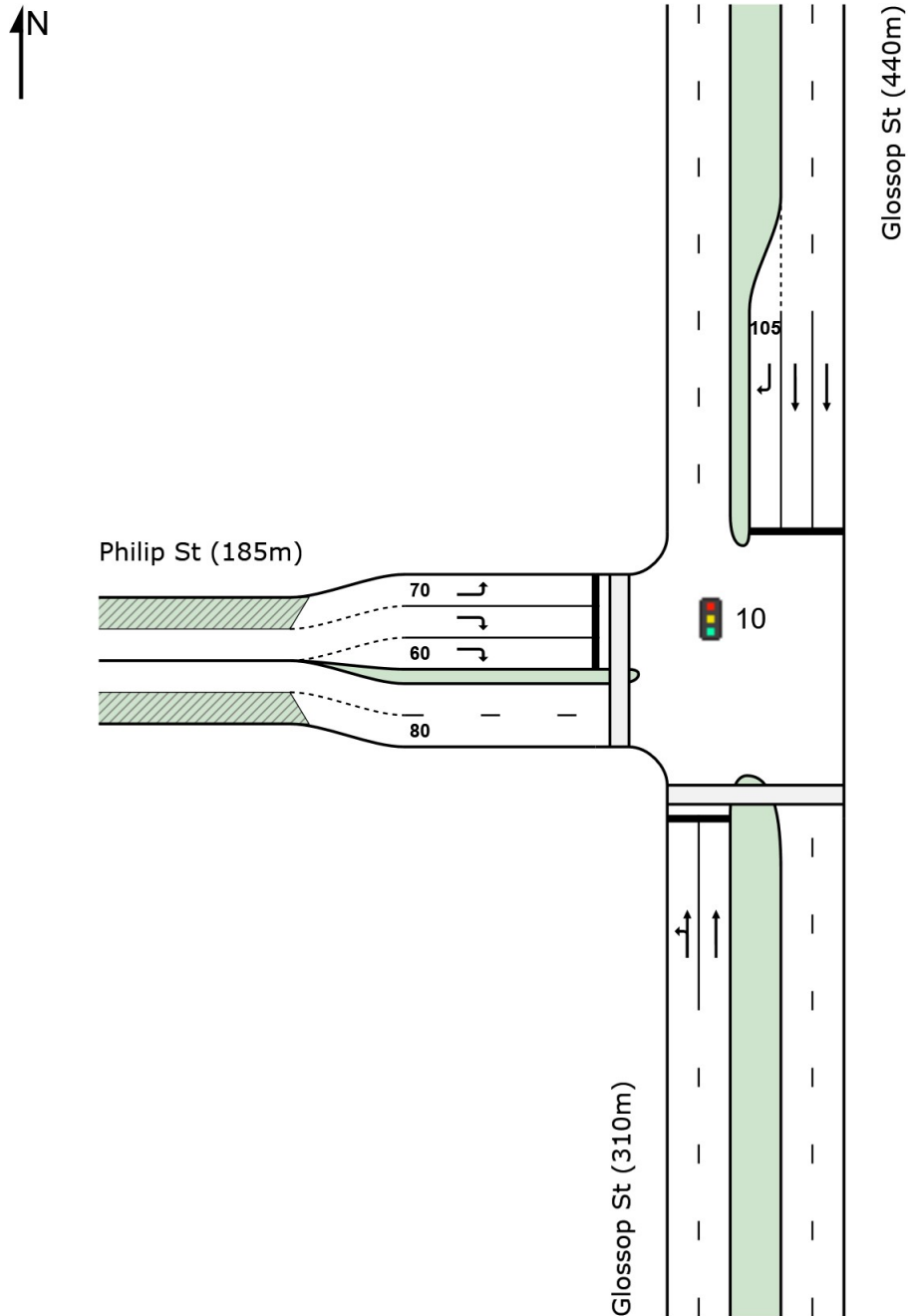
Organisation: ASON GROUP PTY LTD | Processed: Tuesday, 6 August 2019 12:16:16 PM

Project: C:\Users\MatthewTangonan\Desktop\IP0196 Glossop x Phillip.sip8

SITE LAYOUT

 **Site: 10** **[[2035 Base w/ modified config AM] Glossop x Philip - Modified Version]**

Glossop Street x Philip Street
scenario 7: 2018 Traffic (surveyed) + 2% P.A Growth + development
Road Condition: Modified signals & Configuration
Site Category: 3 leg Signalised
Signals - Fixed Time Isolated



LANE SUMMARY

 **Site: 10 [[2035 Base w/ modified config AM] Glossop x Philip - Modified Version]**

Glossop Street x Philip Street
 scenario 7: 2018 Traffic (surveyed) + 2% P.A Growth + development
 Road Condition: Modified signals & Configuration
 Site Category: 3 leg Signalised
 Signals - Fixed Time Isolated Cycle Time = 110 seconds (Site User-Given Phase Times)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	774	11.0	826	0.937	100	51.9	LOS D	49.1	376.6	Full	310	0.0	22.7
Lane 2	771	11.8	823	0.937	100	53.4	LOS D	51.5	396.8	Full	310	0.0	27.4
Approach	1545	11.4		0.937		52.6	LOS D	51.5	396.8				
North: Glossop St (440m)													
Lane 1	680	14.9	1438	0.473	100	3.4	LOS A	11.1	87.3	Full	440	0.0	0.0
Lane 2	680	14.9	1438	0.473	100	3.4	LOS A	11.1	87.3	Full	440	0.0	0.0
Lane 3	479	3.3	544	0.880	100	56.0	LOS D	28.5	205.2	Short	105	0.0	NA
Approach	1839	11.9		0.880		17.1	LOS B	28.5	205.2				
West: Philip St (185m)													
Lane 1	319	4.6	834	0.383	100	25.1	LOS B	11.1	80.5	Short (P)	70	0.0	NA
Lane 2	63	6.7	145	0.435	100	59.2	LOS E	3.4	25.2	Full	185	0.0	0.0
Lane 3	63	6.7	145	0.435	100	59.2	LOS E	3.4	25.2	Short	60	0.0	NA
Approach	445	5.2		0.435		34.8	LOS C	11.1	80.5				
Intersection	3829	10.9		0.937		33.5	LOS C	51.5	396.8				

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

PHASING SUMMARY

 **Site: 10 [[2035 Base w/ modified config AM] Glossop x Philip - Modified Version]**

Glossop Street x Philip Street

scenario 7: 2018 Traffic (surveyed) + 2% P.A Growth + development

Road Condition: Modified signals & Configuration

Site Category: 3 leg Signalised

Signals - Fixed Time 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: SCATS - Copy

Reference Phase: Phase A

Input Phase Sequence: A, B, C

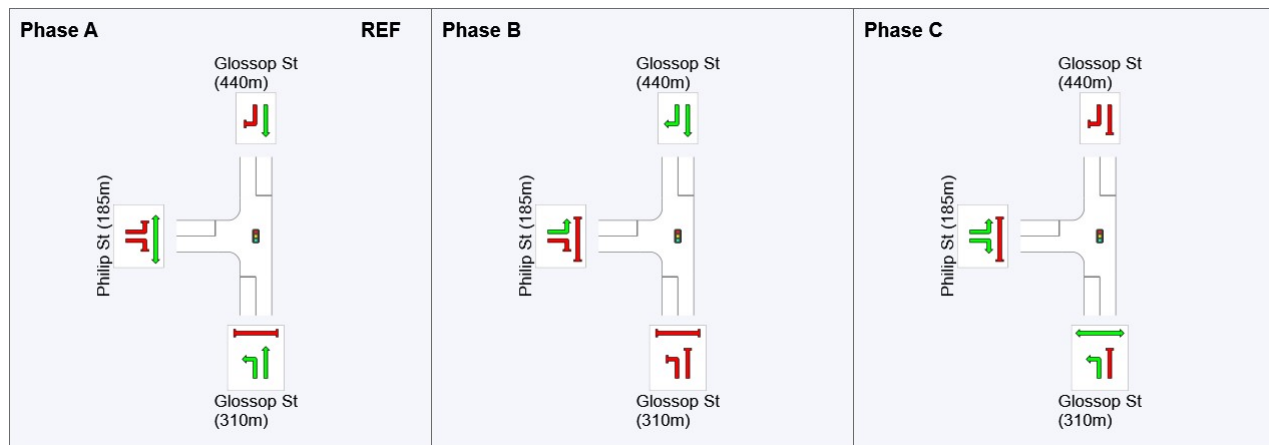
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	53	92
Green Time (sec)	50	33	12
Phase Time (sec)	56	39	15
Phase Split	51%	35%	14%










See the Phase Information section in the Detailed Output 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, 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

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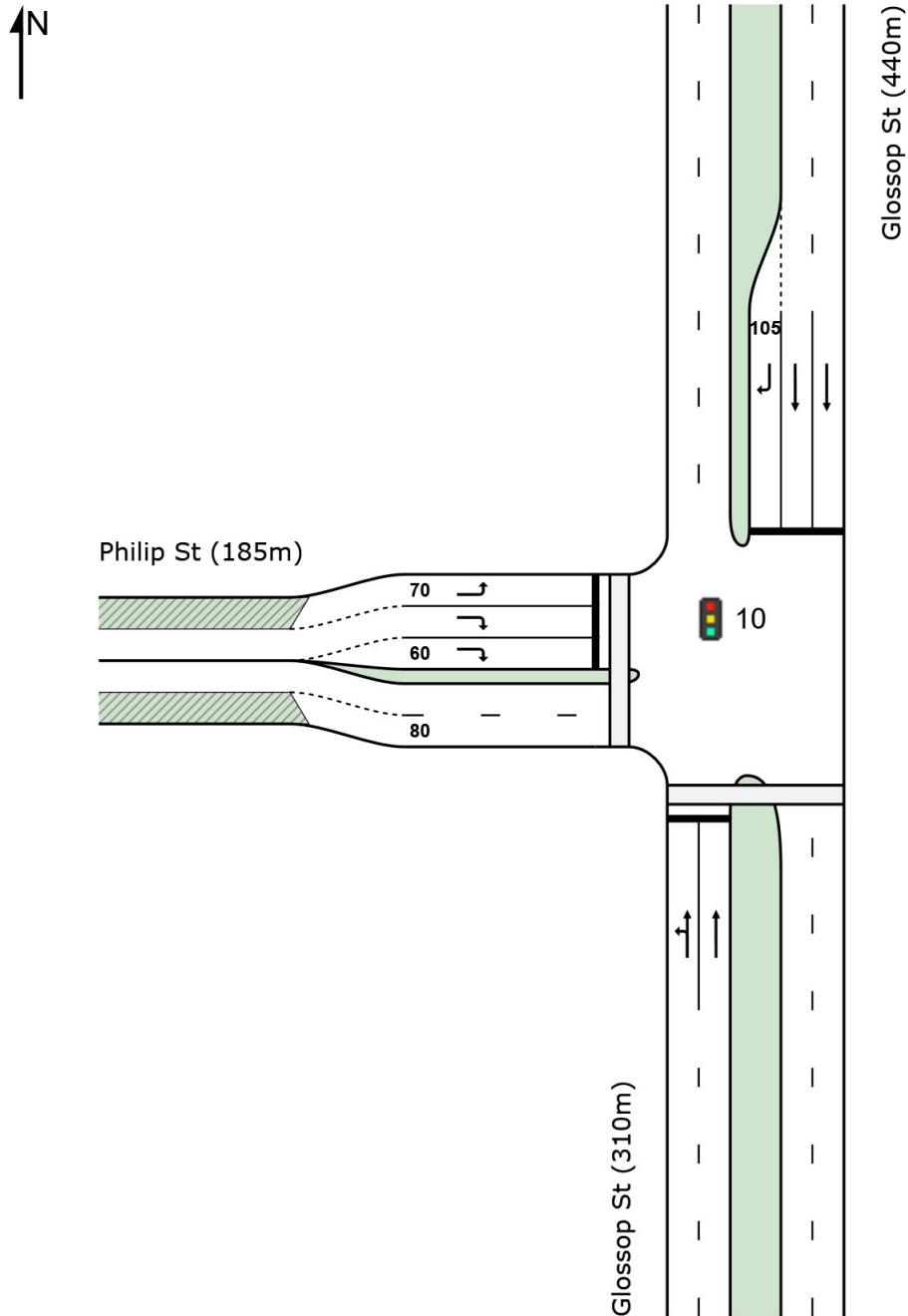
Organisation: ASON GROUP PTY LTD | Processed: Wednesday, 7 August 2019 3:53:25 PM

Project: C:\Users\MatthewTangonan\Desktop\IP0196 Glossop x Phillip.sip8

SITE LAYOUT

 **Site: 10** **[[2035 Base w/ modified config PM] Glossop x Philip - Modified Version]**

Glossop Street x Philip Street
scenario 7: 2018 Traffic (surveyed) + 2% P.A Growth + development
Road Condition: Modified signals & Configuration
Site Category: 3 leg Signalised
Signals - Fixed Time Isolated



LANE SUMMARY



Site: 10 [[2035 Base w/ modified config PM] Glossop x Philip - Modified Version]

Glossop Street x Philip Street

scenario 7: 2018 Traffic (surveyed) + 2% P.A Growth + development

Road Condition: Modified signals & Configuration

Site Category: 3 leg Signalised

Signals - Fixed Time Isolated Cycle Time = 110 seconds (Site User-Given Phase Times)

Lane Use and Performance													
	Demand Flows			Deg.	Lane	Average	Level of	95% Back of Queue		Lane	Lane	Cap.	Prob.
	Total	HV	Cap.	Satn	Util.	Delay	Service	Veh	Dist	Config	Length	Adj.	Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Glossop St (310m)													
Lane 1	745	8.4	806	0.924	100	49.3	LOS D	45.8	344.0	Full	310	0.0	14.4
Lane 2	743	9.0	804	0.924	100	50.1	LOS D	47.6	358.7	Full	310	0.0	18.2
Approach	1487	8.7		0.924		49.7	LOS D	47.6	358.7				
North: Glossop St (440m)													
Lane 1	870	6.7	1529	0.569	100	3.6	LOS A	15.6	115.2	Full	440	0.0	0.0
Lane 2	870	6.7	1529	0.569	100	3.6	LOS A	15.6	115.2	Full	440	0.0	0.0
Lane 3	446	4.0	591	0.755	100	42.6	LOS D	22.0	159.5	Short	105	0.0	NA
Approach	2186	6.2		0.755		11.6	LOS A	22.0	159.5				
West: Philip St (185m)													
Lane 1	529	4.0	772 ¹	0.686	100	26.9	LOS B	20.7	149.7	Short (P)	70	0.0	NA
Lane 2	114	4.6	131	0.873	100	69.8	LOS E	7.0	50.9	Full	185	0.0	0.0
Lane 3	114	4.6	131	0.873	100	69.8	LOS E	7.0	50.9	Short	60	0.0	NA
Approach	758	4.2		0.873		39.8	LOS C	20.7	149.7				
Intersection	4432	6.7		0.924		29.2	LOS C	47.6	358.7				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

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

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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

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

- ¹ Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

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Organisation: ASON GROUP PTY LTD | Processed: Wednesday, 7 August 2019 3:53:25 PM

Project: C:\Users\MatthewTanganon\Desktop\P0196 Glossop x Phillip.sip8

PHASING SUMMARY

 **Site: 10 [[2035 Base w/ modified config PM] Glossop x Philip - Modified Version]**

Glossop Street x Philip Street
 scenario 7: 2018 Traffic (surveyed) + 2% P.A Growth + development
 Road Condition: Modified signals & Configuration
 Site Category: 3 leg Signalised
 Signals - Fixed Time 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: SCATS - Copy

Reference Phase: Phase A

Input Phase Sequence: A, B, C

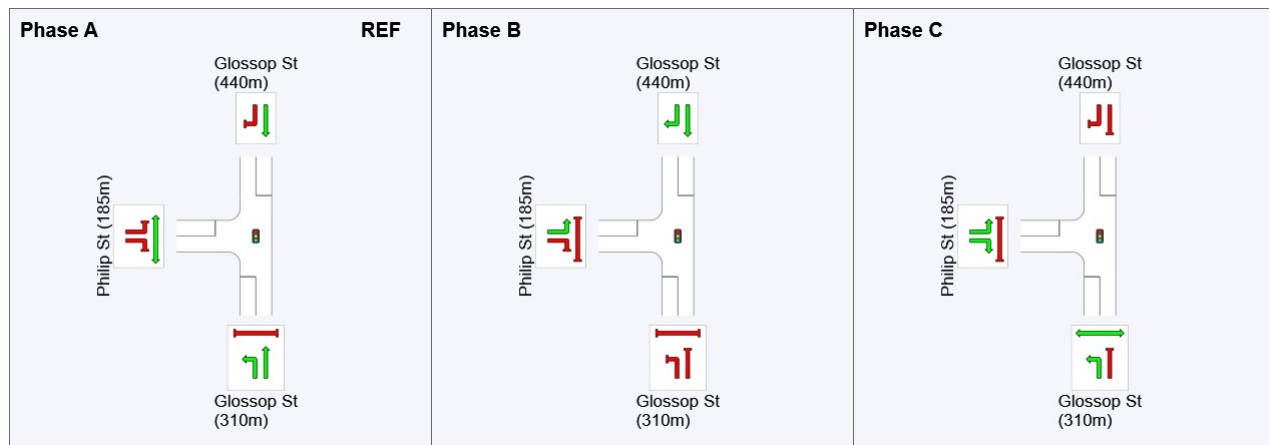
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	51	93
Green Time (sec)	48	36	11
Phase Time (sec)	54	42	14
Phase Split	49%	38%	13%













See the Phase Information section in the Detailed Output 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, 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