

Argyll Estate Precinct Renewal

Traffic and Transport Assessment

NSW Land and Housing Corporation

4 May 2022

→ The Power of Commitment



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Acknowledgment of Country

We acknowledge Aboriginal and Torres Strait Islander peoples as the Traditional Owners of all lands throughout Australia on which we do business, and we pay our respects to Elders, past, present and emerging.

i

Contents

1.	Introdu	ction		1
	1.1	Overvie	ew .	1
	1.2	Scope of	of works	2
	1.3	Docum	ent purpose and structure	2
	1.4	1.4 Study assumptions and limitations		
	1.5	Disclair	ners	3
2.	Existing	g condit	ions	4
	2.1	Existing	land use	4
	2.2	Existing	j road network	4
		2.2.1	Road hierarchy Road classification Functional hierarchy	4 4 5
		2.2.2	Road characteristics Pacific Highway Bray Street Joyce Street Other Roads	6 6 7 8 9
	2.3	Public t	ransport	10
		2.3.1	Rail Network	10
		2.3.2	Bus Services	11
	2.4	Walking	g and cycling	12
	2.5	Travel r	node share	13
	2.6	Crash r	eview	14
	2.7	Traffic		15
		2.7.1	Existing traffic conditions	16
_		2.1.2	Existing intersection performance	
3.	Descrip	otion of t	the proposal	23
4.	Traffic	Impact A	Assessment	26
	4.1	Traffic g	generation	26
	4.2	Intersec	ction performance	27
	4.3	West A	rgyll Street and Argyll Street connection	30
		4.3.1	Intersection performance with new connect	ion 30
		4.3.2	I raffic calming measures	32
			Horizontal deflection devices	33
	4.4	Mode s	hift	34
5.	Parking	g require	ements	37
	_		Roads and Maritime parking requirements DCP parking requirements	37 37
6.	Summa	ary and o	conclusion	40
	6.1	Overvie	ew .	40
	6.2	Key find	dings	40
		-	Existing conditions Traffic Impact	40 40

	Parking Assessment
6.3	Conclusion

Figure index

Eiguro 1 1	Leastion of investigation grad	1
		1
Figure 2-1	Existing land use	4
Figure 2-2	Existing road network (classification)	5
Figure 2-3	Key roads in proximity to the proposed site	6
Figure 2-4	Pacific Highway	7
Figure 2-5	Bray Street	8
Figure 2-6	Joyce Street	9
Figure 2-7	Rail service near proposal site	10
Figure 2-8	Coffs Harbour Bus Network	11
Figure 2-9	Bust stops within 400- and 800-m walking catchments from site	12
Figure 2-10	Active transport facilities	13
Figure 2-11	Road crash incidents within 800-m radius	14
Figure 2-12	Road crash incidents within 800-m radius (road user movement category)	15
Figure 2-13	Location of traffic volume counts	16
Figure 2-14	Aggregate hourly traffic volume – Weekday AM and PM (2022)	16
Figure 2-15	Intersection traffic volumes – AM Peak (2022)	17
Figure 2-16	Intersection traffic volumes – PM Peak (2022)	18
Figure 2-17	SIDRA intersection network layout	20
Figure 2-18	High-level survey validation	22
Figure 3-1	Investigation area	23
Figure 3-2	Existing and proposed lot sizes and land zoning	23
Figure 3-3	Indicative growth scenario – preferred option	24
Figure 4-1	Existing West Argyll Street and Argyll Street layout	30
Figure 4-2	Potential diversions with West Argyll and Argyll Street connection	31
Figure 4-3	Examples of lane narrowing / kerb extensions	33
Figure 4-4	Examples of one-lane slow points	34
Figure 4-5	Active and public transport improvement strategies	35

Table index

Table 2-1	Pacific Highway key features	7
Table 2-2	Bray Street key features	8
Table 2-3	Joyce Street key features	9
Table 2-4	Train services	10
Table 2-5	Bus services accessible from Proposal site	12
Table 2-6	Mode of travel to work (MTWP, 2016)	13
Table 2-7	Road crash incidents within 800-m radius (degree of crash)	14
Table 2-8	Level of service criteria for intersections	19
Table 2-9	Existing intersection performance (2022 Base Case)	22
Table 3-1	Proposed number of dwellings per site	24

Table 3-2	Proposed number of dwellings – 10-year projection	25
Table 4-1	Prak hour trip generation	26
Table 4-2	Future intersection performance (2027, Year 4)	28
Table 4-3	Future intersection performance (2033, Year 10)	29
Table 4-4	Future intersection performance (2033, Year 10) – connected West Argyll and	
	Argyll Street	32
Table 4-5	Width requirements for pedestrian paths	36
Table 4-6	Width requirements for shared paths	36
Table 5-1	Parking requirements based on RMS Guide to Traffic Generating Developments	
	(2002)	37
Table 5-2	Parking requirements based on Coffs Harbour City Council DCP (2015)	37
Table 5-3	Comparison of parking requirements – North Coast Regional Cities	38

Appendices

Appendix A	Traffic count data
Appendix B	SIDRA results summary

1. Introduction

1.1 Overview

The NSW Land and Housing Corporation (LAHC) is a Public Trading Enterprise within the Department of Planning Industry and Environment (DPIE) cluster.

LAHC owns a 33-hectare social housing estate in the Coffs Harbour local government area (LGA), located south of Bray Street to Argyll Street (including Deborah Close, Maple Street and Argyll Place) and from Frederick Street to Elm Street, referred to as the 'Argyll Estate'. The estate consists of 118 ageing social housing cottages and two vacant land lots owned by LAHC, and an additional 11 social homes owned by Aboriginal Housing Office (AHO). There are approximately 68 privately owned homes interspersed through this area.

LAHC has identified this estate as a priority for renewal which supports the NSW Government's 20-year Economic Vision for Regional NSW policy and Coffs Harbour City Council's Local Growth Management Strategy's Infill Program.

Coffs Harbour City Council (Council) and LAHC have developed a project charter to jointly investigate the potential for this area to be redeveloped for medium density residential development ("the Proposal"). If the area (or parts of the area) is deemed suitable for increased development, an amendment to Coffs Harbour Local Environmental Plan 2013 (LEP) and Coffs Harbour Development Control Plan 2015 (DCP) will be prepared and progressed.



The location of the investigation area ("Proposal site") is shown in Figure 1-1.

Figure 1-1 Location of investigation area

1.2 Scope of works

GHD Pty Ltd (GHD) has been commissioned by LAHC to conduct the Traffic and Transport Assessment (the Study) to inform the Planning Proposal of the potential redevelopment. The Study includes the following:

- Data gathering and review of available data
- Liaison and discussion with TfNSW, Council, and LAHC to access existing traffic model in the area (from recent studies conducted for Coffs Harbour Bypass Project)
- Assessment of existing and future traffic and transport covering:
 - Vehicle movements and intersection capacity during peak periods
 - Access to public transport, connectivity to walking and cycling networks
 - Parking requirements
- High-level assessment of multi-modal transport to identify potential impacts
- Assessment of cumulative impacts of other approved developments
- Identification of infrastructure and sustainable transport initiatives to offset potential impacts
- Prepare a Traffic and Transport Assessment report for lodgement based on feedback from LAHC, Council and/or DPIE and any other stakeholder engagement activities.

1.3 Document purpose and structure

This report documents findings of the Traffic and Transport Assessment. The remaining sections of this report are structured as follows:

- Section 2 describes the existing environment, as relevant to the traffic and transport assessment.
- Section 3 provides a description of the Proposal, including proposed staging and changes in land use.
- Section 4 provides an estimate of the transportation impacts (i.e. traffic generation) that will likely be generated by the Proposal, and an assessment of the extent of these impacts on existing transportation systems. This section also includes a high-level investigation of the potential connection of West Argyll Street and Argyll Street. Measures to encourage mode shift and enhance walking and cycling connectivity in the area.
- Section 5 provides an overview of the parking requirements.
- **Section 6** provides a summary of the key findings of the traffic and transport assessment and the principal conclusions for the study.

1.4 Study assumptions and limitations

The following study limitations and key assumptions are applicable to this study:

- Future growth scenario for the Proposal site have been provided by LAHC.
- The preparation of this Traffic and Transport Assessment has relied on the following secondary intersection traffic counts conducted on 10 June 2021 commissioned by TfNSW for the Coffs Harbour Bypass Project:
 - Bray Street / Joyce Street
 - Bray Street / Pacific Highway / Orlando Street
 - Argyll Street / Pacific Highway
- The following annual traffic growth rates have been adopted for the study, based upon the Coffs Harbour Strategic Transport Model (CHSTM) forecasts, as reported in the Coffs Harbour Bypass Environmental Impact Statement Appendix F Traffic and Transport Assessment (2019).
 - 1.1% per annum from until 2024
 - 0.9% per annum from 2024 2033
- Future trip generation have been estimated based on trip generation rates from Roads and Maritime's Guide to Traffic Generating Developments (2002).

- Directional traffic distribution of development-generated trips has been assumed to be as follows based on the Institute of Transportation Engineers' Trip Generation (2018) trip rates for low rise residential buildings.
 - Weekday AM peak hour of generator: 20% entering, 80% exiting
 - Weekday PM peak hour of generator: 64% entering, 36% exiting
 - Traffic distribution estimates of the generated traffic have been based on high-level assumptions based on existing traffic data.
- No site visit was undertaken. The study was limited to a desktop analysis only.

1.5 Disclaimer

This report: has been prepared by GHD for NSW Land and Housing Corporation and may only be used and relied on by NSW Land and Housing Corporation for the purpose agreed between GHD and NSW Land and Housing Corporation as set out in Section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than NSW Land and Housing Corporation arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

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

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

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer to Section 1.4 Document purpose and structure, Section 3 Description of the proposal, and Section 4 Traffic Impact Assessment of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

2. Existing conditions

2.1 Existing land use

The investigation area is located within the Coffs Harbour Central North district. It is situated in an R2 Low Density Residential zone. A map of the existing land use is presented below, with the indicative site boundary.



Source: Argyll Estate Renewal | Scenario update - Preferred option version 25 March 2022 (architectus); modified by GHD

Figure 2-1 Existing land use

2.2 Existing road network

2.2.1 Road hierarchy

Roads within New South Wales are categorised in the following two ways:

- By classification (ownership).
- By the function that they perform.

Road classification

Roads, as defined by the *Roads Act 1993*, are classified based on their importance to the movement of people and goods within NSW (as a primary means of communication).

The classification of a road allows Transport for New South Wales (TfNSW) to exercise authority of all or part of the road. Classified roads include Main Roads, State Highways, Tourist Roads, Secondary Roads, Tollways, Freeways, and Transitways. For management purposes, TfNSW has three administrative classes of roads:

- State Roads Major arterial links through NSW and within major urban areas. They are the principal trafficcarrying roads and are fully controlled and maintained by TfNSW. State Roads include all Tollways, Freeways and Transitways; and all or part of a Main Road, Tourist Road or State Highway.
- Regional Roads Roads of secondary importance between State Roads and Local Roads which, along with State Roads, provide the main connections to and between smaller towns and perform a sub arterial function in major urban areas. Regional roads are the responsibility of councils for maintenance funding, though TfNSW funds some maintenance based on traffic and infrastructure. Traffic management on Regional Roads is controlled under the delegations to local government from TfNSW. Regional Roads may own all or part of a Main Road, Secondary Road, Tourist Road or State Highway; or other roads as determined by TfNSW.
- Local Roads The remainder of the council-controlled roads, Local Roads are the responsibility of councils for maintenance funding. TfNSW may fund some maintenance and improvements based on specific

programs (e.g. urban bus routes, road safety programs). Traffic management on Local Roads is controlled under the delegations to local government from TfNSW.

Functional hierarchy

Functional road classification involves the relative balance of the mobility and access functions. TfNSW defines four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility, to high accessibility and low mobility. These road classes are:

- Arterial Roads generally controlled by TfNSW, they typically have no limit in flow and are designed to carry vehicles long distance between regional centres.
- Sub-Arterial Roads can be managed by either TfNSW or local council. Typically, their operating capacity
 ranges between 10,000 and 20,000 vehicles per day, and their aim is to carry through traffic between specific
 areas in a sub region or provide connectivity from arterial road routes (regional links).
- Collector Roads provide connectivity between local roads and the arterial road network and typically carry between 2,000 and 10,000 vehicles per day.
- Local Roads provide direct access to properties and the collector road system and typically carry less than 2,000 vehicles per day.

LEGEND
Proposal Site
RADIAL CLASSIFICATION
State Road
Description
Called Road
Description
Desc

The road hierarchy of the road network in the vicinity of the site is shown in Figure 2-2.

Source: Road classification information from TfNSW Road Network Classifications Map

Figure 2-2 Existing road network (classification)

2.2.2 Road characteristics

The assessment focuses on the roads in proximity to the site as shown in Figure 2-3. The following subsections describe the keys roads in the study area.



Figure 2-3 Key roads in proximity to the proposed site

Pacific Highway

The Pacific Highway (refer to Figure 2-4) is a national highway that spans around 780 km along the east coast of NSW. It runs an approximate north-south alignment and links Sydney in NSW and Brisbane in Queensland and provides primary connectivity across many of NSW's major cities and local government areas, including Coffs Harbour.

The section of the highway in proximity to the project site currently serves approximately 44,000 vehicles per day and has recently been upgraded into a four-lane dual carriageway in 2018.

Another upgrade is currently under way in the form of the 14-kilometre Coffs Harbour Bypass Project. This project will provide a four-lane divided highway that bypasses Coffs Harbour, which will pass through the North Boambee Valley and Roberts Hill ridge. The main objectives of the project are to decrease congestion, reduce travel times and provide safer road conditions on the new and existing road. The NSW Government estimates a reduction of about 12 minutes of travel time for motorists and the removal of about 12,000 vehicles per day from the Coffs Harbour CBD as a result of the bypass.

Key features of Pacific Highway in proximity to the Proposal site are summarised in Table 2-1.



Image Source: Google Street View || Pacific Highway south of Argyll Street, viewed southwards

Figure 2-4 Pacific Highway

Table 2-1 Pacific Highway key features

Feature	Description
Carriageway	Sealed, divided carriageway with two lanes in each direction. Travel widths of approximately seven meters (3.5 meters per lane). With lane markings and shoulders provided on both directions. Additional turning lanes are provided at approaches to intersections.
Parking	Parking not permitted.
Speed Limit	60 km/h
Pedestrian Facilities	Footpaths and pedestrian crossing facilities are provided.
Bicycle Facilities	Off-road shared path is provided along sections of the road in proximity to the proposal site.
Public Transport	Bus stop facilities are present along the length of the road, providing access to local and intercity bus services. (Discussed further in Section 2.3).

Bray Street

Bray Street (shown in Figure 2-5) functions as a collector road that provides the main east-west connection across Coffs Harbour Central North. It is connected to Pacific Highway / Orlando Street at a signal-controlled intersection at its eastern end. To the west, it forms a T-junction with Mackays Road. Key features of Bray Street are summarised in Table 2-2.



Image Source: Google Street View || Bray Street west of Taloumbi Road, view facing east

Figure 2-5 Bray Street

Table 2-2 Bray Street key features

Feature	Description
Carriageway	Sealed carriageway with one lane in each direction, with travel widths of approximately six meters (three meters per lane). With lane markings and wide shoulders provided on both sides of the carriageway.
Parking	Generally, parking not permitted.
Speed Limit	Varies, 40 – 50 km/h
Pedestrian Facilities	Footpaths and shared paths are provided in proximity to the proposal site. Pedestrian crossing facilities are limited to the signalised crossing at the intersection of Bray Street and Pacific Highway; and the pedestrian crossing facility in front of Orara High School.
Bicycle Facilities	On-road cycleways and shared paths are provided along sections of the road in proximity to the proposal site.
Public Transport	Bus stop facilities are present along the length of the road and is served by Routes 367 and 368.

Joyce Street

Joyce Street (shown in Figure 2-6) is a local road situated west of the Proposal site. It provides a north-south connection between Bray Street at its northern terminus and Beryl Street in the south. Key features of Joyce Street are summarised in Table 2-3.



Image Source: Google Street View || View facing northwards, towards intersection with Bray Street

Figure 2-6 Joyce Street

Table 2-3 Joyce Street key features

Feature	Description
Carriageway	Sealed carriageway with one lane in each direction. Carriageway width of approximately 12 m, including on-street parking spaces (travel width approximately six metres, or three metres per direction) With lane markings and wide shoulders provided on both sides of the carriageway.
Parking	On-street parking permitted on both sides of the road.
Speed Limit	40 km/h (school zone)
Pedestrian Facilities	Shared paths are provided on both sides of the road. A pedestrian crossing facility is provided near Tyalla Primary School (located to the west of the Proposal site)
Bicycle Facilities	None provided
Public Transport	No public transport facilities are provided.

Other Roads

Other relevant roads in the vicinity of the project site are listed below. These roads provide local access to the residential estate and have speed limits of 50 km/h.

- Frederick Street Undivided two-lane carriageway that runs an approximate north-south alignment, beginning at Bray Street in the north and terminating at Argyll Street in the south. It has a width of approximately 10 metres and is located at the western portion of the Proposal site.
- **Elm Street** Undivided two-lane carriageway that runs parallel to Pacific Highway. It has a width of approximately seven metres and provides access to the eastern portions of the Proposal site.
- ArgyII Street Undivided two-lane carriageway that serves as the main spine road for ArgyII Estate. It is
 approximately 10 metres wide and provides east-west connectivity and direct access to Pacific Highway.
- West ArgyII Street / Jackson Place Undivided two-lane carriageway located to the west of the proposal site, approximately nine metres wide. West ArgyII Street shares the same alignment with ArgyII Street but is a no through route for traffic movement.

2.3 Public transport

2.3.1 Rail Network

NSW Trainlink's North Coast Line provides rail services in Coffs Harbour. The North Coast Line connects NSW and Queensland, running from Central Station (Sydney) to Roma Street Station (Brisbane, QLD).

Coffs Harbour Station is located near Jetty Beach, around 3.5 kilometers south-east of the site. And overview of the rail network is provided in Figure 2-7 below, while details of available services are summarised in Table 2-4.



Image Source: TfNSW Trip Planner, modified by GHD

Figure 2-7 Rail service near proposal site

Table 2-4 Train services

		Train Service Frequency (services per day)		
Route / Station	Direction	Monday to Friday	Weekends and Public Holidays	
Central to Casino				
Route 31 and 33: Central to Casino	Northbound	10	4	
Route 34: Casino to Central	Southbound	5 *Route 32 direct train also available	2 Route 32 direct train also available	
Route 32: Brisbane (Roma Street) to Central	Southbound	5 Additional trip service also available via connecting coach and train.	No direct train available during weekends. Only connecting coach and train services are available.	

		Train Service Frequency (services per day)							
Route / Station	Direction	Monday to Friday	Weekends and Public Holidays						
Central to Grafton and vice versa	Central to Grafton and vice versa								
Route 35: Central to Grafton	Northbound	5	2						
Route 36: Grafton to Central	Southbound	5	2						

Source: Coffs Harbour Station | transportnsw.info

2.3.2 Bus Services

A map of the bus services that serve Coffs Harbour is shown in Figure 2-8. These routes are operated by Busway Group and provides connectivity between Coffs Harbour's suburbs. The routes that serve the Proposal site are listed in Table 2-5, while a map of the 400- and 800-m walking catchments from the Proposal site can be found in Figure 2-9.



Image Source: Busways Bus Map - Coffs Harbour Region

Figure 2-8

Coffs Harbour Bus Network

Table 2-5 Bus services accessible from Proposal site

	Approvimate	Bus Service Frequency				
Bus route description	Distance	Monday to Friday	Saturday	Sunday and Public Holidays		
Route 367: Park Beach Plaza - Park Ave via Donn Patterson Drive	within 400m walking catchment	13 trips per day Operates between 7:18 am to 7:57 pm	11 trips per day Operates between 8:25 am to 7:47 pm	5 trips per day Operates between 8:25 am to 5:38 pm		
Route 368: Park Beach Plaza - Park Ave via Pearce Drive		5 trips per day Operates between 7:34 am to 5:47 pm	No operations	No operations		
Route 360: Park Beach Plaza - Park Ave via Highway	within 800m walking catchment	9 trips per day Operates between 8:19 am to 11:57 pm	4 trips per day Operates between 9:50 am to 11:57 pm	2 trips per day Operates between 9:50 am to 3:08 pm		
Route 366: Park Beach Plaza - Park Ave via Frances St		15 trips per day Operates between 7:05 am to 5:50 pm	11 trips per day Operates between 8:50 am to 8:01 pm	5 trips per day Operates between 8:50 am to 5:50 pm		
Route 369: Park Beach Plaza - Park Ave via Highway		12 trips per day Operates between 9:20 am to 8:38 pm	3 trips per day Operates between 10:20 am to 8:52 pm	2 trips per day Operates between 1:01 am to 6:35 pm		



Figure 2-9 Bust stops within 400- and 800-m walking catchments from site

As shown, the proposal site has access to a number of bus services within walking distance.

2.4 Walking and cycling

In reviewing the site and its accessibility to public transport opportunities, reference was made to the NSW Planning Guidelines for Walking and Cycling (2004). This document outlines a recommended walkable distance of 400 to 800 metres to public transport and other local amenities. A map of the existing active transport (walking and cycling) facilities in the vicinity of the proposal site is shown in Figure 2-10.



Data from CHCC Active Transport Map; Base map from TfNSW Trip Planner Map; modified by GHD

Figure 2-10 Active transport facilities

As shown, the existing facilities include shared paths and footpaths along roads that serve a collector function. Internal roads within the residential precincts have limited, disconnected, or no dedicated paths for pedestrians. Pedestrian crossing facilities are also noted to be limited within the study area.

2.5 Travel mode share

The Coffs Harbour Local Growth Management Strategy 2020 (LGMS) highlights car reliance as a key challenge in transport and infrastructure for the LGA, based on a Roads and Maritime Services (RMS) study undertaken in 2004.

A review of the employed population's mode of travel to work was conducted to gain a high-level understanding of the existing travel behaviours in the study area. Table 2-6 provides a summary of the mode of travel to work (MTWP) based on the 2016 Census data from the Australian Bureau of Statistics.

The data indicates that 75.6 per cent of the employed population in the Coffs Harbour Central North district travelled to work by car, which is similar to the average for the entire LGA (city) and regional NSW mode share by car. This is noted to be slightly lower than the reported 80 per cent share in the year 2000 (CHCC, as cited in the LGMS). However, the percentage still comprises a significant portion of the travel mode share.

The mode share for travel to work by public transport is only 0.4 per cent, with 4.4 per cent cycling to work, and only 1.3 per cent walking to work. The mode share for public transport, cycling, and walking are noted to be lower for the district, as compared to the city and regional averages.

The recent data show that while there has been improvement in the mode share over the last decade, car dependence is still very much prevalent in the LGA. There is therefore an opportunity to improve mode share by sustainable travel modes, including active transport and by public transport.

Mode (Travel to work)	Coffs Harbour Central	Coffs Harbo	Pagional NSW	
wode (Travel to work)	North	Range	Ave	Regional NSW
Car	75.6%	71.6 - 81.6%	76.3%	73.4%
Public transport	0.4%	0.0 - 1.4%	0.8 %	1.8%
Cycling	4.4%	2.0 - 8.8%	5.2%	5.8%
Walking	1.3%	0.6 - 6.2%	2.9%	3.5%

Table 2-6 Mode of travel to work (MTWP, 2016)

Source: Australian Bureau of Statistics, as reported by atlas.id

2.6 Crash review

Road crash information in proximity to the site was collected from road crash statistics published by NSW Centre for Road Safety. From 2016 to 2020, a total of 49 road crash incidents were recorded within an 800-metre radius from the proposal site, as presented in Table 2-7. The location of the crashes is shown in Figure 2-11.

	Degree of Crash							
Year	Non-casualty (towaway)	Minor/Other Injury	Moderate Injury	Serious Injury	Fatal	year		
2016	2	1	2	5	1	11		
2017	1	1	3	3	-	8		
2018	3	-	3	3	-	9		
2019	4	2	-	5	-	11		
2020	5	1	3	1	-	10		
Total	15	5	11	17	1	49		

Table 2-7 Road crash incidents within 800-m radius (degree of crash)



Source: Crash and Casualty Statistics, Centre for Road Safety

Figure 2-11 Road crash incidents within 800-m radius

Seventy-one per cent of the crashes in proximity to the site occurred at intersections. The majority of these crashes were recorded at intersections along the Pacific Highway, suggesting that differences in the speed limit, traffic volumes and driver behaviour on local roads and highways may have contributed to the occurrence of the incidents.

A summary of the crash categories is shown in Figure 2-12. The following information can be drawn from the data:

- The predominant crash type category is *crashes with vehicles coming from the same direction* (19 incidents), followed by *crashes with vehicles coming from the opposing direction* (13 incidents).
- Off-path crashes are also noted to be common, contributing a total of eight incidents.
- Four pedestrian / cyclist crashes were recorded in proximity to the site. Further inspection of the crash
 details revealed that three of these were far side crashes and one involving a near side crash. All four

incidents led to Serious Injury. These crashes were noted along Bray Street, Pacific Highway, and Orlando Street.

 One fatal crash was recorded along Argyll Street in 2016, which involved an off-carriageway crash into an object. The vehicle was reported to have been travelling at a very high speed on the wrong side of the road before leaving the carriageway and hitting a power pole at dawn¹. No further information was reported regarding the possible cause of the crash.



Figure 2-12 Road crash incidents within 800-m radius (road user movement category)

2.7 Traffic

Seven intersections were analysed as part of this study. The location of the intersections is shown in Figure 2-13.

- 1. Bray Street / Joyce Street
- 2. Bray Street / Frederick Street
- 3. Bray Street / Elm Street
- 4. Pacific Highway / Bray Street / Orlando Street
- 5. Pacific Highway / Argyll Street
- 6. Frederick Street / Argyll Street
- 7. Joyce Street / West Argyll Street

Traffic data for intersections 1, 4, and 5 has been sourced from traffic surveys conducted on 10 June 2021 commissioned by TfNSW as part of the Coffs Harbour Bypass Project. To supplement the available traffic data obtained from secondary sources, GHD engaged Trans Traffic Survey to undertake intersection traffic turning counts at the remaining intersections. The surveys were undertaken at four intersections on 15 March, 2022 (Tuesday) during the following periods:

- Weekday AM peak (3 hours) 06:30 to 09:30
- Weekday PM peak (3 hours) 15:00 to 18:00

¹ Man dies after car hits power pole in suburban street (The Daily Telegraph, 2016)



Figure 2-13 Location of traffic survey counts

2.7.1 Existing traffic conditions

An annual growth rate of 1.1 per cent has been applied to 2021 traffic count data to estimate 2022 traffic volume counts. The peak hours for the assessment were determined by taking the aggregate traffic volume of all intersections for each survey period. The time intervals with the highest volume are highlighted in Figure 2-14.



Figure 2-14 Aggregate hourly traffic volume – Weekday AM and PM (2022)

The following peak hours were identified from the results of the survey:

-	Weekday AM peak hour	08:15 to 09:15
---	----------------------	----------------

Weekday PM peak hour	15:15 to 16:15
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The traffic survey data is provided in Appendix A, with a summary of the AM and PM peak hour traffic movements shown from Figure 2-15 and Figure 2-16.



Figure 2-15 Intersection traffic volumes – AM Peak (2022)

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Figure 2-16 Intersection traffic volumes – PM Peak (2022)

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2.7.2 Existing intersection performance

The performance of the existing road network is largely dependent on the operating performance of key intersections, which are critical capacity control points on the road network. SIDRA 9 Intersection modelling software was used to assess the proposed peak hour operating performance of intersections on the surrounding road network.

The criteria for evaluating the operational performance of intersections, as provided by the *Guide to Traffic Generating Developments (Roads and Maritime Services, 2002)*, is summarised in Table 2-8. The criteria for evaluating the operational performance of intersections is based on a qualitative measure (i.e. Level of Service), which is applied to each band of average vehicle delay.

Level of Service	Average Delay per Vehicle (seconds / veh)	Traffic signals, Roundabouts	Give Way & Stop Signs
Α	< 14	Good operation	Good operation
В	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
С	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control modes	At capacity, requires another control mode
F	> 70	Over Capacity Unstable operation	Over Capacity Unstable operation

Table 2-8 Level of service criteria for intersections

Source: Guide to Traffic Generating Developments (Roads and Maritime Services 2002)

The base 2022 traffic models were developed using the AM and PM peak hour survey data results. Existing traffic flows at key intersections were analysed using SIDRA 9 to obtain the current operation of the key intersections. The intersection layout in the model is shown in , while the results of the SIDRA analysis are shown in Table 2-9. Details of the SIDRA results can be found in Appendix B.



Figure 2-17 SIDRA intersection network layouts – Sites 1, 2, 6 and 7

*Note refer to Table 2-9 for intersection ID numbers

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Figure 2-18 SIDRA intersection network layout – Sites 3, 4 and 5

*Note refer to Table 2-9 for intersection ID numbers

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		AM Peak Hour (08:15 - 09:15)			PM Peak Hour (15:15 – 16:15)				
ID	Intersection Name	Ave Delay (s)	LoS	95 th % Queue (m)	DoS	Ave Delay (s)	LoS	95 th % Queue (m)	DoS
1	Bray Street / Joyce Street	8	LoS A	16	0.41	8	LoS A	9	0.33
2	Bray Street / Frederick Street	7	LoS A	1	0.32	9	LoS A	2	0.31
3	Bray Street / Elm Street / Access Road	17	LoS B	36	0.33	18	LoS B	99	0.31
4	Bray Street / Pacific Highway / Orlando Street	40	LOS C	239	0.95	56	LoS D	308	0.92
5	Argyll Street / Pacific Highway	100+	LOS F	20	1.05	100+	LoS F	17	1.00
6	Argyll Street / Frederick Street	5	LOS A	0	0.02	5	LoS A	1	0.03
7	West Argyll Street / Joyce Street	5	LOS A	2	0.17	5	LoS A	1	0.14

Table 2-9 Existing intersection performance (2022 Base Case)

Notes:

The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.

The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.

The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.

Average delay is given in seconds per vehicle.

The SIDRA results indicate that Argyll Street / Pacific Highway intersection operates over capacity during the weekday AM and PM peak periods at LoS F. This is mainly due to high traffic volumes along Pacific Highway causing delays for vehicles to make the right turn movement from Argyll Street (minor approach) to Pacific Highway. However, the right turn movement from Argyll Street is low, with six vehicles during AM peak and three vehicles during PM peak observed to make this movement. The operation along the critical movements along the Pacific Highway operate with a satisfactory LoS. Additionally, drivers familiar with the area making this right turn movement can do so instead using the nearby signalised intersection of Bray Street / Pacific Highway, which is noted to operate with an acceptable LoS D or better during peak periods.

All other intersections analysed in the road network currently operate at an acceptable LoS (i.e. better than Level of Service E) during the weekday morning and weekday evening peak periods.

A high-level validation of the intersection modelling has been undertaken by comparing the SIDRA modelling results with Google traffic information (via Google Maps Traffic Layer). This indicates that the results of the SIDRA modelling are consistent with "typical" weekday peak hour conditions, as shown at Figure 2-19.



 Figure 2-19
 High-level validation comparison of SIDRA results

 Source: Google Maps Traffic Layer (2022)

3. Description of the proposal

CHCC and LAHC have developed a project charter to jointly investigate the potential for Argyll Estate to be redeveloped for medium density residential development. The estate consists of 118 ageing social housing cottages and two vacant land lots owned by LAHC, 11 social homes owned by Aboriginal Housing Office (AHO), and around 68 privately owned homes. The existing features of the investigation area (the "Proposal site") is shown in Figure 3-1.



Source: Argyll Estate Renewal | Scenario update - Preferred option version 25 March 2022 (architectus); modified by GHD

Figure 3-1 Investigation area

The proposed changes in land zoning and minimum lot sizes are shown in Figure 3-2, while the indicative growth scenario currently under consideration is shown in Figure 3-3.



Source: Argyll Estate Renewal | Scenario update - Preferred option version 25 March 2022 (architectus); modified by GHD

Figure 3-2 Existing and proposed lot sizes and land zoning



Source: Argyll Estate Renewal | Scenario update - Preferred option version 05 April 2022 (architectus); modified by GHD

Figure 3-3 Indicative growth scenario – preferred option

There are currently 197 existing dwellings in the Proposal site (129 on LAHC sites, and 68 on private sites). The growth scenario looks into the redevelopment of a portion of the existing properties into dual occupancy dwellings and residential flat buildings (RFB), increasing the number of dwellings from 129 to 365 for LAHC-owned sites, and from 68 to 95 on private sites. This would introduce 263 additional dwellings, bringing the total number of dwellings to 460.

A breakdown of the proposed total number of dwellings is summarised in Table 3-1.

Dwelling Type	Lot Type	Configuration	Dwellings per Site	Total Dwellings
Single Dwelling	1	Existing (no change) – LAHC land	1	42
	1	Existing (no change) – Private land	1	41 ª
		Single D	welling Total	83
Dual Occupancy	1	3 Bed – LAHC land	2	138
		3 Bed – Private land	1	54 ^b
		Dual Occ	upancy Total	192
Residential Flat	3	1 Bed / 2 Bed / 3 Bed	28	56
Building (RFB) 4		1 Bed / 2 Bed – LAHC land	43	129
			RFB Total	185
		Grand To	otal (Precinct)	460

Table 3-1 Proposed number of dwellings per site

^a 22 sites unsuitable for redevelopment plus 19 (40% of developable sites) to remain as is

^b 27 sites redeveloped into dual occupancy dwellings (60% take up assumed)

The redevelopment is planned to be carried out over a ten-year delivery period, with bulk of the works proposed to be delivered in the first four years beginning late 2023. The breakdown of the number of dwellings proposed to be delivered over a ten-year period is summarised in Table 3-2.

		LAHC owned Land				Private owned Land		Total	Cum.	
Year		Dual Occupancy	Residentia	l Flat Buildin	g (RFB)	Existing SD (No change)	Existing SD (No change)	Dual Occupancy	per year	total per
		3 Bed	1 Bed	2 Bed	3 Bed	4 Bed	4 Bed	3 Bed		year
2024	YEAR 1	22	40	28	3	42	41	0	176	176
2025	YEAR 2	10	40	28	3			6	87	263
2026	YEAR 3	22	26	17	0			6	71	334
2027	YEAR 4	84	0	0	0			6	90	424
4-year total		138	106	73	6	42	41	18	424	
2028	YEAR 5							6	6	430
2029	YEAR 6							6	6	436
2030	YEAR 7							6	6	442
2031	YEAR 8							6	6	448
2032	YEAR 9							6	6	454
2033	YEAR 10							6	6	460
10-yea	r total	138	106	73	6	42	41	54	460	
Note:	SD = Single	dwelling (to rema	in undeveloped	(i.e. no change))					

Table 3-2 Proposed number of dwellings – 10-year projection

4. Traffic Impact Assessment

This section reviews the expected traffic impacts associated with the Proposal. The assessment has been undertaken for a typical weekday AM and PM peak scenario.

4.1 Traffic generation

An estimate of the peak hour traffic generation for the Proposal has been determined based on trip generation rates provided in *Roads and Maritime's Guide to Traffic Generating Developments (2002)*. The expected increase in traffic associated with the proposal has been determined by applying the trip generation rates to the existing and proposed land uses and dwelling breakdown as discussed in Section 3.

The estimated number of vehicles trips generated by the Proposal site is detailed in Table 4-1.

Land use	Trip generation rate (peak hour vehicles	Argyll Estate Proposed	Trip generation (2022, Existing)		Trip generation (2027, Year 4)		Trip generation (2033, Year 10)	
	trips, vph)	Dwelling Type	Dwellings	Trips	Dwellings	Trips	Dwellings	Trips
Dwelling Houses	0.85 per dwelling	Single dwellings and dual occupancy dwellings	197	168	83	71	83	71
Medium density residential flat building	0.50 per dwelling for smaller units and flats	RFB – 1BR	0	0	106	53	106	53
	(up to two bedrooms) 0.65 per dwelling for	RFB – 2BR	0	0	73	37	73	37
	later units and town houses (three or more bedrooms)	RFB – 3BR	0	0	162	106	198	129
Trip generation 168						267		290
Total additional trips						99		122

Table 4-1Peak hour trip generation

The Proposal is estimated to generate 99 additional peak hour vehicle trips in 2027 (Year 4), and 122 additional peak hour vehicle trips in 2033 (Year 10). The distribution of this additional traffic to the network has been assumed based on the observed distribution of the existing (2022) traffic to access the Proposal site:

-	Bray Street via Frederick Street	30 per cent (AM peak)	27 per cent (PM peak)
-	Bray Street via Elm Street	29 per cent (AM peak)	28 per cent (PM peak)
-	Pacific Highway via Argyll Street	13 per cent (AM peak)	11 per cent (PM peak)
_	Other roads	28 per cent (AM peak)	34 per cent (PM peak)

Directional traffic distribution of development-generated trips has been assumed to be as follows, based on the Institute of Transportation Engineers' Trip Generation (2018) rates for low rise residential developments:

- Weekday AM peak hour of generator: 20% entering, 80% exiting
- Weekday PM peak hour of generator: 64% entering, 36% exiting

In addition to the Proposal trip generation, the following assumptions have been applied to estimate the future traffic in the network:

- Future infill development in proximity to the Proposal site is expected have a dwelling yield of 170 additional dwellings by year 2044, contributing to traffic along Bray Street. For the purposes of this assessment, it has been assumed that 25 per cent of this would be realised by 2027 and 50 per cent by 2033. Using a trip generation rate of 0.85 peak hour trips per dwelling results to the following additional traffic on Bray Street. These trips have been assumed to be split equally for both directions.
 - 2027 (Year 4) +37 vph

- 2033 (Year 10) +73 vph
- By 2033 (Year 10), the Coffs Harbour Bypass is expected to be fully operational, which would result to a 28 per cent decrease in traffic along Bray Street and a 26 per cent decrease along Pacific Highway near the Proposal site. This assumption is based upon estimates from the *Coffs Harbour Bypass Environmental Impact Statement - Traffic and Transport Assessment (Arup, 2019).*

4.2 Intersection performance

The assessment of traffic generated by the Proposal and potential effect on the existing road network were carried out using SIDRA 9 intersection modelling software. Future year traffic volume was estimated by projecting existing background traffic to grow based on an annual average growth rate of 1.1 per cent from 2022 to 2024, and 0.9 per cent from 2024 to 2033.

The following key assumptions were applied in SIDRA modelling:

- An optimum cycle time of 140 seconds were applied in base and future models.
- A total of 50 pedestrians were assumed crossing each crossing at the signalised intersection at Pacific Highway and Bray Street under existing and future scenarios. This is considered a conservative assumption for the purposes of the traffic modelling analysis.

A summary of the SIDRA results for the 2027 and 2033 intersection performance for the "without" and "with" Argyll Estate development for the weekday AM and PM peak periods is shown in Table 4-2 to Table 4-5.

Table 4-2	Future intersection performance	(2027,	Year 4) without Ar	gyll Estate developm	ent
	,	· /	,		

ID		AM Peak Hour (08:15 - 09:15)				PM Peak Hour (15:15 – 16:15)			
	Intersection Name	Ave Delay (s)	LoS	95 th % Queue (m)	DoS	Ave Delay (s)	LoS	95 th % Queue (m)	DoS
1	Bray Street / Joyce Street	9	LoS A	21	0.45	9	LoS A	11	0.36
2	Bray Street / Frederick Street	8	LoS A	1	0.35	10	LoS A	1	0.34
3	Bray Street / Elm Street / Access Road	20	LOS A	74	0.35	22	LoS B	185	0.33
4	Bray Street / Pacific Highway / Orlando Street	43	LoS D	251	1.08	71	LoS F	392	0.98
5	Argyll Street / Pacific Highway	100+	LoS F	25	1.23	100+	LoS F	24	1.00
6	Argyll Street / Frederick Street	5	LoS A	0	0.02	5	LoS A	0	0.03
7	West Argyll Street / Joyce Street	5	LoS A	0	0.18	5	LoS A	1	0.15

Notes:

The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.

The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
 The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.

Average delay is given in seconds per vehicle.

Table 4-3	Future intersection performa	nce (2027,	Year 4) with Argyll Estat	e development
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ID		AM Peak Hour (08:15 - 09:15)				PM Peak Hour (15:15 – 16:15)			
	Intersection Name	Ave Delay (s)	LoS	95 th % Queue (m)	DoS	Ave Delay (s)	LoS	95 th % Queue (m)	DoS
1	Bray Street / Joyce Street	9	LoS A	21	0.45	9	LoS A	12	0.37
2	Bray Street / Frederick Street	8	LoS A	1	0.35	10	LoS A	2	0.34
3	Bray Street / Elm Street / Access Road	21	LOS C	85	0.35	23	LoS B	192	0.34
4	Bray Street / Pacific Highway / Orlando Street	43	LoS D	254	1.08	73	LoS F	392	0.99
5	Argyll Street / Pacific Highway	100+	LoS F	46	1.75	100+	LoS F	24	1.00
6	Argyll Street / Frederick Street	5	LoS A	0	0.02	5	LoS A	1	0.04
7	West Argyll Street / Joyce Street	5	LoS A	0	0.18	5	LoS A	1	0.15

Notes:

The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.

- The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.

The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.

Average delay is given in seconds per vehicle.

A comparison of the SIDRA modelling results for the base 2022 and 2027 "without" and "with" development scenario indicates the following:

- During the PM peak period, the Bray Street / Pacific Highway / Orlando Street is expected to reduce from LoS D in 2022 to LoS F in 2027, for both the "without" and "with" Proposal scenarios.
- The intersection performance of Argyll Street / Pacific Highway is expected to remain at LoS F during AM and PM peak periods in 2027 for both the "without" and "with" Proposal scenarios, which is similar to existing 2022 scenario.
- All other intersections are expected to operate with and acceptable LoS (i.e. better than LoS E) during the weekday morning and weekday evening peak periods.

- The Proposal is expected to have minimal impacts to the operation of intersections in the surrounding road network in 2027.

		AM Peak Hour (08:15 - 09:15)				PM Peak Hour (15:15 – 16:15)			
ID	Intersection Name	Ave Delay (s)	LoS	95 th % Queue (m)	DoS	Ave Delay (s)	LoS	95 th % Queue (m)	DoS
1	Bray Street / Joyce Street	7	LoS A	10	0.34	7	LoS A	8	0.28
2	Bray Street / Frederick Street	7	LoS A	1	0.27	8	LoS A	1	0.27
3	Bray Street / Elm Street / Access Road	14	LoS A	8	0.28	15	LOS B	39	0.27
4	Bray Street / Pacific Highway / Orlando Street	37	LoS C	190	0.71	49	LoS D	218	0.84
5	Argyll Street / Pacific Highway	100+	LoS F	27	1.19	100+	LoS F	15	0.86
6	Argyll Street / Frederick Street	5	LoS A	0	0.02	5	LoS A	0	0.03
7	West Argyll Street / Joyce Street	5	LoS A	0	0.19	5	LoS A	1	0.16

Table 4-4 Future intersection performance (2033, Year 10) – without Argyll Estate development

Notes:

– The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.

The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.

The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.

Average delay is given in seconds per vehicle.

Table 4-5 Future intersection performance (2033, Year 10) – with Argyll Estate development

ID		AM Peak Hour (08:15 - 09:15)				PM Peak Hour (15:15 – 16:15)			
	Intersection Name	Ave Delay (s)	LoS	95 th % Queue (m)	DoS	Ave Delay (s)	LoS	95 th % Queue (m)	DoS
1	Bray Street / Joyce Street	7	LoS A	10	0.35	7	LoS A	8	0.29
2	Bray Street / Frederick Street	7	LoS A	1	0.28	8	LoS A	1	0.28
3	Bray Street / Elm Street / Access Road	14	LoS A	14	0.40	15	LOS B	8	0.28
4	Bray Street / Pacific Highway / Orlando Street	37	LoS C	174	0.77	51	LoS D	226	0.86
5	Argyll Street / Pacific Highway	100+	LoS F	56	1.91	100+	LoS F	19	1.00
6	Argyll Street / Frederick Street	5	LoS A	0	0.03	5	LoS A	1	0.04
7	West Argyll Street / Joyce Street	5	LoS A	1	0.20	5	LoS A	1	0.16

Notes:

- The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.

- The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.

- The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.

Average delay is given in seconds per vehicle.

A comparison of the SIDRA modelling results for the base 2027 and 2033 "without" and "with" development scenario indicates the following:

 The intersections along the Pacific Highway and Bray Street are expected to operate with lower average delays in 2033, which is associated with the expected decrease in traffic related to the implementation of the proposed Coffs Harbour Bypass..

- The operation of the Bray Street / Pacific Highway / Orlando Street intersection is expected to improve during PM peak, from LoS F in 2027 to an acceptable LoS D in 2033 for both the "without" and "with" development scenarios.
- The Argyll Street / Pacific Highway intersection is expected to continue to operate at LoS F during AM and PM peak periods for both the "without" and "with" development scenarios in 2033. However, the critical movements along the Pacific Highway at this intersection are expected to operate satisfactorily. Additionally, an alternative access to the Pacific Highway is provided via the nearby signalised intersection of Bray Street / Pacific Highway, which, is noted to operate with an acceptable LoS D or better during peak periods in 2033.
- All other intersections are expected to operate with and acceptable LoS (i.e. better than LoS E) during the weekday morning and weekday evening peak periods.
- The Proposal is expected to have minimal impacts to the operation of intersections in the surrounding road network in 2033.

4.3 West Argyll Street and Argyll Street connection

Argyll Street is currently a no-though road at it's western end. West Argyll Street functions as a local road located to the west of the Proposal site, where it forms a loop road with Jackson Place and is connected to Joyce Street via a priority-controlled intersection.

Argyll Street and West Argyll Street share the same alignment but are currently disconnected for traffic and do not allow for through vehicle movement. CHCC have requested that the potential to connect the two roads is considered to potentially improve the permeability of the local network for traffic. The layout of the existing roads is shown in Figure 4-1.



Base map: SIX Maps; modified by GHD

Figure 4-1 Existing West Argyll Street and Argyll Street layout

4.3.1 Intersection performance with new connection at West Argyll Street

To provide a high-level assessment of the potential impacts of connecting the two roads, the scenario has been modelled using SIDRA 9 intersection for the full development scenario in 2033. The following assumptions have been adopted for this analysis:
- 50 per cent of the vehicles turning right from Joyce Street to Bray Street would be diverted to the new route to access Pacific Highway (heading northeast).
- Southwest-bound vehicles coming from the Proposal site would access Joyce Street from the new connection in West Argyll Street, instead of using Frederick Street – Bray Street – Joyce Street.
- Northeast-bound vehicles coming from West Argyll Street heading to Pacific Highway would utilise the new Argyll Street connection instead of going through Joyce Street and Bray Street.

The potential diversions that have been assumed for the purpose of this assessment is shown in Figure 4-2. The following vehicle volumes are assumed to be diverted to the new connection:

- From Joyce Street to Pacific Highway (green)
 26 vph (AM peak)
 70 vph (PM peak)
- From Frederick Street to Joyce Street (red)
- 13 vph (AM peak) 11 vph (PM peak)
- From West Argyll Street to Pacific Highway (blue)
 4 vph (AM peak)
 9 vph (PM peak)





The SIDRA results for weekday 2033 AM and PM peak periods are summarised in Table and Table 4-7.

Table 4-6	Future intersection performance (2033, Year 10) – connected West Argyll and Argyll Street, without Argyll Estate
	development

		AM Peak Hour (08:15 - 09:15)				PM Peak Hour (15:15 – 16:15)			
ID	Intersection Name	Ave Delay (s)	LoS	95 th % Queue (m)	DoS	Ave Delay (s)	LoS	95 th % Queue (m)	DoS
1	Bray Street / Joyce Street	7	LoS A	10	0.34	7	LoS A	6	0.28
2	Bray Street / Frederick Street	7	LoS A	1	0.26	8	LoS A	1	0.27
3	Bray Street / Elm Street	13	LoS A	3	0.27	9	LoS A	2	0.27
4	Bray Street / Pacific Highway / Orlando Street	37	LOS C	190	0.71	49	LoS D	218	0.84
5	Argyll Street / Pacific Highway	100+	LoS F	27	1.19	100+	LoS F	15	0.86
6	Argyll Street / Frederick Street	5	LoS A	0	0.03	5	LoS A	1	0.05
7	West Argyll Street / Joyce Street	5	LoS A	2	0.20	5	LoS A	4	0.16

Notes:

The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.

The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.

- The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.

Average delay is given in seconds per vehicle.

		AM Peak Hour (08:15 - 09:15)				PM Peak Hour (15:15 – 16:15)				
ID	Intersection Name	Ave Delay (s)	LoS	95 th % Queue (m)	DoS	Ave Delay (s)	LoS	95 th % Queue (m)	DoS	
1	Bray Street / Joyce Street	8	LoS A	10	0.35	8	LoS A	6	0.28	
2	Bray Street / Frederick Street	7	LoS A	1	0.26	8	LoS A	2	0.28	
3	Bray Street / Elm Street	14	LoS A	4	0.49	9	LoS A	3	0.29	
4	Bray Street / Pacific Highway / Orlando Street	38	LOS C	193	0.75	51	LoS D	226	0.86	
5	Argyll Street / Pacific Highway	100+	LoS F	55	1.86	100+	LoS F	19	1.00	
6	Argyll Street / Frederick Street	5	LoS A	1	0.04	5	LoS A	2	0.05	
7	West Argyll Street / Joyce Street	5	LoS A	2	0.20	5	LoS A	4	0.17	

Table 4-7 Future intersection performance (2033, Year 10) – connected West Argyll and Argyll Street, with Argyll Estate development

Notes:

The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.

The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.

The degree of saturation (DoS) is defined as the ratio of the arrival flow (demand) to the capacity of each approach.

Average delay is given in seconds per vehicle.

A comparison of the SIDRA results for the 2033 without and with connection of West Argyll Street and Argyll Street (assuming full development of the Proposal) scenarios indicates the following:

- The LoS of all intersections remains the same with the West Argyll Street connection, as compared to without connection.
- The intersection performance of Argyll Street / Pacific Highway is expected to continue operating at LoS F during AM and PM peak teriods. A slight increase in average delays is expected, although it is noted that an alternative access to the Pacific Highway is provided via the nearby signalised intersection of Bray Street / Pacific Highway, which, is noted to operate with an acceptable LoS D or better during peak periods in 2033.
- All other intersections are expected to operate with and acceptable LoS (i.e. better than LoS E) during the weekday morning and weekday evening peak periods.

It should be noted that the methodology provides an indication of the potential impacts of the reconnection given the high-level assumptions that have been made for the purposes of the assessment. To capture local travel behaviours more accurately, a local origin-destination study within the study area would be necessary to identify preferred routes and destinations of residents.

Additionally, it is recommended that community consultation is undertaken to confirm if the potential connection is in line with the community's needs.

4.3.2 Traffic calming measures

While the connection of West Argyll Street and Argyll Street may improve connectivity and permeability in the road network, connecting the two streets has the potential to attract through traffic along Argyll Street and encourage the use of residential roads as a shortcut to access the Pacific Highway. This could result to higher traffic volumes along this the residential access local road, potentially introducing safety risks for valuable road users and becoming a barrier for pedestrians to cross the road.

Traffic calming measures outlined in the following sub-sections could be considered by council. This section has been prepared in reference to the Local Area Traffic Management (LATM) Toolkit from the *Austroads Guide to Traffic Management Part 8: Local Street Management (2020)*.

Vertical deflection devices

Vertical deflection devices are physical devices which create a vertical change in the path of travel. They generally result in reduced vehicle speeds as drivers attempt to avoid discomfort when travelling over the device. Vertical deflection devices which may be considered for West Argyll / Argyll Street include road humps and road cushions.

Road humps are typically 70 to 120 mm high with a total length of 3 m to 4 m (Austroads, 2020). The provision of road humps can result in a reduction in vehicle speeds, road crashes and through traffic.

Road cushions are an alternative to road humps that occupy only part of the roadway (as opposed to road humps which occupy the whole width). Road cushions are designed to be more sympathetic to cyclists, buses and commercial vehicles. They are generally 70 mm to 80 mm high, 3.0 m long, with a width of 1.6 to 1.9 m (Austroads 2020).

Since the road is not on a bus route and shared paths / off-street cycling routes are planned to be provided along the street, road humps are considered to be most suitable for West Argyll and Argyll Streets. Austroads recommends that road humps be spaced at least 80 m apart, and generally not more than 120 – 150 m.

Horizontal deflection devices

Horizontal deflection devices are physical features which alter the horizontal path of a vehicle. The deflection may result in a reduction in traffic volume, speed and conflicts. Horizontal deflection devices which may be suitable for the location include lane narrowing and slow points.

Lane narrowing involves reducing the trafficable carriageway width to reduce vehicle speeds, while a slow point is a series of kerb extensions which narrow and / or angle the roadway. Slow points can be either one or two lanes, however, two-lane slow points are usually less effective in controlling speeds and providing adequate visual obstruction (Austroads 2020).

The potential connection could take advantage of the existing layout to keep the trafficable carriageway width at a minimum and introduce horizontal deflection devices to maintain vehicle speeds in the area. Examples of these applications are shown in Figure 4-3 and Figure 4-4.



Source: AGTM Part 8 (Austroads 2020) | (L) City of Yarra, Victoria; (R) City of Glenorchy, Tasmania

Figure 4-3 Examples of lane narrowing / kerb extensions



Source: AGTM Part 8 (Austroads 2020) | (L) City of South Perth, Western Australia; (R) City of Prospect, South Australia

Figure 4-4 Examples of one-lane slow points

Opportunities to introduce landscaping and vegetation on narrow points / kerb extensions to serve as in-street rain gardens may also be explored, noting that proper consideration of the type of vegetation and maintenance be in place to ensure that landscaping would not obscure views and impact safety. The potential to design narrow points and kerb extensions to double as pedestrian and cyclist refuge areas at crossing points could also be considered.

Literature cited in the guide recommends that deflection devices be spaced about 80 m - 120 m apart to have the intended influence on speeds for the road.

4.4 Mode shift

The Coffs Harbour LGMS identifies car reliance as one of the key challenges for the Transport and Infrastructure sector in the LGA. Over the years, initiatives to address this have been developed, guided by Regional and Local strategic documents and policies. In addition to the funding of the Coffs Harbour Bypass, other initiatives have also been adopted by TfNSW. Initiatives relevant to the study area include:

- Using the NSW Movement and Place Framework to plan road networks and allocate road space in a way that improves the liveability of places
- Improving public transport opportunities, including services and infrastructure
- Increasing active transport mode share to and from the area, by providing walking and cycling connectivity and facilities.

The LGMS further identifies opportunities that can be built upon for the Transport and Infrastructure sector. The opportunities focus on improving public transport services (access, technology / innovation) and the improvement of active transport networks.

As discussed in Section 2.4, the existing active transport network within and around the Proposal site is disconnected and inconsistent. Access to places which are supposedly within walking distances are hindered by large block sizes and the absence of dedicated walking / cycling paths, further encouraging car use as the primary mode of transport.

CHCC are currently developing an Active Transport Plan to improve connections across the LGA, including the investigation area.

The potential active transport facilities and networks identified in Figure 4-5 have been discussed and developed in consultation with CHCC. This includes potential active transport facilities / connections in the vicinity of the Proposal site, including improved connection to public transport facilities (bus stops) and other key attractors, such as nearby schools.

These opportunities have been identified with a focus on improving everyday trips (e.g. commute to school / work) and generally align to the following strategies:

1. Improving / completing connections to the schools

- 2. Completing footpath and cycling connections along Bray Street
- 3. Improving permeability
- 4. Optimising use of existing reserves for active transport links and 'linear parks'.

It is recommended that these opportunities are considered to provide improved walking and cycling connectivity to the Proposal site, including to key surrounding attractors such as schools and recreation areas, as well as connecting with public transport services. This will help achieve a higher mode share for walking cycling and public transport for residents and visitors to the area.



Data from CHCC Active Transport Map; Base map from TfNSW Trip Planner Map; modified by GHD

Figure 4-5 Active and public transport improvement strategies

The operation of the Coffs Harbour Bypass is expected to reduce traffic along Bray Street and Pacific Highway, which could provide opportunities for the development of strategic active transport links along these corridors. Improving walking and cycling connections along Bray Street is seen to provide benefits to the immediate community and could complement future strategic links across the LGA (e.g. potential strategic cycling paths along Pacific Highway after the completion of the bypass). Completing a shared path along Bray Street and proding a new shared path along Argyll Street / West Argyll Street would also improve access to the schools located west of the Proposal site.

Open spaces within the Proposal site and the adjoining residential estates provide opportunity for activation and improved permeability. The provision of walking and cycling paths to connect local streets and areas of interest (e.g. schools, parks, fields) through these open spaces could improve the pedestrian experience by providing shorter routes and giving people a safer and more enjoyable walking / cycling environment. These links would also open up new access points to bus stops along Bray Street and Wentworth Avenue and could potentially encourage an increase in public transport use.

The proposed links (shown in Figure 4-5) would open up the following walking / cycling connections:

- Kurrajong Street and Bray Street / Taloumbi Park
- Direct access to schools from Frederick Street
- Joyce Street and Pacific Highway via Argyll Street and Treefern Creek
- Argyll Street and Wentworth Ave (south of Treefern Creek)

Table 4-8 and Table 4-9 outline the required minimum path widths that to allow for pedestrians and cyclists to safely use the facilities. These tables are lifted from Table 5.1 and 5.3 of *Austroads Guide to Road Design Part 6A: Paths for Walking and Cycling (2021).*

Table 4-8 Width requirements for pedestrian paths

Situation	Suggested minimum width	Comments
General low volume	1.2 m *	 General minimum is 1.2 m for most roads and streets.
		- Clear width required for one wheelchair.
		 Not adequate for commercial or shopping environments.
High pedestrian volumes	2.4 m (or higher based on volume)	- Generally commercial and shopping areas.
For wheelchairs to pass	1.8 m	 Refer also to AS 1428.1:2009.

* In constrained locations an absolute minimum of 1.0 m should be provided. In these situations, path users should be able to detect other path users with sufficient time to respond and take appropriate actions.

Table 4-9 Width requirements for shared paths

	Local access path	Regional path ⁽³⁾	Recreational path
Desirable minimum width	2.5 m	3.0	3.5
Maximum width – typical maximum	2.0 ⁽¹⁾ – 3.0 ⁽²⁾ m	2.5 ⁽¹⁾ -4.0 ⁽²⁾ m	3.0 ⁽¹⁾ – 4.0 ⁽²⁾ m

(1) A lesser width should only be adopted where cyclist volumes and operational speeds will remain low.

(2) A greater width may be required where the numbers of cyclists and pedestrians are very high or there is a high probability of conflict between users (e.g. people walking dogs, in-line skaters etc.).

(3) May be part of a principal bicycle network in some jurisdictions.

It is worth noting that the TfNSW Walking Space Guide (2020), which provides guidance on the amount of space necessary to allow for comfortable walking environments for pedestrians, recommends wider widths – at least 2 m for local (Type 1 - low activity) footpaths. Council is generally adopting a minimum path width of 1.5 m.

Based on a desktop check, roads within the Proposal site are expected to have enough space to accommodate the proposed footpaths with widths of 1.5 m. Wider roads such as Argyll Street also have the capacity to provide wider footpaths.

5. Parking requirements

This section provides an overview of the car parking requirements for the Proposal. The requirements have been determined based on *Roads and Maritime Service's (RMS) Guide to Traffic Generating Developments (2002)* and *Coffs Harbour City Council Development Control Plan (DCP) 2015 and recent guidance provided by CHCC in April 2022.*

Roads and Maritime parking requirements

The parking rates provided in Roads and Maritime's *Guide to Traffic Generating Developments (2002)* are summarised in Table 5-1 along with the resulting number of required parking spaces.

Table 5-1 Parking requirements based on RMS Guide to Traffic Generating Developments (2002)

Dwelling type	Parking rate (Off-street)	Argyll Estate proposed dwolling type	Parking sp requiremer Year 4)	ace nts (2027,	Parking space requirements (2033, Year 10)	
		dwenning type	Dwellings	Spaces	Dwellings	Spaces
Dwelling houses	1 space for each unit	Single dwellings and dual occupancy dwellings *	239	239	275	275
High density	0.6 spaces per 1BR unit	RFB – 1BR	106	64	106	64
buildings (RFB)	0.9 spaces per 2BR unit	RFB – 2BR	73	66	73	66
– Metropolitan	1.40 spaces per 3BR unit	RFB – 3BR	6	9	6	9
Centres	+ 1 space per each 5 units for visitor parking or part thereof	RFB Total	185	37	185	37
Total parking spa	ce requirement (RTA/RMS)			415		451

* GFA between 115 - 220 m²

Table 5-1 indicates that up to 451 parking spaces would be required for the proposed development at Year 10 based on RMS requirements.

DCP parking requirements

Part F1.4 of the CHCC DCP (2015) sets out the parking rates for off-street parking for residential uses The DCP parking rates and resulting parking requirements for the proposed development are summarised in Table 5-2. The parking requirements have been based on the indicative growth scenario breakdown as discussed in Section 3.

 Table 5-2
 Parking requirements based on Coffs Harbour City Council DCP (2015)

Dwelling type	Parking rate (Off-street)	Argyll Estate proposed	Parking sp requiremer Year 4)	ace nts (2027,	Parking space requirements (2033, Year 10)	
		dwenning type	Dwellings	Spaces	Dwellings	Spaces
Attached dwelling / Dwelling house / Dual occupancy / Semi - detached	1 space for GFA ≤100m² 2 spaces for GFA >100m²	Single dwellings and dual occupancy dwellings *	239	478	275	550
Multi-dwelling	1 space for GFA ≤100m²	RFB – 1BR	106	106	106	106
housing / Residential flat	2 spaces for GFA >100m ²	RFB – 2BR	73	73	73	73
building (RFB)	+ 1 space per every five dwellings or part thereof for	RFB – 3BR	6	6	6	6
	visitor / overflow spaces	RFB Total	185	37	185	37
Total parking spa	ce requirement (CHCC DCP)			700		772

* GFA between 115 - 220 m²

Table 5-2 indicates that up to 772 parking spaces would be required for the proposed development at Year 10 based on DCP requirements. It must be noted that the CHCC DCP indicates the following requirements for car spaces of Attached Dwelling houses:

- \leq 100m² GFA: one space behind front setback
- >100m² GFA: two spaces, at least one space behind front setback

Further, the DCP indicated that stack parking is acceptable for attached dwelling houses, but not for multi-dwelling housing and RFBs.

The DCP requirements are noted to be much greater (50 per cent more) than that of the RMS requirements. A review of the parking requirements of regional cities in the North Coast Region (refer to Table 5-3) also show that the current CHCC DCP parking rate of two car spaces for dwellings with GFA >100m² is on the higher side and may result to the provision excess parking spaces which would not be utilised.

Table 5-3 Comparison of parking requirements – North Coast Regional Cities

Dwelling type	Coffs Harbour DCP 2015	Port Macquarie DCP 2013	Tweed Shire DCP 2008
Attached dwelling / Dwelling house/ Dual occupancy / Semi- detached dwelling	1 for GFA ≤100m² 2 for GFA >100m²	1 per dwelling	1 space per dwelling plus provision for driveway parking of another vehicle
Multi-dwelling housing / Residential flat building (RFB)	1 for GFA ≤100m² 2 for GFA >100m²	1 per 1- or 2-bedroom unit 1.5 per 3- to 4-bedroom unit	 per each 1-bedroom unit, 5 per 2-bedroom unit, per 3+ bedroom units
Visitor parking	+ 1 space per five dwellings or part thereof	+ 1 space per 4 units	+1 space per 4 units

Discussions with CHCC indicated that Council are looking to reduce parking rates for residential flat buildings (RFBs) and attached dwellings / dwelling houses / dual occupancy / semi- detached dwellings. Council has recommended that the following reduced parking rates be adopted for these dwelling types:

- 1 space per dwelling (regardless of GFA)
- No visitor parking requirements
- Alternative arrangements to be considered where parking rates may trigger the need for basement parking or additional levels of basement parking.

These updated rates are listed in Table 5-4.

Table 5-4	Parking requirements based on the	e Coffs Harbour City Council recommendations (2022)
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Dwelling type	Parking rate (Off-street)	Argyll Estate proposed	Parking sp requiremer Year 4)	ace nts (2027,	Parking space requirements (2033, Year 10)		
		awening type	Dwellings	Spaces	Dwellings	Spaces	
Attached dwelling / Dwelling house	1 space per dwelling	Single dwellings	83	83	83	166	
Dual occupancy / semi-detached	1 space per dwelling	Dual occupancy	156	156	192	192	
Multi-dwelling	1 space per dwelling	RFB – 1BR	106	106	106	106	
housing / Residential flat		RFB – 2BR	73	73	73	73	
building (RFB)		RFB – 3BR	6	6	6	6	
Total parking spa	ce requirement (CHCC DCP 202		424		460		

It should also be noted that the clause 18 of the NSW Housing State Environmental Planning Policy (SEPP) provides reduced parking rates for a development application made by a social housing provider for development

on land in an accessible area. However, the site does not qualify as an 'accessible area' as services at bus stops within the 400m walking catchment are not frequent enough.

Given the above revised parking requirements are similar to the RMS requirements (refer to Table 5-1), it is recommended that the revised Council parking rates are adopted.

6. Summary and conclusion

6.1 Overview

GHD Pty Ltd (GHD) has been commissioned by LAHC to conduct the Traffic and Transport Study (the Study) to inform the Planning Proposal of the potential redevelopment. The study involves the following scope of works:

- Assessment of existing and future traffic and transport covering
 - Vehicle movements and intersection capacity during peak periods
 - Access to public transport, connectivity to walking and cycling networks
 - Parking requirements
- High-level assessment of multi-modal transport to identify potential impacts
- Assessment of cumulative impacts of other approved developments (if any)
- Identification of infrastructure and sustainable transport initiatives to offset potential impacts

6.2 Key findings

Existing conditions

- Existing traffic conditions were determined from traffic volume counts conducted on 10 June 2021 and 15 March 2022. An annual growth rate of 1.1 per cent has been applied to estimate 2022 volume counts from the historical data.
- The existing peak hour for the network occurred between 08:15-09:15 AM and 15:15-16:15 PM.
- Results of the traffic modelling using SIDRA 9 indicate that:
- The Argyll Street / Pacific Highway intersection operates over capacity during the weekday AM and PM peak periods at LoS F. This is mainly due to high traffic volumes along Pacific Highway causing delays for vehicles to make the right turn movement from Argyll Street (minor approach) to Pacific Highway. However, the right turn movement from Argyll Street is low, with six vehicles during AM peak and three vehicles during PM peak observed to make this movement. The operation along the critical movements along the Pacific Highway operate with a satisfactory LoS. Additionally, drivers familiar with the area making this right turn movement can do so instead using the nearby signalised intersection of Bray Street / Pacific Highway, which is noted to operate with an acceptable LoS D or better during peak periods.
- All other intersections analysed in the road network currently operate at an acceptable LoS (i.e. better than Level of Service E) during the weekday morning and weekday evening peak periods.

6.2.1 Traffic impact assessment

- The Proposal seeks to increase the total number of dwellings in the Proposal site through the redevelopment of some existing properties into dual occupancy dwellings and residential flat buildings (RFB).
 - LAHC-owned sites: from 129 dwellings to 365
 - Private sites: from 68 dwellings to 95
 - Total of 263 additional dwellings, bringing the total number of dwellings to 460.
- The redevelopment is planned to be carried out over a ten-year delivery period, with bulk of the works proposed to be delivered in the first four years beginning late 2023. Assessment scenarios for the study were set for 2027 (Year 4 of redevelopment) and 2033 (Year 10).
- The Proposal is estimated to generate 99 additional peak hour vehicle trips in 2027, and 122 additional peak hour vehicle trips in 2033.
- The impacts of other future developments in proximity to the site have been included to estimate future traffic. This includes additional traffic from resulting from the future Bray Street infill development (+37

vph in 2027, + 73 vph in 2033) and a reduction in traffic resulting from the operation of the Coffs Harbour Bypass (-28 per cent along Bray Street by 2033).

A comparison of the SIDRA modelling results for the base 2027 and 2033 "without" and "with" development scenario indicates the following:

- The intersections along the Pacific Highway and Bray Street are expected to operate with lower average delays in 2033, which is associated with the expected decrease in traffic related to the implementation of the proposed Coffs Harbour Bypass.
- The operation of the Bray Street / Pacific Highway / Orlando Street intersection is expected to improve during PM peak, from LoS F in 2027 to an acceptable LoS D in 2033 for both the "without" and "with" development scenarios.
- The Argyll Street / Pacific Highway intersection is expected to continue to operate at LoS F during AM and PM peak periods for both the "without" and "with" development scenarios in 2033. However, the critical movements along the Pacific Highway at this intersection are expected to operate satisfactorily. Additionally, an alternative access to the Pacific Highway is provided via the nearby signalised intersection of Bray Street / Pacific Highway, which, is noted to operate with an acceptable LoS D or better during peak periods in 2033.
- All other intersections are expected to operate with and acceptable LoS (i.e. better than LoS E) during the weekday morning and weekday evening peak periods.
- The Proposal is expected to have minimal impacts to the operation of intersections in the surrounding road network in 2033.

6.2.2 West Argyll Street and Argyll Street Connection

The potential connection of West Argyll Street and Argyll Street was also modelled using SIDRA 9 using high-level assumptions about the percentage of traffic that would be diverted from the existing network to the new connection. A comparison of the SIDRA results for the 2033 without and with connection of West Argyll Street and Argyll Street (assuming full development of the Proposal) scenarios indicates the following:

- The LoS of all intersections remains the same with the West Argyll Street connection, as compared to without connection.
- The intersection performance of Argyll Street / Pacific Highway is expected to continue operating at LoS F during AM and PM peak periods. A slight increase in average delays is expected, although it is noted that an alternative access to the Pacific Highway is provided via the nearby signalised intersection of Bray Street / Pacific Highway, which, is noted to operate with an acceptable LoS D or better during peak periods in 2033.
- All other intersections are expected to operate with and acceptable LoS (i.e. better than LoS E) during the weekday morning and weekday evening peak periods.

It should be noted that the methodology provides an indication of the potential impacts of the reconnection given the high-level assumptions that have been made for the purposes of the assessment. To capture local travel behaviours more accurately, a local origin-destination study within the study area would be necessary to identify preferred routes and destinations of residents.

Additionally, it is recommended that community consultation is undertaken to confirm if the potential connection is in line with the community's needs.

6.2.3 Mode shift and active transport

CHCC are currently developing an Active Transport Plan to improve connections across the LGA, including the investigation area.

A high-level review of the proposed infrastructure indicate that

- The completion of walking and cycling links (shared path) along Bray Street would benefit immediate community (schools, residential estates) and also complement strategic transport links across the LGA (e.g. potential protected cycling paths along Pacific Highway after the completion of the bypass).
- Open spaces provide opportunity for activation and improved permeability

- Providing paths through these open spaces would shorten walking distances and provide a safer and more enjoyable walking / cycling environment
- Paths would also open up connections across different streets, giving pedestrians additional route options and improved access to bus stops, potentially encouraging an increase in public transport use.
- The potential active transport facilities and networks identified in Figure 4-5 have been discussed and developed in consultation with CHCC. It is recommended that these opportunities are considered to provide improved walking and cycling connectivity to the Proposal site, including to key surrounding attractors such as schools and recreation areas, as well as connecting with public transport services. This will help achieve a higher mode share for walking cycling and public transport for residents and visitors to the area.

6.2.4 Parking Assessment

Parking space requirements have been determined based on Roads and Maritime Service's (RMS) Guide to Traffic Generating Developments (2002) and Coffs Harbour City Council Development Control Plan (DCP) 2015 and recent guidance provided by CHCC in April 2022. The parking analysis indicates that:

- RMS requirements indicate that a total of 415 parking spaces would be required in the Proposal site by 2027, and 451 spaces by 2033.
- DCP requirements indicate that a total of 700 parking spaces would be required in the Proposal site by 2027, and 772 spaces by 2033.
- The DCP requirements are much greater (around 50 per cent more) than that of RMS requirements. A
 review of parking requirements of regional cities within the North Coast Region show that the current
 DCP parking rates are extremely conservative and may warrant a review.
- Discussions with CHCC indicated that Council are looking to reduce parking rates for residential flat buildings (RFBs). The revised CHCC requirements indicate that a total of 424 parking spaces would be required for the Proposal site by 2027, and 460 spaces by 2033.
- Given the above revised parking requirements are similar to the RMS requirements, it is recommended that the revised Council parking rates are adopted.

6.3 Conclusion

Based on the assumptions and findings outlined in this report, it is considered that the Proposal satisfies the planning requirements on traffic engineering grounds and is not anticipated to have adverse traffic impacts on the surrounding road network.

Appendix A Traffic count data

Site 1. Bray Street / Joyce Street



Turning Movement Count Summary	
Site ID: 24.4	
Location: Bray St & Joyce St, Coffs Harbour	
Date: 10-June-2021	
Surveyed Time: 6:30 AM to 9:30 AM	
Weather: Fine	
Data for hour starting: 8:00 AM 🔽 to 9:00 AM	
Vehicle Class: ALL VEHICLES 🔄	









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Site 2. Bray Street / Frederick Street

TRANS TRAFFIC SURVEY

TURNIN	IG MOV	EMEN	T SUF	RVEY	traff	icsurvey.c	om.au	150 5001	ASINZS 4801	ISO 14001		
Intersed	ction of E	Brav S	t and I	Freder	ick St.	Coffs	Harbo					
GPS	-30.282380,	153.1181	18									
Date:	Tue 15-03-22	2		North:	N/A				Survey	AM:	6:30 AM-9	:30 AM
Weather:	Fine			East:	Bray St				Period	PM:	3:00 PM-6	:00 PM
Suburban:	Coffs Harbou	Ir		South:	Frederick	St			Traffic	AM:	8:00 AM-9	:00 AM
customer:				west:	Diay St				rean	PIVI.	3.30 FIVI-4	.30 FIVI
All Vehicles	S											
Ti	me	East Ap	proach	Bray St	outh App	oroach Fr	ederick S	West A	pproach	Bray St	Hourly	/ Total
Period Star	Period End	U	WB	L	U	R	L	U	R	EB	Hour	Peak
06:30	06:45	0	34	0	0	1	2	0	1	62	533	
06:45	07:00	0	51	1	0	1	4	0	0	85	609	
07:00	07:15	0	61	0	0	1	2	0	3	74	690	
07:15	07:30	0	60	3	0	3	3	0	3	78	766	
07:30	07:45	0	69	2	0	1	5	0	1	98	866	
07:45	08:00	0	80	1	0	3	1	0	0	138	941	
08:00	08:15	0	68	1	0	3	8	0	3	134	995	Peak
08:15	08:30	0	90	1	0	4	9	1	4	141	985	
08:30	08:45	0	100	2	0	6	13	0	6	124	938	
08:45	09:00	0	129	3	0	4	3	0	2	136		
09:00	09:15	0	86	2	0	2	8	0	2	107		
09:15	09:30	0	82	3	0	4	6	0	4	104		
15:00	15:15	0	131	1	0	4	15	0	4	81	1056	
15:15	15:30	0	122	5	0	2	9	0	7	131	1103	
15:30	15:45	0	136	5	0	3	17	0	3	127	1116	Peak
15:45	16:00	0	116	2	0	2	4	0	2	127	1074	
16:00	16:15	0	146	3	0	5	9	0	1	119	1077	
16:15	16:30	0	154	2	0	2	8	0	6	117	1091	
16:30	16:45	0	128	2	0	6	6	0	7	100	1072	
16:45	17:00	0	128	5	0	7	13	0	4	99	1068	
17:00	17:15	0	162	5	0	7	6	0	2	115	1039	
17:15	17:30	0	134	3	0	3	3	0	6	121		
17:30	17:45	0	127	2	0	2	5	1	2	106		
17:45	18:00	0	131	4	0	2	7	0	2	81		

Peak	Time	East A	oproach l	Bray St	outh App	proach Fr	ederick S	West A	pproach	Bray St	Peak
Period Star	Period End	U	WB	L	U	R	L	U	R	EB	total
08:00	09:00	0	387	7	0	17	33	1	15	535	995
15:30	16:30	0	552	12	0	12	38	0	12	490	1116

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehic	les	Eact A	oproach	Bray St	outh Apr	vroach Fr	odorick 9	Weet A	nnroach	Bray St	1
Period Star	Period End	U	WB		U	R	L	U	R	EB	
06:30	06:45	0	30	0	0	1	2	0	1	60	
06:45	07:00	0	45	1	0	1	3	0	0	80	
07:00	07:15	0	56	0	0	1	2	0	3	74	
07:15	07:30	0	55	3	0	3	3	0	3	75	
07:30	07:45	0	68	2	0	1	4	0	1	92	
07:45	08.00	0	70	-	0		1	0		126	
07.40	00.00	0	64	1	0	2	0	0	0	100	
00.00	00.15	0	04	'	0	3	0	0	3	125	
08:15	08:30	0	85	1	0	4	9	1	4	134	
08:30	08:45	0	95	2	0	6	13	0	6	115	
08:45	09:00	0	123	3	0	4	3	0	1	133	
09:00	09:15	0	81	2	0	2	8	0	2	103	
09:15	09:30	0	78	3	0	4	6	0	4	99	
15:00	15:15	0	125	1	0	4	15	0	4	80	
15:15	15:30	0	119	5	0	2	6	0	7	126	
15:30	15:45	0	129	5	0	3	16	0	2	118	
15:45	16:00	0	114	2	0	2	3	0	2	125	
16:00	16:15	0	139	3	0	5	9	0	1	114	
16:15	16:30	0	153	2	0	2	8	0	5	112	
16:30	16:45	0	120	2	0	6	6	0	7	98	
16:45	17:00	0	125	5	0	7	13	0	4	97	
17:00	17:15	0	161	5	0	7	6	0	2	115	
17:15	17:30	0	134	3	0	3	2	0	6	121	
17:30	17:45	0	123	2	0	2	5	1	2	102	
17:45	18.00	0	130	4	0	2	7	0	2	78	
11.40	10.00	Ū	100	-	Ŭ	2	,	Ū	2	10	
Peak	Time	East A	pproach I	Bray St	outh App	proach Fr	ederick S	West A	pproach	Bray St	Peak
08:00	09:00	0	367	L 7	0	R 17	L 33	1	R 14	EB 507	946
15:30	16:30	0	535	12	0	12	36	0	10	469	1074
Heavy Vehi	cles										
Heavy Vehi Tir Period Star	cles me Period End	East A	pproach I WB	Bray St	outh App	proach Fr	ederick S	West A	pproach R	Bray St	
Heavy Vehi Tin Period Star 06:30	cles me Period End 06:45	East A	pproach I WB 4	Bray St	outh App U 0	oroach Fr R 0	ederick S	West A U 0	pproach R 0	Bray St EB 2	
Heavy Vehi Tin Period Star 06:30 06:45	cles me Period End 06:45 07:00	East A U 0	WB 4 6	Bray St L 0	outh App U 0	oroach Fr R 0 0	ederick S	West A U 0	pproach R 0 0	Bray St EB 2 5	
Heavy Vehi Tin Period Star 06:30 06:45 07:00	cles me Period End 06:45 07:00 07:15	East A	wB 4 6 5	Bray St L 0 0	outh App U 0 0	oroach Fr R 0 0	ederick S	West A U 0 0	pproach R 0 0	Bray St EB 2 5 0	
Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15	cles me Period End 06:45 07:00 07:15 07:30	East A	WB 4 6 5 5	Bray St 	outh App U 0 0 0	oroach Fr R 0 0 0	ederick S	West A U 0 0 0	pproach R 0 0 0	Bray St EB 2 5 0 3	
Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15 07:30	cles me Period End 06:45 07:00 07:15 07:30 07:45	East Aj U 0 0 0	WB 4 6 5 5	Bray St L 0 0 0 0 0	outh App U 0 0 0	0 0 0 0 0 0	ederick S	West A U 0 0 0 0	pproach R 0 0 0	Bray St EB 2 5 0 3	
Heavy Vehi Tii Period Star 06:30 06:45 07:00 07:15 07:30 07:45	cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00	East Aj U 0 0 0 0 0	WB 4 6 5 5 1 2	Bray St L 0 0 0 0 0 0 0	outh App U 0 0 0 0 0	0 0 0 0 0 0 0 1	ederick \$	West A U 0 0 0 0 0	pproach R 0 0 0 0 0	Bray St EB 2 5 0 3 6 2	
Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00	cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15	East A U 0 0 0 0 0 0 0	bproach I WB 4 6 5 5 1 1 2 4	Bray St L 0 0 0 0 0 0 0 0 0	outh App U 0 0 0 0 0 0 0	R 0 0 0 0 0 0 0 1 0	ederick \$ L 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0 0 0 0 0 0 0	pproach R 0 0 0 0 0 0 0	Bray St EB 2 5 0 3 6 2 9	
Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:45	cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30	East A U 0 0 0 0 0 0 0 0 0 0	bproach I WB 4 6 5 5 1 2 4 5	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App U 0 0 0 0 0 0 0 0	Proach Fr 0 0 0 0 1 0 0	ederick \$ L 0 1 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0 0 0 0 0 0 0 0	pproach R 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 5 0 3 6 2 9 7	
Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:20	Cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30	East A U 0 0 0 0 0 0 0 0 0 0 0	bproach I WB 4 6 5 5 1 2 4 5 5	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App 0 0 0 0 0 0 0 0 0 0	Proach Fr R 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ederick \$ L 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0 0 0 0 0 0 0 0 0 0	pproach R 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 5 0 3 6 2 9 7 7	
Heavy Vehi Tim Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45	Cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45	East A U 0 0 0 0 0 0 0 0 0 0 0 0	WB 4 6 5 1 2 4 5 5	Bray St 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App U 0 0 0 0 0 0 0 0 0 0 0 0	Proach Fr R 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ederick S L 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0 0 0 0 0 0 0 0 0 0 0 0 0	pproach R 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 5 0 3 6 2 9 7 9 7 9	
Heavy Vehi Tim Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45	Cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00	East Ay U 0 0 0 0 0 0 0 0 0 0 0 0 0 0	pproach I WB 4 6 5 5 1 2 4 5 5 6 6	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App U 0 0 0 0 0 0 0 0 0 0 0 0 0 0	R 0	ederick S L 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	pproach R 0 0 0 0 0 0 0 0 0 1 0	Bray St EB 2 5 0 3 6 2 9 7 7 9 3 3	
Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 08:45 09:00	Cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15	East Ay U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	pproach I WB 4 6 5 5 1 2 4 5 5 6 5 6 5	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	R 0	ederick 5 L 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	pproach R 0	Bray St EB 2 5 0 3 6 2 9 7 7 9 3 4	
Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:05	Cles Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	bproach 1 WB 4 6 5 5 1 2 4 5 5 6 5 6 5 4	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Proach Fr R 0	ederick \$ 0 1 0	West A U 0	pproach R 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 5 0 3 6 2 9 7 7 9 3 3 4 5 5	
Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 1500	Cles Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	bproach 1 WB 4 6 5 5 1 2 4 5 5 6 5 6 5 4 6	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Proach Fr R 0	ederick S L 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	pproach R 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 5 0 3 6 2 9 7 9 3 4 5 1	
Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 15:00 15:15	Cles Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 15:30	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	bproach 1 WB 4 6 5 5 1 2 4 5 5 6 5 6 5 4 6 3 3	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Proach Fr R 0	ederick \$ L 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	pproach R 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 5 0 3 6 2 9 7 9 3 4 5 1 5	
Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 15:00 15:15 15:30	Cles Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 15:30	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	bproach 1 WB 4 6 5 5 1 2 4 5 5 6 5 6 5 6 5 4 6 3 7	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Proach Fr R 0	ederick S L 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	pproach R 0 0 0 0 0 0 0 1 0 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1	Bray St EB 2 5 0 3 6 2 9 7 9 3 4 5 9 9	
Heavy Vehi Tim Period Star 06:30 06:45 07:00 07:15 08:00 08:15 08:30 08:45 09:00 09:15 15:50 15:50 15:30 15:45	Cles Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 15:30 15:45 16:00	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	bproach 1 WB 4 6 5 5 1 2 4 5 5 6 5 6 5 6 5 4 6 3 7 7 2	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Proach Fr R 0	ederick S L 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	pproach R 0 0 0 0 0 0 0 1 0 0 1 0 1 0 1 0 1 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 5 0 3 6 2 9 7 9 3 4 5 9 2 9 3 4 5 9 2	
Heavy Vehi Tim Period Star 06:30 06:45 07:00 07:15 08:00 08:15 08:30 08:45 09:00 09:15 15:50 15:50 15:50 15:45 16:00	Description Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 15:30 15:45 16:00 16:15	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	Opproach I WB 4 6 5 1 2 4 5 6 5 4 6 7 2 7 2 7	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Proach Fr R 0	ederick S L 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	pproach R 0 0 0 0 0 0 0 0 1 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 5 0 3 6 2 9 7 9 3 4 5 9 2 5 9 2 5 9 2 5 9 2 5	
Heavy Vehi Tim Period Star 06:30 06:45 07:00 07:15 08:00 08:15 08:30 08:45 09:00 09:15 15:50 15:50 15:53 15:45 16:00 16:15	Cles Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 16:00 16:15 16:30	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	Opproach I WB 4 6 5 1 2 4 5 6 5 4 6 5 6 3 7 2 7 1	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App 0	Proach Fr R 0	ederick S L 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	pproach R 0 1 0 0	Bray St EB 2 5 0 3 6 2 9 7 7 9 3 4 5 1 5 9 2 2 5 5 5	
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Heavy Vehi Tim Period Star 06:30 06:45 07:00 07:15 08:00 08:15 08:30 08:45 09:00 09:15 15:00 15:15 15:30 15:45 16:00 16:15 16:30 16:45	Cles Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 16:00 16:15 16:30 16:45 17:00	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	Opproach I WB 4 6 5 1 2 4 5 6 5 4 6 5 6 5 4 6 7 2 7 1 8 3	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App 0	Proach Fr R 0	ederick S L 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	Pproach R 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0 0 0 0	Bray St EB 2 5 0 3 6 2 9 7 9 3 4 5 1 9 2 5 5 5 2 5 2 5 2 2 2 5 2 2 5 2 2 2 3	
Heavy Vehi Tim Period Star 06:30 06:45 07:00 07:15 08:00 08:15 08:30 08:45 09:00 09:15 15:00 15:15 15:30 15:45 16:00 16:15 16:30 16:45	Cles Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 16:00 16:15 16:30 16:45 17:00 17:15	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	Opproach I WB 4 6 5 1 2 4 5 6 5 4 6 5 4 5 6 5 4 6 3 7 1 8 3 1	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App 0	Proach Fr R 0	ederick S L 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	Pproach R 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0	Bray St EB 2 5 0 3 6 2 9 7 9 3 4 5 1 5 2 5 2 5 2 5 2 5 2 2 2 0	
Heavy Vehi Tim Period Star 06:30 06:45 07:00 07:15 08:00 08:15 08:30 08:45 09:00 09:15 15:00 15:15 15:30 15:45 16:00 16:15 16:30 16:45 16:30 16:45	Best Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 15:15 15:30 15:45 16:00 16:45 17:00 17:15 17:30	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	Opproach I WB 4 6 5 1 2 4 5 6 5 4 6 5 4 5 6 5 4 6 3 7 1 8 3 1 0	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App 0	Proach Fr R 0	ederick S L 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	Pproach R 0	Bray St EB 2 5 0 3 6 2 9 7 9 3 4 5 1 5 2 5 2 5 2 5 2 2 2 0 0	
Heavy Vehi Tim Period Star 06:30 06:45 07:00 07:15 08:00 08:15 08:30 08:45 09:00 09:15 15:00 15:15 15:30 15:45 16:00 16:15 16:30 16:45 16:30 16:45 17:00	Cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 15:30 15:45 16:00 16:15 16:30 16:45 17:00 17:15 17:30 17:45	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	Opproach I WB 4 6 5 1 2 4 5 6 5 4 6 5 6 5 4 6 3 7 1 8 3 1 0 4	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App 0	Proach Fr R 0	ederick S L 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	Pproach R 0	Bray St EB 2 5 0 3 6 2 9 7 9 3 4 5 1 5 2 5 2 5 2 0 0 4	
Heavy Vehi Tim Period Star 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 15:00 15:15 15:30 15:45 16:00 16:15 16:30 16:45 17:30 17:15 17:30	Cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 15:30 15:45 16:00 16:15 16:30 16:45 17:00 17:15 17:30 17:45 18:00	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	Opproach I WB 4 6 5 1 2 4 5 6 5 4 6 3 7 1 8 3 1 0 4 1	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App 0	Proach Fr R 0	ederick S L 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	Pproach R 0	Bray St EB 2 5 0 3 6 2 9 7 9 3 4 5 7 9 3 4 5 5 5 2 2 2 5 5 5 2 2 0 0 0 4 3	
Heavy Vehi Tim Period Star 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 15:00 15:15 15:30 15:45 16:00 16:15 16:30 16:45 17:30 17:15 17:30 17:45	Cries Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 15:30 15:45 16:00 16:15 16:30 16:45 17:00 17:15 17:30 17:45 18:00	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	Opproach I WB 4 6 5 1 2 4 5 6 5 4 6 5 6 5 4 6 3 7 1 8 3 1 0 4 1	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App 0	Proach Fr R 0	ederick S L 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	pproach R 0	Bray St EB 2 5 0 3 6 2 9 7 9 7 9 3 4 5 5 5 2 2 5 5 2 2 2 0 0 0 4 3	
Heavy Vehi The Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 15:00 15:15 16:30 16:45 17:00 17:15 17:30 17:45 Period Star	Best Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 15:15 15:30 15:45 16:00 16:15 16:30 16:45 17:00 17:15 17:30 17:45 18:00	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	Operoach I WB 4 6 5 1 2 4 5 6 5 4 6 3 7 1 8 3 1 0 4 1 WB	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Oroach Fr R 0 0 0 0<	ederick S	West A U 0 <td>pproach R 0 0</td> <td>Bray St EB 2 5 0 3 6 2 9 7 9 3 4 5 2 5 2 0 4 5 2 0 4 3 8 9 2 5 2 0 4 3</td> <td>Peak</td>	pproach R 0 0	Bray St EB 2 5 0 3 6 2 9 7 9 3 4 5 2 5 2 0 4 5 2 0 4 3 8 9 2 5 2 0 4 3	Peak
Heavy Vehi Tim Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 15:00 15:15 16:30 16:45 17:00 17:45 Period Star 08:00	Cles Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 16:00 16:15 16:30 16:45 17:00 17:15 17:30 17:45 18:00 Time Period End 09:00	East A) 0 0 0 0 0 0 0 0 0 0 0 0 0	oproach I WB 4 6 5 1 2 4 5 6 5 4 6 3 7 1 8 3 1 0 4 1 oproach I WB 20	Bray St L 0 0 0 0 0 0 0 0 0 0 0 0 0	outh App 0	Oroach Fr R 0	ederick S	West A U 0	pproach R 0 0 0 0 <td>Bray St EB 2 5 0 3 6 2 9 3 4 5 1 5 2 5 2 0 4 5 2 0 4 3 8 Bray St 28</td> <td>Peak total 49</td>	Bray St EB 2 5 0 3 6 2 9 3 4 5 1 5 2 5 2 0 4 5 2 0 4 3 8 Bray St 28	Peak total 49

Site 3. Bray Street / Elm Street

TRA	NS .	TR/	AFF	FIC	SU	RV	EY	DNVGL	DNVGL	DNV-GL	- Allow	
TURNIN	IG MOV	EMEN	IT SUF	RVEY	🙀 uan	icsurvey.c	om.au	190 9001	ASIN25 4801	ISO 14001		
Intersed	ction of E	Bray S	tand	Elm St	, Coffs	Harbo	our					
GPS	-30.283470,	153.1253	71									
Date:	Tue 15-03-22	2		North:	N/A				Survey	AM:	6:30 AM-9	:30 AM
Suburban:	Coffs Harbou	ır		East:	Fim St				Traffic	AM.	3.00 PIVI-6	:00 PN
Customer:				West:	Bray St			318	Peak	PM:	3:30 PM-4	:30 PM
All Vehicle	s											
Ti	me	East A	pproach	Bray St	South A	Approach	Elm St	West A	pproach	Bray St	Hourly	Total
Period Star	Period End	U	WB	L	U	R	L	U	R	EB	Hour	Peak
06:30	06:45	0	36	1	0	1	0	0	0	85	615	
06:45	07:00	0	58	3	0	5	1	0	0	93	679	
07:00	07:15	0	59	1	0	4	3	0	1	95	764	
07:15	07:30	0	75	2	0	7	3	0	0	82	859	
07:30	07:45	0	65	3	0	6	3	0	1	109	962	
07:45	08:00	0	82	4	0	4	3	0	1	151	1055	
08:00	08:15	0	74	3	0	1	4	0	1	175	1105	Peak
08:15	08:30	0	98	5	0	3	3	0	3	160	1089	
08:30	08:45	0	111	9	0	7	6	0	0	147	1059	
08:45	09:00	0	120	7	0	10	12	0	0	146		
09:00	09:15	0	100	8	0	6	5	0	1	122		
09:15	09:30	0	93	7	0	5	3	0	1	133		
15:00	15:15	0	143	10	0	10	11	0	0	99	1178	
15:15	15:30	0	140	11	1	9	9	0	2	127	1232	
15:30	15:45	0	163	6	0	6	6	0	0	134	1260	Peak
15:45	16:00	0	128	9	0	7	7	0	1	139	1231	
16:00	16:15	0	171	7	0	4	4	0	2	139	1239	
16:15	16:30	0	166	5	0	8	10	0	1	137	1235	
16:30	16:45	0	141	4	0	10	7	0	2	122	1208	
16:45	17:00	0	147	9	0	6	9	0	1	127	1203	
17:00	17:15	0	174	6	0	6	13	0	2	122	1171	
17:15	17:30	0	139	5	0	7	8	0	0	141		
17:30	17:45	0	143	4	0	9	4	0	1	120		
17:45	18:00	0	149	4	0	8	8	0	0	98		

Peak	Time	East A	oproach l	Bray St	South /	Approach	Elm St	West A	pproach	Bray St	Peak
Period Star	Period End	U	WB	L	U	R	L	U	R	EB	total
08:00	09:00	0	403	24	0	21	25	0	4	628	1105
15:30	16:30	0	628	27	0	25	27	0	4	549	1260

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehic	les	Eact A	anroach I	Broy St	South	Annroach	Elm St	Weet A	nnroach	Broy St	
III Period Star	me Period End	East A	wB	Bray St	South	Approach R	Elm St	West A	pproacn R	FB	
06:30	06:45	0	32	1	0	1	0	0	0	83	
06:45	07.00	0	52	3	0	5	1	0	0	86	
07:00	07:15	0	54	1	0	4	3	0	1	00	
07:45	07.10	0	70	-	0	7	3	0	1	35	
07:15	07:30	U	70	2	U	7	3	0	0	79	
07:30	07:45	0	64	2	0	5	3	0	1	104	
07:45	08:00	0	82	4	0	4	1	0	1	148	
08:00	08:15	0	69	3	0	1	4	0	1	165	
08:15	08:30	0	94	5	0	3	2	0	3	154	
08:30	08:45	0	104	8	0	7	5	0	0	140	
08:45	09:00	0	116	7	0	10	11	0	0	142	
09:00	09:15	0	95	8	0	6	5	0	1	120	
09.15	09:30	0	88	7	0	5	3	0	1	127	
15:00	15.15	0	127	10	0	10	11	0		0.0	
15.00	15.15	0	137	10	0	10	- 11	0	0	90	
15:15	15:30	0	138	11	1	9	8	0	1	123	
15:30	15:45	0	156	6	0	6	5	0	0	127	
15:45	16:00	0	125	9	0	7	6	0	1	133	
16:00	16:15	0	166	7	0	4	4	0	2	136	
16:15	16:30	0	164	5	0	8	10	0	1	133	
16:30	16:45	0	130	4	0	10	7	0	2	120	
16:45	17:00	0	145	9	0	6	9	0	1	124	
17:00	17:15	0	173	5	0	6	13	0	2	121	
17:15	17:30	0	130	5	0	7	8	0	0	141	
17:10	17.45	0	100	3	0	,	0	0	0	141	
17:30	17:45	0	139	4	0	9	4	0	1	116	
17:45	18:00	0	147	4	0	8	8	0	0	95	
Peak	Time	East A	pproach I	Bray St	South /	Approach	Elm St	West A	pproach	Bray St	Peak
Period Star	Period End	U	WB	L	U	R	L	U	R	EB	total
08:00	09:00	0	383	23	0	21	22	0	4	601 529	1054
Heavy Vehi Ti	cles me	East A	pproach I	Bray St	South /	Approach	Elm St	West A	pproach	Bray St	
Heavy Vehi Tii Period Star	cles me Period End	East A	wB	Bray St	South /	Approach R	Elm St	West A	pproach R	Bray St EB	
Heavy Vehi Tin Period Star 06:30	cles me Period End 06:45	East A	WB	Bray St L	South A	Approach R 0	Elm St L 0	West A U 0	pproach R 0	Bray St EB 2	
Heavy Vehi Tin Period Star 06:30 06:45	cles me Period End 06:45 07:00	East A U 0	WB 4 6	Bray St L 0 0	South <i>J</i> U 0	Approach R 0 0	Elm St L 0 0	West A U 0 0	pproach R 0 0	Bray St EB 2 7	
Heavy Vehi Tin Period Star 06:30 06:45 07:00	cles me Period End 06:45 07:00 07:15	East A U 0 0	WB 4 6 5	Bray St L 0 0	South <i>J</i> 0 0	Approach R 0 0	Elm St 	West A U 0 0	pproach R 0 0	Bray St EB 2 7 2	
Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15	cles me Period End 06:45 07:00 07:15 07:30	East A U 0 0 0 0	WB 4 6 5 5	Bray St L 0 0 0 0	South 7 0 0 0	Approach R 0 0 0	Elm St L 0 0 0 0 0	West A U 0 0 0	pproach R 0 0 0	Bray St EB 2 7 2 3	
Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15 07:30	cles me Period End 06:45 07:00 07:15 07:30 07:45	East A	WB 4 6 5 5 1	Bray St L 0 0 0 0 1	South / U 0 0 0 0 0	Approach R 0 0 0 0 1	Elm St L 0 0 0 0 0 0 0	West A U 0 0 0 0 0	pproach R 0 0 0 0 0	Bray St EB 2 7 2 3 5	
Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15 07:30 07:45	cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00	East A) U 0 0 0 0 0 0	pproach I WB 4 6 5 5 1 0	Bray St L 0 0 0 1 0	South 7 0 0 0 0 0 0	Approach R 0 0 0 1 1	Elm St L 0 0 0 0 0 2	West A U 0 0 0 0 0 0	pproach R 0 <td>Bray St EB 2 7 2 3 5 3</td> <td></td>	Bray St EB 2 7 2 3 5 3	
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Heavy Vehi Tin Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15	cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30	East A) U 0 0 0 0 0 0 0 0 0 0 0 0 0	pproach I WB 4 6 5 5 1 0 5 4	Bray St L 0 0 0 1 0 0 0 0 0 0 0	South / U 0 0 0 0 0 0 0 0 0 0	Approach R 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Elm St L 0 0 0 0 2 0 1	West A U 0 0 0 0 0 0 0 0 0 0 0 0 0	pproach R 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 7 2 3 5 3 10 6	
Heavy Vehi Ti Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30	Cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45	East A) 0 0 0 0 0 0 0 0 0 0 0 0 0	pproach I WB 4 6 5 5 5 1 0 5 4 7	Bray St L 0 0 0 1 0 0 0 1 1 0 0 1 1 1 0 0 1 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	South / U 0 0 0 0 0 0 0 0 0 0 0	Approach R 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Elm St L 0 0 0 0 2 0 1 1	West A U 0 0 0 0 0 0 0 0 0 0 0 0 0	Pproach R 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 7 2 3 5 3 10 6 7	
Heavy Vehi Til Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:30 08:45	Cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45	East A U 0 0 0 0 0 0 0 0 0 0 0 0	bproach l WB 4 6 5 5 1 0 5 4 7 4	Bray St L 0 0 0 1 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	South / U 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach R 0	Elm St L 0 0 0 2 0 1 1 4	West A U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	pproach R 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 7 2 3 5 3 10 6 7	
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Heavy Vehi Ti Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15	Cles Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30	East Ay U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	bproach I WB 4 6 5 5 1 0 5 4 7 4 5 5 5	Bray St L 0 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	South A U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach R 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Eim St L 0 0 0 0 2 0 1 1 1 1 0 0	West A U 0	pproach R 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 7 2 3 5 3 10 6 7 4 2 6	
Heavy Vehi Tir Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:45 09:00 09:15 15:00	Cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15	East Ay U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	pproach 1 WB 4 6 5 5 1 0 5 4 7 4 5 5 5 6	Bray St L 0 0 0 1 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	South A U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach R 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Eim St L 0 0 0 2 0 1 1 1 1 0 0 0 0	West A U 0	pproach R 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 7 2 3 5 3 10 6 7 4 2 6 1	
Heavy Vehi Ti Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 15:00 15:15	Cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 15:30	East A U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	pproach 1 WB 4 6 5 5 7 4 7 4 5 5 5 6 6 2	Bray St L 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	South / U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach R 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Eim St L 0 0 0 2 0 1 1 1 1 0 0 0 0 1	West A U 0	Pproach R 0 1	Bray St EB 2 7 2 3 5 3 10 6 7 4 2 6 1 4	
Heavy Vehi Tir Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 15:00 15:15 15:30	Cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 15:30 15:45	East A U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	WB 4 6 5 1 0 5 4 7 4 5 6 2 7	Bray St L 0 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	South / U 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach R 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Elm St L 0 0 2 0 1 1 1 1 0 0 0 0 1 1 1 1 1	West A U 0	pproach R 0 0 0 0 0 0 0 0 0 0 0 0 0	Bray St EB 2 7 3 5 3 10 6 7 4 2 6 1 4 2 6 1 4 7	
Heavy Vehi Tir Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 15:00 15:15 15:30	Cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 15:30 15:45 16:00	East A U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	WB 4 6 5 1 0 5 4 7 4 5 6 2 7 3	Bray St L 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	South / U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach R 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Elm St L 0 0 0 2 0 1 1 1 1 0 0 0 0 1 1 1 1 1 1 1	West A U 0	Pproach R 0	Bray St EB 2 7 3 5 3 10 6 7 4 2 6 1 4 7 6	
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Heavy Vehi Tir Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:00 08:15 15:00 15:15 15:30 15:45 16:00 16:15 16:30 16:45 17:00 17:15 17:30 17:45 Peak	cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 16:00 16:15 16:30 16:45 17:00 17:15 17:30 17:45 18:00 Time Period End 09:00	East Ay U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	WB 4 6 5 1 0 5 4 7 4 5 6 2 7 3 5 2 11 0 4 2 0 4 2 Pproach I WB 20 17	Bray St L 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	South / U 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach R 0	Elm St L 0 0 0 2 0 1 1 1 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	West A U 0	pproach	Bray St EB 2 7 2 3 5 3 10 6 7 4 2 6 1 4 2 6 1 4 2 6 3 4 2 3 1 0 4 3 1 0 4 3 EB 27 20	Peak total 511 30

Site 4. Pacific Highway / Bray Street / Orlando Street







TOTALS AND PE	WKS																																																															
Period 1 Tot	al 1214	39	5	0 3	457 13	3 127	5 (635 1	6 6	1	0	0 0	0 0	23	334	18	12	D 307	7 10	0	4	422	33	3 (0 0	0	0	0	37	138	3	0	0 18	378 17	1 16	55 0	304	16	5	0	1	0	0	0	13 8	22 26	5 8	0	543	11	1	0	257	6	1 (0 0	0	0	0	7	11137 5	638 1	.143 26	681 1675
Period 1 Peak	lr 479	17	1	0 1	469 48	3 40	0	273 7	7 3	1	0	0 (0 0	9	153	6	5	0 155	5 6	0	0	167	9	1 (0 0	0	0	0	20	70	0	0	0 8	24 54	5 52	2 0	136	3	1	0	0	0	0	0	3 3	19 6	7	0	211	4	0	0	112	1 :	1 (0 0	0	0	0	4	4673 2	338 5	502 11	142 691
	Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB pacific Hwy SB	Pacific Hwy 58 Pacific Hwy 58	Pacific Hwy SB	Or lando St WB	Orlando St WB	Orlando St WB	Orlando St. WB Orlando St. WB	Orlando St WB	Orlando St WB	Orlando St WB	Orlando St WB	Orlandio St WB	Orlandio St WB	Orlando St WB	Orlandio St WB	Or lando St WB	Orlando St WB	Orlando St WB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB Pacific Hwy NR	Pacific Hww NB	Pacific Hwy ND Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	oray at co Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB Brav St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	GRA ND TOTAL	Pacific Hwy SB	Orlando St WB	Pacific Hwy ws Bray St EB
	Left	Left	Left	Left Th	rough Thro	ugh Through	Through R	light Rig	ht Right	Right	U-tum L	J-tum U-t	tum U-ta	um Cross	1 Left	Left	Left L	aft Throu	igh Throug	hThrough	Through	Right F	Right Ri	ght Rig	ht U-tu	m U-tun	n U-turn	U-turn	Cross 1	Left	Left	Left L	eft Thro	ough Thro	ughThro	ough Thro	ugh Righ	t Righ	t Right	Right	U-tum	U-turn	U-turn L	J-turn O	oss 1 Le	ft Lei	it Lef	t Left	Through	hThrough	Through	Through	Right F	ight Ri	ght Rig	ht U-tu	rn U-turr	n U-turn	U-tum O	ross 1	T	DTAL TO	JTAL TO	JTAL TOTAL
Time Starting	Lights (1-2)	Light Trucks (3- 5)	Heavy Trucks (6- 1.2)	Bicycles on Road	Lights (1-2) Light Trucks (3-	5) Heavy Trucks (6- 1.2)	Bicycles on Road	Lights (1-2) Light Trucks (3-	5) Heary Trucks (6- 1.2)	Bicycles on Road	Lights (1-2.)	Light Trucks (3- 5) Heavy Trucks (6-	12) Bicycles on	Road Pedest rians	Lights (1-2)	Light Trucks [3- 5)	Heavy Irucks (9- 1.2) Bicycles on	Road Lights (1-2)	Light Trucks (3- 5)	Heavy Trucks (6- 1.2)	Bicycles on Road	Lights (1-2)	Light Trucks (3- 5) Heanv Trucks (6-	1.2} Bicycles on	Road Lights (12)	Light Trucks (3- 5)	Heavy Trucks (6- 1.2)	Bicycles on Road	Pedest rians	Lights (1-2)	Light Trucks (3- 5)	12) Bicveles on	Road	Light Trucks [3-	5) Heavy Trucks (6-	12) Bicycles on	Road Lights (1-2)	Light Trucks [3- st	Heavy Trucks (6- 1.2)	Bicycles on Road	Lights (1-2)	Light Trucks (3- 5)	Heavy Trucks (6- 1.2)	Bicycles on Road	Pedestrians	Light Trucks [3-	5) Heavy Trucks (6-	Bicycles on Road	Lights (1-2)	Light Trucks (3- 5)	Heavy Trucks (6- 1.2)	Bicycles on Road	Lights (1-2)	S) Heavy Trucks (6-	12) Bicycles on	Road Lights (1-2)	Light Trucks [3- 5)	Heavy Trucks (6- 1.2)	Bicycles on Road	Peckest rians	TOTALS	All Classes	All Classes	All Classes All Classes
06:30	59	2	0	0 1	180 10	8 (3	17 1	L 0	0	0	0 0	0 0) 3	8	2	0	0 8	1	0	0	35	1	1 () 0	0	0	0	1	4	1	0	0 8	36 1	5 13	3 0	10	2	1	0	0	0	0	0	2 4	5 3	0	0	26	2	0	0	19	0 (0 0	0 0	0	0	0	0	563	280 !	56 1	32 95
06:45	75	5	0	0 1	195 7	12	1	44 O) 1	0	0	0 0	0 0	2	20	2	1	0 13	1	0	1	29	4	0 0	0 0	0	0	0	1	7	1	0	0 1	07 14	4 11	1 0	16	2	0	0	0	0	0	0	1 4	8 2	0	0	35	1	1	0	14	1 (0 0	0 0	0	0	0	0	671	340 3	71 1'	158 102
07:00	57	0	0	0 1	186 10) 6	0	34 1	L O	0	0	0 0	0 0	0 0	15	0	0	0 11	0	0	0	22	2	0 0	0 0	0	0	0	2	7	0	0	0 8	37 1	7 23	2 0	18	2	0	0	0	0	0	0	0 4	6 2	0	0	34	0	0	0	17	1 (0 0	0 0	0	0	0	0	597	294	50 1'	153 100
07:15	82	5	0	0 2	212 9	16	1	35 1	L 0	0	0	0 0	0 0	2	25	4	1	24	0	0	1	26	3	0 0	0 0	0	0	0	3	1	0	0	0 1	22 1	5 13	3 0	22	1	1	0	0	0	0	0	2 3	5 2	0	0	40	1	0	0	12	1 (0 0	0 0	0	0	0	0	712	361 4	84 1	76 91
07:30	137	0	1	0 2	277 9	9	0	46 1	L 0	0	0	0 0	0 0	0 0	21	0	3	0 19	1	0	0	29	3	1 () 0	0	0	0	2	8	1	0	0 1	14 1	7 14	4 0	24	1	1	0	0	0	0	0	0 5	2 3	1	0	45	2	0	0	17	0 (0 0	0 0	0	0	0	0	857	480	77 1	80 120
07:45	143	0	1	0 3	363 1:	1 5	0	53 C) 2	0	0	0 0	0 0) 0	21	3	1	26	0	0	0	27	4	0 0) 0	0	0	0	2	13	0	0	0 1	41 1	3 14	4 0	27	2	1	0	0	0	0	0	1 8	2 1	0	0	50	0	0	0	19	2 (0 0	0 0	0	0	0	0	1030	578 4	82 2'	16 154
08:00	122	5	1	0 3	343 14	10	0	73 1	. 0	0	0	0 0	0 0	2	32	1	0	0 18	0	0	2	41	4	0 0	0 0	0	0	0	3	11	0	0	0 1	54 9	9	9 0	27	2	0	0	0	0	0	0	3 7	6 6	0	0	60	0	0	0	24	0 (0 0	0 0	0	0	0	2	1045	569 9	98 2	/12 166
08:15	149	11	1	0 4	431 16	5 12	0	68 2	2 1	1	0	0 0	0 0	2	33	2	2	0 31	1	0	0	33	2	0 0	0 0	0	0	0	2	16	0	0	0 1	75 1	7 19	5 0	27	1	1	0	0	0	0	0	0 9	3 0	3	0	52	1	0	0	28	0 (0 0	0 0	0	0	0	0	1225	692 1	104 2'	52 177
08:30	138	1	0	0 3	393 8	9	0	57 2	2 1	0	0	0 0	0 0	0 0	55	3	1	38	3	0	0	37	3	1 (0 0	0	0	0	2	13	0	0	0 1	83 1	5 12	2 0	33	1	0	0	0	0	0	0	2 7	8 3	2	0	66	2	0	0	30	1 (0 0	0 0	0	0	0	0	1189	509 1	141 2'	57 182
08:45	98	3	0	0 3	332 14	10	0	74 2	2 1	0	0	0 0	0 0) 5	39	0	1	0 43	1	0	0	52	3	0 0	0 0	0	0	0	8	20	0	0	0 2	09 1	1 10	0 0	45	0	0	0	0	0	0	0	0 8	9 1	1	0	54	1	0	0	36	0	1 (0 0	0	0	0	3	1151	534 1	139 2	.95 183
09:00	94	2	0	0 3	313 10	9	0	74 1	L 0	0	0	0 0	0 0	2	26	1	1	0 43	1	0	0	45	1	0 0	0 0	0	0	0	8	21	0	0	0 2	57 1	3 19	5 0	31	1	0	0	0	0	0	0	1 8	9 2	1	0	39	0	0	0	18	0 (0 0	0 0	0	0	0	1	1108	503 1	118 3	38 149
09:15	60	5	1	0 2	732 1	5 21	0	60 4	1 0	0	0	0 0	0 0) 5	39	0	1	33	1	0	0	46	3	0 0	0	0	0	0	3	17	0	0	0 2	43 9	17	7 0	24	1	0	0	1	0	0	0	1 8	9 1	0	0	42	1	0	0	23	0 (0 0	0	0	0	0	1	989	398 1	123 3	12 156



	7	2	2	318	2	0	0	0	0	0	0	11	13//31	4711	1899	4837	1989	
-	5	1	1	104	1	0	0	0	0	0	0	9	4809	1735	649	1690	735	
1		1	1									-				A		
	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	Bray St EB	GRAND TOTAL	Pacific Hwy 58	Orlando St WB	Pacific Hwy NB	Bray St EB	
gh	Through	Through	Through	Right	Right	Right	Right	U-turn	U-turn	U-turn	U-turn	Cross 1		TOTAL	TOTAL	TOTAL	TOTAL	
	Light Trucks (3- 5)	Heavy Trucks (6- 12)	Bicycles on Road	Lights (1-2)	Light Trucks (3- 5)	He avy Trucks (6- 12)	Bicycles on Road	Lights (1-2)	Light Trucks (3- 5)	Heavy Trucks (6- 12)	Bicycles on Road	Pede Krians	TOTALS	All Classes	All Classes	All Classes	All Classes	
	1	0	0	24	0	0	0	0	0	0	0	0	1038	389	193	283	173	
_	1	1	0	17	1	0	0	0	0	0	0	0	1207	454	146	463	144	
	3	0	1	31	0	0	0	0	0	0	0	5	1210	422	155	432	201	
	1	0	0	27	0	0	0	0	0	0	0	0	1201	393	187	429	192	
		0	0	29	0	0	0	0	0	0	0	4	1191	466	161	366	198	
_	0					1 0		0	0	0	0	1 0	1187	436			3.45	
_	0	1	0	19	0	0	0	-	-		0			430	155	450	140	
	0 0 1	1	0	19 32	0	0	0	0	0	0	0	0	1134	394	155	450	146	
	0 0 1 0	1 0 0	0 1 0	19 32 23	0	0	0	0	0	0	0	0 2	1134 1147	430 394 388	155 166 161	450 404 441	146	
	0 0 1 0 0	1 0 0	0 1 0 0 0	19 32 23 36	0 0 1	0	0	0	0	0	0	0 2 0	1134 1147 1125	430 394 388 366	155 166 161 173	450 404 441 401	146 170 157 185	
	0 0 1 0 0 0 0 0 0 0		0 1 0 0 0 0 0 0	19 32 23 36 24 39	0 0 1 0	0 0 0 0 0 0 0	0	0 0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0 0	0 0 0 0 0 0 0	0 2 0 0	1134 1147 1125 1069	430 394 388 366 353 227	155 166 161 173 146	450 404 441 401 424 415	146 170 157 185 146	
	0 0 1 0 0 0 0 0	1 0 0 0 0 0	0 1 0 0 0 0 0 0 0 0	19 32 23 36 24 29 27	0 0 1 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0	0 2 0 0 0	1134 1147 1125 1069 1046	430 394 388 366 353 337 313	155 166 161 173 146 151	450 404 441 401 424 415 324	146 170 157 185 146 143 134	



Site 5. Pacific Highway / Argyll Street



TOTALS AND PEAKS

TOTALS AND PEAK	5																																																													_
																																																														4
Period 1 Total	17	0 (0 0	4049	170 12	9 5	18	0 0	0	4	0	0	0 0	13	1	0	0 0	0 0	0	0	4	1 (0 0	0	0	0	0	12	95	8 (0 0	0 226	3 190	147	1	8	0	0	0 2	0 1	0	0	1	24 (0 0	0	0	0	0	0 1	8 0	0	0	0	0 0	0 0	11	7186	4392	19 7	2733 42	<u>i </u>
Period 1 Peak Hr	6	0 (0 0	1729	64 40	0	9	0 0	0	1	0	0	0 0	5	1	0	0 0	0 0	0	0	0	0 (0 0	0	0	0	0	6	45 4	4 (0 0	0 97	5 62	44	1	3	0	0	0 1	0 1	0	0	0	14 (0 0	0	0	0	0	0 5	5 0	0	0	0	0 0	0 0	9	3020	1849	6 1	1146 19	1
																																																														4
	Pacific Hwy SB	Pacific Hwy SB Ducific Hwy CB	Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy SB	Pacific Hwy 58 Pacific Hwy 58	Argyli St WB	Argyli St WB	Argyli St WB	Argyli St WB Areuli St WB	Argyli St WB	Argyli St WB	Argyli St WB	Argyll St WB	Argyli St WB	Argyli St WB Argyli St WB	Argyli St WB	Argyli St WB	Argyli St WB	Argyli St WB	Argyll St WB	Pacific Hwy NB	Pacific Hwy NB Pacific Hww NR	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Pacific Hwy NB	Argyll St EB	Argyli St EB	Argyll St EB	Argyli St EB	Argyll St EB	Argyll St EB	Argyll St EB Aread St EB	Argyll St EB	Argyli St EB	Argyli St EB	Argyll St EB	Argyll St EB Areadl St FR	Argyli St EB Argyli St EB	Argyll St EB	GRA ND TOTAL	Pacific Hwy SB	Argyll St WB	Pacific Hwy NB Argyll St EB	
	Left L	left Le	ft Left	Through	Through Thro	igh Through	Right	Right Rig	nt Right	U-tum	U-tum U	-tum U-1	tum Cross	1 Left	Left	Left I	eft Thro	ugh Throu	hThrough	Through	Right R	ight Rij	ght Righ	t U-tum	U-tum	U-turn I	U-turn C	ross 1	Left Le	eft Le	aft Lei	aft Thro	gh Throug	th Throug	hThrough	Right	Right F	Right R	Right U-1	tum U-tu	n U-turn	U-turn	Cross 1	Left Le	aft Lef	t Left	Through	hrough TI	hrough Th	rough Rig	t Right	t Right	Right	U-turn U	J-turn U-ti	urn U-tu	um Cross 1	1	TOTAL	TOTAL 7	TOTAL TOTA	ÂL
Time Starting	Lights (1-2) Light Trucks (3-	S) Heavy Trucks (6-	12) Bicycles on Road	Lights (1-2)	Light Trucks (3- 5) Heavy Trucks (6-	12) Bicycles on Road	Lights (1-2)	Light Trucks (3- 5) Heavy Trucks (6-	Bicycles on Road	Lights (1-2)	Light Trucks [3- 5)	Heavy Trucks (6- 1.2) Bicycles on	Road Pedestrians	Lights (12.)	Light Trucks [3- 5}	Heavy Trucks (6- 12) Riveries on	Road	Light Trucks [3-	Heavy Trucks (6- 12)	Bicycles on Road	Lights (1-2) Lishe Towle (3-	S) Heavy Trucks (6-	12) Bicycles on	Lights (12)	Light Trucks (3- S)	Heavy Trucks (6- 12)	Bicycles on Road	Pecke st rians	Lights (1-2) Light Trucks (3-	s) Heavy Trucks (6-	12) Bicycles on	Road Liehts (1-2)	Light Trucks [3- 5)	Heary Trucks (6- 12)	Bicycles on Road	Lights (12)	Light Trucks [3- 5)	Heary Trucks (6- 1.2) Ricurks on	Bicycles on Road	Light Trucks [3-	er Heavy Trucks (6- 1.2)	Bicycles on Road	Peciest rians	Lights (1-2) Light Trucks (3-	s) Heavy Trucks (6-	1.2) Bicycles on Road	Lights (1-2)	Light Trucks [3- 5}	Heary Trucks (6- 1.2) Blow lac on	Road	Light Trucks [3-	Heavy Trucks (6- 12)	Bicycles on Road	Lights (1-2)	Light Trucks (3- 5) Heavy Trucks (6-	12) Bicycles on	Road Pedest rians	TOTALS	All Classes	All Classes	All Classes All Classes	
06:30	0	0 (0 0	214	13 7	3	0	0 0	0	0	0	0	0 0	2	0	0	0 0	0 0	0	0	1	1 (0 0	0	0	0	0	0	5 (0 0	0 0	0 97	14	7	0	1	0	0	0	1 0	0	0	0	2 (0 0	0	0	0	0	0 4	+ 0	0	0	0	0 0	0 0	1	372	237	4	125 6	Γ.
06:45	2	0 (0 0	233	14 10	1	0	0 0	0	1	0	0	0 0	0	0	0	0 0) 0	0	0	0	0 (0 0	0	0	0	0	0	6 (0 0	0 0	0 10	3 16	11	0	1	0	0	0	2 0	0	0	1	0 (0 0	0	0	0	0	0 2	2 0	0	0	0	0 0	0 0	0	407	261	0	144 2	_
07:00	1	0 (0 0	215	12 8	0	1	0 0	0	0	0	0	0 0	2	0	0	0 0) 0	0	0	0	0 (0 0	0	0	0	0	0	6 (0 0	0 0	0 13) 12	12	0	1	0	0	0	0 0	0	0	0	0 (0 0	0	0	0	0	0 1	L 0	0	0	0	0 0	0 0	0	401	237	2	161 1	. —
07:15	0	0 0	0 0	246	10 16	0	0	0 0	0	0	0	0	0 0	0	0	0	0 0	0 0	0	0	0	0 (0 0	0	0	0	0	2	4 (0 0	0 0	0 13	3 16	16	0	0	0	0	0	3 0	0	0	0	1 (0 0	0	0	0	0	0 1	1 0	0	0	0	0 0	0 0	0	446	272	0	172 2	_
07:30	2	0 0	0 0	306	9 12	1	1	0 0	0	0	0	0	0 0	0	0	0	0 0		0	0	1	0 0	0 0	0	0	0	0	0	4 (0 0	0 0	0 14	9 16	16	0	1	0	0	0	0 0	0	0	0	1 (0	0	0	0	0 0		0	0	0	0 0		0	519	331	1	186 1	-
07:45	4	0 0	0 0	409	15 6	0	2	0 0	0	1	0	0	0 0	1	0	0	0 0		0	0	1	0 0	0 0	0	0	0	0	0	2	3 (0 0	0 16	1 19	15	0	0	0	0	0	1 0	0	0	0	2 (0	0	0	0	0 0	0 0	0	0	0	0 0		0	642	437	2	201 2	-
08:00	1	0 0		399	17 10	0	2	0 0	0	1	0	0	0 0	0	0	0	0 0		0	0	0	0 0		0	0	0	0	0	7	1 0		0 22	19	11	0	0	0	0	0	1 0	0	0	0	2 0		0	0	0	0	0	2 0	0	0	0	0 0		1	694	430		259 5	-
08:15	1	0 0		516	21 12	0	4	0 0	- ŏ	0	0	0	0 0	3	1	0			0	ő	0	0 0		0	ő	0	0	4	4	2 0		0 20	1 7	11	0	1	0	0	0	3 0	0	0	0	3 0		0	1 0	0	0	0 0		0	0	0	0 0		2	790	554	4	229 3	-
08:30	1	č		471	14 9	0	3	0 0	Ť	1	0	0	0 0	0	0	0			1 õ	ő	0	0 0		0	ő	0	0	0	11 0			0 24	3 14	10	0	0	0	0	0	2 0	0	- ů	0	2 0		- <u> </u>	1 o	0	ő	0 0		0	0	0	0 0		1	7.98	499		285 4	-
08:45	2	0 0		405	14 12	0	1	0 0	ő	0	0	0	0 0	2	0	0	0 0		0	0	0	0 0		0	0	0	0	2	13 (0 26	1 14	9	1	1	0	0	0	2 0	0	0	0	5 0		0	0	0	0	0 0		0	0	0	0 0		4	742	434	2	301 5	-
09:00	2	0 0		337	15 7	0	1	0 0	- ŏ	0	0	0	0 0	0	0	0	0 0		0	0	0	0 0		0	0	0	0	0	17	2 0		0 26	5 27	14	0	1	0	0	0	3 1	0	ő	0	4 (0	0	0	0	0 3	3 0	0	0	0	0 0		2	700	362	0	331 7	-
09-15	1	č i		298	16 20	0	2	0 0	Ť	ŏ	0	0		2	ő	0				1 č	1	o		0	ŏ	0	0	4	16 0			0 28	16	15	0	1	ŏ	ő	0			1 o	õ	2 0				ő	ŏ –	0		0	ő	ŏ	0 0		0	695	22.0	4	329 4	-
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0	0	0	0	11	0	0	0	1	0	0	0	22	8454	3778	30	4604	42
0	0	0	0	2	0	0	0	0	0	0	0	9	3118	1420	13	1666	19
Argyll St EB	Argyll St EB	Argyll St EB	Argyll St EB	Argyll St EB	Argyll St EB	Argyll St EB	Argyll St EB	Argyll St EB	Argyll St EB	Argyll St EB	Argyll St EB	Argyll st EB	GRAND TOTAL	Pacific Hvry SB	Argyll st WB	Pedfic Hwy NB	Argyll st EB
rough	Through	Through	Through	Right	Right	Right	Right	U-tum	U-turn	U-turn	U-turn	Cross 1		TOTAL	TOTAL	TOTAL	TOTAL
Lights (1-2)	Light Trucks (3- 5)	Heavy Trucks (6 12)	Bicycles on Road	Lights (1-2)	Light Trucks (3- 5)	Heavy Trucks (6 12)	Bicycles on Road	Lights (1-2)	Light Trucks (3- 5)	Heavy Trucks (6 12)	Bicycles on Road	P e destrians	TOTALS	All Classes	All Classes	All Classes	All Classes
0	0	0	0	1	0	0	0	0	0	0	0	1	747	342	з	397	5
0	0	0	0	1	0	0	0	0	0	0	0	0	816	383	1	428	4
0	0	0	0	0	0	0	0	0	0	0	0	3	775	336	6	430	3
0	0	0	0	0	0	0	0	0	0	0	0	5	780	359	3	411	7
0	0	0	0	1	0	0	0	0	0	0	0	4	650	311	2	334	3
		-	0		0	0	0	0	0	0	0	1	755	356	7	387	5
0	0	0	0	1	0			0									
0	0	0	0	1	0	0	0	0	0	0	0	3	609	328	1	278	2
0 0 0	0 0 0	0	0	1 0	0	0	0	0	0	0	0	3	609 754	328 307	1 4	278 441	2
0 0 0	0 0 0 0 0	0 0 0 0	0 0 0 0	1 0 2	0	0	0	0 0 1	0	0 0 0	0 0	3 5 0	609 754 819	328 307 320	1 4 3	278 441 492	2 2 4
0 0 0 0	0 0 0 0	0 0 0 0 0 0	0 0 0 0	1 0 2 1	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 1 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	3 5 0	609 754 819 641	328 307 320 240	1 4 3 0	278 441 492 399	2 2 4 2
0 0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 0 0	1 0 2 1 0	0 0 0 0	0 0 0 0 0	0 0 0 0 0	0 0 1 0 0	0 0 0 0	0 0 0 0	0 0 0 0	3 5 0 0	609 754 819 641 585	328 307 320 240 250	1 4 3 0	278 441 492 399 334	2 2 4 2 1

Site 6. Frederick Street / Argyll Street

TURNIN	NNS NG MOV		IT SUF	RVEY	traff	icsurvey.c	om.au	DNV-GL	ASN25 4801	DNV-GL		
Interse	ction of A	Argyll	St and	Frede	erick S	<mark>t, Coff</mark>	<mark>s Har</mark> b					
Date:	Tue 15-03-22	2	[North:	Frederick	St		1	Survey	AM:	6:30 AM-9	:30 AM
Weather:	Fine		1	East:	Argyll St			1	Period	PM:	3:00 PM-6	:00 PM
Suburban:	Coffs Harbou	ır]	South:	N/A			1	Traffic	AM:	8:15 AM-9	:15 AM
Customer:				West:	Argyll St			30	Peak	PM:	3:30 PM-4	:30 PM
All Vehicle	s											
Ti	me	lorth App	roach Fr	ederick \$	East Ap	proach A	rgyll St	West A	pproach /	Argyll St	Hourly	/ Total
Period Star	Period End	U	R	L	U	R	WB	U	EB	L	Hour	Peak
06:30	06:45	0	0	0	0	3	0	0	0	1	28	
06:45	07:00	0	1	0	0	1	1	0	3	0	29	
07:00	07:15	0	0	3	0	2	1	0	0	1	27	
07:15	07:30	0	1	3	0	4	0	0	1	2	31	
07:30	07:45	0	3	0	0	1	0	0	0	1	41	
07:45	08:00	0	0	0	0	1	1	0	0	2	56	
08:00	08:15	0	3	1	0	3	0	0	1	3	65	
08:15	08:30	0	3	1	0	6	5	0	2	4	70	Peak
08:30	08:45	0	1	3	0	4	3	0	2	7	66	
08:45	09:00	0	1	4	0	1	4	0	1	2		
09:00	09:15	0	3	1	0	3	1	0	2	6		
09:15	09:30	0	3	3	1	3	2	0	1	4		
15:00	15:15	0	4	3	0	13	1	0	0	5	74	
15:15	15:30	0	3	0	0	4	4	0	3	1	73	
15:30	15:45	0	2	2	0	7	4	0	2	4	81	Peak
15:45	16:00	0	2	1	0	6	1	0	0	2	70	
16:00	16:15	0	3	4	0	10	3	0	2	3	70	
16:15	16:30	0	5	2	0	10	1	0	2	3	59	
16:30	16:45	0	0	1	0	2	2	0	1	4	43	
16:45	17:00	0	2	3	0	2	0	0	2	3	38	
17:00	17:15	0	2	1	0	6	3	0	2	0	35	
17:15	17:30	0	1	1	0	2	1	0	1	1		
17:30	17:45	0	1	0	0	2	1	0	0	1		
17:45	18:00	0	1	0	0	2	3	0	1	2		
												,
Peak	Time	lorth App	roach Fr	ederick	East Ap	proach A	rgyll St	West A	pproach A	Argyll St	Peak	
Period Star	Period End	U	R	L	0	R	WB	0	FR	L	total	1

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration. Graphic Total

14 33

13 9

Period Star Period End 08:15 15:30

09:15 16:30



TDAFFIC CI TDANC 101/

ate:	Tue 15-03-22	North:	Frederick St		Survey	AM:	6:30 AM-9:30 AM
/eather:	Fine	East:	Argyll St		Period	PM:	3:00 PM-6:00 PM
uburban:	Coffs Harbour	South:	N/A	1	Traffic	AM:	8:15 AM-9:15 AM
ustomer:		West:	Argyll St	30	Peak	PM:	3:30 PM-4:30 PM

70 81

Light Vehic	les	orth Ann	waaab Er	o do viola C	East An	nreach A	navel Cá	Mage Ar		Annual Cé	
Period Star	me Period End	Iorth App	R	ederick s	East Ap	proacn A	WB	West Ap	FB	Argyli St	
06:30	06:45	0	0	0	0	3	0	0	0	1	
06:45	07.00	0	1	0	0	1	1	0	3	0	
07:00	07:15	0	0	2	0	2	1	0	0	1	
07.00	07.15	0	0	3	0	2	1	0	0	1	
07:15	07:30	0	1	3	0	4	0	0	1	2	
07:30	07:45	0	3	0	0	1	0	0	0	1	
07:45	08:00	0	0	0	0	0	1	0	0	2	
08:00	08:15	0	3	1	0	3	0	0	1	3	
08:15	08:30	0	3	1	0	6	5	0	2	4	
08:30	08:45	0	1	3	0	4	3	0	2	7	
08:45	09.00	0	1	3	0	1	3	0	1	2	
00:00	00:15	0		1	0		1	0	2	-	
09.00	09.15	0	3	1	0	3	1	0	2	5	
09:15	09:30	0	3	2	1	3	2	0	1	4	
15:00	15:15	0	4	2	0	12	1	0	0	5	
15:15	15:30	0	3	0	0	3	4	0	3	1	
15:30	15:45	0	2	2	0	6	4	0	2	4	
15:45	16:00	0	2	1	0	6	1	0	0	2	
16:00	16:15	0	3	4	0	10	3	0	2	3	
16:15	16:30	0	5	2	0	10	1	0	2	3	
16:30	16:45	ů n	n n	-	0 0		2	0 0	- 1	4	
10.30	10.45	0	0		0	2	2	0		4	
16:45	17:00	0	2	3	0	2	0	0	2	3	
17:00	17:15	0	2	1	0	6	3	0	2	0	
17:15	17:30	0	1	1	0	2	1	0	1	1	
17:30	17:45	0	1	0	0	2	1	0	0	1	
17:45	18:00	0	1	0	0	2	3	0	1	2	
	-										
Peak Period Star	Time Period End	Iorth App	roach Fr	ederick S	East Ap	proach A	wB	West Ap	FB	Argyll St	Peak total
08:15	09:15	0	8	8	0	14	12	0	7	18	67
15:30	16:30	0	12	9	0	32	9	0	6	12	80
							Ũ				
Heavy Vehi	cles						Ū				
Heavy Vehi	cles me	lorth App	proach Fr	ederick S	East Ap	proach A	rgyll St	West Ap	proach /	Argyll St	
Heavy Vehi Tin Period Star	cles me Period End	lorth App	roach Fr	ederick S	East Ap	proach A	rgyll St WB	West Ap	EB	Argyll St	1
Heavy Vehi Tin Period Star 06:30	cles me Period End 06:45	lorth App U 0	oroach Fr R 0	ederick S	East Ap	proach A R 0	wB 0	West Ap	oproach / EB 0	Argyll St	
Heavy Vehi Tin Period Star 06:30 06:45	cles me Period End 06:45 07:00	lorth App U 0	oroach Fr R 0	ederick S	East Ap	proach A R 0	wB 0	West Ap	Deproach A EB 0 0	Argyll St L 0	
Heavy Vehi Tii Period Star 06:30 06:45 07:00	cles me Period End 06:45 07:00 07:15	lorth App U 0 0	Proach Fr R 0 0	ederick S L 0 0	East Ap U 0 0	proach A R 0 0	wB 0 0	West Ap U 0 0	oproach A EB 0 0	Argyll St L 0 0	
Heavy Vehi Tii Period Star 06:30 06:45 07:00 07:15	cles me Period End 06:45 07:00 07:15 07:30	lorth App U 0 0 0	Proach Fr R 0 0 0	ederick S L O O O	East Ap U 0 0 0	proach A R 0 0 0 0	wB 0 0 0 0	West A U 0 0 0	oproach / EB 0 0 0	Argyll St L O O O	
Heavy Vehi Tii Period Star 06:30 06:45 07:00 07:15 07:30	cles me Period End 06:45 07:00 07:15 07:30 07:45	lorth App U 0 0 0 0	Proach Fr R 0 0 0 0 0	ederick S 0 0 0 0 0	East Ap U 0 0 0 0 0	proach A R 0 0 0 0 0	rgyll St WB 0 0 0 0	West Ap U 0 0 0 0 0	Deproach A EB 0 0 0 0 0	Argyll St L O O O O O	
Heavy Vehi Tir Period Star 06:30 06:45 07:00 07:15 07:30 07:45	cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00	lorth App U 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0	ederick S L 0 0 0 0 0 0 0	East Ap U 0 0 0 0 0 0 0	proach A R 0 0 0 0 0 0 1	rgyll St WB 0 0 0 0 0 0 0	West Ap U 0 0 0 0 0 0 0 0 0	bproach / EB 0 0 0 0 0 0 0	Argyll St L 0 0 0 0 0 0 0	
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Heavy Vehi Tim Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 15:30 15:45 15:30 15:45 16:30 16:45 17:00 17:15 17:30 17:45 Period Star Period Star 09:01 17:45 17	cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:15 15:30 16:45 16:00 16:45 17:00 17:15 17:30 17:45 18:00 Time Period End	Iorth App U 0 0	Proach Fr R 0 0 0 <td>ederick S L 0 0 0 0 0 0 0 0 0 1 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>East Ap U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>Proach A R 0<</td> <td>rgyII St WB 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>West Ag U 0 </td> <td>Operate / EB 0</td> <td>Argyll St L 0 0 0 0<</td> <td>Peak total</td>	ederick S L 0 0 0 0 0 0 0 0 0 1 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	East Ap U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Proach A R 0<	rgyII St WB 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	West Ag U 0	Operate / EB 0	Argyll St L 0 0 0 0<	Peak total
Heavy Vehi Ti Period Star 06:30 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 15:30 15:45 15:30 15:45 15:30 15:45 16:00 16:15 16:30 16:45 17:00 17:15 17:30 17:45 Peak Peak Peak Peak	cles me Period End 06:45 07:00 07:15 07:30 07:45 08:00 08:15 08:30 08:45 09:00 09:15 09:30 15:45 16:00 16:15 16:30 16:45 17:00 17:45 18:00 Time Period End 09:15	Iorth App U 0	Proach Fr R 0	ederick S L 0 0 0 0 0 0 0 0 1 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	East Ap U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Proach A R 0<	rgyII St WB 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	West Ag U 0	Operation EB 0 0	Argyll St L 0	Peak total 3

Site 7. Joyce Street / West Argyll Street

	TRANS TRAFFIC SURVEY																		
Interse	ction of V		<mark>/II Sta</mark>	nd .lo	vce St	Coffs	Harbo	ur											
GPS	-30 285521	153 1111	95		yce oi,	00113	TIATUC												
Date:	Tue 15-03-22	!	Ĩ	North:	Joyce St			1	Survey	AM:	6:30 AM-9	:30 AM	T						
Weather:	Fine			East:	W Argyll	St			Period	PM:	3:00 PM-6	:00 PM	t						
Suburban:	Coffs Harbou	r	1	South:	Joyce St				Traffic	AM:	8:15 AM-9	:15 AM	1						
Customer:]	West:	Green Le	a Cres		3210	Peak	PM:	3:00 PM-4	:00 PM]						
All Vehicle	s																		
Ti	me	Nor	th Appro	ach Joyo	ce St	East	t Approac	ch W Arg	yll St	Sc	outh Appro	ach Joyce	St	West A	pproach	Green L	ea Cres	Hourly	/ Total
Period Star	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
06:30	06:45	0	0	20	0	0	0	0	1	0	1	5	0	0	4	0	0	169	
06:45	07:00	0	1	22	0	0	1	0	1	0	0	7	1	0	4	1	1	197	
07:00	07:15	0	1	21	1	0	0	0	2	0	0	14	2	0	1	0	0	233	
07:15	07:30	0	0	34	0	0	0	0	1	0	0	17	1	0	2	0	2	268	
07:30	07:45	0	0	36	0	0	0	0	2	0	1	14	4	0	2	0	0	340	
07:45	08:00	0	0	41	0	0	2	0	0	0	0	28	1	0	2	0	1	476	
08:00	08:15	0	0	46	0	0	2	0	1	0	0	25	1	0	2	0	0	605	
08:15	08:30	0	0	70	0	0	1	0	1	0	1	43	3	0	10	0	0	630	Peak
08:30	08:45	1	5	96	2	0	1	0	10	0	1	58	10	0	11	0	0	567	
08:45	09:00	1	3	90	0	0	2	0	8	0	4	64	9	0	21	0	2		
09:00	09:15	0	1	47	0	0	3	0	5	0	2	31	3	0	8	0	2		
09:15	09:30	0	0	37	0	0	0	0	1	1	1	19	1	0	4	0	2		
15:00	15:15	1	6	48	3	0	3	0	11	0	5	40	7	0	8	0	2	532	Peak
15:15	15:30	0	1	102	2	0	10	0	15	0	2	51	4	0	4	1	1	484	
15:30	15:45	0	3	57	1	0	1	0	1	1	1	51	2	0	6	0	2	392	
15:45	16:00	0	0	32	0	0	1	0	1	0	0	36	4	0	4	0	1	346	
16:00	16:15	0	0	36	3	0	0	0	0	0	0	42	3	0	1	0	1	358	
16:15	16:30	0	0	42	3	0	1	0	4	0	3	42	2	0	1	0	3	371	
16:30	16:45	0	2	32	2	0	1	0	0	0	0	37	4	0	2	0	0	367	
16:45	17:00	0	0	41	0	0	1	0	0	0	0	45	2	0	2	0	0	369	
17:00	17:15	0	2	28	1	0	1	0	1	1	1	60	3	0	0	1	0	363	
17:15	17:30	0	1	33	0	0	0	0	0	0	6	49	5	0	3	0	0		
17:30	17:45	0	0	35	3	0	1	0	0	0	1	37	4	0	0	0	1		
17:45	18:00	0	3	26	0	0	0	0	0	0	0	45	7	0	4	0	0		

Peak	Time	Nor	th Appro	ach Joyc	e St	East	Approac	h W Argy	/II St	So	outh Appro	ach Joyce	St	West A	pproach	Green Le	ea Cres	Peak
Period Star	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
08:15	09:15	2	9	303	2	0	7	0	24	0	8	196	25	0	50	0	4	630
15:00	16:00	1	10	239	6	0	15	0	28	1	8	178	17	0	22	1	6	532

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



GHD | NSW Land and Housing Corporation | 12571083 | Argyll Estate Precinct Renewal 56

LIGHT VENIC	cles	Mar		a ah Jawa	. 64	Fact	A	h 14/ Augus	41.04			a ah Jawaa	C4	Manta	nnraah	Creenil	
Period Star	me Period End		tn Appro	acn Joyc		East		w R		50	outn Appro	ACR JOYCE	51	West A	pproacn R	FR	ea Cres
06:30	06:45	0	0	19	0	0	0	0	1	0	0	4	0	0	3	0	0
06:45	07:00	0	0	21	0	0	1	0	1	0	0	7	1	0	3	1	0
07:00	07:15	0	0	21	1	0	0	0	1	0	0	12	2	0	1	0	0
07.00	07.10	0	0	21	-	0	0	0	-	0	0	12	4	0	2	0	0
07.15	07.30	0	U	33	U	U	0	U	-	U	0	10	-	U	2	0	2
07:30	07:45	0	0	36	0	0	0	0	2	0	1	14	4	0	2	0	0
07:45	08:00	0	0	41	0	0	2	0	0	0	0	27	1	0	2	0	1
08:00	08:15	0	0	46	0	0	2	0	1	0	0	24	1	0	2	0	0
08:15	08:30	0	0	69	0	0	1	0	0	0	1	42	3	0	10	0	0
08:30	08:45	1	5	95	2	0	0	0	10	0	1	57	10	0	11	0	0
09:45	00.00	1	2	80	-	0	2	0	.0	0		62	0	0	21	0	2
00.40	09.00	-	3	09	0	0	2	0	0	0	4	02	9	0	21	0	2
09:00	09:15	0	1	47	0	0	2	0	2	0	2	31	3	0	8	0	2
09:15	09:30	0	0	37	0	0	0	0	1	1	1	18	1	0	4	0	2
15:00	15:15	1	6	48	3	0	3	0	8	0	5	37	7	0	8	0	2
15:15	15:30	0	1	100	2	0	8	0	11	0	2	47	4	0	4	1	1
15:30	15:45	0	3	57	1	0	1	0	1	1	1	50	2	0	6	0	2
15:45	16:00	0	0	32	0	0	1	0	1	0	0	35	-	0	4	0	1
10.40	10.00	0	0	52		0	, i	, , , , , , , , , , , , , , , , , , ,		0	0		+		+	0	
16:00	16:15	υ	U	34	3	U	U	0	U	0	0	42	2	U	1	U	U
16:15	16:30	0	0	41	3	0	1	0	4	0	3	41	2	0	1	0	3
16:30	16:45	0	2	32	2	0	1	0	0	0	0	37	4	0	1	0	0
16:45	17:00	0	0	41	0	0	1	0	0	0	0	45	2	0	2	0	0
17:00	17:15	0	2	28	1	0	1	0	1	1	1	60	3	0	0	1	0
17:15	17:30	0	1	33	0	0	0	0	0	0	6	49	4	0	3	0	0
17:20	17:45	0		24	2	0	1	0	0	0	1	27		0	0	0	1
17.30	17.45	0	U	34	3	U	1	U	U	U	-	37	4	U	0	0	1
17:45	18:00	0	3	26	0	0	0	0	0	0	0	45	7	0	4	0	0
Poak	Time	Nor	th Annro	ach Jove	o St	Fast	Annroad	h W Aray	/II St	So	uth Annro	ach Jovco	St	West A	nnroach	Greenle	a Cros
Period Star	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
08:15	09:15	2	9	300	2	0	5	0	20	0	8	192	25	0	50	0	4
15:00	16:00	1	10	237	6	0	13	0	21	1	8	169	17	0	22	1	6
Heavy Vehi																	
	cies																
Ti	me	Nor	th Appro	ach Joyc	e St	East	Approad	h W Arg	/II St	So	outh Appro	ach Joyce	St	West A	pproach	Green Le	ea Cres
Tin Period Star	me Period End	Nor U	th Appro R	ach Joyc SB	e St	East U	R R	wB	/II St ⊥	So U	R	ach Joyce NB	St L	West A	pproach R	Green Le EB	ea Cres
Tin Period Star 06:30	me Period End 06:45	Nor U 0	th Appro R 0	ach Joyc SB 1	e St L 0	East U 0	R 0	wB 0	/II St L	So U 0	euth Appro R 1	ach Joyce NB 1	St	West A U 0	pproach R 1	Green Le EB 0	ea Cres L 0
Tin Period Star 06:30 06:45	me Period End 06:45 07:00	Nor U 0	th Appro R 0 1	ach Joyc SB 1	e St L 0	East U 0	Approac R 0	wB 0	/II St L 0	So U 0	R R 1 0	ach Joyce NB 1 0	St 0	West A	pproach R 1 1	Green Le EB 0 0	ea Cres L 0 1
Tin Period Star 06:30 06:45 07:00	me Period End 06:45 07:00 07:15	Nor U 0 0	th Appro R 0 1	ach Joyc SB 1 1 0	e St L 0 0	East U 0 0	Approac R 0 0	wB WB 0 0 0	/II St 0 0	So U 0 0	R R 1 0 0	ach Joyce NB 1 0 2	St 0 0	West A U 0 0	pproach R 1 1	Green Lo EB 0 0	EXAMPLE
Tin Period Star 06:30 06:45 07:00 07:15	me Period End 06:45 07:00 07:15 07:30	Nor U 0 0 0	th Appro R 0 1 1 0	ach Joyc SB 1 1 0 1	e St 0 0 0	East U 0 0 0 0 0 0	Approac R 0 0 0	WB WB 0 0 0 0	/II St 0 1 0	So U 0 0 0	Puth Appro R 1 0 0	ach Joyce NB 1 0 2 1	St 0 0 0 0 0 0	West A U 0 0 0 0 0 0	pproach R 1 1 0 0	Green Le EB 0 0 0	ea Cres L 0 1 0 0
Tin Period Star 06:30 06:45 07:00 07:15 07:30	Period End 06:45 07:00 07:15 07:30	Nor U 0 0 0	th Appro R 0 1 1 0	ach Joyc SB 1 1 0 1	e St 0 0 0 0 0	East U 0 0 0 0 0 0 0 0	Approac R 0 0 0 0 0 0	h W Argy WB 0 0 0 0	/II St 	So U 0 0 0	R R 1 0 0 0	ach Joyce NB 1 0 2 1	St 0 0 0 0 0 0	West A U 0 0 0 0 0 0	pproach R 1 1 0 0	Green Lo EB 0 0 0 0	ea Cres L 0 1 0 0 0 0
Tin Tin Tin Tin Tin Tin Tin Constant Of:30 Of:45 Of:00 Of:15 Of:30	Period End 06:45 07:00 07:15 07:30 07:45	Nor U 0 0 0 0 0	th Appro R 0 1 1 0 0	ach Joyc SB 1 1 0 1 0	e St 0 0 0 0 0 0 0	East U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approac R 0 0 0 0 0 0 0	WB 0 0 0 0 0 0 0	II St 0 0 1 0 0 0 0 0 0 0	So U 0 0 0 0 0	Appro R 1 0 0 0 0 0 0	ach Joyce NB 1 0 2 1 0	St 0 0 0 0 0 0 0 0 0	West A U 0 0 0 0 0 0 0 0	pproach R 1 1 0 0 0	Green Le EB 0 0 0 0 0	EXAMPLE
Tim Veriod Star 06:30 06:45 07:00 07:15 07:30 07:45	Operation Operation <t< td=""><td>Nor 0 0 0 0 0 0</td><td>th Appro R 0 1 1 0 0 0</td><td>ach Joyc SB 1 1 0 1 0 0</td><td>e St 0 0 0 0 0 0 0 0</td><td>East U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>Approac R 0 0 0 0 0 0 0 0 0 0 0 0</td><td>WB 0 0 0 0 0 0 0 0 0 0 0</td><td>/II St L 0 1 0 0 0 0</td><td>So 0 0 0 0 0 0 0 0 0 0</td><td>Appro R 1 0 0 0 0 0 0 0 0</td><td>ach Joyce NB 1 0 2 1 0 1</td><td>St 0 0 0 0 0 0 0 0 0 0</td><td>West A 0 0 0 0 0 0 0 0 0 0 0</td><td>pproach R 1 1 0 0 0 0 0</td><td>Green Le EB 0 0 0 0 0 0</td><td>Cres L 0 1 0 0 0 0 0 0</td></t<>	Nor 0 0 0 0 0 0	th Appro R 0 1 1 0 0 0	ach Joyc SB 1 1 0 1 0 0	e St 0 0 0 0 0 0 0 0	East U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approac R 0 0 0 0 0 0 0 0 0 0 0 0	WB 0 0 0 0 0 0 0 0 0 0 0	/II St L 0 1 0 0 0 0	So 0 0 0 0 0 0 0 0 0 0	Appro R 1 0 0 0 0 0 0 0 0	ach Joyce NB 1 0 2 1 0 1	St 0 0 0 0 0 0 0 0 0 0	West A 0 0 0 0 0 0 0 0 0 0 0	pproach R 1 1 0 0 0 0 0	Green Le EB 0 0 0 0 0 0	Cres L 0 1 0 0 0 0 0 0
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Appendix B SIDRA results summary

V Site: 1 [2022_Base_AM Peak_Bray Street and Joyce Street_1 (Site Folder: Base 2022_AM Peak)]

Bray Street and Joyce Street Site Category: Bray Street and Joyce Street Give-Way (Two-Way)

Vehi	cle M	ovemen	t Perfor	mance										
Mov ID	Turn	INF VOLI	PUT JMES	DEM. FLO	AND WS	Deg. Satn	Aver. Delay	Level of Service	95% BA QUI	ACK OF EUE	Prop. Que	Effective Stop	Aver. No.	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
South	n: Frec	lerick Str	eet											
1	L2	66	2	69	3.0	0.111	5.3	LOS A	0.4	2.7	0.34	0.61	0.34	44.6
3	R2	46	4	48	8.7	0.111	7.8	LOS A	0.4	2.7	0.34	0.61	0.34	44.4
Appro	oach	112	6	118	5.4	0.111	6.3	LOS A	0.4	2.7	0.34	0.61	0.34	44.5
East:	Joyce	Street												
4	L2	169	9	178	5.3	0.239	4.7	LOS A	0.0	0.0	0.00	0.22	0.00	47.7
5	T1	249	10	262	4.0	0.239	0.1	LOS A	0.0	0.0	0.00	0.22	0.00	48.7
Appro	oach	418	19	440	4.5	0.239	1.9	NA	0.0	0.0	0.00	0.22	0.00	48.3
West	: Joyc	e Street												
11	T1	503	17	529	3.4	0.408	1.0	LOS A	2.3	16.4	0.40	0.19	0.45	48.0
12	R2	195	0	205	0.0	0.408	6.7	LOS A	2.3	16.4	0.40	0.19	0.45	46.8
Appro	oach	698	17	735	2.4	0.408	2.6	NA	2.3	16.4	0.40	0.19	0.45	47.7
All Vehic	les	1228	42	1293	3.4	0.408	2.7	NA	2.3	16.4	0.26	0.24	0.29	47.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Vehicle movement LOS values are based on average delay per movement.

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

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

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

Queue Model: SIDRA Standard.

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

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

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V Site: 2 [2022_Base_AM Peak_Bray Street and Frederick Street_2 (Site Folder: Base 2022_AM Peak)]

■ Network: N101 [2022_Base_AM Peak_Frederick Street between Bray Street and Argyll Street_2 & 6 (Network Folder: Base 2022_AM Peak)]

Bray Street and Frederick Street Site Category: Bray Street and Frederick Street Give-Way (Two-Way)

Vehi	cle Mo	vement	Perfo	rmanc	e									
Mov ID	Turn	DEMA FLO\ [Total veh/h	AND WS HV] %	ARRI FLO [Total veh/h	VAL WS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERA OF [Veh. veh	AGE BACK QUEUE Dist] m	Prop. Que	Effective <i>A</i> Stop Rate	ver. No. Cycles	Aver. Speed km/h
South	n: Frede	erick Stre	et											
1	L2	35	0.0	35	0.0	0.053	6.1	LOS A	0.1	0.5	0.41	0.65	0.41	44.6
3	R2	18	0.0	18	0.0	0.053	6.8	LOS A	0.1	0.5	0.41	0.65	0.41	44.3
Appro	bach	53	0.0	53	0.0	0.053	6.3	LOS A	0.1	0.5	0.41	0.65	0.41	44.5
East:	Bray S	treet												
4	L2	7	0.0	7	0.0	0.221	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.8
5	T1	407	5.2	407	5.2	0.221	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	49.8
Appro	bach	415	5.1	415	5.1	0.221	0.2	NA	0.0	0.0	0.00	0.01	0.00	49.8
West	: Bray S	Street												
11	T1	563	5.2	563	5.2	0.315	0.1	LOS A	0.1	0.6	0.04	0.02	0.05	49.8
12	R2	16	6.7	16	6.7	0.315	7.1	LOS A	0.1	0.6	0.04	0.02	0.05	49.6
Appro	bach	579	5.3	579	5.3	0.315	0.3	NA	0.1	0.6	0.04	0.02	0.05	49.8
All Ve	hicles	1046	4.9	1046	4.9	0.315	0.5	NA	0.1	0.6	0.04	0.05	0.05	49.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.

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

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

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

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

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

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V Site: 3a [2022_Base_AM Peak_Bray Street and Elm Street _3a (Site Folder: Base 2022_AM Peak)] ■ Network: N102 [2022_Base_AM Peak_ Pacific Highway from Bray St to Argyll Street_3,4 & 5 -RMS target delay (Network Folder: Base 2022_AM Peak)]

Bray Street and Elm Street Site Category: Bray Street and Elm Street Give-Way (Two-Way)

Vehi	cle Mo	vement	Perfo	rmano	e									
Mov ID	Turn	DEMA FLO\ [Total	AND NS HV]	ARRI FLO [Total	VAL WS HV]	Deg. Satn	Aver. Delay	Level of Service	95% Q [Veh.	BACK OF UEUE Dist]	Prop. Que	Effective <i>A</i> Stop Rate	ver. No. Cycles	Aver. Speed
Cauth		ven/n	%	ven/h	%	V/C	sec		ven	m				Km/h
South	i: Eim s	street												
1	L2	26	12.0	26	12.0	0.150	6.5	LOS A	0.4	2.8	0.58	0.72	0.58	40.4
3	R2	22	0.0	22	0.0	0.150	16.9	LOS B	0.4	2.8	0.58	0.72	0.58	28.9
Appro	bach	48	6.5	48	6.5	0.150	11.2	LOS A	0.4	2.8	0.58	0.72	0.58	37.4
East:	Bray S	treet												
4	L2	25	4.2	25	4.2	0.041	4.6	LOS A	0.0	0.0	0.00	0.18	0.00	45.0
5	T1	424	5.0	424	5.0	0.205	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.7
Appro	bach	449	4.9	449	4.9	0.205	0.3	NA	0.0	0.0	0.00	0.03	0.00	49.6
West	Bray S	Street												
11	T1	661	4.3	661	4.3	0.325	0.0	LOS A	5.0	36.0	0.01	0.00	0.01	59.8
12	R2	4	0.0	4	0.0	0.325	8.4	LOS A	5.0	36.0	0.01	0.00	0.01	55.6
Appro	bach	665	4.3	665	4.3	0.325	0.1	NA	5.0	36.0	0.01	0.00	0.01	59.8
All Ve	hicles	1163	4.6	1163	4.6	0.325	0.6	NA	5.0	36.0	0.03	0.04	0.03	53.9

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

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

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

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

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

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

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

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Site: 4 [2022_Base_AM Peak_Bray Street and Pacific Highway_4 (Site Folder: Base 2022_AM Peak)]

■ Network: N102 [2022_Base_AM Peak_ Pacific Highway from Bray St to ArgyII Street_3,4 & 5 -RMS target delay (Network Folder: Base 2022_AM Peak)]

Bray Street and Pacific Highway Site Category: Bray Street and Pacific Highway Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network Optimum Cycle Time -Minimum Degree of Saturation)

Vehi	cle Mo	vement	Perfo	rmanc	e									
Mov	Turn	DEMA	AND	ARRI	VAL	Deg.	Aver.	Level of	95% B	ACK OF	Prop.	EffectiveA	ver. No.	Aver.
ID		FLO\	WS	FLO	WS	Satn	Delay	Service	QL I Vah		Que	Stop	Cycles	Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m		Trate		km/h
South	n: Pacifi	c Highwa	ау											
1	L2	75	0.0	75	0.0	*0.485	38.9	LOS C	17.7	133.5	0.79	0.74	0.79	18.6
2	T1	991	11.7	991	11.7	0.485	33.3	LOS C	17.8	136.8	0.80	0.71	0.80	26.7
3	R2	152	4.2	152	4.2	*0.948	102.4	LOS F	13.4	97.4	1.00	1.08	1.56	18.3
Appro	bach	1217	10.0	1217	10.0	0.948	42.2	LOS C	17.8	136.8	0.82	0.76	0.89	24.1
East:	Orland	o Street												
4	L2	177	7.7	177	7.7	0.220	16.8	LOS B	4.3	32.4	0.43	0.68	0.43	41.7
5	T1	173	4.3	173	4.3	*0.631	61.7	LOS E	12.2	88.3	0.99	0.82	0.99	20.4
6	R2	191	6.6	191	6.6	0.631	66.2	LOS E	12.2	88.3	0.99	0.82	0.99	23.5
Appro	bach	540	6.2	540	6.2	0.631	48.6	LOS D	12.2	88.3	0.81	0.77	0.81	25.6
North	: Pacifi	c Highwa	ıy											
7	L2	529	4.0	529	4.0	0.379	8.7	LOS A	8.4	60.8	0.31	0.65	0.31	49.0
8	T1	1654	5.7	1654	5.7	0.715	34.4	LOS C	32.6	239.3	0.86	0.77	0.86	16.3
9	R2	303	4.2	303	4.2	*0.486	46.1	LOS D	9.1	66.3	0.93	0.84	0.93	13.0
Appro	bach	2486	5.2	2486	5.2	0.715	30.4	LOS C	32.6	239.3	0.75	0.76	0.75	23.3
West	Bray S	Street												
10	L2	386	4.1	386	4.1	0.851	59.4	LOS E	20.3	146.9	0.93	0.91	1.08	13.4
11	T1	229	2.3	229	2.3	0.659	58.2	LOS E	14.7	105.3	0.99	0.82	0.99	23.5
12	R2	123	3.4	123	3.4	0.525	63.1	LOS E	7.8	56.4	0.96	0.80	0.96	5.7
Appro	bach	739	3.4	739	3.4	0.851	59.7	LOS E	20.3	146.9	0.95	0.86	1.03	16.0
All Ve	hicles	4982	6.2	4982	6.2	0.948	39.6	LOS C	32.6	239.3	0.81	0.77	0.83	22.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.

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

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

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

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

* Critical Movement (Signal Timing)

Pedestriar	n Movement	t Perfori	nance							
Mov	Dem.	Aver.	Level of	AVERAGE	BACK OF	Prop. E	ffective	Travel	Travel	Aver.
	'9 FIOW	Delay	Service	[Ped	Dist]	Que	Rate	Time	DISI.	Speed
	ped/h	sec		ped	m			sec	m	m/sec
South: Pacit	fic Highway									
P1 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	238.6	226.7	0.95
East: Orland	do Street									

P2 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	229.1	214.3	0.94
North: Pacific High	way									
P3 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	241.9	230.9	0.95
West: Bray Street										
P4 Full	53	64.3	LOS F	0.2	0.2	0.96	0.96	232.0	218.0	0.94
All Pedestrians	211	64.3	LOS F	0.2	0.2	0.96	0.96	235.4	222.5	0.95

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

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V Site: 5 [2022_Base_AM Peak_Pacific Highway and Argyll Street_5 (Site Folder: Base 2022_AM Peak)]

■ Network: N102 [2022_Base_AM Peak_ Pacific Highway from Bray St to Argyll Street_3,4 & 5 -RMS target delay (Network Folder: Base 2022_AM Peak)]

Pacific Highway and Argyll Street Site Category: Pacific Highway and Argyll Street Give-Way (Two-Way)

Vehi	cle Mo	vement	Perfo	rmanc	e									
Mov ID	Turn	DEMA FLOV	ND NS	ARRI FLO	VAL WS	Deg. Satn	Aver. Delay	Level of Service	95% Q	BACK OF	Prop. Que	Effective A Stop	ver. No. Cycles	Aver. Speed
		veh/h	нvј %	veh/h	HV J %	v/c	sec		ven. veh	. Disi j m		Rale		km/h
South	: Pacif	ic Highwa	iy											
1	L2	54	9.8	54	9.8	0.328	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	57.3
2	T1	1149	9.9	1149	9.9	0.328	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.3
Appro	bach	1203	9.9	1203	9.9	0.328	0.4	NA	0.0	0.0	0.00	0.03	0.00	59.2
North	: Pacifi	c Highwa	у											
8	T1	1946	5.7	1946	5.7	0.518	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
9	R2	11	0.0	11	0.0	0.036	17.1	LOS B	0.1	0.7	0.81	0.92	0.81	39.4
Appro	bach	1957	5.7	1957	5.7	0.518	0.2	NA	0.1	0.7	0.00	0.00	0.00	59.4
West:	Argyll	Street												
10	L2	16	0.0	16	0.0	0.022	7.6	LOS A	0.1	0.5	0.50	0.67	0.50	41.5
12	R2	6	0.0	6	0.0	1.053	999.4	LOS F	2.8	19.6	1.00	1.09	1.39	3.3
Appro	bach	22	0.0	22	0.0	1.053	290.9	LOS F	2.8	19.6	0.65	0.79	0.76	6.9
All Ve	hicles	3182	7.2	3182	7.2	1.053	2.3	NA	2.8	19.6	0.01	0.02	0.01	56.4

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

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

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

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

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

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

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

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V Site: 6 [2022_Base_AM Peak_Argyll Street and Frederick Street_6 (Site Folder: Base 2022_AM Peak)]

■ Network: N101 [2022_Base_AM Peak_Frederick Street between Bray Street and Argyll Street_2 & 6 (Network Folder: Base 2022_AM Peak)]

Argyll Street and Frederick Street Site Category: Argyll Street and Frederick Street Give-Way (Two-Way)

Vehi	cle Mc	vement	Perfo	rmano	се									
Mov ID	Turn	DEMA FLOV [Total veh/h	ND NS HV] %	ARR FLO [Tota veh/h	IVAL WS I HV] 1 %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERA OF [Veh. veh	AGE BACK QUEUE Dist] m	Prop. Que	Effective <i>A</i> Stop Rate	ver. No. Cycles	Aver. Speed km/h
East:	Argyll	Street												
11	T1	14	7.7	14	7.7	0.015	0.1	LOS A	0.0	0.2	0.08	0.27	0.08	48.2
12	R2	15	0.0	15	0.0	0.015	4.6	LOS A	0.0	0.2	0.08	0.27	0.08	46.5
Appro	bach	28	3.7	28	3.7	0.015	2.4	NA	0.0	0.2	0.08	0.27	0.08	47.6
North	: Frede	erick Stree	et											
1	L2	9	11.1	9	11.1	0.012	4.7	LOS A	0.0	0.1	0.03	0.52	0.03	45.6
3	R2	8	0.0	8	0.0	0.012	4.6	LOS A	0.0	0.1	0.03	0.52	0.03	45.7
Appro	bach	18	5.9	18	5.9	0.012	4.7	LOS A	0.0	0.1	0.03	0.52	0.03	45.6
West	: Argyll	Street												
4	L2	20	5.3	20	5.3	0.014	4.6	LOS A	0.0	0.0	0.00	0.39	0.00	45.9
5	T1	7	0.0	7	0.0	0.014	0.0	LOS A	0.0	0.0	0.00	0.39	0.00	47.8
Appro	bach	27	3.8	27	3.8	0.014	3.4	NA	0.0	0.0	0.00	0.39	0.00	46.7
All Ve	hicles	74	4.3	74	4.3	0.015	3.3	NA	0.0	0.2	0.04	0.37	0.04	46.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.

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

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

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

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

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

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V Site: 7a [2022_Base_AM Peak_Joyce Street and W Argyll Street_7a (Site Folder: Base 2022_AM Peak)]

■ Network: N101 [2022_Base_AM Peak_Joyce Street and Green Lea Cres_7 (Network Folder: Base 2022_AM Peak)]

Joyce Street and W Argyll Street Site Category: Joyce Street and W Argyll Street Give-Way (Two-Way)

Vehi	cle Mo	vement	Perfo	rmano	ce									
Mov ID	Turn	DEMA FLO\ [Total veh/h	AND WS HV] %	ARR FLO [Tota veh/h	IVAL WS I HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Q [Veh. veh	BACK OF UEUE Dist] m	Prop. Que	Effective <i>A</i> Stop Rate	ver. No. Cycles	Aver. Speed km/h
South	n: Joyce	e Street												
11 12	T1 R2	211 8	2.0 0.0	211 8	2.0 0.0	0.105 0.105	0.3 3.2	LOS A LOS A	0.1 0.1	0.4 0.4	0.04 0.04	0.19 0.19	0.04 0.04	49.8 20.5
Appro	bach	219	1.9	219	1.9	0.105	0.4	NA	0.1	0.4	0.04	0.19	0.04	46.9
East:	W Argy	Il Street												
1	L2	25	16.7	25	16.7	0.031	1.3	LOS A	0.1	0.9	0.37	0.26	0.37	19.7
3	R2	7	28.6	7	28.6	0.031	1.6	LOS A	0.1	0.9	0.37	0.26	0.37	26.9
Appro	bach	33	19.4	33	19.4	0.031	1.4	LOS A	0.1	0.9	0.37	0.26	0.37	21.7
North	: Joyce	Street												
4	L2	2	0.0	2	0.0	0.169	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	49.4
5	T1	328	1.0	328	1.0	0.169	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Appro	bach	331	1.0	331	1.0	0.169	0.1	NA	0.0	0.0	0.00	0.00	0.00	49.9
All Ve	hicles	582	2.4	582	2.4	0.169	0.3	NA	0.1	0.9	0.04	0.09	0.04	44.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.

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

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

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

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

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

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V Site: 7b [2022_Base_AM Peak_Joyce Street and Green Lea Cres_7b (Site Folder: Base 2022_AM Peak)]

■ Network: N101 [2022_Base_AM Peak_Joyce Street and Green Lea Cres_7 (Network Folder: Base 2022_AM Peak)]

Joyce Street and Green Lea Cres Site Category: Joyce Street and Green Lea Cres Give-Way (Two-Way)

Vehi	cle Mo	vement	Perfo	rmano	ce									
Mov ID	Turn	DEMA FLO\ [Total veh/h	AND NS HV] %	ARRI FLO [Total veh/h	IVAL WS I HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% C [Veh veh	BACK OF UEUE . Dist] m	Prop. Que	Effective <i>l</i> Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South	n: Joyce	e Street												
4	L2	26	0.0	26	0.0	0.124	4.6	LOS A	0.0	0.0	0.00	0.06	0.00	49.1
5	T1	215	2.0	215	2.0	0.124	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	49.3
Appro	bach	241	1.7	241	1.7	0.124	0.5	NA	0.0	0.0	0.00	0.06	0.00	49.2
North	: Joyce	Street												
11	T1	344	2.1	344	2.1	0.169	0.2	LOS A	0.1	0.5	0.02	0.19	0.02	49.9
12	R2	9	0.0	9	0.0	0.169	2.9	LOS A	0.1	0.5	0.02	0.19	0.02	21.0
Appro	bach	354	2.1	354	2.1	0.169	0.3	NA	0.1	0.5	0.02	0.19	0.02	48.1
West	Green	Lea Cre	s											
1	L2	4	0.0	4	0.0	0.075	0.7	LOS A	0.2	1.7	0.45	0.46	0.45	19.4
3	R2	53	0.0	53	0.0	0.075	3.3	LOS A	0.2	1.7	0.45	0.46	0.45	27.5
Appro	bach	57	0.0	57	0.0	0.075	3.1	LOS A	0.2	1.7	0.45	0.46	0.45	27.0
All Ve	hicles	652	1.8	652	1.8	0.169	0.6	NA	0.2	1.7	0.05	0.17	0.05	43.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.

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

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

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

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

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

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V Site: 1 [2022_Base_PM Peak_Bray Street and Joyce Street_1 (Site Folder: Base 2022 PM Peak)]

Bray Street and Joyce Street Site Category: Bray Street and Joyce Street Give-Way (Two-Way)

Vehi	cle M	ovemer	nt Perfor	mance										
Mov ID	Turn	INF VO <u>LI</u>	PUT JMES	DEM. FLO	AND WS	Deg. Satn	Aver. Delay	Level of Service	95% BA QUI	ACK OF EUE	Prop. Qu <u>e</u>	Effective Stop	Aver. No.	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
Sout	h: Frec	lerick Str	eet											
1	L2	125	2	132	1.6	0.271	6.2	LOS A	1.0	7.2	0.48	0.73	0.53	44.1
3	R2	126	4	133	3.2	0.271	8.0	LOS A	1.0	7.2	0.48	0.73	0.53	43.9
Appr	oach	251	6	264	2.4	0.271	7.1	LOS A	1.0	7.2	0.48	0.73	0.53	44.0
East:	Joyce	Street												
4	L2	122	4	128	3.3	0.308	4.7	LOS A	0.0	0.0	0.00	0.12	0.00	48.4
5	T1	422	22	444	5.2	0.308	0.1	LOS A	0.0	0.0	0.00	0.12	0.00	49.2
Appr	oach	544	26	573	4.8	0.308	1.1	NA	0.0	0.0	0.00	0.12	0.00	49.0
West	: Joyc	e Street												
11	T1	457	16	481	3.5	0.328	0.8	LOS A	1.2	8.7	0.29	0.11	0.32	48.6
12	R2	95	2	100	2.1	0.328	7.4	LOS A	1.2	8.7	0.29	0.11	0.32	47.5
Appr	oach	552	18	581	3.3	0.328	2.0	NA	1.2	8.7	0.29	0.11	0.32	48.5
All Vehic	cles	1347	50	1418	3.7	0.328	2.6	NA	1.2	8.7	0.21	0.23	0.23	47.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Vehicle movement LOS values are based on average delay per movement.

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

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

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

Queue Model: SIDRA Standard.

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

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

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V Site: 2 [2022_Base_PM Peak_Bray Street and Frederick Street_2 (Site Folder: Base 2022 PM Peak)]

■ Network: N101 [2022_Base_PM Peak_Frederick Street between Bray Street and Argyll Street (Network Folder: Base 2022 - PM Peak)]

Bray Street and Frederick Street Site Category: Bray Street and Frederick Street Give-Way (Two-Way)

Vehi	cle Mo	vement	Perfo	rmano	ce									
Mov ID	Turn	DEMA FLOV [Total veh/h	AND WS HV] %	ARRI FLO [Total veh/h	IVAL WS I HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Q [Veh. veh	BACK OF UEUE Dist] m	Prop. Que	Effective <i>A</i> Stop Rate	ver. No. Cycles	Aver. Speed km/h
South	n: Frede	erick Stre	et											
1 3	L2 R2	40 13	5.3 0.0	40 13	5.3 0.0	0.064 0.064	7.3 7.3	LOS A LOS A	0.2 0.2	1.5 1.5	0.50 0.50	0.71 0.71	0.50 0.50	43.9 43.7
Appro	bach	53	4.0	53	4.0	0.064	7.3	LOS A	0.2	1.5	0.50	0.71	0.50	43.9
East:	East: Bray Street													
4	L2	13	0.0	13	0.0	0.312	4.7	LOS A	0.0	0.0	0.00	0.01	0.00	49.7
5	T1	581	3.1	581	3.1	0.312	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	49.8
Appro	bach	594	3.0	594	3.0	0.312	0.2	NA	0.0	0.0	0.00	0.01	0.00	49.8
West	: Bray S	Street												
11	T1	516	4.3	516	4.3	0.290	0.2	LOS A	0.3	1.9	0.05	0.01	0.06	49.7
12	R2	13	16.7	13	16.7	0.290	9.3	LOS A	0.3	1.9	0.05	0.01	0.06	49.4
Appro	bach	528	4.6	528	4.6	0.290	0.4	NA	0.3	1.9	0.05	0.01	0.06	49.7
All Ve	hicles	1175	3.8	1175	3.8	0.312	0.6	NA	0.3	1.9	0.05	0.04	0.05	49.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.

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

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

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

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

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

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V Site: 3a [2022_Base_PM Peak_Bray Street and Elm Street _3a (Site Folder: Base 2022 PM Peak)]

Bray Street and Elm Street Site Category: Bray Street and Elm Street Give-Way (Two-Way)

Vehi	cle Mo	vement	Perfo	rmanc	e									
Mov ID	Turn	DEMA FLOV [Total veh/h	ND NS HV] %	ARRI FLO [Total veh/h	VAL WS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% [Ql [Veh. veh	BACK OF JEUE Dist] m	Prop. Que	Effective <i>A</i> Stop Rate	ver. No. Cycles	Aver. Speed km/h
South	n: Elm S	Street												
1	L2	28	7.4	28	7.4	0.197	7.9	LOS A	0.6	4.5	0.67	0.80	0.67	39.5
3	R2	26	0.0	26	0.0	0.197	18.2	LOS B	0.6	4.5	0.67	0.80	0.67	27.2
Appro	bach	55	3.8	55	3.8	0.197	12.8	LOS A	0.6	4.5	0.67	0.80	0.67	36.0
East:	Bray S	treet												
4	L2	28	0.0	28	0.0	0.062	4.6	LOS A	0.0	0.0	0.00	0.13	0.00	46.0
5	T1	661	2.7	661	2.7	0.309	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.7
Appro	bach	689	2.6	689	2.6	0.309	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.6
West	: Bray S	Street												
11	T1	578	3.6	578	3.6	0.284	0.1	LOS A	13.8	99.3	0.02	0.00	0.02	59.7
12	R2	4	0.0	4	0.0	0.284	10.3	LOS A	13.8	99.3	0.02	0.00	0.02	55.5
Appro	bach	582	3.6	582	3.6	0.284	0.2	NA	13.8	99.3	0.02	0.00	0.02	59.6
All Ve	hicles	1326	3.1	1326	3.1	0.309	0.7	NA	13.8	99.3	0.04	0.05	0.04	52.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.

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

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

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

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

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

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Site: 4 [2022_Base_PM Peak_Bray Street and Pacific Highway_4 (Site Folder: Base 2022 PM Peak)]

■ Network: N102 [2022_Base_PM Peak_ Pacific Highway from Bray St to ArgyII Street (Network Folder: Base 2022 - PM Peak)]

Bray Street and Pacific Highway Site Category: Bray Street and Pacific Highway Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network Optimum Cycle Time -Minimum Degree of Saturation)

Vehi	cle Mo	vement	Perfo	rmanc	:e									
Mov ID	Turn	DEMA FLOV [Total	AND WS HV]	ARRI FLO [Total	VAL WS HV]	Deg. Satn	Aver. Delay	Level of Service	95% E Ql [Veh.	BACK OF JEUE Dist]	Prop. Que	Effective <i>A</i> Stop Rate	ver. No. Cycles	Aver. Speed
South	n Pacifi	ven/n c Highwa	% W	ven/n	%	V/C	sec	_	ven	m	_	_	_	Km/n
1	12	118	0.0	118	0.0	<u>*</u> 0 917	68.4	LOSE	42.0	307.6	1 00	1.08	1 22	11 7
2	T1	1558	6.9	1558	6.9	*0.917	62 1	LOSE	42.0	307.6	1.00	1.00	1.22	18.1
3	R2	121	7.0	121	7.0	0.737	70.3	LOSE	8.0	59.5	1.00	0.87	1.15	23.3
Appro	bach	1797	6.4	1797	6.4	0.917	63.1	LOS E	42.0	308.2	1.00	1.06	1.22	18.2
East:	Orland	o Street												
4	L2	158	6.0	158	6.0	0.163	12.3	LOS A	2.9	21.1	0.36	0.65	0.36	44.7
5	T1	188	3.4	188	3.4	*0.876	68.0	LOS E	18.9	137.0	1.00	1.01	1.26	19.0
6	R2	349	5.1	349	5.1	0.876	72.6	LOS F	18.9	137.0	1.00	0.98	1.26	22.4
Appro	bach	696	4.8	696	4.8	0.876	57.7	LOS E	18.9	137.0	0.85	0.91	1.06	23.6
North	: Pacifi	c Highwa	у											
7	L2	234	6.3	234	6.3	0.171	7.3	LOS A	2.1	15.8	0.21	0.61	0.21	50.3
8	T1	1206	11.7	1206	11.7	0.713	40.6	LOS C	23.8	183.5	0.92	0.81	0.92	14.3
9	R2	407	2.6	407	2.6	*0.919	83.8	LOS F	15.3	109.2	1.00	1.01	1.42	7.9
Appro	bach	1847	9.0	1847	9.0	0.919	45.9	LOS D	23.8	183.5	0.85	0.83	0.94	15.8
West	Bray S	Street												
10	L2	497	3.0	497	3.0	0.910	64.0	LOS E	20.5	146.9	0.96	0.97	1.20	12.7
11	T1	176	4.8	176	4.8	0.496	51.8	LOS D	10.1	73.7	0.95	0.78	0.95	25.2
12	R2	113	1.9	113	1.9	0.450	57.6	LOS E	6.5	46.3	0.94	0.79	0.94	6.2
Appro	bach	785	3.2	785	3.2	0.910	60.3	LOS E	20.5	146.9	0.95	0.90	1.10	15.0
All Ve	hicles	5125	6.7	5125	6.7	0.919	55.7	LOS D	42.0	308.2	0.92	0.93	1.08	17.9

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

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

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

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

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

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

* Critical Movement (Signal Timing)

Pec	lestrian Mov	vement	Perform	nance							
Mov		Dem.	Aver.	Level of	AVERAGE	BACK OF	Prop. Ef	fective	Travel	Travel	Aver.
ID	Crossing	rossing Flow Delay			QUE	EUE	Que	Stop	Time	Dist.	Speed
					[Ped	Dist]		Rate			
		ped/h	sec		ped	m			sec	m	m/sec
Sou	th: Pacific Hig	hway									
P1	Full	53	59.3	LOS E	0.2	0.2	0.96	0.96	233.6	226.7	0.97
Eas	t: Orlando Str	eet									
P2	Full	53	59.3	LOS E	0.2	0.2	0.96	0.96	224.1	214.3	0.96

North: Pacific High	way									
P3 Full	53	59.3	LOS E	0.2	0.2	0.96	0.96	236.9	230.9	0.97
West: Bray Street										
P4 Full	53	59.3	LOS E	0.2	0.2	0.96	0.96	227.0	218.0	0.96
All Pedestrians	211	59.3	LOS E	0.2	0.2	0.96	0.96	230.4	222.5	0.97

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

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V Site: 5 [2022_Base_PM Peak_Pacific Highway and Argyll Street_5 (Site Folder: Base 2022 PM Peak)]

■ Network: N102 [2022_Base_PM Peak_ Pacific Highway from Bray St to Argyll Street (Network Folder: Base 2022 - PM Peak)]

Pacific Highway and Argyll Street Site Category: Pacific Highway and Argyll Street Give-Way (Two-Way)

Vehi	cle Mo	vement	Perfo	rmanc	e									
Mov ID	Turn	DEMA FLOV [Total veh/h	AND WS HV] %	ARRI FLO [Total veh/h	VAL WS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Q [Veh. veh	BACK OF UEUE Dist] m	Prop. Que	Effective <i>A</i> Stop Rate	ver. No. Cycles	Aver. Speed km/h
South	n: Pacifi	ic Highwa	ау											
1	L2 T1	95 1664	10.0 6.8	95 1664	10.0 6.8	0.608	6.0 0.4		0.0	0.0	0.00	0.07	0.00	56.6 58.7
Appro	bach	1759	6.9	1759	6.9	0.608	0.7	NA	0.0	0.0	0.00	0.03	0.00	58.5
North	: Pacifi	c Highwa	y											
8	T1	1488	9.9	1488	9.9	0.408	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
9	R2	14	0.0	14	0.0	0.160	47.3	LOS D	0.4	2.7	0.95	0.98	0.96	27.5
Appro	bach	1502	9.8	1502	9.8	0.408	0.5	NA	0.4	2.7	0.01	0.01	0.01	59.1
West	Argyll	Street												
10	L2	19	0.0	19	0.0	0.025	5.5	LOS A	0.1	0.4	0.31	0.54	0.31	43.2
12	R2	3	0.0	3	0.0	1.000	1664.5	LOS F	2.4	16.5	1.00	1.05	1.21	2.1
Appro	bach	22	0.0	22	0.0	1.000	242.5	LOS F	2.4	16.5	0.40	0.61	0.43	7.4
All Ve	hicles	3283	8.2	3283	8.2	1.000	2.3	NA	2.4	16.5	0.01	0.03	0.01	56.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.

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

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

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

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

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

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V Site: 6 [2022_Base_PM Peak_ArgyII Street and Frederick Street_6 (Site Folder: Base 2022 PM Peak)]

■ Network: N101 [2022_Base_PM Peak_Frederick Street between Bray Street and Argyll Street (Network Folder: Base 2022 - PM Peak)]

Argyll Street and Frederick Street Site Category: Argyll Street and Frederick Street Give-Way (Two-Way)

Vehi	cle Mc	vement	Perfo	rmano	ce									
Mov ID	Turn	DEMA FLOV [Total veh/h	ND NS HV] %	ARR FLO [Tota veh/h	IVAL WS I HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Q [Veh. veh	BACK OF UEUE Dist] m	Prop. Que	Effective <i>A</i> Stop Rate	ver. No. Cycles	Aver. Speed km/h
East:	Argyll	Street												
11 12	T1 R2	9 35	0.0 3.0	9 35	0.0 3.0	0.025 0.025	0.0 4.6	LOS A LOS A	0.1 0.1	0.8 0.8	0.07 0.07	0.40 0.40	0.07 0.07	47.5 45.3
Appro	bach	44	2.4	44	2.4	0.025	3.7	NA	0.1	0.8	0.07	0.40	0.07	46.0
North	North: Frederick Stree													
1	L2	9	0.0	9	0.0	0.014	4.6	LOS A	0.0	0.3	0.03	0.52	0.03	45.8
3	R2	13	0.0	13	0.0	0.014	4.6	LOS A	0.0	0.3	0.03	0.52	0.03	45.7
Appro	bach	22	0.0	22	0.0	0.014	4.6	LOS A	0.0	0.3	0.03	0.52	0.03	45.7
West:	Argyll	Street												
4	L2	13	0.0	13	0.0	0.009	4.6	LOS A	0.0	0.0	0.00	0.36	0.00	46.2
5	T1	6	0.0	6	0.0	0.009	0.0	LOS A	0.0	0.0	0.00	0.36	0.00	48.0
Appro	bach	19	0.0	19	0.0	0.009	3.0	NA	0.0	0.0	0.00	0.36	0.00	47.1
All Ve	hicles	85	1.2	85	1.2	0.025	3.8	NA	0.1	0.8	0.05	0.42	0.05	46.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.

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

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

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

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

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

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V Site: 7a [2022_Base_PM Peak_Joyce Street and W Argyll Street_7a (Site Folder: Base 2022 PM Peak)]

■ Network: N101 [2022_Base_PM Peak_Joyce Street and Green Lea Cres (Network Folder: Base 2022 -PM Peak)]

Joyce Street and W Argyll Street Site Category: Joyce Street and W Argyll Street Give-Way (Two-Way)

Vehi	cle Mo	vement	Perfo	rman	ce									
Mov ID	Turn	DEMA FLO\ [Total veh/h	AND NS HV] %	ARR FLO [Tota veh/h	IVAL WS I HV]	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Q [Veh. veh	BACK OF UEUE Dist] m	Prop. Que	Effective <i>A</i> Stop Rate	ver. No. Cycles	Aver. Speed km/h
South	n: Joyce	e Street												
11	T1	194	4.9	194	4.9	0.099	0.3	LOS A	0.1	0.5	0.04	0.20	0.04	49.8
12	R2	9	0.0	9	0.0	0.099	3.0	LOS A	0.1	0.5	0.04	0.20	0.04	20.5
Appro	bach	203	4.7	203	4.7	0.099	0.4	NA	0.1	0.5	0.04	0.20	0.04	46.3
East:	W Argy													
1	L2	29	25.0	29	25.0	0.046	1.1	LOS A	0.1	1.1	0.30	0.23	0.30	19.7
3	R2	16	13.3	16	13.3	0.046	1.2	LOS A	0.1	1.1	0.30	0.23	0.30	27.0
Appro	bach	45	20.9	45	20.9	0.046	1.1	LOS A	0.1	1.1	0.30	0.23	0.30	22.8
North	: Joyce	Street												
4	L2	6	0.0	6	0.0	0.137	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.3
5	T1	262	0.8	262	0.8	0.137	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.8
Appro	bach	268	0.8	268	0.8	0.137	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.8
All Ve	hicles	517	4.1	517	4.1	0.137	0.3	NA	0.1	1.1	0.04	0.10	0.04	42.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.

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

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

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

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

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

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V Site: 7b [2022_Base_PM Peak_Joyce Street and Green Lea Cres_7b (Site Folder: Base 2022 PM Peak)]

■ Network: N101 [2022_Base_PM Peak_Joyce Street and Green Lea Cres (Network Folder: Base 2022 -PM Peak)]

Joyce Street and Green Lea Cres Site Category: Joyce Street and Green Lea Cres Give-Way (Two-Way)

Vehi	cle Mo	vement	Perfo	rmano	ce									
Mov ID	Turn	DEMA FLOV [Total veh/h	AND WS HV] %	ARRI FLO [Total veh/h	IVAL WS I HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Q [Veh. veh	BACK OF UEUE Dist] m	Prop. Que	Effective <i>A</i> Stop Rate	ver. No. Cycles	Aver. Speed km/h
South	n: Joyce	e Street												
4 5	L2 T1	18 196	0.0 4.8	18 196	0.0 4.8	0.112 0.112	4.6 0.0	LOS A LOS A	0.0 0.0	0.0 0.0	0.00 0.00	0.05 0.05	0.00 0.00	49.2 49.4
Appro	bach	214	4.4	214	4.4	0.112	0.4	NA	0.0	0.0	0.00	0.05	0.00	49.4
North	North: Joyce Street													
11 12	T1 R2	281 11	3.4 0.0	281 11	3.4 0.0	0.141 0.141	0.2 2.8	LOS A LOS A	0.1 0.1	0.5 0.5	0.03 0.03	0.20 0.20	0.03 0.03	49.9 21.0
Appro	bach	292	3.2	292	3.2	0.141	0.3	NA	0.1	0.5	0.03	0.20	0.03	47.5
West	Green	Lea Cre	s											
1	L2	7	0.0	7	0.0	0.025	0.6	LOS A	0.1	0.5	0.27	0.25	0.27	19.7
3	R2	23	0.0	23	0.0	0.025	1.3	LOS A	0.1	0.5	0.27	0.25	0.27	27.8
Appro	bach	31	0.0	31	0.0	0.025	1.2	LOS A	0.1	0.5	0.27	0.25	0.27	26.3
All Ve	hicles	536	3.5	536	3.5	0.141	0.4	NA	0.1	0.5	0.03	0.14	0.03	44.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab). Vehicle movement LOS values are based on average delay per movement.

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

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

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

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

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

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